

**MEASUREMENTS AND METRICS IN SMALL
TECHNOLOGY AND KNOWLEDGE
ENTREPRENEURSHIP**

Robert Henry Tierney

Promotion committee:

Chairmen: prof. dr. R.I. van Oudenhoven –van der Zee
Secretary: prof. dr. R.I. van Oudenhoven –van der Zee University Of Twente MB/GW

Supervisors: prof. dr. S.T. Walsh University of Twente MB
 prof. dr. J.D. Linton University of Ottawa

Expert: Ir. M. Luizink University of Twente MESA+

Members: prof. dr. A. J. Groen University of Twente MB
 dr. R. Harms University of Twente MB
 prof. dr. J. Kratzer Technische University Berlin

The work described in this thesis was performed at the NIKOS group, Institute for Innovation and Governance Studies, School of Innovation and Governance Studies, University of Twente, PO Box 217, 7500 AE Enschede, The Netherlands.

Copyright © 2014, All rights reserved.
ISBN: 978-90-365-3601-1

MEASUREMENTS AND METRICS IN SMALL TECHNOLOGY AND KNOWLEDGE ENTREPRENEURSHIP

DISSERTATION

to obtain
the degree of doctor at the University of Twente,
on the authority of the rector magnificus,
prof.dr. H. Brinkma,
on account of the decision of the graduation committee,
to be publicly defended
on Friday 31st of January 2014 at 12.45 hrs.

By

Robert Henry Tierney

Born on the 12th of June, 1958
in Pittsburgh, United States of America

This dissertation has been approved by:

prof. dr. Jonathan Linton

prof. dr. Dr. Steven Walsh

prof. dr. Aard J. Groen

dr. Rainer Harms

prof. dr. Miriam Luizink

prof. dr. Jan Kratzer

Table of Contents

Section 1. Introduction

1.1.	Thesis Foundation	12
1.2.	Entrepreneurial Foundation	18
1.3.	Management of Technology and Innovation Foundation	20
1.3.1.	Schumpeterian Waves	20
1.3.2.	Small Technology	21
1.3.3.	University (Knowledge Entrepreneur) Industry Interaction	24
1.4.	Research Questions	24
1.4.1.	Pharmaceutical Landscape	27
1.4.2.	Highly Flexible Facilities	28
1.4.3.	A Strategic Model for Firms Who Seek to Embrace NanoManufacturing.	28
1.4.4.	Publish or Perish: How are Research and Reputation Related	29
1.4.5.	What Is High Expectations: A Comparative Study of Different Disciplines?	30
1.5.	References	32

Section 2. The Pharmaceutical Landscape

2.1.	Abstract and Keywords	40
2.2.	Introduction	41
2.3.	Literature Review	43
2.3.1.	The changing nature of many new pharmaceutical innovations	43
2.3.2.	Many of today's innovations are using technology differently	43
2.3.3.	No Unit Cell	44
2.3.4.	Differences in critical dimensions	44
2.3.5.	Today's pharmaceutical innovations are more heavily constrained	44
2.3.6.	Today's innovations are being shaped by different drivers	45
2.3.7.	Today's pharmaceutical innovations are creating new business models	45
2.3.8.	Value and gaps in traditional roadmap techniques	46
2.4.	First generation roadmaps	46
2.5.	Second generation roadmaps	48
2.6.	Developing new roadmap processes and components	51

2.7.	Technology and Innovation	51
2.7.1.	Using technology lifecycles	51
2.7.2.	Using Technology Readiness Levels (TRL) theory	52
2.8.	The role of drivers	54
2.8.1.	The role of consortia	55
2.8.2.	The role of components	56
2.9.	Methods	57
2.9.1.	Drivers in the changing pharmaceutical innovation arena	57
2.9.2.	The role of drivers in the Technological Landscape process	59
2.9.3.	The global population is aging.	59
2.9.4.	Treating the disease at the molecular level	60
2.9.5.	Chemical to biologically based pharmaceutical products	60
2.9.6.	Central lab diagnostics to “Point of Care” diagnostics	61
2.9.7.	Funding lifetime therapeutics rather than cures	61
2.9.8.	Doctor to Patient Directed Care	62
2.9.9.	Direct customer interaction	62
2.9.10.	Personalized care	63
2.9.11.	Pharmaceutical differentiation	63
2.9.12.	Crisis Intervention to prevention / non invasive innovations	63
2.9.13.	Detection is not enough	64
2.9.14.	Movement to remote care	64
2.9.15.	Increasing population	65
2.9.16.	High cost of drug development	65
2.9.17.	Shifts in intellectual property rights	66
2.10.	Consortia and target products	67
2.11.	The role of components in the Pharmaceutical Landscape	68
2.12.	The technology base	69
2.13.	The Pharmaceutical Landscape model	72
2.13.1.	Technology	72
2.13.2.	Drivers	72
2.13.3.	Consortia	73
2.13.4.	Components	73
2.13.5.	The Pharmaceutical Landscape	73
2.14.	Discussion and Future Research	74
2.15.	References	76

Section 3. Highly Flexible Facilities

3.1	Introduction	85
3.2	Literature Review	87
3.2.1.	Highly Flexible Facilities	89
3.2.2.	High Volume Facilities Metrics	90
3.2.3.	High Volume Facilities Global Metrics	90
3.2.4.	High Volume Facilities Local Metrics	92
3.2.5.	Innovation, Research and Development Metrics	94
3.3.	Methodology	95
3.3.1	Characteristics of a Highly Flexible Facility	96
3.3.2	Characteristics Review	97
3.3.3	Questionnaire Development	100
3.4.	Results	101
3.5.	A Metrics Selection Model for Highly Flexible Facilities	103
3.6	Discussion and Conclusions	104
3.7	References	107

Section 4. A Strategic Model for Firms Who Seek to Embrace Nanomanufacturing.

4.1.	Abstract	117
4.2.	Introduction	118
4.3.	Literature Review	121
4.4.	Methods and Model Building	122
4.5.	The Strategic Nanomanufacturing Model	127
4.6.	Conclusions and Future Efforts	130
4.7.	References	132

Section 5. Publish or Perish: How are Research and Reputation Related.

5.1.	Abstract	137
5.2.	Introduction	138

5.2.1.	Determinants of an Institution Reputation	139
5.2.2.	Research Status and Ranking	141
5.3.	Methods	145
5.4.	Results	148
5.5.	Discussions	161
5.6.	Implications	166
5.7.	Conclusions	167
5.8.	References	168

Section 6. What are Research Expectations? A Comparative Study of Different Disciplines.

6.1	Abstract	179
6.2.	Introduction	180
6.3	Methods	182
6.4	Results	185
6.4.1	Consideration of Overall Data	185
6.4.2	Consideration of Supplementary Data	195
6.5	Conclusions	196
6.6	References	201

Section 7. Conclusions

7.1	Conclusions on each Research Question	203
7.2	Suggestions for Future Research	205

Section 8. Acknowledgements 208

List of Tables and Figures

Section One

Figure 1.1	Time Line of MEMS	23
Figure 1.2	Time Line of Nanotechnology	23
Table 1.1	Research Questions and Expectations	26

Section Two

Figure 2.1	First Generation Roadmap Tool	48
Figure 2.2	Emergent Disruptive vs. Traditional Options	50
Figure 2.3	Three Phases of Disruptive Technology Roadmap	50

Figure 2.4 Generic TRL's Questionnaire	56
Table 2.1 Pharmaceutical Landscape Drivers	59
Table 2.2a Individual Technology Ratings 2010	70
Table 2.2b TRL Set Average Score 2010	70
Table 2.2c Individual Technology Standard Deviation, Mode and Median 2010	71
Table 2.3a Individual Technology Ratings 2015	71
Table 2.3b TRL Set Average Score 2015	71
Table 2.3c Individual Technology Standard Deviation, Mode and Median 2015	71
Table 2.4a Individual Technology Ratings 2025	71
Table 2.4b TRL Set Average Score 2025	72
Table 2.4c Individual Technology Standard Deviation, Mode and Median 2025	72
Figure 2.5 Pharmaceutical Landscape Model	74
 Section Three	
Table 3.1 High Volume Facility Global Metrics	92
Table 3.2 High Volume Facility Local Metrics	93
Table 3.3 Innovation, Research and Design Metrics	95
Table 3.4 Case Studies Results	98
Figure 3.1 Metrics Selection Model	103
Table 3.5 Table 3.5 Definitions and acronyms	106
 Section Four	
Figure 4.1 Evolutionary vs. Revolutionary Technology Pathways	126
Figure 4.2 Strategic Nanomanufacturing Model	128
 Section Five	
Table 5.1 Correlation between total quantity of research in a given field and institution Ranking	150
Table 5.2 Coefficients for regression between total quantity of research in a given field and institution ranking	151
Table 5.3 Correlation between total quantity of research for most prolific researcher in a given field and institution ranking	152
Table 5.4 Correlation between total number of citations for most prolific researcher in a given field and institution ranking	153
Table 5.5 Correlation between total number of coauthors for most prolific researcher in a given field and institution ranking	154
Table 5.6 Correlation between Hirsch index for most prolific researcher in a given field	

and institution ranking	155
Table 5.7 Correlation between Web references to the most prolific researcher in a given field and institution ranking	156
Table 5.8 Coefficients for regression between total quantity of research for most prolific researcher in a given field and institution ranking	157
Table 5.9 Coefficients for regression between total number of citations for most prolific researcher in a given field and institution ranking	158
Table 5.10 Coefficients for regression between total number of coauthors for most prolific researcher in a given field and institution ranking.	159
Table 5.11 Coefficients for regression between Hirsch index for most prolific researcher in a given field and institution ranking	160
Table 5.12 Coefficients for regression between Web references to the most prolific researcher in a given field and institution ranking	162
Appendix Screen Images of Steps Used to Collect Data	175

Section Six

Table 6.1 Total Publications for Each Area of Study for 348 top universities: minimum, various percentile levels and maximum value	186
Table 6.2 Total Publications for Most Prolific Author for 348 top universities: minimum, various percentile levels and maximum value	187
Table 6.3 Total Citations for Most Prolific Author for 348 top universities: minimum, various percentile levels and maximum value	188
Table 6.4 H-index for Most Prolific Author for 348 top universities: minimum, various percentile levels and maximum value	189
Table 6.5 Number of coauthors for Most Prolific Author for 348 top universities: minimum, various percentile levels and maximum value	190
Table 6.6 Sample of supplement data listing medical publications data for 31 universities by alphabetical order—both number and rank are provided.	197

Appendix A

Detailed of Data Utilized in <i>What are Research Expectations? A comparative study of different academic disciplines</i>	210
---	-----

Introduction

Section 1.1 Thesis Foundation

This thesis concentrates on the relationship between measurement, management and research. Measurement is “the assignment of numerals to represent properties” (Campbell 1957 p 267) and it is the heart of modern science and technology efforts to form commonly understood discourse. Many have stated the importance of being able to effectively measure something before you can usefully manage, engineer or construct for it a pathway forward. The quote “You cannot manage what you cannot measure” is often attributed to Dr. William Edwards Deming (quotations and literature 2012). However, the quote is, in reality much older than Deming’s emphasis and can be found in many different fields. I seek specifically, to increase entrepreneurial knowledge (Harms and Erhmann 2003, Harms et al. 2009) by creating new models and research to assist academic and industry creation insight and thus activity through measurement and metrics. I do so by focusing on both “knowledge entrepreneurs” and more traditional entrepreneurial action. I seek to contribute to the growing literature stream on measurement to improve entrepreneurial understanding and research.

I recognize that the notion of effective measurement standards aiding the managerial process is not new nor of a singular source. Indeed, a large number of policy makers, academics, practitioners and technologists have made some version of the above quote both earlier and later than Deming’s effort. Some of those that have stated the relationship between effective management being dependant on effective measurement include: Dr. William Hewlett (one of the founders of HP), Lord Kelvin (a pioneer in the field of thermodynamics), Tom Peters (empowering decision-makers) and George Odiorne, who fathered the management-by-objectives approach (Quotations and literature forum 2012). This knowledge fathered efforts like measuring and defining differences in innovations and patents (Mansfield 1968, Marquis 1969, Souder 1987), whose efforts often initiated the practice that being able to measure any activity was noble. However, this application of knowledge has caused a standardization problem in the

process of measurement for specific management issues.

For example, 3M has often been named the most innovative company in the United States. Many metrics show that most of 3M sales come from new products over any five year period of time. Yet most of 3 M's innovations are incremental in nature and their managerial measurement methodology does not differentiate by classification of innovation type such as incremental, generational or radical (Hulshoff et al. 1998). Where this concept is inaccurate is it does not provide a standard metric that takes into account the varied nature of different innovation classifications. Similarly, entrepreneurial scholars such as (Birch 1979, Newbert, Kirchhoff and Walsh 2007) bemoan ineffective measurement and lack of comparable metrics to create standards.

I provide value concerning the entrepreneurship definitional and measurement discussion in two areas. First, I add to the literature in the field metrics and small technology entrepreneurs. The growth of micro-electrical-mechanical systems (MEMS) and nanotechnology have spurred the advance of new facilities and the need for new models. Additionally, the pharmaceutical industry is examined and a new technology roadmap is introduced. Next I add to the literature by advancing the understanding of "knowledge entrepreneurs" (Bouchikhi and Kimberly 2001) and to further the understanding those who undertake entrepreneurial action to provide the foundation of economic change. The later group is comprised not only of high tech entrepreneur but, also the policy and economic developers who embrace entrepreneurial action (Anson et al. 2008) to generate regional wealth and job creation.

The role of universities and academics in regional wealth and employment opportunism is paramount to economic development (Ducker and Goldstein 2007). At the base of university economic development are academics themselves. Now these academics are not only known as for their instruction, but also as knowledge creators or knowledge entrepreneurs (Balaz 1996). I add to the knowledge entrepreneur with research examining academic literature measurement with two separate efforts.

These efforts provide analytical measurements of different aspects of the top 250 universities, which house university professors or the previously defined knowledge entrepreneur. I utilized the top 250 universities identified in two separate university ranking systems as the sample base. The first effort analyzed scholarly output from each school or discipline at each university. I used that data to ascertain both individual and cumulative school and discipline contribution to the overall ranking of a university. The second effort provided a finer view of the knowledge entrepreneur. This project focused on the top researchers in 27 disciplines or schools at all the top 250 universities in order to define differences in knowledge entrepreneurship of top researchers by each field of study. This effort represents the continuation of scholarly research into the quantification of the differences in knowledge output and citation rates from exceptional scholars by discipline. These efforts viewed together provide a basis for normalizing output across disciplines and allowing for a comparison of output across disciplines. Finally, I used the knowledge gained from this research to provide a foundation for measuring entrepreneurial action. Similar to my effort in understanding measurement and management in the knowledge entrepreneur setting, I add to the measurement in field of high technology based entrepreneurial action by focusing on entrepreneurial firms and entrepreneurial actions.

Firms and support activities that are most aligned with Schumpeterian change are in terms of initiating new economic cycles, such as those in small technology (Schumpeter 1937). In particular, I focus my research efforts on a subset of entrepreneurial actions by entrepreneurial firms, policy makers and economic development activities that have traditionally provided the greatest wealth and job creation impact – entrepreneurial action based on emerging enabling technologies (Groen and Walsh 2013, Kirchoff 2013).

I more finely defined these actions as those that Kirchoff characterized as being high business growth rate and high business innovation rate entrepreneurial firms and the supporting activities they require (Kirchoff 1994). Entrepreneurial action that Kirchoff (1994) and others

(Birch 1979) have characterized as traditionally providing exceptional and differential regional job and wealth creation (Kirchhoff, Linton, and Walsh, 2013). We focus on entrepreneurial action centered on micro and nano technologies (Drexler 1986, Feynman 1960). These two emerging technology basis are being highly funded by multiple countries and regions around the world at a rate that exceeds any emerging technology prior to them (Gouvea et al. 2012). These contemporary emerging technology efforts are creating entrepreneurial activity as regions vie to develop Schumpeterian change for their specific economies (Drexler 2004, Gouvea et al. 2012).

I provide two final points that helped to determine my selection of these emerging technology based entrepreneurial organizations. First, I focus on organizations, which utilize emerging technologies as the basis of their entrepreneurial action. History has shown this category of technology and entrepreneurial action centered on them is most often the harbingers of Schumpeterian economic waves. Second, micro-technology and nanotechnology and its commercialization are considered by many to be the most ambiguous, yet most economically important of all high tech entrepreneurial action today (Drexler 1986, Linton and Walsh 2002, Fink, Lang and Harms 2013). Now I discuss how I addressed the need for measurement to improve entrepreneurial action.

I provide three efforts that investigate the relationship between management, measurement and research for entrepreneurial action in the area of microsystems and nano- systems. Microsystems and nanosystems are described as being an enabling, emerging technology base (Linton and Walsh 2008). The first of these efforts investigates manufacturing and entrepreneurial actions for firms and organizations in microsystems and nanosystems. I applied the case study method to assist in the definitional understanding of the fields and identify areas in need of further investigation. The second effort provides an in depth understanding of economic policy maker's entrepreneurial action in the micro and nanotechnology or "small technology" (Linton and Walsh 2008) arena. Many worldwide regions economic development entrepreneurial actions are providing small technology manufacturing centers (Kautt et al. 2007) for entrepreneurial firms seeking to advance small technology commercial activities and the

entrepreneurial firms themselves. This effort uncovered the dearth of measure and metrics for these small agile multi technology based fabrication facilities. Facilities that are the cornerstones required for regional development.

Specifically, my effort adds to the metrics literature for these new types of multi use facilities. I identify how the use of more traditional higher volume facilities metrics has negatively affected policy makers' (Tierney et al. 2012) decision processes for the enabling facilities. I further provided a manufacturing metric review and developed more appropriate techniques that aid in the strategic and operational management of these enabling technology based manufacturing facilities. Finally, in the third effort, I review how measurement of micro-technology and nanotechnology enabled organizations aid entrepreneurial action. I provide a new roadmap technology, which I named a "landscape" that incorporates new measurement capabilities to more rapidly advance entrepreneurial action in the 21st century pharmaceutical industry. The landscape tool is based on the new emerging technologies of micro-technology and nanotechnology and their increasing use together as multi technology roots of 21st century innovations.

My five efforts are designed to provide improved measurement techniques for entrepreneurial research and entrepreneurial action. My efforts have prompted me to promote an addendum to "Deming's quotation" on the relationship between management and measurement. I have rethought Deming's bromide and suggest a restatement of it as others are now doing. I suggest it to be replaced by "You cannot manage what you cannot measure and you cannot measure what you cannot define" (Allarakhia and Walsh 2011, Groen and Walsh 2013, Saner and Stoklosa 2013, Cowan 2013).

I hope to join the many that focus on measurement research that have affected managerial change. Perhaps the most famous of these are the founders of total quality movement, whose metrics measurement idioms have made far reaching operational and strategic management change. Indeed, we do have Deming, Crosby and Juran to thank for these efforts (Deming 1982, Crosby 1992, Juran 1964). Researchers that I hope soon to call colleagues are trying to similarly

advance measurement in entrepreneurial action.

A full set of standard metrics and measurement continue to elude the entrepreneurial field. Many including myself are seeking to rectify improve entrepreneurial metrics in entrepreneurial research and practice. Both researchers and entrepreneurs state that good operational and strategic metrics are important for the field. Yet perhaps because of its recent popularity entrepreneurship on most critical operational, project, and strategic management activities do not have fully robust metrics. Moreover, indecisive or even no metrics leads to calamitous efforts in management practices (Kirchhoff 1994).

I initiated the introduction with a measurement discussion. I now discuss the content of that measurement entrepreneurship. In light of my focus on measurement, I initiate the content discussion with a discussion on the perceptions of entrepreneurship. The terms “Entrepreneur” and “Entrepreneurship” have become exhortations both in academia and in the popular press limiting their common understanding and therefore a mutually agreed upon common definition. Researchers, especially those that have just recently embraced entrepreneurship, have greatly expanded the definition of entrepreneurial action in a variety of contexts. Often, in doing so, these researchers call into question prior research (Shane and Venkataraman 2000; Schoonhoven and Romanelli, 2001). Today interest in entrepreneurship is being driven by the need for economic revitalization (Baumol, 1968; Stevenson and Jarillo, 1990; Wennekers and Thurik, 1999, Walsh 2012).

Entrepreneurs and entrepreneurial activity continue to improve regional competitiveness, create jobs, stimulate the larger economy, and create new wealth. However, the field has not developed standard methods to measure or have metrics, which provide an avenue for criticism of its value (Kirchhoff 1994). This lack of traditional management practice provides an avenue for detractors. For example, critics of capitalism suggest that capitalism’s largest down fall is the discussion of entrepreneurial reapportionment rather than creation of wealth (Marx and Engles, 1845; Schumpeter, 1934). Recently, a structural view of entrepreneurship as the nexus of individual and opportunity was presented (Sarason, Dean, and Dillard 2006). I next provide a

short discussion of contemporary entrepreneurship theory focusing on measurement and metric aspects.

1.2 Entrepreneurial Foundation

I review the origins of scholarly thought on entrepreneurship and its connection with economic literature (Schumpeter 1937, Kondratieff 1937, Kondrat'ev and Jakovec 2004, Marshal 1890). I further review the next wave of entrepreneurial researchers like Kirchoff and Birch (Spencer, Kirchoff, and White 2008, Birch 1979). Finally I highlight more contemporary technology entrepreneurial author's thoughts such as those expressed by Groen (2005), Harms (2013), Linton (2002), Shane and Venkataraman (2000), Linton and Walsh (2003).

First, the advent of the industrial revolution demonstrated the importance of entrepreneurs and entrepreneurial activity in the improvement of regional competitiveness, create jobs, stimulate the larger economy, and create new wealth. This was first suggested by Schumpeter (Schumpeter 1937) and then proven through the seminal research of the second wave of economic and entrepreneurial researchers (Birch 1979, 1987, Kirchoff and Philips 1989, Baldwin 1995, Head 2003, Head and Kirchoff 2009, Story 1994, Picot and Dupuy 1998, and Stearns et al. 1995). Yet, some research output from the third and latest wave of entrepreneurial researchers, especially those that have sought to redefine entrepreneurial action to include large established firms seems counter the importance of Schumpeterian or the completely new venture. Schumpeter in his efforts saw entrepreneurship and new to the world enterprises I have eliminated the Greenfield startup word made popular in later years.

Their output sometimes does more to shed doubt on earlier findings than to build upon them, (Shane and Venkataraman 2000). I find that this is consistent with the muddled discussion in innovation literature concerning incremental and radical definitional change (Linton and Walsh 2008).

Many throughout the three waves of entrepreneurial research activity have identified a variety of important subjects and attributes associated with entrepreneurship, entrepreneurial action and the entrepreneur (Kilby 1971, Hébert and Link, 1989, Gartner, 1990, Linton and Walsh 2008). They have taken the first steps in being able to operationally or strategically define, measure, and manage entrepreneurial activity. Furthermore, there is plenty of room for those like me who seek to define, measure, and advance the field of entrepreneurship.

The interest in entrepreneurship has increased with the turn of the century compelled by established large firms' lack of capacity to develop adequate job and wealth creation (Kirchhoff et al. 2013). This is mirrored by academic interest with many researchers embracing knowledge entrepreneurship and is embracing more diverse backgrounds. Not surprisingly, the literature, previously more cohesive, has not adapted to the new wave of researchers that are just now performing research that leads to entrepreneurial literature. There currently is not a universally accepted definition of the term "Entrepreneurship". This presents a problem since there is no orientation on which to base research on. Instead the entrepreneurial discussion has shifted to aspects of entrepreneurial action.

I am most interested in the entrepreneur's role in the process of "creative destruction" (Schumpeter 1934). Yet, even here traditional definitions have either been limited or shifted in the process of creative destruction. Entrepreneurial emphasis has moved towards the creation of innovations, recognizing opportunities, developing new organizations, and availability of resources (Stevenson and Jarillo, 1990; Wennekers and Thurik, 1999). This in turn suggests differing prescriptive of potential outcomes and requires a more diverse set of current measures.

The definitional process and indeed the research approach to "entrepreneurship" gave rise to related subjects like defining an entrepreneur by the way that they recognize or create opportunity. This approach defined three subsets of entrepreneurs. The first was developed by Schumpeter (1934, 1942) who emphasized new independent firm formation based on seizing technological change leading to creative destruction. The second was developed by Kirzner (1973, 1997) who emphasized the entrepreneur as one who used innate or analyzed opportunity

recognition and thereby filling gaps in the marketplace. Finally, a third type of entrepreneur was characterized by Williamson (2001) who focused on an entrepreneur's ability to cut transaction costs.

1.3. Management of Technology and Innovation Foundation

I use the entrepreneurial categorizations developed in my discussion above to link entrepreneurial literature to Management of Technology Innovation (MOTI) literature. I utilize MOTI literature to review three late 20th century Micro-technology micro and Nanotechnology enabled industries that have come about as a result of disruptive technologies (Yanez et al. 2010). Finally I review the role that entrepreneurial firms play in that process. I specifically utilized the stream of effort that links disruptive technology concepts to how new independent firm entrepreneurship plays a pivotal role in that process in my thesis. I start with high technology harbingered economic waves.

1.3.1 Schumpeterian Waves

Emerging technology driven economic epochs were noticed by the economist first by Kondratieff and later furthered by Schumpeter (Schumpeter 1934, Kondratieff 1937). Schumpeter is considered a founder of both entrepreneurial and MOTI research and focused his economic wave research as being driven by new emerging technologies. Schumpeter saw that when emerging technologies grew and displaced traditional technology product paradigms the technology became disruptive. Furthermore, that process becoming the foundation of waves of economic change and growth. Technological entrepreneurs like Watt with his steam engine and later Nikola Tesla and Thomas Edison were not only inventors but also innovators and visionaries (Pretzer, Rodgers and Bush, 2007) that helped to form the foundations of these series of waves. These Schumpeterian or Kondratieff waves are built on new problems that require new solutions based on differing sets of technology.

Presently, many see novel technology as approaching the slope of a new Schumpeterian wave (Korotayev, Zinkina and Bogevolnov, 2011). This wave is based on new root technologies'

like micro-technology and nanotechnology that are pan industrial and enabling in nature (Linton and Walsh 2008). They are the foundations of convergent technology sets that provide a stable platform on which to build economies (Romig et al 2007, Wonglimpiyara 2005). These emerging disruptive technologies become disruptive and have founded past entrepreneurial cycles that are heavily reliant on entrepreneurship activities for success (Kirchhoff 1994). We next discuss Micro-technology and Nanotechnology or small technology (Linton and Walsh 2008) as the harbingers of the next Schumpeterian wave.

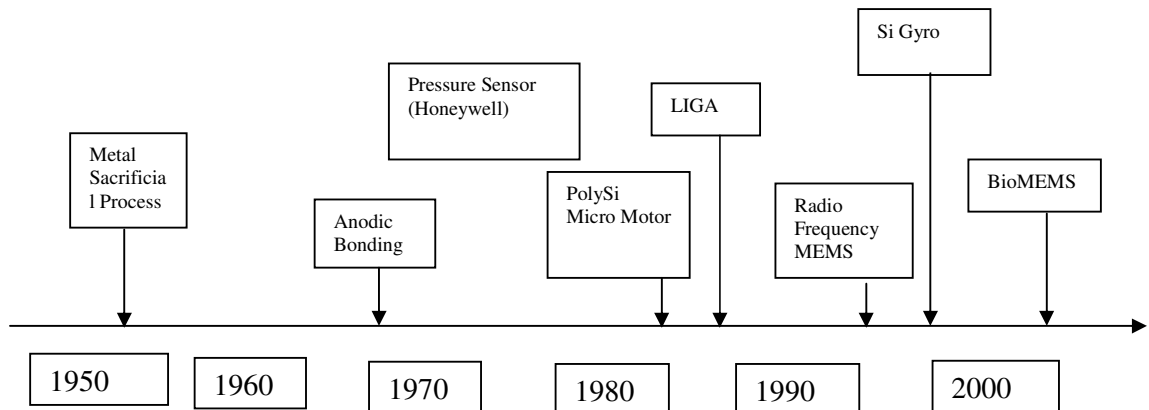
1.3.2 Small Technology

The initiation of the next Schumpeterian wave is being driven by small technology as well as other emerging technologies. Items enabled by small tech are becoming smaller, better in performance and cheaper (Roco 2003). But again, strategic action entrepreneurial or other is being hampered by the root of all measurement processes – the lack of mutually agreed upon definition. For example if one was to ask what is the definition of small technology? One answer might be that small technologies are those technologies based upon the minimization of conventional technologies or the nature of the communities that are making that definition (Saner et al 2013). Other definitions focus on physical size (Feynman 1960) or the nature of interaction with the physical world (Walsh 2004). Examples of small technologies include the subfields of micro fluidics, micro-switches and accelerometers. I depict in figure 1.1 below the historical progression of the microsystems portion of small technologies.

The most recent economically significant segment of small technology is nanotechnology. One definition of nanotechnology is the United States Department of Energy's definition. This defines technology as the creation of functional materials, devices, and systems through control of matter on the nanometer (1 to 100+ nm) length scale and the exploitation of novel properties and phenomena developed at that scale (LANL 2001). Yet many other countries offer definitions that range from being extremely similar to completely dissimilar. Examples of innovations include carbon nanotubes products, cutting tool applications and medical carriers. It is these small

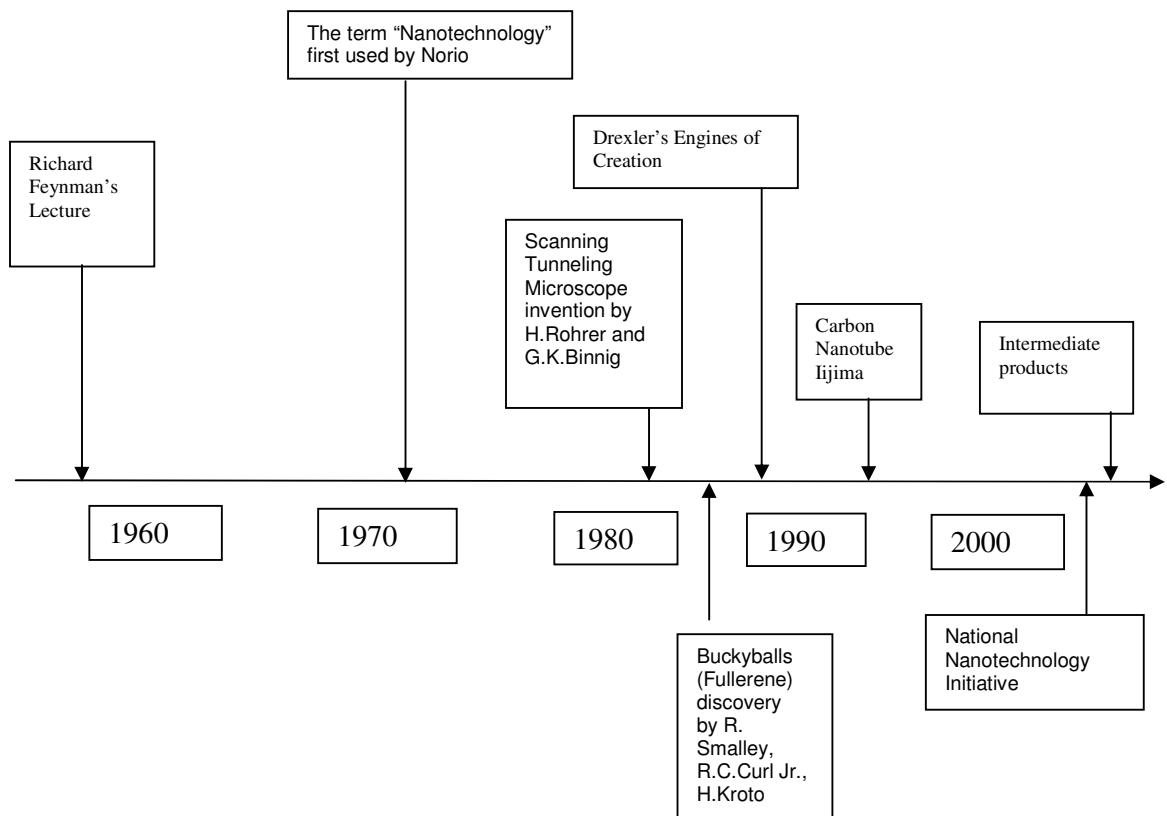
technologies and innovations that are driving the next Schumpeterian wave. Figure 1.2 shows the time progression for nanotechnology.

Figure 1.1 MEMS Timeline



(*Developed from a Brief History of MEMS (2012))

Figure 1.2 Nanotechnology Timeline*



(*Developed from the American Chemical Council (2012))

Today's potential Kondratieff /Schumpeter waves are based on small tech. They are being

driven by innovations that stem from the research and development from the collaboration between universities, government sponsored labs and private research firms. The new small tech driven Schumpeterian cycle is once again being fueled by entrepreneurial action. For example, currently the number of small business startups is down in the United States. Yet, at the same time, US small technology based startups are experiencing rapid growth (Small Business Labs Trends 2012). Entrepreneurs are forming alliances with universities and governmental labs to seek assistance and technology. However, small technology development and the inclusion of academia are not without problems. I next provide a brief discussion of this interaction.

1.3.3 University (Knowledge Entrepreneur) Industry Interaction

The emergence of the biotechnology as solution vector for the pharmaceutical industry provided a necessity for interaction between academia and industry (Pepeu 1999; Sanchez-Serran 2011; Breimer 2001; Dean et al. 2000, Allarakhia and Walsh 2011). Due to the Bayh-Dole act and other demand driven factors, the pharmaceutical industry that I elaborate on later, also is increasingly requiring small technology based competencies to develop next generation product platforms. This thesis resulted in the increased commercial collaboration, not only between academia and industry, but also between academic entrepreneurial spin-offs and larger pharmaceutical firms. Microsystems and nanotechnology or small technology developed by researcher in predominately academic settings with full rights to their inventions started to develop entrepreneurial firms to interact with traditional pharmaceutical firms to develop new therapeutics. Both categories of small technologies have the potential for revolutionary breakthroughs' in this industry (Roco 2003, Allarakhia and Walsh 2012) and many times the solution sets ultimately created required both as multiple root technology.

Universities are becoming increasingly entrepreneurial. A plethora of university based technology transfer offices opened in the wake of Bayh Dole legislation in the US and this trend was taken up in all developed or developing countries worldwide. Universities were forging a closer alignment between scientific research and innovation (OECD 2003; Siegel, Waldman and

Link 2006; Rothaermel, Agung and Jiang 2007). The rise in university entrepreneurial action is epitomized by the increase in their patenting, licensing and creation of spin-off companies by academic researchers (Clarysse 2007; Siegel, Waldman and Link 2004). Evidence of different entrepreneurial performance among academics highlights the need to understand what distinguishes academic researchers in terms of their inclination to engage in knowledge transfer activities and, especially, to become academic entrepreneurs (Bercovitz and Feldman, 2008; Hoye and Pries, 2009, Kidwell 2013). Now in some universities for example patents are becoming as valuable as academic publications for professorial tenure review (Porter and Cunningham, 2005). Some negative feedback of the increase of commercial interest at universities especially by students has been voiced (Lee, 1996; Glaser and Bero, 2005). Industry involvement with academia may require specific skills and organizational capabilities than are from those required to excel in the academic arena (Bercovitz and Feldman, 2008). However, most studies suggest a positive relationship between increased professorial or knowledge entrepreneur interest in more non-traditional commercial activities with more traditional knowledge entrepreneur measures of excellence like publication rates (Geuna and Nesta, 2006; Siegel et al., 2007).

On the commercial side of the increased university / industrial interaction research shows that increasingly that firms especially in the innovation field are greatly benefiting (Jaffe, 1989; Acs and Audretsch 1991, Acs, Audretsch and Feldman 1994; Gambardella, 1992; Mansfield, 1995, Cockburn and Henderson, 1998; Cohen et al, 2002; Zucker et al, 2002; Belderbos et al, 2004; Fleming and Sorenson, 2004; Cassiman et al, 2008; Furman and Stern 2006). Further, many empirical studies have shown that academic research stimulates growth in regional industrial R&D as well as the creation of new university related research intensive ventures (Jaffe 1989; Bania et al., 1992; Anselin et al., 1997; Furman and MacGarvie, 2007; Abramovsky et al., 2007). In the next section of the introduction, I expand on my limited discussion of the focus of my research investigation.

Section 1.4 Research Questions and Expectations

The research questions, along with their design, purpose and social implication have provided published results in five differing areas. Here I initiate with the effort on understanding and measuring radical change in entrepreneurial action in the pharmaceutical industry. Flexible facilities management and then nanomanufacturing follow this. The next two articles deal with academic publishing and reputation. I have summarized the research questions and expectations into Table 1.

Table 1.1 Research Questions

Effort	Purpose (A)	Design/ Methodology (B)	Social Implication (C)	Originality /value (D)
Pharmaceutical Landscape	Examination of new drivers	Case study	Economic Development/ Metrics	Development of 3 rd generation roadmap
Highly Flexible Facilities	Understanding metrics for multi technology facilities	Case study	Economic Development / Metrics	Inaugural exploration of metrics for flexible facilities
Embracing Nano manufacturing	Provides a strategic decision model	Case Study	Economic Development/ metrics	Initial study of nanomanufacturing and complimentary assets
Publish or Perish	Examination of institution and research.	Empirically derived	Research development metrics	Elevation of metrics for knowledge entrepreneurs and institutions
Research Expectations	Assessment of quality research	Empirically derived	Comparison of research metrics	Advancement in metrics for individual Knowledge entrepreneurs

Section 1.4.1 The Pharmaceutical Technology Landscape:

1.4.1.a Purpose

The research concentrates on the lack of understanding of current road mapping techniques addressing the evolving pharmaceutical industry. The amelioration of the pharmaceutical industry is due to environment pressures. These pressures are giving rise to new drivers and are causing concern for the development of future products. These drivers are explored and taken into account in a new road mapping technique called landscaping. This article focuses on the development of a new landscaping technique in order for firms to measure and manage their innovation process.

1.4.1.b Design/methodology/approach –

The article investigates a novel road mapping technique that incorporates measurement techniques and thereby expresses new theory and processes that are in alignment with the nature of these new products and innovations. The model is tested through a case study of new pharmaceutical industry innovations.

1.4.1.c Social implications

Health care is at the crossroads of micro, nano and semiconductor technology. The convergence of these technologies into the health care field is poised to solve many of these health problems and becomes a basis for job creation and prosperity. If a new roadmapping technique is not developed, then subsequently both health care and economic development will suffer without new roadmapping metric development.

1.4.1.d Originality/value

While there is an abundance of research on first and second generation roadmapping techniques, this is the first attempt at a third generation roadmap for the pharmaceutical industry. The third generation roadmapping will additionally provide insight to the dynamics of the pharmaceutical industry.

Section 1.4.2 Managing Highly Flexible Facilities

1.4.2.a Purpose

Twenty first century problems are increasingly being addressed by multi technology solutions developed by regional entrepreneurial and intrapreneurial innovators. However, they require an expensive new type of fabrication facility. Multiple technology production facilities (MTPF) have become the essential incubators for these innovations. This paper aims to focus on the issue of developing metrics for those facilities.

1.4.2.b Design/methodology/approach

The article addresses the lack of managerial understanding of how to express the value and operationally manage MTPF centers through the use of investigative case study methods for multiple firms in the study.

1.4.2.c Social implications

Innovations at the interface of micro technology, nanotechnology and semiconductor micro fabrication are poised to solve many of these problems and become a basis for job creation and prosperity. If a new metric techniques is not developed, then these harbingers of regional economic development will be closed.

1.4.2.d Originality/value

While there is an abundance of research on measures and metrics for High volume facilities HVE, this is the first attempt to develop measures and metrics for Multi Technology Low volume production facilities MTPFs.

Section 1.4.3 A Strategic Model for Firms Who Seek to Embrace Nanomanufacturing

1.4.3.a Purpose

Nonmanufacturing is being perceived as the centric of many regional manufacturing sectors potential. Though there are high expectations, there exists little infrastructure to support such activities. This paper seeks to make a contribution by offering a categorization scheme for nonmanufacturing based on the types of hurdles that firms are likely to encounter and provide some case base examples of both evolutionary and revolutionary nanomanufactured products

1.4.3.b Design/methodology/approach

The article discusses the common terminology and economic ramifications of the emerging nonmanufacturing endeavors. The study then follows through with a case based strategic nonmanufacturing model on which to base strategic decision making.

1.4.3.c Social implications

Innovations at the nanotechnology level and are both revolutionary and evolutionary in nature. They are poised to solve many of these problems and become a basis for job creation and prosperity. If new management techniques are not developed, then these harbingers of regional economic development will be closed.

1.4.3.d Originality/value

While there have previous articles have investigated elements of nonmanufacturing, this is the first article to include strategic components attached to nanomanufacturing and complementary assets.

Section 1.4.4 Publish or Perish: How Are Research and Reputation Related?

1.4.4. a Purpose

Academic researchers (Knowledge entrepreneurs) and the topic of quality is a much discussed subject. The result has been a proliferation of measures to assess research, researchers, research outlets, and the locations in which the research occurs. By empirically assessing the relationship between institution ranking and research production, a better understanding of the

relationship between the perceived qualities of institutions is possible.

1.4.4.b *Design/methodology/approach*

The article discusses the common terminology and metrics used in academic research and then follows through with an empirical study to better understand the relations between institution ranking and scholarly research generated by their knowledge entrepreneurs.

1.4.4.c *Social implications*

There needs to be a better understanding of the relationship between reputation and research in different fields so that incentives and knowledge infrastructure that are the most appropriate for fostering research are offered. It is not possible to take a “one size fits all approach” so terms such as “publish or perish” or an excessive reliance on simple metrics should be avoided.

1.4.4.d *Originality/value*

While there is a plethora of research on particular metrics for scholarly research, this is the first to include empirical research linking metrics with academic excellence.

Section 1.4.5 What are Research Expectations? A comparative study of different academic disciplines

1.4.5.a *Purpose*

Academic research and the topic of quality is a much discussed subject. This paper is intended to assist senior administrators and members of university level committees that must consider “what quality of research” is in fields that they lack personal domain expertise.

1.4.5.b *Design/methodology/approach*

The article discusses the common terminology used in the area of interest and then follows through with an empirical based study that measures quality and scholarly research.

1.4.5.c *Social implications*

The study allows entrepreneurs, companies, faculty and administrative professionals to seek comparisons between the differing fields of scholarly research. This allocates the best possible resource for the situation at hand.

1.4.5.d

Originality/value

While there is a plethora of research on metrics for scholarly research, this article adds to the research by including empirical data on particular fields of scholarly research and universities reputations.

Section 1.5 References

A brief history of MEMS

<http://courses.engr.illinois.edu/ece485/Fall2012/485%20Lecture%202%20Fall%202012.pdf> Retrieved June 2012

Abramovsky, L., Harrison, R. and Simpson, H. (2007), University Research and the Location of Business Rand. *The Economic Journal*, 117(519), pp. 114-141.

Acs, Z. and D. Audretsch (1988), Innovation in large and small firms; an empirical analysis. *American Economic Review* 78, pp. 678-690.

Acs, Z. J. and Audretsch, D. B. (Eds.). (1991). *Innovation and technological change: an international comparison*. University of Michigan Press.

Acs, Z. J., Audretsch, D. B., and Feldman, M. P., (1994), R and D spillovers and recipient firm size. *The Review of Economics and Statistics*, pp. 336-340.

Allarakhia, M. and Walsh, S.T. (2011), Managing knowledge assets under conditions of radical change: The case of the pharmaceutical industry. *Technovation*, 31(2-3), pp. 105-117.

American Chemical Council <http://www.americanchemistry.com/Nanotechnology-Timeline> Retrieved June 6, 2013

Anselin, L., Varga, A., and Acs, Z. (1997), Local geographic spillovers between university research and high technology innovations. *Journal of Urban Economics*, 42(3), pp. 422-448.

Anson, S., Kautt, M., Walsh, S.T., Bittner, K., (2008), Academic Infrastructure and Competence Centres for a potentially evolving Nano-manufacturing industry, *International Journal of Technology Transfer and Commercialization*, 7(4), pp. 436-455.

Balaz, K. (1996)

<http://www.admin.susx.ac.uk/Units/spru/publications/imprint/steepdps/37/steep37.pdf> Retrieved June 5 2013.

Baldwin, J. R. (1995). *The Dynamics of Industrial Competition: A North American Perspective*. New York: Cambridge University Press.

Bania, N., Calkins, L. N., and Dalenberg, D. R., (1992), The effects of regional science and technology policy on the geographic distribution of industrial R&D laboratories. *Journal of Regional Science*, 32(2), pp. 209-228.

Belderbos, R., Carree, M., and Lokshin, B., (2004), Cooperative R&D and firm performance. *Research Policy*, 33(10), pp. 1477-1492.

Bercovitz, J., and Feldman, M., (2008), Academic entrepreneurs: Organizational change at the individual level. *Organization Science*, 19(1), pp. 69-89.

Birch, D.L., (1979), *The Job Generation Process*. Unpublished report prepared by the Massachusetts Institute of Technology Program on Neighborhood and Regional Change for the Economic Development Administration. Washington, DC: U.S. Department of Commerce.

Birch, D.L., (1987). *Job Creation in America: How Our Smallest Companies Put the Most People to Work*. Free Press. New York, New York.

Breimer, D. D., (2001), Future training needs in the pharmaceutical sciences: academia--industry. *European journal of pharmaceutical sciences: official journal of the European Federation for Pharmaceutical Sciences*, 12(4), pp. 347.

Bouchikhi, H., and Kimberly, H.R., (2001), 'It's Difficult to Innovate': The death of the Tenured Professor and the Birth of the Knowledge Entrepreneur. *Human Relations*, 54(1), pp. 77-84.

Campbell, N.R. (1957). *Foundations of Science*, .Drover New York, New York. pp. 267.

Cassiman, B., Veugelers, R., and Zuniga, P. (2008), In search of performance effects of (in) direct industry science links. *Industrial and Corporate Change*, 17(4), pp. 611-646.

Clarysse, B., Wright, M., Lockett, A., Mustar, P., and Knockaert, M. (2007), Academic spin-offs, formal technology transfer and capital raising. *Industrial and Corporate Change*, 16(4), pp. 609- 640.

Cockburn, I. M. and Henderson, R. M., (1998), Absorptive capacity, coauthoring behavior, and the organization of research in drug discovery. *The Journal of Industrial Economics*, 46(2), pp. 157-182.

Cohen, W. M., Nelson, R. R. and Walsh, J. P., (2002), Links and impacts: the influence of public research on industrial Rand. *Management science*, 48(1), pp. 1-23.

Cowan, C., (2013), A new road mapping technique for creatively managing the Emerging Smart Grid, *Creative Innovation management Journal*, in press

Crosby, P.B.,(1992) *Quality is free: The art of making quality certain*. Mentor Books Denver, CO.

Davidson, P., Kirchoff B., Hatemi, J.A. and Gustavsson H., (2002), Empirical analysis of business growth factors using Swedish data. *Journal of Small Business Management*, 40(4): pp. 332-349.

Dean, P. M., Zanders, E. D. and Bailey, D. S., (2001), Industrial-scale, genomics-based drug design and discovery. *Trends in Biotechnology*, 19(8), pp. 288-292.

Deming, W. Edwards. *Improvement of Quality and Productivity through Action by Management*. In *Readings in the Management of Innovation*, ed. M.L. Tushman and W. Moore. pp. 454-465. Second ed., Vol. Ballinger, 1982.

Drexler, KE. (1986), *Engines of Creation: The Coming Era of Nanotechnology*. Anchor Books: New York, New York

Drexler, K.E., (2004), *Nanotechnology: From Feynman to Funding*. *Bulletin of Science Technology Society* 24, pp. 21-27.

- Ducker, J. and Goldstein, H., (2007) Assessing the regional economic development of universities: A review of current approaches. *International Regional Science Review*, 30(1) pp. 26-46.
- Feynman, R. P., (1960), There's plenty of room at the bottom. *Engineering and Science*, 23(5), pp. 22-36.
- Fink M., Lang R., Harms R. (2013): Local responses to global technological change – Contrasting restructuring practices in two rural communities in Austria. *Technological Forecasting and Social Change*, Vol. 80, No. 2, pp. 243-252
- Fleming, L. and Sorenson, O., (2004), Science as a map in technological search *Strategic Management Journal*, 25(8-9) pp. 909-928.
- Furman, J. L. and MacGarvie, M. J., (2007), Academic science and the birth of industrial research laboratories in the US pharmaceutical industry. *Journal of Economic Behavior and Organization*, 63(4), pp. 756-776.
- Furman, J. L. and Stern, S. (2006), *Climbing atop the shoulders of giants: The impact of institutions on cumulative research* (No. w12523), National Bureau of Economic Research.
- Gambardella, A. (1992), Competitive advantages from in-house scientific research: the US pharmaceutical industry in the 1980s. *Research Policy*, 21(5), pp. 391-407.
- Gartner, W. B. (1990), What Are We Talking About When We Talk About Entrepreneurship? *Journal of Business Venturing*, 5, pp. 15-28.
- Glaser, B. E. and Bero, L. A., (2005), Attitudes of academic and clinical researchers toward financial ties in research: A systematic review. *Science and Engineering Ethics*, 11(4), pp. 553- 573.
- Geuna, A., and Nesta, L. J., (2006), University patenting and its effects on academic research: The emerging European evidence. *Research Policy*, 35(6), pp. 790-807.
- Gouvea, R., Linton, J., Montoya, M. and Walsh, S. (2012), Emerging Technology and Ethics: A Race to the Top or a Race to the Bottom, *Journal of Business Ethics*, 109(4), pp. 553-567.
- Groen, A. J., (2005), Knowledge intensive entrepreneurship in networks: towards a multi-level/multi dimensional approach. *Journal of Enterprising Culture*, 13(1), pp 69-88.
- Harms, R. and Erhmann, T. (2003), The performance implications of Entrepreneurial management: Linking Stevenson's and Miller's conceptualization of growth', paper presented at the Babson Kauffman Entrepreneurship Research Conference, Wellesley, MA.
- Harms, R., Schulz, A., Kraus, S. and Fink, M. (2009), The conceptualization of 'opportunity' in strategic management research. *International Journal of Entrepreneurial Venturing*, 1(1), pp 57-71.
- Headd, B., (2003), Redefining business success: Distinguishing between closure and failure. *Small Business Economics*, 21(1), pp. 51-61.

- Headd, B., and Kirchoff, B.A., (2009), The growth, decline and survival of small businesses: An exploratory study of life cycles, *Journal of Small Business Management*, 47(4), pp. 531-550.
- Hébert, R. F., and Link, A. N., (1989), In Search of the Meaning of Entrepreneurship, *Small Business Economics*, (11), pp. 39-49.
- Hoye, K. and Pries, F., (2009), Repeat Commercializers, The habitual entrepreneurs' of university-industry technology transfer. *Technovation*, 29(10), pp. 682-689.
- Hulshoff, H. E., Kirchoff, J. J., Kirchoff, B. A., Walsh, S. T. and Westhof, F. M. J., (1998), EIM press, New Services. Strategic Study and Exploratory Survey of a Dynamic Phenomenon," EIM Small Business Research, Zoetermeer, Netherlands, November, pp. 82.
- Jaffe, A.B., (1989), Real effects of academic research. *The American Economic Review*, pp. 957- 970.
- Juran, Y.J.M., (1964), *Managerial Breakthrough*, McGraw Hill Publishing Company, New York, New York
- Kautt, M. Walsh, S. and Bittner, K., (2007), Global distribution of micro–nano technology and fabrication centers: A portfolio analysis approach, *Technology Forecasting and Social Change*, 74, pp. 1697-1717.
- Kidwell, D.,(2013), Principal investigators as knowledge brokers: A multiple case study of the creative actions of PIs in entrepreneurial science *Technological Forecasting and Social Change*, 80(2), pp. 212-220.
- Kilby, P., (1971), Hunting the Heffalump. In P. Kilby (Ed.), *Entrepreneurship and Economic Development*: 1-40. New York: The Free Press.
- Kirchoff, B.A., (1994), *Entrepreneurship and Dynamic Capitalism: the Economics of Business Firm Formation and Growth*. Westport, CT: Praeger.
- Kirchoff, B.A. and Walsh, S.T., (2000), Entrepreneurship's Role in Commercialization of Disruptive Technologies, Band 13, *Unternehmer und Unternehmensperspektive für Klein- und Mittelunternehmen*, Berlin: Dunker and Humbolt, pp. 323-332.
- Kirchoff, Linton, J.D. and Walsh, S.T., (2013), Neo-Marshallian Equilibrium versus Schumpeterian Creative Destruction: Its impact on Business Research and Economic Policy, *Journal of Small Business Management*, 51(2), pp. 159–166.
- Kirzner, I., (1979), *Perception, Opportunity and Profit: Studies in the Theory of Entrepreneurship*. Chicago: University of Chicago Press.
- Knight, F. H., (1921), *Risk, Uncertainty and Profit*. New York: Augustus M. Kelley.
- Kondratieff, N.D., (1937), Long Waves in Economic Life LLOYDS BANK ANNU REV July,1978.
- Kondrat'ev, N.D. and Jakovec, Y.V., (2004), *The world economy and its Conjunctions During and After the War*. International Kondratieff Foundation
- Kuhn, TEST, (1962), *The Structure of Scientific Revolutions*. Chicago: University of

Chicago Press.

LANL <http://www.lanl.gov/mst/nano/definition.html> 2001

Lee, Y.S., (1996), Technology transfer and the research university; a search for the boundaries of university–industry collaboration, *Research Policy* 25(6) pp. 843-863

Linton, J. D., (2002), Forecasting the market diffusion of disruptive and discontinuous innovation. *Engineering Management, IEEE Transactions on*, 49(4) pp. 365-374.

Linton, J. D., and Walsh, S. T., (2003), From bench to business. *Nature materials* 2(5), pp. 287- 289.

Linton J. and Walsh S., (2008), A Theory of innovation for process-based innovations such as nanotechnology. *Technological Forecasting and Social Change* 75(5) pp. 583-594.

Linton, J., and Walsh, S.T.,(2008), Acceleration and Extension of Opportunity Recognition for Nanotechnologies and Other Emerging Technologies *International Small Business Journal* 26 pp. 83-99.

Mangematin, V and Walsh, S., (2012), The future of nanotechnologies, *Technovation*, 3-4, pp. 216-226.

Mansfield, Edwin., (1968a), *The Economics of Technological Change*. New York: W.W.

Norton. Mansfield, E., (1995), Academic research underlying industrial innovations: sources, characteristics, and financing. *The review of Economics and Statistics*, pp. 55-65.

Marquis, Donald G. The Anatomy of Successful Innovations, In Readings in the Management of Innovation, ed. M.L. Tushman and W. Moore, 79-87. Second ed., Vol. Ballinger, 1969.

Marshall, A., (1890), *Principles of Economics*, London: Macmillan and Co.

Marx, K., and Engles, F., (1845), *Capital: A Critique of Political Economy* (B. Fowkes, D. Fernbach, and E. Mandel, Trans.). Harmondsworth, Eng.: Penguin Books.

Newbert, S.L., Kirchhoff, B.A. and Walsh, S.T., (2007), Defining the relation among founding resources, strategies, and performance in technology-intensive new ventures: Evidence from the semiconductor silicon industry, *Journal of Small Business Management* 45(4) pp. 438-466.

OCED 2003 <http://www.oecd.org/els/employmentpoliciesanddata/31775229.pdf>

Pepou, G., (1999), Is there still a role for Academia? *Pharmaceutical science and technology Today*, 2(8) pp. 305.

Phillips, B.D. and Kirchhoff, B.A.,(1989). Formation, growth and survival: Small firm dynamics in the U.S. economy, *Small Business Economics* 1 pp. 65-74.

Picot, G. and Dupuy, R., (1998). Job Creation by Company Size Class: The Magnitude, Concentration and Persistence of Job Gains and Losses in Canada, *Small Business Economics* 10(2) pp. 117-139.

Porter, A. L. and Cunningham, S. W., (2005), Tech mining, *Competitive Intelligence Magazine*, 8(1) pp. 30-36.

Quotations and Literature forum, (2012), "You cannot manage what you cannot measure," <http://www.quotationspage.com/forum/viewtopic.php?t=225>

Roco M.C., (2003), Broader Societal Issues of Nanotechnology *Journal of Nanoparticle Research*. 5. pp. 181-189.

Rothaermel, F. T., Agung, S. D. and Jiang, L., (2007), University entrepreneurship: taxonomy of the literature. *Industrial and corporate change*, 16(4) pp. 691-791.

Sanchez-Serrano, I., (2011), *The World's Health Care Crisis: From the Laboratory Bench to the Patient's Bedside*. Elsevier. Netherlands.

Saner, M, and Stoklosa, A., (2012), Reducing ambiguity to increase emerging technology commercial potential: the case of Nanomaterials, *Creative Innovation Management* (in press).

Sarason, Y., Dean, T., and Dillard, J.F. (2006), Entrepreneurship as the nexus of individual and opportunity: A Structuration view, *Journal of Business Venturing* 21(3), pp. 286-305

Schoonhoven, C. B., and Romanelli, E. (Eds.). 2001. *The Entrepreneurship Dynamic: Origins of Entrepreneurship and the Evolution of Industries*. Stanford, Calif. Stanford University Press.

Schumpeter, J.A. (1934), *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle*. New Brunswick, NJ, Transaction Books.

Schumpeter, J.A. (1942). *Capitalism, Socialism, and Democracy*. New York: Harper and Row. Shane, S., and Venkataraman, S., (2000), The Promise of Entrepreneurship as a Field of Research, *Academy of Management Review*, 25, pp. 217-226.

Siegel, D. S., Waldman, D., and Link, A., (2003), Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study, *Research policy*, 32(1), pp. 27-48.

Siegel, D. S., Waldman, D. A., Atwater, L. E., and Link, A. N., (2004), Toward a model of the effective transfer of scientific knowledge from academicians to practitioners: qualitative evidence from the commercialization of university technologies, *Journal of Engineering and Technology Management*, 21(1), pp. 115-142.

Small Business Labs <http://www.smallbizlabs.com/2012/01/top-ten-small-business-trends-for-2012.html>

Souder, William E., (1987), *Managing New Product Innovations*, Lexington Books, Lexington, MA.

Spencer, A., Kirchoff, B, and White, C., (2008), Entrepreneurship, Innovation, and Wealth Distribution -The Essence of Creative Destruction, *International Small Business Journal*, February 26(1) pp. 9-26

Stearns, T.M., Reynolds, P.D., and Williams, M.L., (1995), New firm survival: Industry, strategy and location, *Journal of Business Venturing*, 10(1), pp. 23-42.

Storey, D.J., (1994), *Understanding the Small Business Sector*, Routledge, New York, New York.

Tierney, R., Groen, A. J., Harms R., Luizink, M., Hetherington, D., Stewart, H., Linton, J. D., Walsh, S. T., (2012), "Managing Highly Flexible Facilities: An Essential Complementary Asset at Risk," *International Journal of Enterprise Behaviour and Research*, Vol., 18, Issue 2, pp. 233- 255

Walsh S.T., and Groen A.J., (2012), "Introduction to the Field of Emerging Technology Management," *Creativity and Innovation Management Journal*, Volume 22, Issue 1, pages 1–5, March 2013

Williamson, O.E., and Kaiser, E.F., (2005), Transaction cost economic and business administration, *Scandinavian Journal of Management*, 21(1 SPEC. ISS.) pp. 19-40.

Yanez, M. Tarek M. Khalil, Walsh S. T., (2010), IAMOT and Education: Defining a Technology and Innovation Management (TIM) Body-of-Knowledge (BoK) for graduate education (TIM BoK), *Technovation*, 30(7-8) pp. 389-400.

Zucker, L.G. and Darby, M.R., (2002), Knowledge, capture and firm performance in biotechnology, *Management Science*, 48, pp. 138-153.

Section 2

The Pharmaceutical Technology Landscape: A new form of Technology Roadmapping

By

Robert Tierney ^a, Wahid Hermina ^b, Steven Walsh ^c

^a NIKOS, University of Twente, Enschede, The Netherlands

^c Microsystems, RD&A/Integration, Sandia National Laboratories, United States

^e Anderson School of Management, University of New Mexico, United States

Reproduced with permission from Elsevier Publishing Inc. Article originally appeared in Technological Forecasting and Social Change, February 2013 Volume 80 Issue 2 pp. 194-211

Citations presented in accordance to journal requirements

Section 2.1 Abstract and Key words

Practitioners are finding it increasingly difficult to develop effective roadmapping efforts for many new products and innovations. We argue that this difficulty stems from the fundamental differences between many of today's innovations and earlier ones. Many current innovations are: using technology differently; more heavily constrained; forcing new business models and increasingly being shaped by drivers. Current roadmapping techniques do not translate well to this new reality. Roadmapping efforts for these innovations are increasingly failing to meet their primary goal of including technology into the strategic process of firms, regions or industries.

We seek to address this concern by creating a new roadmapping technique, one we name Technology Landscaping. We build this technique by basing it upon the relevant sections and structures found in first and second-generation roadmapping theories and practices. We then apply new theory and processes that are in alignment with the nature of these new products and innovations. We test our model through a case study of new pharmaceutical industry innovations. Finally, we present our new roadmapping technique.

Key words: constrained innovations, creative enterprise, nanotechnology, microtechnology, technology entrepreneurship, national laboratories, MEMS, Technology Roadmaps, Technology Landscape, Convergence

Section 2.2 Introduction

Technology roadmaps were developed to insert technology into the strategic processes of firms, industries or regional development activities [120]. Technology roadmaps traditionally plot the technology requirements of one or more products or innovations along a single technology pathway over time. Technology roadmaps provide both strategic and tactical value for those that use them. At least two separate generations of roadmaps provide value to today's industries and firms. The highly successful first generation roadmap techniques advance architecturally stable technology product platforms like those found in the semiconductor industry [42,56]. Similarly, successful second generation technology roadmaps provide value for emergent disruptive technology bases like MEMS or nanotechnology [120,122]. Both first and second generation roadmapping techniques mirror the nature of the innovations and products they serve.

The nature of many new pharmaceutical innovations and products, however, vary greatly from the architecturally stable product platforms served by first generation roadmaps or even emergent disruptive technology based products served by the second. Further, these new pharmaceutical innovations are prototypical of other new innovations in a variety of industries. It is then no wonder then that roadmapping participants are finding it increasingly difficult to apply existing roadmapping techniques to these new innovations [80, 82]. Yet many firms, industries and economic development activities would benefit from a roadmapping process for these new innovations. Here we provide one path that roadmapping techniques can evolve for a third time to meet the needs of a new generation of innovations.

We argue that in order to build an effective third generation roadmapping technique we must first define the nature of these new technology innovations, particularly the differing nature of these innovations and products from previous ones. Each new generation of roadmap development has been driven by the changing nature of the innovations and products under review. We next build on the first two roadmapping techniques, identifying the value that they bring to the third

generation process. Finally, we apply newer theory to build our new roadmapping technique.

We identify six important manners in which the nature of many new pharmaceutical innovations and products differ from earlier products and innovations. First, these innovations are created at the interface of multiple root technologies [9, 14]. Second, these innovations often do not benefit from a unit cell such as the transistor does for the semiconductor roadmaps. Third, differing applications drive innovations that will require differing and often multiple critical dimension development for each technology being utilized. Fourth, the boundary conditions constraining today's innovations and products are much stricter than ever before [12]. Fifth, drivers are much more important to these new innovations. Sixth, new business models such as focused consortia [7] are driving technological development without benefit of predetermined architecturally stable product process platforms. Using these differences as a baseline we then review the current roadmap and innovation literature in order to develop a new third generation roadmapping technique.

We provide the new pharmaceutical innovation process as a case study [136] to further develop data and test new roadmap tactics in order to present a robust third generation roadmapping model. Many new pharmaceutical innovation processes have resisted current roadmapping techniques [8]. Newer pharmaceutical innovations often do not follow the traditional pharmaceutical industry single root technology innovation base. We found that new pharmaceutical innovations are often generated at the interface of multiple technologies. We collected interviews at conferences to identify the technologies that serve as the bases of new pharmaceutical innovations. We grouped these technologies into five root categories.

We next compiled pharmaceutical drivers from primary and secondary case based techniques. This step in our roadmapping process emphasizes the new importance of drivers in our roadmap process. We further, incorporated the pharmaceutical industry new business model of consortia into our roadmap. We used these consortia much in the same way as the first

generation roadmaps utilize important architecturally stable process product platforms. We functionalized the time axis for technology maturity time along multiple critical dimensions by modifying Technology Readiness Level (TRL) and Technology Readiness Assessment (TRA) techniques. We incorporated our findings and present a new third generation roadmap technique.

Section 2.3 Literature review

Our literature review is designed to assist in the development of a new roadmap technique that suits the nature of many recent pharmaceutical innovations and products. We have segmented the literature review into three sections. We discuss in Section 2.1 the six ways that more recent pharmaceutical innovations differ from earlier ones. We conclude that the nature of these innovations is not well served by traditional roadmapping techniques. We next discuss in Section 2.2 the value and gaps in current roadmapping techniques as applied to these innovations. Finally in Section 2.3 we review current literature that enables new roadmapping segments required by these innovations.

2.3.1 The changing nature of many new pharmaceutical innovations

First, we discuss how new pharmaceutical innovations substantially differ from traditional ones. There are at least six ways that new pharmaceutical innovations differ. We postulate that these new innovations and products cannot be adequately addressed by traditional roadmapping techniques.

2.3.2 Many of today's innovations are using technology differently

First and second generation roadmaps are focused on a single root technology based innovation or product. A shift has occurred and many of today's pharmaceutical innovations are increasingly generated at the interface of two or more root technologies [106, 6]. Innovations developed at the interface of multiple root technologies are perhaps the single most problematic issue for current roadmapping techniques to address. Roadmapping practitioners often try to cope

with this by designating a single technology as most important to an innovation, disregarding all others, or by trying to generate a roadmap for every single root technology and every differing critical dimension required of that technology [128]. Neither choice efficiently allows for the inclusion of technology into the strategic processes of firms, industries or regional economic activities.

2.3.3. No unit cell

Today's pharmaceutical innovations do not have a unit cell (component) such as a transistor [109]. The transistor is the unit cell or base element in the ITRS semiconductor first generation roadmapping effort. The lack of a unit cell does not allow for shared learning across industrial applications [109]. The lack of a dominant unit cell (component) makes it very difficult to use the strata structure Y axis or vertical segment of the traditional roadmapping process.

2.3.4. Differences in critical dimensions

Traditional roadmapping techniques follow a single technology trait trajectory. One of the most famous is “Moore's Law” [83]. Moore's law depicts the ever increasing number of transistors for a given silicon area. The ITRS roadmap uses line width as the major critical dimension. There exists no corresponding critical dimension for most new pharmaceutical innovations.

These new innovations require the technologies to improve on multiple dimensions. A traditional roadmapping effort uses technology lifecycle techniques which plot the progression of a technology along a single critical dimension (CD) pathway. Technological improvements along a number of CDs and its integration with other technologies are required to produce these new pharmaceutical innovations.

2.3.5. Today's pharmaceutical innovations are more heavily constrained

Optimal innovations are more highly constrained than ever before. Now an innovation that solves a local expression of a global problem [37,100], but simultaneously adversely affects another global problem, is no longer considered optimal and therefore it may not be implemented. These constraints stem from the largest challenges or problems facing the twenty first century which are: healthcare [24]; energy [78]; the environment [24, 10]; food [44,22,24];and water [53].

Finally, innovations are under increasingly higher scrutiny from litigation, regulation and public opinion [76]. New pharmaceutical innovations must address these challenges in order to be considered optimal [47]. Some policy makers, especially in the European Union, are using something akin to the “Hippocratic Oath” heuristic of “first do no harm” as embodied by the “Precautionary Principle” [105] for innovation, product and patent governance. Traditional roadmaps do not address this intensified concern.

2.3.6. Today's innovations are being shaped by different drivers

Today's pharmaceutical innovations are being initiated by new sets of drivers. One of the differences between first and second generation roadmaps is the use of technology product platforms rather than products [120] and drivers played a role [30] in that process. Yet the inclusion of very differing drivers such as changing customers expectations, fluid intellectual property procedures and resource requirements among others are catapulting drivers into a new and more important role in innovation development [8,98]. A more prominent position for drivers is required in a roadmapping technique for these innovations.

2.3.7 Today's pharmaceutical innovations are creating new business models

Many firms foresee the value in these new innovations yet lack the financial resources and/or competence to embrace them regardless of their size. This has caused the development of new business models such as consortia [6] to generate these new innovations. These creative

enterprise consortia often use supply chain partners [25] to generate innovations. Differing consortia have varied rules for the sharing of intellectual property, necessary equipment and other resources. The differences between conventional products and these newer innovations are stark. These new innovations are causing radical strategic industrial and firm change [26, 65, 93]. This change is creating exceptional opportunity [60, 64]. This reality is not addressed by traditional roadmapping techniques. A targeted road mapping technique would help firms better embrace this opportunity.

2.3.8. Value and gaps in traditional roadmap techniques

We review roadmapping literature in order to provide the foundation for our new effort. We selected the elements from first and second generation roadmaps that provide value to the new process. Roadmaps have a long history and have evolved to address many new needs over the years. They were first used by firms such as General Electric for internal product development in the nineteenth century [120]. First generation roadmaps then evolved to meet the needs of industries. Roadmapping practice then evolved further, incorporating new techniques that focused on emergent disruptive single root technology innovations [90]. We initiate our discussion with the evolution of first generation roadmaps.

Section 2.4. First generation roadmaps

The roadmap process was conceived as a vital strategic tool [30] and has benefitted international, national and regional long term planning [70]. First generation roadmaps have a long history and are used routinely by firms and industries today [15,45,131]. The roadmapping technique is also a baseline process used by firms and industries for standard product continuous improvement efforts [59]. One of the most famous applications of first generation roadmapping is the International Technology Roadmap for Semiconductors (ITRS, 2011).

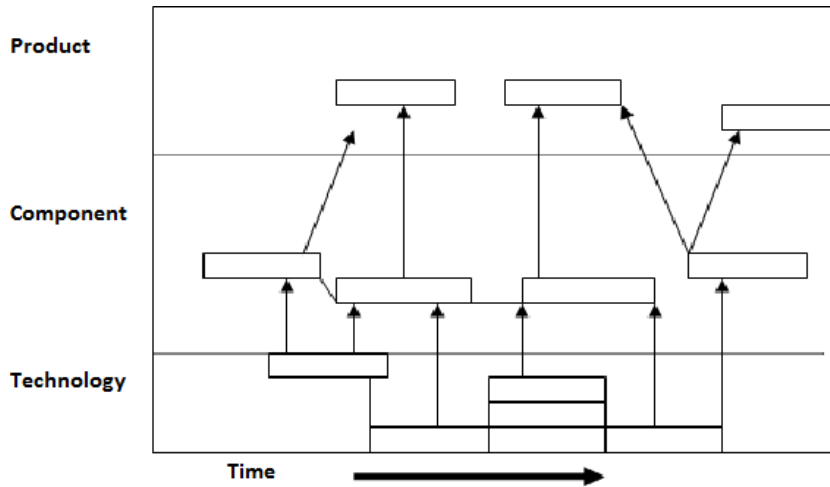
One problem that practitioners encounter using this technique for new pharmaceutical

innovations is the innovation's lack of a stable technology product platform. Previous innovations like semiconductor micro-fabrication were unable to derive value from roadmapping until a stable product process platform was developed. The ITRS roadmapping process, for example, did not begin with the invention of the solid state transistor in 1946 [110]. Rather it began in the 1970s, years after the MOS and Bipolar product platform bases provided a stable process product platform in the late 1950s [58,89]. The ITRS industrial roadmap today is still based on this process product platform [11,34]. Similarly industrial roadmaps like the aluminum industry roadmaps also followed a first generation roadmapping technique [120].

A second difficulty with first generation roadmaps is the dependence on a single root technology. The complexity of today's high tech problems have encouraged many entrepreneurs and intrapreneurs to create innovations based on complementary and/or convergent technology sets [140], rather than the traditional single technology or “silo” approach [91]. By combining technology into sets, new methods of solving problems become available [66].

The major contribution from the first generation roadmap to our model is its structure. It still provides an overall easily modifiable structure [31] for specific roadmap efforts. The structure is comprised of a time based X axis and functional Y axis strata. The initial roadmaps were developed with technology as the base layer, components in the middle stratum all feeding to products on the highest level (see Fig. 1). Traditionally these were driven by a single critical dimension (CD) of a single technology. These CDs are operationalized for roadmaps through the use of technology life cycles [27,141]. For example, decreasing the line width was the single CD that guided the roadmapping process for semiconductors [115].

Figure 2.1. First generation Roadmap general tool



This common layered strata roadmap structure is the foundational element for the new third generation road mapping landscaping process. The multistep process is transferable; however its single root technology focus is not. We discuss the new strata as well as the techniques used to generate them in our case study and present them in our final model.

Section 2.5. Second generation roadmaps

Second generation roadmaps were developed for emerging technologies that are potentially disruptive in nature [70,101]. These often have no fixed market targets or stable product process paradigm [120]. These innovations are typified by having no unit cell, yet they are still are generated from a single root technology [109]. These roadmaps are designed for two types of innovations. One roadmap option is for innovations that are designed for direct product replacement [130]. This occurs when the practitioners try to predict when a traditional product process platform for a given market is transitioning to an emergent process product platform [78]. In this instance the performance measures of the previous product are known and predicted points of value that must be reached to overcome the resistance for new product marketplace change [141] can be predicted. The second and more common case of this disruptive technology roadmap

exists when a potentially disruptive technology is being considered for use in an application space, but the exact product is unknown [120,101].

The first industrial roadmap effort to embrace a non-architectural disruptive technology base was by produced by MANCEF [125,126]. This effort focused on MEMS (Micro Electro Mechanical Systems) technology and top down nanotechnology completing a series of industrial roadmaps in 2003, 2004 and 2005 [125,121,123]. MEMS and Nanotechnology do not have established base technology processes like semiconductor micro-fabrication nor did they have a unit cell like the transistor to progress. MEMS innovators sought to change the way that people were making products (disruptive), rather than sustaining the current innovation base. MEMS and nanotechnology based innovations were then characterized by the phrase “one product, one fabrication process, one testing procedure, one package” [109] creating complexities that negated the use of first generation roadmapping techniques [127].

These innovations required new roadmap processes and techniques like incorporating drivers to a far greater extent than first generation roadmapping did [70]. New operational techniques were developed such as the use of multiple technology lifecycles (Fig. 2) and the creation of a new roadmapping process (Fig. 3). MEMS innovations generated by emergent disruptive technologies were different and required a different roadmapping technique [124].

Figure 2.2 Emergent disruptive technologies versus many traditional options

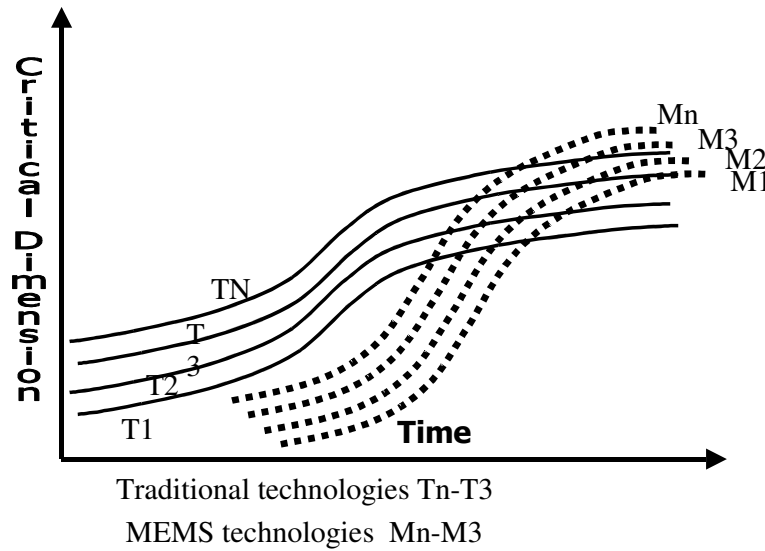
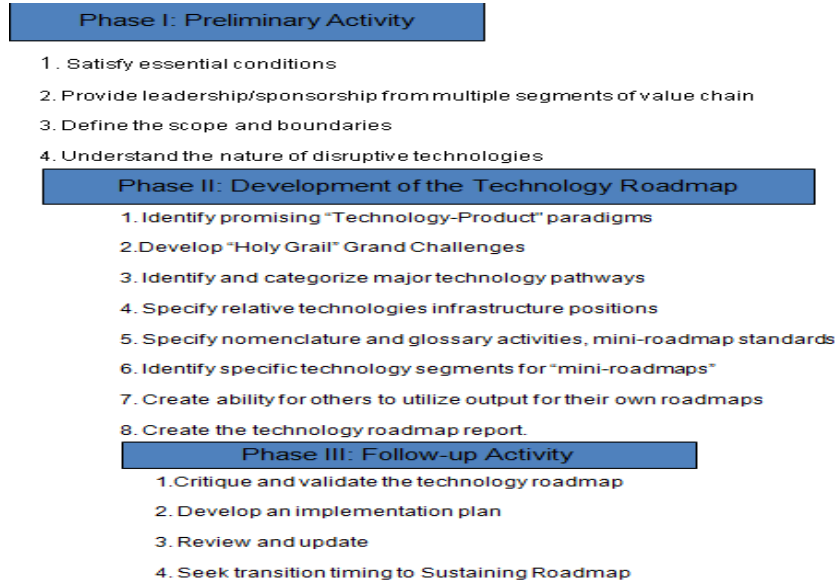


Figure 2.3: Three phases of disruptive technology roadmaps



Second generation MEMS roadmaps also highlighted the importance of supportive technologies to fully enable a product or innovation [65]. Yet these innovations were not cogenerated at the interface of multiple technologies [97]. Many times the use of MEMS and a

more mature complementary technology was required the MEMS based innovation to be systematized.

First generation roadmapping provides us with an overall structure (model) and an ability to generate roadmaps for firms, industries, and or regions seeking to improve economic development. Second generation roadmaps provide us with a method of reviewing technology pathways on more than one critical dimension. They do not, however, provide direct methods to include; multiple root technologies, constraints, drivers and new business models.

Section 2.6. Developing new roadmap processes and components

A roadmap developed for new pharmaceutical innovations must first mirror the manner in which multiple technologies are used to develop them. Here we discuss the use of both multiple technology lifecycles and Technology Readiness Levels for multiple technology sets and multiple CD progression. Our new roadmapping process must provide a larger role for pharmaceutical drivers and constraints. Moreover we must provide a role for new business models created in response to the knowledge and resource challenges of these innovations. We start by reconsidering innovation and technology development.

Section 2.7. Technology and innovation

We have argued that when innovations are created at the interface of multiple root technologies, current roadmapping techniques that focus on single technology based innovations are inadequate. To counter this difficulty we searched the technology innovation and progression literature and found two techniques that we have modified for our use. The first is multiple technology lifecycle theory. The second is Technology Readiness Levels (TRL) and Technology Readiness Assessment (TRA). We will discuss the former, but have chosen to modify and use the latter for this industrial focused pharmaceutical roadmap.

2.7.1. Using technology lifecycles.

The technology lifecycle curve serves as the foundation of first and second generation roadmaps. These curves usually follow either a Fisher Pry curve which is a substitution model where a new technology based innovation overcomes an existing product platform [38] or a Gompertz curve which is a product mortality model [41]. Using either model can generate a great deal of specificity for each technology underpinning an innovation. For example, each technology can be examined for multiple critical dimension path progression. This is important for many pharmaceutical innovations since different aspects of a given technology are either important or not for any specific innovation. The use of these curves would mimic the second generation roadmap's use of technology lifecycles (Fig. 2) where the timing of technological transitions can be forecasted [39].

Yet this specificity which is good for a firm based single innovation effort is also a handicap for industrial roadmaps where a large number of innovation platforms are reviewed. For the pharmaceutical industry roadmapping effort a more general review of each technology and its integrated set is required.

2.7.2. Using Technology Readiness Levels (TRL) theory.

Technology Readiness Levels (TRLs) are a systematic metric structure that gauges the maturity of a particular technology as applied to an application [75]. TRL can also be used for the comparison of maturity between different types of technology. TRLs originally consisted of nine individual and distinct technology readiness levels but have been modified to include as many as 11 by other users. The authors use the TRL concept to provide a more general technology review. This allows roadmap practitioners to focus on how best a group of technologies can be used to meet the needs of a new innovation. The technique meets the needs of innovations that are born at the interface of multiple technologies.

New pharmaceutical innovations are born not only out of many technologies but also from

improvement along many different critical dimensions of each of these technologies. The rise of technology utility is difficult to forecast since any given technology progresses non-uniformly along its many different critical dimensions. More often than not an improvement in more than one critical dimension per technology will be required to fully enable a pharmaceutical innovation.

This multiple CD challenge is then magnified when a new innovation requires multiple technologies to progress along multiple critical dimensions in order to meet the needs of a new innovation. Traditional roadmap efforts cannot be used since they follow a single technology progression against a single critical dimension. TRL based constructs allow practitioners to evaluate the state of readiness of a technology set and follow its progression. Lastly, TRL practitioners benefit from its general ability to embrace many technologies.

The use of TRLs for our pharmaceutical landscape requires a TRL level temporal assessment for each specific root technology as well as the complete set of technologies. Here we analyze the readiness levels of a set of five root technologies for the future development of pharmaceutical innovations. We will identify and define the five major root technologies key to many future pharmaceutical innovations. They are; chemistry, biology, MEMS, computational sciences, and nanotechnology.

We identified a given technology's TRL level through the administration of a simplified semi-structured Technology Readiness Assessment (TRA) questionnaire [114]. We provided each respondent with a brief discussion and definition of the TRL technique prior to the administration of the questionnaire. We used the traditional TRL scale of 1 through 9 for the pharmaceutical landscape. The TRL scale ranges from level 1 (the most commercially immature) through level 9 (fully commercially developed). We developed our questionnaire by reviewing many of the current TRA level questions. We then simplified this set to one yes or no question per TRL level for ease of response.

We presented the questionnaire to a pilot group of professionals involved in creating

pharmaceutical innovations (technologists, researchers, and commercialization professionals). The respondents were asked to rate the TRL levels of each of our 5 defined technology bases as well as the set as a whole. The respondents were interviewed either in person or through a phone interview. We asked each respondent to answer the questions for each of three time periods,

We asked the respondents to answer ‘yes’ or ‘no’ for each technology base initiating at level 1 and progressing in order to level 9, beginning with the current state of technology for pharmaceutical innovations. The respondents were told to stop at the level where they responded “no” to a question. We then asked the respondent to state if the level that they previously stated “no” to for the current TRL would most likely be answered affirmatively as the technology progressed over the next 5 years. Again we asked the respondent to answer ‘yes’ or ‘no’ to subsequent level questions for what they perceived to be the state of that technology in 5 years. When the respondent answered negatively we asked them to stop. We then asked the respondent to state if the level that they previously stated “no” too at the projected 5 year technology state could be answered affirmatively in 15 years. If the answer was affirmative they were then to proceed sequentially through the level questions until an answer was negative. The last level to be answered in the affirmative for each of the three time periods was then stated to be the TRL level that the specific technology had achieved at that time for the pharmaceutical industry.

We used the questionnaire to define the perceived technology readiness level of each individual technology as well as the integration of these technologies as a set. We defined what was meant by each technology. We defined the term “many applications” for the questionnaire to mean for at least 5 different technology product platforms. Moreover, we further defined some questions in the questionnaire itself. We provide the generic questions we used in Fig. 4 below. An individual firm or organization could use a much longer and more detailed questionnaire emphasizing specific technologies important to that entity.

Section 2.8 The Role of Drivers

Many roadmapping experts recognize the potential for the use of drivers in a roadmapping process. Albright discusses roadmap drivers such as regulation, individual cultures and market drivers [4]. Shinn [103] discussed the role of lead users in the road mapping process. Coates discussed the use of multiple technologies [29]. Hernández-Ortega discussed the potential of supply chain members' ability to accept a new technology as a driver [51]. Yet most drivers operationalized in previous roadmap generations are incorporated as market drivers [30].

Some roadmapping efforts place political drivers in the market driver segment. Political driven regulation can either create instant demand for a technology based product [116] or hinder its progress (precautionary principle [105,112]). Finally, many government agencies are leveraging their economies to solve significant world problems [133,135]. Yet neither market drivers nor government policy directives encompass all the drivers in the pharmaceutical innovation development process. Here we expand the role for drivers through both secondary and primary data exploration. We place drivers in the pharmaceutical landscape as the top strata of our model.

2.8.1. The role of consortia

The financial, legal and knowledge resource requirements for new pharmaceutical innovations are forcing the creation of new business models particularly consortia [8]. These consortia often focus on specific subsets of the larger pharmaceutical innovation portfolio. They are often formed by firms responding to drivers and many times at their conception do not even have a full technology product pathway developed. One example is Biomarker Consortium. The Biomarker Consortium brings together the expertise and resources of various partners to rapidly identify, develop, and qualify potential high-impact biomarkers. The Biomarker Consortium is a major public–private biomedical research partnership.

In the new pharmaceutical innovation landscape these consortia in many ways act as products do in the traditional road mapping process. We operationalize them in this third generation roadmapping process much as the ITRS roadmap utilizes the semiconductor based memory devices, power devices, micro processors and microcontroller products. They form the second strata in the roadmapping process. We performed secondary and primary research identifying many of these existing pharmaceutical consortia.

Figure 2.4

Stage 1:
 Has the Technology solution feasibility to implement the new capability been supported by conceptual studies with a likely R&D pathway.
 Yes___ No___

Stage 2:
 Has an analytical study been performed that confirms the potential usefulness of the new solution.
 Yes___ No___

Stage 3:
 Is there a viable path forward that would lead the experiment and or analytical result forward to a future application that solution risk can be evaluated?
 Yes___ No___

Stage 4:
 Has the new solution been successfully modeled and tested and a viable path forward to experimentation or demonstration of the potential application identified.
 Yes___ No___

Stage 5:
 Has the new solutions laboratory demonstrations been successfully and consistently performed with key elements being tested individually and or in an integrated fashion.
 Yes___ No___

Stage 6:
 Has rigorous system –level demonstrations been performed successfully in a relevant environment with results consistent with the levels of performance, cost, etc that the new solution must possess for the intended application.
 Yes___ No___

Stage 7:
 Has verifiable system-level demonstration of the solution been performed successfully in a relevant environment with the results consistent with the levels of performance, costs, etc. that the new solution must possess for the intended application in the actual environment of use.
 Yes___ No___

Stage 8:
 Has a production solution been fully described and successfully manufactured with no additional commercial barriers to overcome and all interactions between each technology understood and qualified to the satisfaction of one or more customers?
 Yes___ No___

Stage 9:
 Is the solution producible at the critical dimensions levels such as performance, cost, quality, reliability that were originally anticipated and all unforeseen barriers been removed with complete customer satisfaction?
 Yes___ No___

Fig. 4. Generic TRL Questionnaire.

2.8.2. The role of components

New pharmaceutical innovations are often built upon multiple components. Components form the third strata in our roadmap process and are used similarly to the way components are used by practitioners of earlier roadmap techniques. There exists no unit cell component for the

pharmaceutical industry that mirrors the transistor in the ITRS roadmap. In our case one or more of our technology bases are used together presenting a number of components.

We operationalize the component strata by showing the interactions between technologies that are needed to develop them. One example is the use of nanotechnology, chemistry and biology to develop specific medical carriers. We develop the component layer through primary and secondary research. We now illustrate our process through a case study of pharmaceutical industry innovations.

Section 2.9 Methods

We employed a case study analysis methodology to generate a technology landscape process for innovations in the pharmaceuticals industry. We utilized [136], Eisenhardt's [35] and Eisenhardt and Graebner's [36] case study techniques to develop our new multistrata roadmap technique. We initiate our case study by generating a list of pharmaceutical drivers gathered from a number of pharmaceutical commercialization professionals, technologists, government policy makers, academics, lawyers and entrepreneurs using a structured survey technique [142]. We only used drivers generated from primary research that were subsequently validated through secondary research. We provide a list of the drivers in Table 1 below. We initiate the case study with a brief description of the changes in the pharmaceutical arena.

2.9.1. Drivers in the changing pharmaceutical innovation arena

Drug discovery and diagnostic innovations have traditionally been dominated by large, multinational pharmaceutical firms. Traditionally the therapeutic innovations these firms produced were based on a single chemical monomer technology. Similarly, diagnostics were designed around a single technology. Traditionally diagnostics were distinct from therapeutics and designed to be used by central medical laboratories either in a hospital or a facility that serviced many hospitals. The way these innovations are being currently developed in the

therapeutic and diagnostic markets is radically changing [67, 68].

Now many organizations are involved in pharmaceutical drug discovery, diagnostics and innovation. Therapeutics is now more directly linked to diagnostics. The innovation process is, more often than not, based on an expanded set of converging technologies including biology, computational sciences, nanotechnology, MEMS and chemistry as we will discuss below.

Further, new intellectual property laws, especially in the United States, are severely stressing the traditional pharmaceutical Intellectual Property (IP) paradigms. These paradigms were the bases of large pharmaceutical company's competitive advantage. Until recently, large pharmaceutical firms based therapeutic innovations on their internal chemical technical competence and government sponsored research at universities which the large firms could use since universities and other government sponsored research firms did not have a legally protected right of ownership.

The single chemical monomer based pharmaceutical product has become increasingly challenged. The changing technology base for pharmaceutical innovations first incorporated biology based innovations like those found at Genentech [43]. Other technologies then became important to the pharmaceutical process. MEMS technologies, for example, became the technology underpinning for important “point of care” innovations such as those developed by i-STAT diagnostic products, now part of Abbott Lab. Next, computational sciences provided a new foundation for custom drug discovery innovations, most famously demonstrated through the Human Genome Project [52], and this again altered the way in which pharmaceutical innovations were generated. Finally, new nanotechnology innovations such as those used to clean the blood [77] and medical carriers were developed.

Non technology activities such as the Bayh–Dole Act [46] are returning more intellectual property (IP) rights to researchers and specifically, academic researchers. The less than clear distinction between discovery and invention in the patenting process [6] is further stressing the

traditional pharmaceutical IP process. Now many public sector technology generators are patenting their research to obtain ownership rights [19]. It is not only the multiple technology platforms that are acting as pharmaceutical innovation drivers, but also legal ones as well. Next we discuss how to generate the pharmaceutical drivers. We then place them in the model.

2.9.2. The role of drivers in the Technological Landscape process

We initiate our pharmaceutical landscape effort through a discussion of pharmaceutical industry drivers. An overall driver for all twenty first century innovations and especially pharmaceutical ones is the precautionary principal constraint. The more specific pharmaceutical drivers are provided below. We have found a number of specific drivers through structured survey [40] of professionals in this arena. We narrowed this field to fifteen (15) by requiring support from secondary research [136]. These drivers are a force behind the advance of converging technology innovation found in the healthcare landscape [143]. We provide them below in Table 2.1 and discuss them subsequently.

Table 2.1 Pharmaceutical landscape drivers.

Treating the Human System is moving to treatment at the Molecular Level	Crisis Intervention to Prevention /Non invasive Innovations	Chemical based Pharmaceuticals to Biological Based ones
Development of Therapeutics not Cures	Central Laboratory to Point of Care	Customer Interaction with Suppliers
Pharmaceutical Differentiation	Personalized Care	Patient Directed Care
Changes in Intellectual Property	Detection not Enough	Remote Care
Aging Population	Increasing Population	Cost of Drug Development

2.9.3. The global population is aging

Aging populations require more and cheaper medical therapies and diagnostics for improved longevity and quality of life ([92], [24]). The world's population is living longer especially in

developed countries and medical expenses are expected to dramatically increase [62]. The more developed countries, as defined by the United Nations, have an overall median population age which rose from 29.0 years in 1950 to 37.3 years in 2000, and is forecast to rise to 45.5 years by 2050 [133]. The aging population is a function of both increased longevity and the decreasing birth rates in developed countries. Some suggest that this large increase in longevity is driving healthcare demand [118,144].

2.9.4. Treating the human system is moving to treating the disease at the molecular level

Traditionally the treatment of a disease is not confined to the treatment of the affected cells but rather the pharmaceutical treatment affects the entire patient's well being. Treatment in this manner can affect healthy organs and cells as much as it affects diseased ones. Pharmaceutical innovations are shifting this treatment practice to treatment at the cellular level [48,119]. This treatment method is far more selective and is designed to focus on and eliminate only diseased cells. The therapeutics developed at the interface of multiple technologies creates this ability.

Today cancer is treated mainly by traditional approaches such as; chemotherapy, radiation therapy and surgery. All of these treatment modes affect the whole body. Zevalin [138] and other therapeutics are being developed to change the nature of cancer therapeutics. Specifically, Zevalin targets and eradicates CD20 antigens in B-Cell lymphomas or diseased cells preferentially to normal cells [138]. This and other projects using a subset of the pharmaceutical convergent technology set are creating “Silver Bullets” designed to seek out and eliminate only diseased cells [111]. Whether this is accomplished by scaffolding or the preferential combination of the therapies to diseased cells, the convergence of biotechnology, chemistry, nanotechnology, computational science and MEMS are making their mark.

2.9.5. Chemical to biologically based pharmaceutical products

Historically, pharmaceuticals have been based on monomer chemistry. Specifically, the chemical paradigm for drug discovery and development focuses on using chemistries to equilibrate the human system [33]. One of the first commercial biology based pharmaceutical innovations was developed from whey extract by Genentech [43]. The pharmaceutical industry is now moving rapidly from chemical monomer based products to more biological and large molecule chemistry based ones [57].

Innovations based on large molecular-weight chemistries hold promise in inflammation and cancer treatments [87]. Large pharmaceutical firms are rich in chemical competencies, but are limited in many of the other technology competency bases required by today's diagnostic and therapeutic innovations. These new innovations require broad based capabilities in biology, chemistry, MEMS and nanotechnology.

2.9.6. Central lab diagnostics to “Point of Care” diagnostics

Traditional patient diagnostics are divorced from therapeutics and require the use of a central laboratory which is costly and time inefficient. The diagnostic process often takes days or even weeks to complete and many times either due to patient or doctor error the test results are never even communicated. One study focusing on HIV testing showed that the patient return rate is less than 35% [23], and a patient must return in order to obtain the results of their tests. Another study shows that test result delays causes doctors not to relay the information to their patients (17 to 32% of the time) when the results were abnormal [21].

The new set of convergent technologies develops innovations that produce near immediate results [18]. Now medical personnel can get the same information in an immediate manner with “Point of Care” tests. “Point of Care” devices are used by medical practitioners to take patient samples and provide the patient results during their initial visit [107]. Near real time testing

provides immediacy and convenience for patients and the medical professionals alike. Diagnostic innovation development is moving more and more to “Point of Care” efforts either through development or purchase [79]. Examples of this trend includes: [1] and Dolomite's microfluidic systems that enhance “Point of Care” diagnostics [49].

2.9.7. Funding lifetime therapeutics rather than cures

Pharmaceutical firms are simply not funding research focused on medical cures. They are funding drug discovery focused on a lifetime user. Whether this is due to the difficulty and expense of finding cures [84] or the attraction of a population base of lifetime users to defray the costs of drug development [28], many of today's largest successful drug development projects are focused on a lifetime therapeutic value for their customers [81]. Rogaine and Viagra are examples of lifetime therapeutics. One was planned and the other more serendipitously discovered, however both provide value to their users. These new therapeutics are leveraging the new convergent pharmaceutical technology set.

2.9.8. Doctor to patient directed care

A movement within the medical community toward patient directed care is occurring [16]. Inexpensive and easy patient directed monitoring is required. Patient-centered practice improves health status and increases the efficiency of care by reducing diagnostic tests and referrals [113]. Regardless of the patient's age, constant monitoring is often required [71]. Patients requiring therapies like blood thinners are driving computational science based monitoring products for patient directed care on their own. Monitoring cost is reduced and the patients are empowered. Innovations such as these leverage the new medical convergent technology set especially biologics, computational sciences and MEMS.

2.9.9. Direct customer interaction

Institutional regulations that have been in place for decades are being removed and competitive pressures on various levels are forcing pharmaceutical companies to adopt customer-oriented strategies [5]. Many in the pharmaceutical industry are seeking to obtain some form of patient direct interaction with pharmaceutical firms [72]. Today, pharmaceutical firms receive the vast majority of information concerning patients using their therapeutics through filters like HMOs which minimize information flow. Some firms are already taking action. AsuteSolutions, for example, now maintains 24/7/365 sales channels for customers in the pharmaceutical field to close this open information loop [13]. Wireless and computer monitoring interaction are now allowing patient monitoring. Initial examples like Nike's Fuel band [85] (<http://store.nike.com>) are being developed using computational science and MEMS to create an opportunity for firms to directly interact.

2.9.10. Personalized care

The idea of personalized therapeutic care can be expressed as the movement from “One size fits all to one size fits one” [17]. This idea is not new and patient therapeutic dosing has been based on age, gender, bodyweight and the like for years. This concept now encompasses a much larger computational component. The Human Genome project [55] gave rise to the idea of preventative medicine customized based on genetic proclivities [50].

Designing therapeutics and understanding personalized risk for disease are logical extensions of the Human Genome project. Many [20] are utilizing individual genome mapping to develop individualized healthcare plans. The United State Department of Health sees this as the next revolution in health care, affecting everyone in the coming years [117]. The development of improved diagnosis, and treatment based on personalized care and tailored therapies are being actively investigated [74].

2.9.11. Pharmaceutical differentiation

The promise of computational benefits from efforts like the Human Genome project can assist not only patients but pharmaceutical therapeutic providers as well. The cost of new drug development has risen significantly [3]. Even therapeutics which endure the many hurdles in development and pass FDA certification often have extremely negative side effects on a small segment of the population [63]. Here if pharmaceutical firms can isolate the affected groups by genetic segmentation through computational means they can reduce the risk of a drug failure and recall while continuing to provide value to a large number of patients. Pharmaceutical risk is then limited and therapeutics useful for the vast majority of patients become efficacious [81].

2.9.12. Crisis intervention to prevention/non invasive innovations

The “Wellness” approach to medical treatment is becoming more accepted [139]. The increasing demand for healthy food and additives are moving the food and nutraceutical industry toward the inclusion of bio active agents and nanotechnology [54]. Nutraceuticals are becoming more accepted with up to 62% of the U.S. population now using some form of nutraceutical based product [86]. The manufacture of nutraceuticals, food additives and other supplements using large molecule chemistry, biology and nanotechnology is increasingly demanded by the public [129].

The movement from invasive to minimally invasive or to noninvasive therapies and diagnostics also is changing the pharmaceutical industry. The pharmaceutical industry is progressing toward convergent technology based non-invasive and minimally invasive diagnostic innovations [108] for patients suffering from diseases like diabetes. ALZA is perhaps the first company to modify therapeutics on the basis of minimally invasive products. They created buffered products for common aspirin and time released drugs through encapsulation technologies

[137].

2.9.13. Detection is not enough

The medical industry has traditionally separated detection or test from therapeutics. Companies like Abbott labs have concentrated on detection, while others like Johnson and Johnson have focused on therapeutics. This traditional market segmentation is being challenged by the idea that detection is not enough. The pharmaceutical industry is moving to detection through therapeutics doctrine [17,110]. Ethical questions about the ability to diagnose without the ability to treat effectively and improve quality of life for those affected continue [104]. The MANCEF COMS (2006) medical panel turned into a heated discussion of more than 200 professionals on the subject.

2.9.14. Movement to remote care

Remote care is needed when trained medical personnel are not available. This often occurs: in sparsely populated areas where there is a dearth of medical personnel; when a soldier needs medical attention on a remote battlefield; or when an interdiction team is in harm's way. The promise of MEMS and nanotechnology based "Just in Time" and "Point of Care" diagnostics and MEMS based RF communication [128] gives hope to this alternative [18].

Further, remote care trends such as the increasing use of portable defibrillators with on board computer guidance have proven to be highly effective in resuscitating individuals [96]. Virtual military medicine [102] has demonstrated its military effectiveness. One such example of this change in focus is the United States Defense Advanced Research Project Agency (DARPA) funding of the Advanced BioMedical Technology Program [94].

2.9.15. Increasing population

The increasing population exacerbates all of the 5 major problems facing the twenty first century world including healthcare [24]. Today the average life expectancy is going up and the number of people living on the planet could reach 10 billion by the end of the century [133,134]. Increasing population is a driver for low cost medical care.

The differential in quality of life between the most economically advantaged countries and the poorest has never been larger [95]. The “Have Not” nations could simply view themselves as having less to lose. Historically, when this condition exists world unrest follows. Less costly, more effective diagnostics through therapeutics must be generated. The use innovations produced at the interface of the convergent pharmaceutical base gives potential to low cost and energy efficient products that are required [99].

2.9.16. High cost of drug development

The high cost of drug development when coupled with the risk of failure in any stage of the US FDA or EU approval processes can stress any firm's financial resources. A firm can lose hundreds of millions of dollars during the drug discovery and commercialization process if a drug does not progress as expected. The high cost of drug development (\$802 million by some estimates) [3], and key trends like IP change and ever widening competencies required for leading edge innovations [32] are only increasing these risks and costs. Few firms can afford to singularly develop pharmaceutical innovations. Traditional pharmaceutical therapeutic developers are creating new business models like consortia to diffuse this risk as well as to obtain the competencies required to develop innovations (Hurley, 2008).

2.9.17. Shifts in intellectual property rights

The dominant form of Intellectual Property (IP) protection strategy for entities in the

pharmaceutical industry is patents. Yet there have been huge changes in this area. The first came with the United States based Bayh Dole Act of 1988. This act provided research institutions ownership of IP as a result of federally funded research [46]. U.S. universities, small businesses and non- profits were given control of the intellectual property they generated. Further the United States has recently joined many nations in providing the rights of an invention to the researcher that is first to file rather than the traditional United States stance that the rights went to those that were first to invent [73,88]. Finally, the line between discovery and invention especially in molecular biology and nanotechnology has blurred. Patent rights provided to innovations which are provided closer to discovery have exceptional implications on “Downstream” therapeutic and diagnostic development [6].

These drivers are disrupting or radically altering the pharmaceutical industry. It has given rise to a new business model based on: competency building, patient needs, the changing intellectual property landscape, funding requirements and risk. We next discuss the utilization of consortia as a business model in the industry.

Section 2.10. Consortia and target products

New pharmaceutical innovations do not benefit from a small number of targeted final product categories that are characteristic of many first generation roadmapping efforts. Rather the new set of pharmaceutical drivers has created a plethora of new potential pharmaceutical innovations. The problem that we address here is a way to provide focus.

We utilized the consortia pharmaceutical business model to provide more focus to the industrial landscape process without moving to a single product which is the realm of firm based roadmap efforts. Different consortia, due to their growing use and specificity, focus on differing therapies, diagnostics and or knowledge on specific innovation areas. These innovation areas are used as innovation platforms in the pharmaceutical landscape. These consortia consist of firms, research entities and others that share the business risk as well as their competencies in search of

a competitive advantage in a specific pharmaceutical innovation space. We have identified a number of these and use them as platforms for the second strata of our roadmap.

Consortia are often formed in a very early phase where a singular innovation platform has not been determined. There are usually many pathways that can be used to develop a desired therapy or diagnostic and many times these consortia embrace more than one. A specific consortium could then either choose a technology and component mix that they feel is closest to their product maturity needs or ones that they feel they can accelerate faster than experts predict.

Consortia have another trait that assists our landscaping effort — they are stable over time. Like the four semiconductor products in ITRS roadmaps, they span the time discussed in our landscape. We specifically use the following consortia: Biomarker, MalariaGEN, Zink Finger, International consortium for cardiac tissue engineering, Autism, and the European consortium for tissue engineering as the third strata in our pharmaceutical landscape.

Section 2.11. The role of components in the pharmaceutical landscape

The third stratum from the top of our technology landscape is comprised of components. Components are often the simplest segment of a roadmap to identify. However, pharmaceutical innovations are often comprised of more than one component. Further, pharmaceutical innovation technologies are stressed along more than one critical dimension. Pharmaceutical components are a critical element of a larger pharmaceutical innovation.

These components are often developed from a subset of the available pharmaceutical technology set. We performed a literature search on our example consortia to derive the pharmaceutical components list for our pharmaceutical roadmap. This resulted in many pharmaceutical components generated from differing technology subsets. Pharmaceutical components based on MEMS, chemistry and biology included: MEMS sensors; RF MEMS; microarrays, chemical monomers and others. Pharmaceutical components based more on nanotechnology and computational sciences included: cardiac tissue engineering, genomic

mapping and synthetic vaccine development. We provide a subset of these for illustration in the pilot Pharmaceutical Landscape.

Section 2.12 The technology base

The new technologies used in pharmaceutical innovation development are disruptive in nature [64,65]. This has created great interest in the sector by firms and economic development professionals who are not currently involved in the pharmaceutical sector since they believe they can leapfrog existing and formerly essential infrastructure. New pharmaceutical innovations are based on new technologies [69,132] which are pan-industrial in nature [145]. New regions and firms can now invest at a more even basis with established firms and regions to obtain a competitive advantage and regional economic growth [2, 61]. Whether a firm is established or new to the industry understanding the progress of the new pharmaceutical technology set is essential.

We analyzed the pharmaceutical technology set progression through the use of a TRL based semi-structured questionnaire. We requested 20 professionals involved in the pharmaceutical commercial process to act as a pilot group. Our full questionnaire response rate was 70% or 14 respondents.

We analyzed the respondents by totaling all respondents TRL ratings for each technology category (Chemistry, Biology, MEMS, Nanotechnology, Computational Science) as well as the set as a whole for each of our three projected times. We analyzed the technology set as a whole using 2 methods. The first method we used was to take a simple average of all the raw scores. The second method we used was to take all the 14 individual respondents stated set scores averaging those. We found that the differences in set averages were negligible. We provide the descriptive statistics for our technologies in 2010, 2015 and 2025 below.

We initiate our analysis on technology progression with three tables providing TRL information on our 2010 technology set. The authors provide the average individual technology

TRL scores as well as maximum and minimum respondent TRL scores in Table 2.2 a. We next provide the two methods for providing technology set as a whole values in Table 2.2 b. We utilize the raw score average value in our Technology Landscape or 5.67. Finally we provide the standard deviation, median and mode in Table 2.2 c.

We continued our analysis of technology progression with three tables providing TRL information on our 2015 pharmaceutical innovation technology set. The authors provide the average individual technology TRL scores as well as maximum and minimum respondent TRL scores in Table 2.3 a. We next provide the two methods for providing technology set as whole values in Table 2.3 b. We utilize the raw score average value in our Technology Landscape of 6.61. The standard deviation, median and mode are provided in Table 2.3 c.

We finalize our analysis of technology progression with three tables providing TRL information on our 2025 pharmaceutical innovation technology set. The authors provide the average individual technology TRL scores as well as maximum and minimum respondent TRL scores in Table 2.4 a. We next provide the two methods for providing technology set as a whole values in Table 2.4 b. The standard deviation, median and mode are provided in Table 2.4 c.

Table 2.2.a Individual technology ratings 2010

Subject	Average TRL	Minimum	Maximum
Chemistry	6.4285	TRL 4	TRL 9
Biology	5.2857	TRL 4	TRL 6
Comp. Science	5.7857	TRL 4	TRL 9
MEMS	6.1428	TRL 4	TRL 9
Nanotechnology	4.7142	TRL 3	TRL 6

Table 2.2.b TRL set average score 2010

Type	Average
Raw average method	5.67142
Set average method	5.285714

Table 2.2.c Individual technology Standard Deviation, Median and Mode 2010

	Chemistry	Biology	Comp Science	MEMS	Nanotechnology
Median	7	5	6	6	5
Mode (Single)	7	5	6	6	5
STD Dev	1.87899	0.69985	1.37209	1.3552	0.79539

Table 2.3.a Individual Technology ratings 2015

Group	Average TRL	Minimum	Maximum
Chemistry	7.64285	TRL5	TRL 9
Biology	6.50000	TRL 5	TRL 8
Comp. Science	6.57149	TRL 5	TRL 9
MEMS	6.35714	TRL 4	TRL 8
Nanotechnology	0.57142	TRL 3	TRL 8

Table 2.3.b TRL Set average score 2015

Type	Average
Raw average method	6.61428
Set average method	6.57142

2.3.c Standard Deviation, Median and Mode 2015 by Group

	Chemistry	Biology	Comp Science	MEMS	Nanotechnology
Median	8	8	6.5	6	6
Mode (Single)	8	7	7	6	5
STD Dev	1.17151	0.90632	1.17803	1.34202	1.13389

We utilize the raw score average value in our Technology Landscape or 7.4571. Finally in Table 4.c we provide each technology's standard deviation, median and mode.

The pilot use of TRL levels proved to be a good surrogate for the technology lifecycle curve in our case. The result is the progression in maturity of each technology set over time. We provided the standard deviation and other descriptive statistics to analyze the specificity of the technique over time. The pilot study illustrated the potential to use TRL levels to analyze the progression of sets of technologies over time. Our analysis developed set technology levels of 5.67, 6.61, and 7.46 rounded to the second decimal for 2010, 2015 and 2025 respectively.

Table 2.4.a Individual technology ratings 2025

Group	Average TRL	Minimum	Maximum
Chemistry	8.35714	TRL 6	TRL 9
Biology	7.42857	TRL 6	TRL 9
Comp. Science	7.35714	TRL 6	TRL 9
MEMS	7.28571	TRL 6	TRL 9
Nanotechnology	6.85714	TRL 4	TRL 9

Table 2.4.b TRL Set average score 2025

Type	Average
Raw average method	7.4571
Set average method	7.42857

2.4.c Standard Deviation, Median and Mode 2025 by Group

	Chemistry	Biology	Comp Science	MEMS	Nanotechnology
Median	9	8	7	7.5	7
Mode (Single)	9	8	7	9	7
STD Dev	0.89499	0.90350	1.17151	1.29559	1.18666

Section 2.13. The Pharmaceutical Landscape model

We provide our Pharmaceutical Landscape model based on data generated in our case study as presented in Fig. 3. The X axis of our landscape is a time line. We have chosen the times of 2010, 2015, and 2025 as important dates to understand the maturity of each technology as well as the technology set as a whole for the pharmaceutical industry. We then develop the model's strata from the pharmaceutical case study developed in Section 3. The roadmapping technique is the first developed around the nature of innovations made at the interface of multiple technologies. We provide the elements and the placement of the constituents in our technology landscape below in Sections 4.1 through 4.4. The model itself is found in Section 4.5.

2.13.1. Technology

We used modified TRL tactics to develop the technology baseline of our model. We analyzed the defined five technologies set as an innovation paradigm over time using a semi structured questionnaire. The results are the base strata for our Pharmaceutical Landscape found in Fig. 5.

2.13.2. Drivers

Pharmaceutical innovations are bound by the precautionary principle which is a constraint as

well as a driver. We also provide a list of the 15 specific pharmaceutical landscape drivers we developed from primary data and supported with secondary data. A list of these drivers can be found in Table 1 above. These drivers are constant over time and form the top strata of our pharmaceutical landscape seen in Fig. 3.

2.13.3. Consortia

Consortia play a unique role in the Pharmaceutical Landscape model. Consortia are groupings of firms with competency and financial resources focusing on a subset of potential pharmaceutical innovations which many in the industry see as important product platforms. Consortia form the second strata from the top of the pharmaceutical landscape and are found just below the drivers' stratum. We provide many examples of consortia here from a fuller list of consortia, see [6].

2.13.4. Components

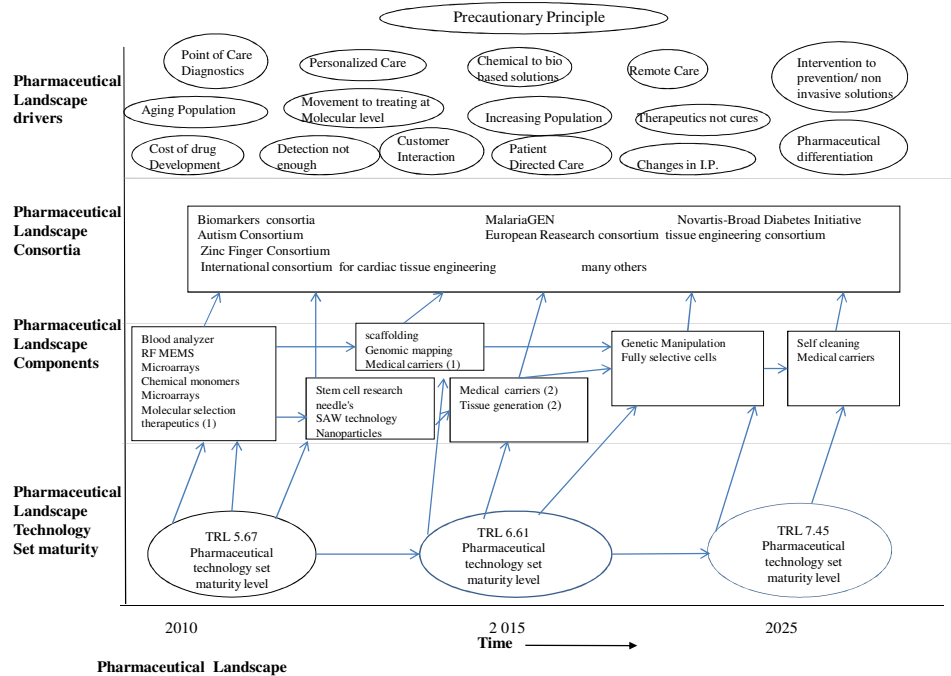
Many of today's pharmaceutical innovations consist of multiple components. Each component is generated from subsets of the five technologies which form the basis of pharmaceutical innovations defined in our effort. We provide an example of these industry wide components in our pharmaceutical landscape model and form the 3rd strata in Fig. 3 below.

2.13.5 . The Pharmaceutical Landscape

We present the Pharmaceutical Landscape model in Fig.2. 5 below. The authors, through this model, provide a role for the drivers of innovation in the industry. The authors provide a new method to analyze technology progression over time for innovations generated by multiple technologies. We use consortia to provide important industry innovation focus. These innovations are born of market, technology, government policy and environmental drivers. The Pharmaceutical Landscape is a technique which accommodates the dynamic changes within the technology set of this radically

changing industry.

Figure 2.5: The Pharmaceutical Landscape



Section 2.14. Discussion and future research

The pharmaceutical landscape is a radical departure from first and second generation roadmap techniques. Our pilot study shows that this technique holds promise to provide superior value to the strategic process of firms, industries and regions seeking to profit from innovations born of more than one technology. Moreover, the knowledge of the relative maturity levels of each of the technology bases and future projections allow for project selection that meets the risk profile of the firms involved. A need to investigate how to fund embracing this field is needed. Option theory particularly the max min theory needs to be investigated.

Further effort is required on how to use TRL and TRA techniques to analyze subsets of the five technologies on which the pharmaceutical technology is based. This technique may also use roadmapping for a single technology which must meet multiple critical dimension demands for a given innovation. A more empirical evaluation is now needed. The authors are progressing on a fuller

exploration of the pharmaceutical industry with an industry association.

Finally a number of interesting interactions were uncovered in our effort, we will present three here. The first concerns lifestyle drugs like Viagra and Rogaine which may benefit from patient predispositions; however, more study is needed in this area. Another is religious and ethical issues around tissue engineering. Again more research is required in this area to make valid conclusions. Finally we uncover a number of issues centered on the use or avoidance by some countries of the precautionary principal. Does the use of the precautionary principle in policy limit innovation or help produce an ethical innovation pathway?

Section 2.15 References

- [1] Abbott, http://www.abbott.com/global/url/content/en_US/10.20:20/general_content/General_Content_00007.htm. 200612/9/2010.
- [2] W.J. Abernathy, J.M. Utterback, Patterns of industrial innovation, *Technol. Rev.* 50 (7) (1978) 40–47.
- [3] C.P. Adams, V.V. Branter, Estimating the cost of new drug development: is it really \$802 million? *Health Aff.* 25 (2) (2006) 420–428.
- [4] R. Albright, How to use roadmapping for global platform products, <http://www.technologyforge.net/enma/6020/6020Lectures/TechnologyRoadmapping/ENMA291TRReferences/RoadmappingAlbright.pdf>. 200212/8/2011.
- [5] R. Alt, H. Oestele, T. Puschmann, V. Barak, T. Huber, Customer relationship management architecture in the pharma industry, *Int. J. Health Technol. Manage.* 5 (3) (2003) 296–314.
- [6] M. Allarakhia, S. Walsh, Managing knowledge assets under conditions of radical change: the case of the pharmaceutical industry, *Technovation* 31 (105) (2011) 105–117.
- [7] M. Allarakhia, S.T. Walsh, Analyzing and organizing nanotechnology developments: Application of the institutional analysis development framework to nanotechnology consortia, *Technovation* 32 (3–4) (2012) 216–226.
- [8] M. Allarakhia, A. Wensley, Systems biology: a disruptive biopharmaceutical research paradigm, *Technol. Forecast. Soc.* 74 (9) (2007) 1643–1660. [9] F. Allhoff, The coming era of nanomedicine, *Am. J. Bioeth.* 9 (10) (2009) 3–11.
- [9] F. Allhoff, The coming era of nanomedicine, *Am. J. Bioeth.* 9 (10) (2009) 3–11.
- [10] M. Amer, T.U. Daim, Application of energy roadmaps for renewable energy sector, *Technol. Forecast. Soc.* 77 (8) (2010) 1355–1370.
- [11] W.M. Arden, The international technology roadmap for semiconductors—perspectives and challenges for the next 15 years, *Curr. Opin. Solid State Mater. Sci.* 6 (5) (2002) 371–377.
- [12] N.A. Ashford, Incorporating science, technology, fairness, and accountability in environmental, health, and safety decisions, *Hum. Ecol. Risk Assess.* 11 (1) (2005) 85–96.
- [13] AsuteSolutions, Solutions for the pharmaceutical industry, <http://www.astutesolutions.com/industries-pharmaceuticals.php>. 201012/09/2011.
- [14] W.S. Bainbridge, M. Roco, *Managing Nano-Bio-Info-Cogno Innovations*, 1st ed. Springer, Netherlands, 2006.
- [15] R. Baker, D.J.H. Smith, Technology foresight using roadmaps, *Long Range Plann.* 28 (2) (1995) 21–28.
- [16] M. Beeuwkes Buntin, C. Damberg, A. Haviland, K. Kapur, N. Lurie, R. McDevitt, M.S. Marquis, Consumer directed health care: early evidence about effects on cost and quality, *Health Aff.* 25 (6) (2006) 516–530.
- [17] T. Beugelsdijk, S. Varma, S. Walsh, Ch. 4 BioMEMS, international roadmap on MEMS, Microsystems, Micromachining and Top Down Nanotechnology, MANCEF, Naples, Florida, 2003, pp. 109–157.

- [18] M. Bissell, F. Sanfilippo, Empowering patients with point-of-care testing, *Trends Biotechnol.* 20 (6) (2002) 269–270.
- [19] P. Boardman, Beyond the stars: the impact of affiliation with university biotechnology centers on the industrial involvement of university scientists, *Technovation* 28 (2008) 291–297.
- [20] B. Bonett, Getting up close and personal with your genome, *Cell* 133 (5) (2008) 753–756.
- [21] E.A. Boohaker, R.E. Ward, J.E. Uman, B.D. McCarthy, Patient notification and follow-up of abnormal test results: a physician survey, *Arch. Intern. Med.* 156 (3) (1996) 327–331.
- [22] K. Borch, Refining the debate on GM crops using technological foresight — the Danish experience, *Technol. Forecast. Soc.* 72 (5) (2005) 549–566.
- [23] R.E. Chaisson, J.C. Keruly, S. McAvinue, J.E. Gallant, R.D. Moore, Effects of an incentive and education program on return rates for PPD test reading in patients with HIV infection, *J. Acquir. Immune Defic. Syndr.* 15 11 (5) (1996) 455–459.
- [24] M. Chan, Global health diplomacy: negotiating health in the 21st century Director-General of the World Health Organization, Address at the Second High-level Symposium on Global Health Diplomacy, 12/6/2011 <http://www.who.int/dg/speeches/2008/20081021/en/index.html>.
- [25] H. Chesbough, A. Kardo, Beyond high tech: early adopter of open innovation in other industries, *R&D Manage.* 36 (3) (2006) 229–236.
- [26] C. Christensen, R.A. Burgelman, S.C. Wheelwright, *Strategic Management of Technology and Innovation*, 5th ed. McGraw-Hill/Irwin, Columbus, OH, 2008. [27] C.M. Christensen, *The Innovators Dilemma: The Revolutionary Book that Will Change the Way You Do Business*, Harper Collins Publications, New York, New York, 2003.
- [28] P. Christopher, V.V. Adams, M. Dickson, P. Gagnon, Key factors in the rising cost of new drug discovery and development, *Nat. Rev. Drug Discov.* 3 (2004) 417–429. [29] J.F. Coates, Technological change and future growth: issues and opportunities, *Technol. Forecast. Soc.* 11 (1) (1977) 49–74.
- [30] R. Cooper, Perspective third-generation new product processes, *J. Prod. Innov. Manage.* 11 (1) (1994) 3–14.
- [31] T.U. Daim, T. Oliver, Implementing technology roadmap process in the energy services sector: a case study of a government agency, *Technol. Forecast. Soc.* 75 (5) (2008) 678–720.
- [32] M. Dickson, P. Gagnon, Key factors in the rising cost of new drug discovery and development, *Nat. Rev. Drug Discovery* 3 (2004) 417–429.
- [33] G. Dutifield, *Intellectual Property Rights and the Life Sciences Industries: A Twentieth Century History*, Ashgate Publishing Limited, Burlington VT, 2003. [34] K. Eijkel, E. Knol, S. Walsh, *Converging technologies*, <http://www.itrs.net>. 12/05/2010.
- [35] K.M. Eisenhardt, Building theories from case study research ACD, *Manage Rev.* 14 (4) (1989) 532–550.
- [36] K.M. Eisenhardt, M.E. Graebner, Theory building from cases: opportunities and challenges, *Acad. Manage. J.* 50 (1) (2007) 25–32.
- [37] M. Fink, R. Lang and R. Harms, Local responses to global technological change — contrasting restructuring practices in two rural communities in Austria, *Technol. Forecast. Soc.*, in press.

- [38] J.C. Fisher, R.H. Pry, Simple substitution model of technological change, *Technol. Forecast. Soc.* (3) (1971–1972) 75–88.
- [39] R.N. Foster, *Innovation: The Attractor's Advantage*, 1st ed. Summit Books, Manila Philippines, 1985.
- [40] F.J. Fowler, *Survey Research Methods (Applied Social Research Methods)*, 4th ed. Sage, Thousand Oaks, CA, 2008.
- [41] P.H. Franses, A method to select between Gompertz and logistic trend curves, *Technol. Forecast. Soc.* 46 (1) (1994) 45–49.
- [42] M.L. Garcia, O.H. Bray, Fundamentals of technology roadmapping, Sandia National Labs press release SAND97-0665, <http://www.sandia.gov/PHMCOE/pdf/Sandia'sFundamentalsofTech.pdf>. 12/05/2011.
- [43] Genentech, <http://www.gene.com/gene/research/focusareas/>. 12/07/2011.
- [44] H.J. de Graaf, M.A.W. Noordervliet, C.J.M. Musters, C.J.M. G.R. de Snoo, Roadmap for interactive exploration of sustainable development opportunities: the use of simple instruments in the complex setting of bottom-up processes in rural areas, *Land Use Policy* 26 (2) (2009) 295–307.
- [45] P. Groenveia, Roadmapping intergrates business and technology, *Res. Technol. Manage* 40(50)(1997) 48-55.
- [46] C. Gross, J. Allen, *Technology Transfer for Entrepreneurs: A Guide to Commercializing Federal Laboratory Innovations*, Praeger Publishing, Westport CT, 2003.
- [47] K.R. Haines, D. Smith, P.R. Anderson, A.J. Epstein, I. McMichael, P. Roberts, J. Wilkinson, J. Woodcock, J. Woods, Policies for accelerating access to clean energy, improving health, advancing development and mitigating climate change, *Lancet* 370 (9594) (2007) 6–12 (1264 128).
- [48] D. Hanahan, R.A. Weinberg, The hallmarks of cancer, *Cell* 100 (1) (2000) 57–70.
- [49] Dolomite MicroFluidic Products, <http://www.dolomite-microfluidics.com/en/products>. 201012/09/2010.
- [50] A. Harmon, Gene map becomes a luxury item new times, <http://www.nytimes.com/2008/03/04/health/research/04geno.html>. March 4, 2008.
- [51] B. Hernandez-Ortega, The role of post-use trust in the acceptance of a technology: drivers and consequences, *Technovation* 31 (10–11) (2011) 523–538.
- [52] S. Hilgartner, *Access to Data and Intellectual Property: Scientific Exchange in Genome Research, Intellectual Property Rights and Research Tools n Molecular Biology*, National Academy Press, Washington DC, 1996, pp. 28–33.
- [53] T. Hinkebein, M.K. Price, Progress with the desalination and water purification technologies U.S, *Desalination* 182 (1–3) (2005) 19–28. [54] Q. Huang, H. Yu, Q. Ru, Bioavailability and

delivery of nutraceuticals using nanotechnology, *J. Food Sci.* 75 (1) (2010) 50–57.

- [55] Human Genome Project information on the Human Genome Project, http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml. 201112/09/2011. [56] International technology roadmap for semiconductors 2008 update, www.itrs.net/links/2008ITRS/Update/2008_Update.pdf. 79.
- [57] A.J.S. Jones, J.L. Cleland, Technical and regulatory hurdles in delivery aspects of macromolecular drugs, *J. Control Release* 41 (1–2) (1996) 147–155.
- [58] J. Kilby, Turning potential into realities: the invention of the integrated circuit, *Chemphyschem* 2 (8/9) (2000) 482–489.
- [59] S. Lee, Y. Park, Customization of technology roadmaps according to roadmapping purposes: overall process and detailed modules, *Technol. Forecast. Soc.* 72 (5) (2005) 567–583.
- [60] J.D. Linton, S. Walsh, Acceleration and extension of opportunity recognition for nanotechnologies and other emerging technologies, *Int. Small. Bus. J.* 26 (2006) 83–99.
- [61] J.D. Linton, S. Walsh, Integrating innovation and learning curve theory: an enabler for moving nanotechnologies and other emerging process technologies into production, *R&D Manage.* 34 (5) (2004) 513–522.
- [62] J. Lubitz, J. Beebe, C. Baker, Longevity and medicare expenditures, *N. Engl. J. Med.* 332 (1995) 999–1003.
- [63] P.Y. Lum, C.D. Armour, S.B. Stepaniant, G. Cavet, M.K. Wolf, J. Scott Butler, J.C. Hinshaw, Philippe Garnier, G.D. Prestwich, Amy Leonardson, Philip Garrett-Engele, C.M. Rush, M. Bard, G. Schimmack, J.W. Phillips, C.J. Roberts, D.D. Shoemaker, Discovering modes of action for therapeutic compounds using a genome-wide screen of yeast heterozygotes, *Cell* 116 (1) (2004) 121–137.
- [64] B.A. Kirchoff, *Entrepreneurship and Dynamic Capitalism: the Economics of Business Firm Formation and Growth*, Praeger, Westport, Conn, 1994. [65] B. Kirchoff, S. Walsh, Entrepreneurs' opportunities in technology-based markets, *Research in Entrepreneurship and Management*, 2002, pp. 17–30.
- [66] B. Kirchoff, S. Walsh, Entrepreneurship's role in commercialization of disruptive technologies band 13, *Unternehmer und nternehmensperspektive fur Klien-und Mittelunternehmen*, Dunker & Humboldt, Berlin/St. Gallen, 2000, pp. 323–332.
- [67] I.M. Kirzner, *How markets work: disequilibrium, entrepreneurship and discovery*, IEA Hobart Paper No. 133, London Institute for Economic Affairs, 1997. [68] I.M. Kirzner, *Competition and Entrepreneurship*, University of Chicago Press, Chicago, Ill, 1973.
- [69] J. Korotayev, J. Zinkina, J. Bogevolnov, Kondratieff waves in global invention activity, *Technol. Forecast. Soc.* 78 (7) (2011) 1280–1284.
- [70] R.N. Kostoff, R.R. Schaller, Science and technology roadmaps, *IEEE Trans. Eng. Manage.* 48 (2) (2001) 132–143.
- [71] S. Kroc, V. Delic, Personal wireless sensor network for mobile health care monitoring. *Telecommunications in Modern Satellite, Cable and Broadcasting Service TELSIKS 6th International Conference*, 2(1–3), 2004, pp. 471–474.
- [72] A. Lyles, Direct marketing of pharmaceuticals to consumers, *Rev. Public Health* 23 (2002) 73–79

- [73] MacDailyNews Obama signs first-to-file U.S. patent reform bill into law 2011, <http://macdailynews.com/2011/09/16/obama-signs-first-to-file-u-s-patent-reform-bill-into-law/>. 2011/09/16/2011.
- [74] V. Mangematin, A. Amir-Aslani, The future of drug discovery and development: shifting emphasis towards personalized medicine, *Technol. Forecast. Soc.* 77 (2) (2010) 203–217.
- [75] J.C. Mankins, Technology readiness levels white paper office of space access and technology NASA April 6, 1995, <http://ehbs.org/trl/Mankins1995.pdf> 2011. [76] G. Marinkas, R. Tierney and D. Walsh, Are nanotechnology researchers, developers and their managers addressing health and safety concerns through publications and or patent applications, *J. Bus. Ethics.* in press.
- [77] A. Markus, Tiny magnets could clear diseases from the blood technology review, <http://www.technologyreview.com/biomedicine/39181/?mod=chfe>. 12/07/2011.
- [78] W. McDowall, Technology roadmaps for transition management: The case of hydrogen energy, *Technol. Forecast. Soc.* 79 (3) (2012) 530–542.
- [79] S.P. McGrath, E. Grigg, S. Wendelken, G. Blike, M. De Rosa, A. Fiske, R. Gray, R. Artemis, A vision for remote triage and emergency management information integration, <http://www.ists.dartmouth.edu/library/15.pdf>. 2003/2011.
- [80] Micro and Nanotechnology Commercialization Education Foundation (MANCEF), Commercialization of Micro Nano Systems Conference, 2011.
- [81] Micro, Nanotechnology Commercialization Education Foundation (MANCEF), Roundtable discussion by life science investors. Albuquerque, New Mexico, 2010.
- [82] Micro, Nanotechnology Commercialization Education Foundation (MANCEF), International Micro/Nano Roadmap, 3rd ed., 2011.
- [83] G. Moore, Lithography and the future of Moore's law, *Solid State Circuits Newsl.* 20 (3) (2006) 37–42.
- [84] S. Morgan, J. Hurley, Influences on the health care technology cost-driver commission on the future of health care in Canada, Discussion Paper 14, 2002, p. 22. [85] Nike Fuel Band, http://store.nike.com/us/en_us/?l=shop,pwp,c-1+100701/hf-4294899078+12003+50142&cp=USNS_KW_0611081618.
- [85] Nike Fuel Band http://store.nike.com/us/en_us/?l=shop,pwp,c-1+100701/hf-4294899078+12003+50142&cp=USNS_KW_0611081618
- [86] J.Ness, D.J. Cirilla, D.R. Weir, N.L. Nisley and R.B. Wallace, Use of Complementary Medicine in Older Americans: Results From the Health and Retirement Study *GERONTOLOGIST* 45(4) (2004) 516–524.
- [87] NERAC New Perspectives on the Future of Drug Discovery http://www.nerac.com/nerac_insights.php?category=reports&id=7 2008 12/09/2011.
- [88] New York Times, First to File Bill, December 10, 2011, http://topics.nytimes.com/top/news/science/topics/inventions_and_patents/index.html, New York 2011.
- [89] R.N. Noyce, Carrier Generation and Recombination in P-N Junctions and N-P Junctions Characteristics *PROC IRE* 45(9) (1957) 1228–1243.
- [90] R. Phaal, E. O'Sullivan, S. Routley and D. Probert, A Framework for Mapping Industrial

- Emergence TECHOL FORECAST SOC 72(2) (2011) 217 230.
- [91] R. Phaal, J.P.F. Clare and D. Probert, Technology Roadmapping-A Planning Framework for Evolution and Revolution TECHOL FORECAST SOC 71(1-2) (2004) 5 26.
- [92] Population Profile of the United States <http://www.census.gov/population/www/pop-profile/natproj.html> 12/8/2011.
- [93] A. Porter, Forecasting and Management of Technology 2nd ed., Wiley, Somerset, NJ, 2011
- [94] J.A. Poupard and L.A. Miller, Biological Warfare Encyclopedia of Microbiology 3rd ed. 2009 Philadelphia PA.
- [95] M. Pradhan, D.E. Sahn and S. Younger, Decomposing world health inequalities J HEALTH ECON 22(2) (2003) 27.
- [96] S.A. Rathore, Roadmap for Implementation of Quality by Design (QbD) for Biotechnology Products TRENDS BIOTECHNOL 27(9) (2009) 546 553.
- [97] M. Rinne, Technology Roadmaps: Infrastructure for Innovation TECHOL FORECAST SOC 71 (1-2) (2004) 67 80.
- [98] M.C. Roco, Broader Societal Issues of Nanotechnology J NANOPART RES 5 (2003) 181-189.
- [99] M.Roco, C.A. Mirkin, M.C. Hersam, Nanotechnology research directions for societal needs in 2020: Retrospective and Outlook, Springer, New York, New York 2011.
- [100] M.C. Roco, Progress in Governance of Converging Technologies Integrated from the Nanoscale, ANN NY ACAD SCI. 1093, 2006, 1-23.
- [101] A.D. Romig, A.B. Baker, J. Johannes, T. Zipperian, K. Eijkel, B. Kirchhoff, H.S. Mani, C.N.R. Rao and S. Walsh, An introduction to Nanotechnology Policy: Opportunities and Constraints for Emerging and Established Economies TECHOL FORECAST SOC 74(9) (2007) 1634 1642.
- [102] N. Ronald, R. B. Kostoff and G. R. Simons, Disruptive technology roadmaps TECHNOL FORECAST SOC 71(1-2) (2004) 141 159.
- [103] R.M. Satava Virtual Reality and Telepresence for Military Medicine COMPUT BIO MED 25(2) (1995) 229-236.
- [104] J.A. Schumpeter, R. Swedberg, Capitalism, socialism and democracy, 5th ed., Routledge, New York, New York, 1942.
- [105] J.A. Schumpeter, The theory of economic development. Cambridge, Harvard University Press Cambridge, MA, 1937.
- [106] D.H. Shin, Potential user factors driving adoption of IPTV. What are customers expecting from IPTV? TECHNOL FORECAST SOC, 74(8) (2007) 1446 1464.
- [107] JH. Sidney, S.H. Wanzer, S.J. Adelstein, R.E. Cranford, D.D. Federman, E.D. Hook, C.G. Moertel, P. Safar, A. Stone, H.B. Taussig and J. van Eys The Physicians Responsibility toward Hopelessly Ill Patients NEW ENGL J MED 310 (1984) 955 959.
- [108] C. Som, L.M. Hilty and A.R. Köhler, The Precautionary Principle as a Framework for a Sustainable Information Society. J BUS ETHICS 85 (2009) 493 505.
- [109] J.A. Styhre, Institutionalizing technoscience: Post-genomic technologies and the case of systems biology SCAND J. MANAG 27(4), December (2011) 375 388.
- [110] A.J. Tudos, G.A.J. Besselink and R.B.M. Schasfoort, Trends in miniaturized total analysis systems for point of care in clinical chemistry LAB CHIP 1 (2001) 83 95.
- A. Tura, A. Maran and G. Pacini, Non-Invasive glucose monitoring: Assessment of technologies and devices to quantitative criteria DIABETES RES CLIN PR 77(1) (2007) 16 40.
- [111] M. Scott and S. T. Walsh, Commercial importance of a unit cell: nanolithographic patenting trends for Microsystems, microfabrication, and Microsystems J MICROLITH MICROFAB 1(1-6) 11 14.
- [112] W. Shockley, The path to the Conception of the Junction Transistor IEEE ELECTRON

- DEVICE LETT 23(7) (1976) 597 620.
- [113] P.R.Srinivas, P. Baker and S. Srivastava, Nanotechnology in Early Detection of Cancer LAB INVEST 82 (2002) 657 662.
- [114] M. Stebbing, Avoiding the Trust Deficit: Public Engagement, Values, The Precautionary Principle and the Future of Nanotechnology J BIOETHIC INQ 6 (2009) 37 48.
- [115] M. Steward, J.B. Brown, A. Donna, I. McWhinney, J Oates, W.W. Weston, and J. Jordan, The Impact of Patient Centered Care on Outcomes FAMILY PRAC 49(9) (2000)
<http://www.ucdmc.ucdavis.edu/ome/mcrtp/docs/Kravitz%20The%20impact%20of%20patient-centered%20care%20on%20outcomes.pdf> 2011.
- [116] Technology Readiness Levels Handbook for Space Operations,
https://telecom.esa.int/telecom/media/document/TRL_Handbook.pdf Issue 1, Revision 6
 September 2008, J 1/1/2012.
- [117] R. Tierney, R. Harms, A. Groen, H. Stewart, D. Hetherington, M. Luzink, J. Linton, and S. Walsh, Managing Highly Flexible Facilities – An essential complementary asset at risk INTER J ENTREP BEHAV RES (2011) In Press.
- [118] U.S. Clean Air Act <http://www.epa.gov/lawsregs/laws/caa.html> 2011 1/13/2012
- [119] U.S. Department of Health Personalized Health Care <http://www.hhs.gov/myhealthcare> 2008 12/09/2011.
- [120] R.E. Uwe Does the Aging of the Population Really Drive the Demand for Health Care Does The Aging Of The Population Really Drive The Demand For Health Care HEALTH AFFAIR, 22 (6) (2003) 27 39.
- [121] P. Vallance and M. Levick, Drug Discovery and Development in the Age of Molecular Medicine Perspectives CLIN PHARMACOL THER 82(4) (2007) 363 366.
- [122] S. Walsh, Roadmapping a Disruptive Technology: A Case Study: The Emerging Microsystems and Top Down Nanosystems Industry: TECHOL FORECAST SOC 71 (1-2) (2004) 161 185.
- [123] S. Walsh and R. Boylan, C. McDermott and A. Paulson, The Semiconductor Silicon Industry Roadmap: Epochs driven by the Dynamics between Disruptive Technologies and Core Competencies TECHOL FORECAST SOC 72(2) (2005a) 213 236.
- [124] Wylde, J. Walsh, S., etc., (2005), “The International RF MEMS Road map”, pp.122, MANCEF, Naples, Florida
- [125] S. Walsh, R. Giasolli and J. Elders (Eds.), The second edition of the International Micro – Nano Roadmap, 2004, p. 674, MANCEF, Naples, Florida.
- [126] S. Walsh, B. Kirchhoff and S. Newbert, Differentiating Market Strategies for disruptive technologies IEEE T ENG MANAGE 49(4) (2002) 341 351.
- [127] S. Walsh and J. Elders (Eds.), International Roadmap on MEMS, Microsystems, Micromachining and Top Down Nanotechnology, 2003 pp. 614, 2003, MANCEF, Naples, Florida
- [128] S. Walsh, J. Linton, R. Grace, S. Marshall and J. Knutti, MEMS, Microsystems, Micro machines: Commercializing An Emergent Disruptive Technology, in MEMS and MOEMS Technology and Applications, Editor P. Rai-Choudry, SPIE – The International Society for Optical Engineering Development, Billingham, Washington, p. 479 514, 2000.
- [129] S. Walsh and J. Wylde, Ch. 2 RF MEMS 2nd ed., International Micro – Nano Roadmap, p.40-152, 2004, MANCEF, Naples, Florida.
- [130] S. Walsh and J. Wylde, The International RF MEMS Road map, p.122, 2005 MANCEF, Naples, Florida
- [131] S. H. Wanzer, S.J. Adelstein, R. E. Cranford, D. D. Federman, E. D. Hook, C. G. Moertel, P. Safar, A. Stone, H. B. Taussig, J. van Eys, The Physician's Responsibility toward

- Hopelessly Ill Patients, *N Engl J Med* 310 (1984) 955-959.
- [132] J. Weiss, P. Takhistov and D. McClemments, Functional Materials in Food Nanotechnology, *J FOOD SCI* 71(9) (2006) 107 116.
- [133] C.H. Willyard, C.W. McClees, Motorola's technology roadmap process *RES MANAGE* 30(5) (1987) 13 19
- [134] O.E. Williamson, *The Economic Institutions of Capitalism*, Free Press, New York N.Y. 1985.
- [135] J. Wonglimpiyara, The nano-revolution of Schumpeter's Kondratieff cycle. *TECHNOVATION* 25 (2005) 1349 1354.
- [136] World Population Ageing: 1950-2050 United Nations, <http://www.un.org/esa/population/publications/WPA2007/WORLD%20POPULATION%20AGEING%202007.pdf> 12/7/2011.
- [137] World Population to reach 10 billion by 2100 if Fertility in all Countries Converges to Replacement Level http://esa.un.org/wpp/Other-Information/Press_Release_WPP2010.pdf 2011.
- [138] Y. Yasunaga, M. Watanabe, M. Korenaga Application of technology roadmaps to governmental innovation policy for promoting technology convergence *TECHNOL FORECAST SOC* 76(1) (2009) 61 79.
- [139] R.K. Yin, *Case Study Research: Design and Methods* 3rd Ed. Sage Publishers, 2003. A. Zaffaroni, ALZA: An enterprise in biomedical innovation *TECHNOVATION* 1(2) (1981) 135 146.
- [140] Zevalin Information on Zevalin pharmacology <http://zevalin.com/v3/zevalin-rit/index.htm> 2011 12/09/201.
- [141] R. Zoorob and V. Morelli, Disease Prevention and Wellness in the Twenty-first Century *PRIMARY CARE* 35(4) (2008) 663 667.

Section 3

Managing Highly Flexible Facilities An essential complimentary asset at risk

By

Robert Tierney, Aard J. Groen and Rainer Harms
NIKOS, University of Twente, Enschede, The Netherlands
Miriam Luizink
Mesa p , University of Twente, Enschede, The Netherlands
Dale Hetherington and Harold Stewart
Sandia National Laboratories, Albuquerque, New Mexico, USA
Steve T. Walsh
Anderson School of Management, University of New Mexico, Albuquerque,
New Mexico, USA, and
Jonathan Linton
Telfer School of Management, University of Ottawa, Ottawa, Canada

Reproduced with permission of Emerald Group Publishing. Article originally appeared in
International Journal of Entrepreneurial Behavior and Research 2012, Volume 18 Issue 2 pp.
pp. 233-255

Citations presented in accordance to journal requirements

Section 3.1 Introduction

There is a gap in strategic entrepreneurial thought where entrepreneurial action requires crucial external complementary assets (Teece, 1988) which are important to regional economic development based on entrepreneurial action (Walsh and Linton, 2000). The authors add to the body of literature that addresses complementary assets (Hitt et al., 2001; Shane, 2001). We choose small technology (see appendix A) highly flexible facilities (see appendix A) as our critical complementary asset focus.

These highly flexible facilities are critically important for entrepreneurial action and economic development (Linton and Walsh, 2008). Second, these facilities are extremely costly to build and maintain (Van Heeren et al., 2003; Walsh, 2004); costs which far outpace the resource base of even high technology based entrepreneurial efforts. Third, many see small technology as the harbingers and enablers of the next Schumpeterian economic wave (Walsh et al., 2000). Finally, firms based on these technologies are already starting to solve problems in a uniquely valuable manner (Anson et al., 2008; Corbett et al., 2000; Linton and Walsh, 2008; Romig et al., 2007; Thukral et al., 2008).

Yet these small technology highly flexible facilities are at risk. Entrepreneurs, facility managers and policy makers using current management techniques are hard pressed to convey these facilities operational effectiveness and strategic value. Effective strategic and operational management is required to keep these knowledge assets effective (Li et al., 2009). Accomplishing this requires a general understanding of the nature of the small technology based modern production processes. Modern production processes (also called convergent technologies) are progressively more multiple root technology based and are often superseding more traditional solo or single root technology production processes (Eijkel et al., 2006). The modern production process causes operational and strategic complexity.

Current best practice (Bergek and Norrman, 2008) strategic management of these facilities is using traditional single root technology high volume facilities. The results of this practice have not been encouraging and the facilities managers discussions of “doing the right things are not as

compelling due to environmental factors. Several environmental factors are leading to an increased scrutiny of small technology based highly flexible facilities:

1) Semiconductor manufacturing facilities or high volume facilities are moving from the more developed economies of North America and Europe to the emerging economies of Asia (Ernst, 2010; Globalfoundries, 2009).

2) Financing for these facilities is being more harshly scrutinized during a period of economic uncertainty.

3) Small technology facilities are often too costly for any one firm. Increasingly regions are seeking support from governmental bodies (Elders and Walsh, 1999).

4) Small technology facilities have matured from purely research facilities to multi-use facilities with little or no operational scrutiny (Myers et al., 2000; Naughton, 2005).

5) The success of high volume facility metrics management has made metrics management and particular high volume facility metrics the methodology of choice for all facilities (Benson et al., 1995; Sattler et al., 1997).

6) Highly flexible facilities are still perceived by many founders, managers and policy makers as extensions of semiconductor based high volume facilities and they expect to see high volume facility metrics.

We initiate our investigation of these strategic assets by delving into foundational strategic literature, strategic entrepreneurship literature and strategic literature on technology entrepreneurship in particular. We review the theory that supports the current use of metrics. We choose the case study method (Eisenhardt and Graebner, 2007; Yin, 2009) to interact with one high

volume facility and five highly flexible facilities to garner the rich information needed to advance the field. We find that metrics usage is meeting with resistance in highly flexible facilities and when used has limited operational success.

Furthermore, some highly flexible facility managers are so frustrated with their initial use of high volume facility metrics that they simply use none at all. We find that this challenge has produced an environment where managers of highly flexible facilities are not able to effectively use even a minimum common set of metrics, which is seen as International Journal of Entrepreneurial Behaviour & Research problematic. Finally we provide a model for highly flexible facilities managers and stakeholders for metric selection based on both our finding and the literature. We fill a literature gap concerning the strategic action of essential complementary strategic assets. We provide a model that managers of highly flexible facilities can use to express both their facilities strategic value and as a selection criteria for metrics management-based operations.

Section 3.2 Literature Review

The highly flexible facility is important to a variety of stakeholders. To a small technology based entrepreneur it is an essential strategic resource that is most often financially out of reach (Walsh, 2004). To a regional or national policy maker a highly flexible factory is a complementary asset for national policy or regional development (Romig et al., 2007). Here we provide value to the academic and practitioner community by linking the development, sustainability and operations management of this asset to strategic entrepreneurship literature, strategic technology entrepreneurship literature and general strategy literature to further the fields understanding of this issue.

Entrepreneurs derive sustainable competitive advantage from exploiting market gaps (Kirzner, 1997), lower transaction costs (Williamson, 1985) or taking advantage of technological advances (Spencer et al., 2008). Strategic entrepreneurship has many and often competing strategic perspectives (Hitt et al., 2011). While researchers in these fields demonstrate different perspectives of thought on just how to create sustainable competitive advantage, most of them highlight the

importance of innovation (Ireland and Webb, 2007). Complementary assets like highly flexible facilities find strategic value for firm renewal, sustained regeneration, domain redefinition, organizational rejuvenation and business model reconstruction (Covin and Miles, 1999). We integrate strategic entrepreneurship to general strategy by focusing on the internal and external environment of the venture from a technological point of view (Kuratko and Audretsch, 2009).

We choose the objective rather than the normative approach to strategy, since the normative approach of prescribing metrics that worked in one arena to another is fundamental source of contention of managers of highly flexible facilities (Mintzberg, 1994). We have taken an inside out” strategic perspective and chosen the competency (Prahalad and Hamel, 1990) over the Resource Based (Barney and Wright, 2001) perspectives due to its relatively larger emphasis on technology (Katzy and Crowston, 2008; Nath et al., 2010; Terziovski, 2010). The competency perspective highlights technology, production skills, and their associated management practices as the core of competitive advantage. Furthermore, the resource based strategic perspective has been found lacking when considering either new competition or industry drivers that offer competitive advantage in dynamic markets (Saarenketo et al., 2009). As highly flexible facilities are essentially technology-based, the competence perspective (Walsh and Linton, 2011) with its focus on technology and its management is a superior fit for our research.

Technology and its management is of critical importance to a competence perspective of strategy. To remain competitive, most firms must continually acquire and/or develop new skills (Linton and Walsh, 2004). Highly flexible facilities are the source of these manufacturing and technology development-based complementary assets in small technology. To date the much of the strategic entrepreneurship literature on innovation has focused on an organization characteristics (Damanpour, 1996). We seek to expand this through the competency perspective. We operationalized the competency based perspective through the industry standard metrics approach.

Metrics can condition data into useful and compact information that is easily assimilated (Pich et al., 2002). Further, researchers have suggested that the selection of metrics must be tied to the strategic imperatives of a firm or facility to attain maximum utility (Drongelen-K. and Bilderbeek,

1999). Foundational metrics management suggests that metrics must be tied to the product and process metrics mix of a facility (Corderoal., 2005; Hayes and Wheelwright, 1979). Metrics management is the standard for the highly successful management of high volume semiconductor facilities. Due to the outward similarity between these facilities and highly flexible small technology facilities they have been directly applied. The same set of metrics are unlikely to be applicable to both extremes (Hayes and Wheelwright, 1979).

Research on semiconductor based high volume facilities show that wafer starts or the amount of material initiated into a process and the associated total system yield are the most important facilities management metrics (Sattler and Schlueter, 1998). Metrics management has pushed these high volume facilities towards automation wherever possible (Goldratt and Cox, 2004). Yet as change and innovation become important the lot move” metric or the movement of one batch process quantity to the next process step becomes the more important management metric (Goodall et al., 2002). Highly flexible facilities introduce change on many more dimensions and emphasize skilled labor knowledge (Comerford, 1993). The fundamental difference between these two types of facilities provides us with a starting point for the development of an effective management model for highly flexible facilities.

3.2.1 Highly Flexible Facilities

The term Multi-technology High Mix Low Volume facility (MTHMLV) was introduced to define high volume semiconductor flexible facilities (Myers et al., 2000; Naughton, 26 2005). The authors have further simplified this acronym through the addition of small technology to create the term highly flexible facility. Both our effort and the earlier work show that the workflow varies greatly between highly flexible facilities and high volume facilities and further states that operational or strategic metrics must mimic the needs of the facility.

The highly flexible facility now includes the new tasks of research and development, product and process maturation, innovation, and design validation (Pich et al., 2002). It is based on not simply semiconductor processing technology but nanotechnologies and micro electro mechanical

systems as well. High volume facilities and highly flexible facilities differ greatly in operation and strategic value.

3.2.2 High volume facilities metrics

Metrics management in semiconductor high volume facilities management became recognized as semiconductor surface process technologies became the dominate manufacturing semiconductor process in the late 1950 (Kilby, 2001). Today, most semiconductor products are silicon based, produced by a semiconductor surface modification process and fall into well- defined product areas (ITRS, 2008). The semiconductor industry produces well over \$261.2 billion in commercial devices annually, and its devices are found in products affecting nearly every aspect of our daily life (SIA, 2008). Despite this success, the number of semiconductor micro fabrication facilities worldwide is shrinking.

Here we limit the our metrics investigation to the high volume facilities materials to device manufacturing even though those of packaging a device (often called back end) are important. We build on semiconductor metrics classification schemes (Sattler and Schlueter, 1998). We do so by separating these metrics into two segments. Those focused on the entire process which we name "global" metrics and those focused on a single process steps which we name "local" metrics (Limanond et al., 1998).

3.2.3 High volume facility global metrics

Many global high volume facility metrics focus on productivity and yield (Goldratt and Cox, 2004). We provide a selected list of high volume facility based global metrics in table 1 below as foundations of thought. First, we will discuss the utility of high volume facilities yield and wafer start metrics for highly flexible facility management. Next, we will address the utility of Cycle Time (CT) or the time it takes to complete an entire process and Work in Process (WIP) measures (Montoya-Torres, 2006). Finally, we discuss high volume facility management practices centered on information sharing, simulation automation, clustering and facilities upgrade below.

High volume metrics such as entire process yield and the amount of material that initiate the

process or “wafer starts” which was developed through benchmarking techniques (Benson et al., 1995) and are key performance measures. This was further linked to the facility as it approached capacity (Leachman and Hodges, 1996). These metrics become important for highly flexible facilities by adding product mix and the required number of process steps (Sattler et al., 1997). For these types of measures to be useful in highly flexible facilities, the product mix as well as facility activity mix would have to be much more emphasized. Finally production process speed (cycle time) measures are essential to high volume facility operation management (Montoya-Torres, 2006) and many of these focus on traditional bottleneck processes (Bonal et al., 1996; Fallon et al., 1995; Sattler and Schlueter, 1998).

A global metric centered on process speed is found in the process step named lithography (Jacobs et al., 2001). Process step limitations to throughput is not overcome by simple process station redundancy but rather by understanding the scope of each processes or task required (Dietrich, 2004; Maynard et al., 2003) especially in highly flexible facilities. Yet most process time metrics other than lot moves have limited theoretical backing.

We next discuss metrics derived from computer-aided efforts. Many of these applications hold promise for highly flexible facilities due to the nature of parameters. For example, modeling is used to define bottlenecks for high volume facilities and modifications to this process can make it applicable to highly flexible facilities (Guidi et al., 1999). Further Mozumder and Loewenstein (1992) discussed the focus change in a re-facilitation. He described transitioning from one size of materials input material to another (Wu, 2002). This is especially important for highly flexible facilities since many centers are older semiconductor facilities, which have been refocused.

Computer aided metrics efforts focused on process step manufacturing tool clustering and re-clustering metrics (Goodall et al., 2002) have great potential application in highly flexible facilities do to their need for process scope. Further, computer aided decision tool metrics for high volume facilities failure analysis (Wagner, 2001) have potential for highly flexible facilities. Finally, the exploration of limiting information flow to workers in high volume facilities (Ishii and Watanabe, 2002) is simply not useful for the knowledge worker required in highly flexible facilities.

Table 3.1: High Volume Facility Global Metrics

Author	Characteristics	Analytical Technique
Maynard <i>et al.</i> (2003)	Yield	Project Costs
Sattler <i>et al.</i> (1997)	Yield/Wafer starts vs. cap	Ranking
Benson <i>et al.</i> (1995)	Wafer Starts Capacity	Factory performance
Leachman and Hodges (1996)	Product Mix	Benchmarking
Sattler and Schlueter (1998)	WIP/Wafer starts	Case Study
Fallon <i>et al.</i> (1995)	WIP	Case Study
Bonal <i>et al.</i> (1996)	WIP	Equipment efficiency
Ishii and Wantanabe (2002)	Control Information	Case Study
Wu (2002)	Control 300/450 comparison	Case Study
Goodall <i>et al.</i> (2002)	Control Fab tool cluster setup	Manufacturing cost
Jacobs <i>et al.</i> (2001)	Cycle time Management	Case Study
Dietrich <i>et al.</i> (2004)	Cycle time Management	Case Study
Montoya (2006)	Cycle time Management	Case Study
Wagner (2001)	Failure analysis	Case analysis
Guidi <i>et al.</i> (1999)	Simulation and automation	Modeling
Mozumber and Loewenstein (1992)	Simulation and automation	Modeling

3.2.4 High volume facility local metrics

The complexity in highly flexible facilities is defined by the distinct natures of their three main technology and the scope of very different tasks. High volume facilities complexity is defined by products produced by a large number of repetitive tasks. High volume facilities performance originate at the process step level. Semiconductor based high volume processes routinely achieve overall yields of over 90% meaning the process steps must yield nearly perfectly (Appleyard and Brown, 2001). We provide a selected group of four types of local metrics that are either potentially important to high volume facilities in Table 2 below.

Even though less than 10% of the production cost of any high volume facility are labor costs, the cost is of concern (Appleyard and Brown, 2001). This has driven high volume facilities to embrace automation at some level (Croft et al., 2001). These authors discuss theoretical labor intensive versus automated facility crossover point but the nature of highly flexible facility is that is

knowledge intensive and not a very attractive managerial tool for highly flexible facilities.

Another set of local metrics is temporal in nature and refers to the number of process steps that can be done in a given period of time (Herrmann et al., 2000). A better temporal metric for highly flexible facilities is how long it takes a specific tool to be reset for differing layer thicknesses and exposure times and from that to process step contribution to overall process flow time (Meyersdorf and Yang, 1997) and its link to facility ofitability (Foster and Nugent, 2000).

The third group of local metrics is process step yield uniformity. Incoming material at each process step in both the highly flexible small tech facilities and semiconductor high volume facilities can yield differently due to the position of the material when it is processed. The capital equipment chosen to be used in high volume facilities are those that show the least position variability (Mozumder et al., 1994; Smith et al., 1999). Similarly high volume facilities select process step facilitating capital equipment based on reinvestment (Miller, 2004), process step capital equipment lifetime measures, specificity of the process step capital equipment (Kim and Lee, 2003; Limanond et al., 1998) and process step capital equipment contribution to maintenance (Hallas et al., 1996). Highly flexible facility managers choose process step capital equipment for their process scope rather it exceptional process step throughput at one particular process setting making these measure not easily transferable to their needs.

Table 3.2: High Volume Facility Local Metrics

Author	Characteristic	Analytical technique
Appleyard and Brown (2001)	Labor usage	Case Study
Croft et al. (2001)	Labor	Case Study
Meyersdorf and Yang (1997)	Tool usage	Temporal
Konopka and Trybula (1998)	Tool usage	Temporal
Foster and Nugent (2000)	Tool usage/ WIP	Temporal
Mozumber <i>et al.</i> (1994)	Wafer uniformity	Yield
Smith et al. (1999)	Wafer uniformity	Yield
Herrmann et al. (2000)	Simulation and automation	Modeling
Hallas <i>et al.</i> (1996)	Tools	Cost
Miller (2004)	Tool utility	Cost
Limanond <i>et al.</i> (1998)	Tool utility	Cost
Kim and Lee (2003)	Tool utility	Cost

3.2.5 Innovation and Research & Development metrics

Highly flexible facilities act as engines of innovation and entrepreneurial action (Kautt et al., 2007). They provide entrepreneurs and intrapreneurs with new product and process creation capabilities, the ability to perform proof of concept evaluation and the ability to provide experimentation at the interface of converging technologies (Walsh et al., 1996). These tasks diverge greatly from the traditional high volume facility since they simply do not perform these functions. They are much more in line with the strategic and tactical roles found in R&D and commercial development departments of a firm (Michelin and Berg, 1985). Here the authors investigate R&D and innovation based metrics to ascertain their value for inclusion in the highly flexible facility management metrics package.

We provide in table 3 a review of potentially relevant metrics from the innovation, entrepreneurship and R&D literature. We categorize them as decision-making, product and applications, or process focused. We start by recognizing that innovation management has utilized decision making metrics for many years (Abby and Dickson, 1983; Harms et al., 2010; Matzler et al., 2008). Highly flexible facilities need to convey their value by demonstrating their innovation volume and decision making (Adams et al., 2003) and R&D facility activities (Meyers et al., 1997). The focus of a R&D based innovation center is to transfer knowledge, re- invent the corporation, provide new technology product platforms and make existing technology product lines better, faster, and cheaper (Walsh et al., 1996). The idea of parallel metrics centered on R&D and marketing (Chen et al., 2007) is an essential set of metrics for managers of highly flexible facilities to convey their strategic value. Another important metric set that provides information to stakeholder concerning the strategic value of the facility are innovation metrics (Schumann et al., 1995; Szakonyi, 1994) and those used to convey firm performance (Baglieri et al., 2001) and system design (Chen and Han, 2006; Mihm et al., 2003). The link between innovation and R&D funding and increased market dominance has been shown (Ofek and Sarvary, 2003). Yet each highly flexible facility will have differing goals. Multiple objective and subjective methods for applied metrics in innovation, product development and R&D situations (Werner and Souder,

1994). Metrics sets for facilities focused on research development or engineering (Hauser and Zettelmeyer, 1997) are important for highly flexible facilities.

Table 3.3: Innovation and R&D Metrics

Author	Characteristic	Analytical technique
Ptich <i>et al.</i> (2002) Kerrsen van Drongelen and Bilderbeek Abby and Dickson (1983) Adams (2003)	Choosing metrics Decision making Metric application Metric application	Operational Operational Operational Operational
Meyers <i>et al.</i> (1997) Chen <i>et al.</i> (2007)	R&D Parallel R&D projects	Core competence Strategic
Szakonyi (1994) Schumann <i>et al.</i> (1995) Werner and Sounder (1994) Hauser and Zettlmeyer (1997) Ofek and Sarvary (2003)	Metrics evaluation Metrics evaluation Combining metrics R&D/engineering R&D investment	Process evaluation Process evaluation Case Study Core Competence Case Analysis
Baglieri <i>et al.</i> (2001)	R&D performance	Stakeholder value creation
Mihm <i>et al.</i> (2003) Chen and Han (2006)	System Design Data Envelopment Anaylsis	Manufacturing throughput R&D performance

Section 3.3 Methodology

We employ a case analysis methodology to generate an understanding of the differing imperatives, nature and metric utilization between small technology based highly flexible facilities and semiconductor high volume facilities. We limited facility selectivity bias by selecting highly flexible facilities identified in other studies (Kautt *et al.*, 2007) with differing objectives. We choose a top ten semiconductor based high volume facility to partake in the study. We had 5 responses in the affirmative and we interviewed more than one manager at each facility. They list of professionals included a facility manager, director, or vice president. Finally we reviewed all secondary data sources and facilities information to triangulate the data. We utilize the case method to investigate not only differences between high volume facilities and highly flexible facilities but also the differences among highly flexible facilities. We have utilized Yin (2009) and Eisenhardt (2007) case study techniques to interview firms, obtain secondary information and analyze these facilities through in depth interview observations and secondary data. We provide a summary of the findings in Table 4. We further our case study by administering a structured survey to all five firms

(Fowler, 2002). The survey probes each firm's metric utilization, and we provide the results in Table 3.5 .

3.3.1 Characteristics of highly flexible facilities

Our case study analysis focused on 21 characteristics of highly flexible facilities. These characteristics range from basic technologies to more specific subjects such as the degree of automation in the facility. We derived these characteristics by attending conferences focusing on small tech, reviewing a series of small technology industry roadmaps and reviewing a number of articles (Eijkel et al., 2006; Walsh, 2004). All highly flexible facilities in this study are small technology based and two were in the United States and two were from different countries in Europe. The semiconductor high volume based facility was in the United States. We segmented these characteristics into four groups. The first group is the number and nature of technologies in use in a particular facility. The second group deals with the number and difference in products offered. This measure includes the number of products, processes developed, innovation efforts embraced and research efforts undertaken at a specific facility. The third group of characteristics was designed to understand facility utilization and includes measures such as number of incoming material or wafer starts and determines both facility and capital tool process step capacity and utilization. Finally, the fourth group includes measures such as metric usage, capital tool process specific availability, number of operations decisions which require lot movement holds, number changes in process steps which require capital equipment setup changes, process step capital equipment scope and amount of automation in a particular facility.

We initiate the discussion with group I characteristics. Here we focus on three small technology at forms of semiconductor microfabrication, MEMS and nanotechnology. A facility is said to have a semiconductor micro fabrication capability if it has a bipolar or CMOS front-end process. A facility having MEMS capability has a full front-end process for one of the three types of MEMS process basis (sacrificial surface, bulk silicon micro-machining or high aspect ratio MEMS, Walsh, 2004). A facility is said to have a nanotechnology process if they have a bottom up

or top down nanotechnology capability. This allows us to illustrate the differences between highly flexible facilities.

The results of our investigation are found in the first three rows of Table 4 below. We follow with a review of our group II characteristics. We investigated facility operations as manifested by a number of different characteristics: They are: products produced at a single facility; the amount of research versus product production lot starts; the number of processes run; the number projects completed; the inclusion of an innovation mission; and the inclusion of a research mission at a given facility. We also depict each firm's group three characteristics and place them in rows ten and eleven. These rows categorize each facility's wafer starts and tool capacity. The final nine rows of table 4 refer to our group 4 firm characteristics and are much more facility specific.

3.3.2 The results of characteristics review

These results are found in rows four through nine in Table 4 below. There are major differences between the five facilities we reviewed. When looking at group one characteristics, for example, all of the highly flexible facilities have three major technology platforms whereas the high facility has one technology platform. When examining group 2 characteristics the difference between highly flexible and high volume facilities are stark. The number of products these facilities produce range from fifty to hundreds. Further, there exists a slight but noted difference in relative use of the facility for production versus research.

Table 3.4: Case Study Results

	MTPF1	MTPF2	MTPF3	MTPF 4	HVF
Group 1					
Nanotechnology	Yes	Yes	Yes	Yes	no
Semiconductor	Yes	Yes	Yes	Yes	Yes
Microsystems	Yes	Yes	Yes	Yes	no
Group 2					
Number of Products	>100	50-100	20-70	50	2
Research vs. production lots	Unknown	30% to 50%	50%	40% to 60%	0%
Innovation	High	High	High	High	Low
Mission					
Research	Yes	Yes	Yes	Yes	No
Mission					
Processes	Yes	Yes	Yes	Yes	Yes
Project completion	Yes	Yes	Yes	Yes	No
Group 3					
# of starts/yr.	<10000	<1000	<2000	<5000	>50000
Capacity use	Low	Low	Low	Low	High
Group 4					
Tool availability	Yes	Yes	Yes	Yes	No
Engineering	Yes	Yes	Yes	Yes	No
Holds	Yes	Yes	Yes	Yes	Yes
Metrics	0 to 2	0 to 2	1	2	5+
Global metrics	5	16	5	3	16+
Local metrics	Yes	Yes	Yes	Yes	No
Lots moves	High	High	High	High	Low
Changes in tool setup	Low	Low	Low	Low	Yes
Tool					
redundancy	High	High	High	High	Low
Tool Scope	High	Low	Low	Low	
Automation					

We found differences between high volume facilities and highly flexible facilities when we viewed group III characteristics responses from the five facilities. Further, there are significant differences among the highly flexible facilities as well. The nature of highly flexible facilities demands flexibility in selecting and designing metrics. Highly flexible facilities have from 10,000 to considerably less than 1,000 wafer starts per year. Finally when analyzing group 4 facilities characteristics we see an extreme difference between high volume and highly flexible facilities. There are also significant differences between the highly flexible facilities. Highly

flexible small technology based facilities are characterized by three separate root technologies and their convergence increase production line complexity and generates significant tool compatibility and flexibility issues.

This creates a work environment where process step capital tool scope rather than its efficiency becomes the dominant concern. Further, all high volume facilities use some form of metrics, including many that are tool based or local metrics. A recurring theme in all the highly flexible facilities was the view that a global wafer starts metrics, so important for high volume facilities, provided them no or little value. Finally, lot moves, usually not seen as exceptionally important for high volume facilities, were seen as providing exceptional value to the operation of highly flexible facilities. The highly flexible facilities are focused on just that – flexibility –, rather than standard product manufacturing efficiency found in their high volume facilities. Highly flexible individual processing steps are just as critical as those in high volume facilities but integration measures take on new dimensions. For example, MEMS process times are often longer due to their use of silicon and other materials in both a structural and electrical manner rather than just electrical as in high volume facilities. Finally, the very nature of structural material changes in a bottom up nanotechnology provide process complexity issues never encountered in a high volume facility.

Our case study analysis demonstrates that the very nature of high volume facilities is exceptionally different from high volume facilities. Competency based strategic management and metrics theory tells us that the strategic management practice of technological varied firms should be different and that the simple transference of metrics would prove ineffective. More interestingly we found a great diversity of mission, scope and process activities within highly flexible facilities, a characteristic we did not expect to find. We decided to further our understanding of highly flexible facilities through a directed questionnaire. We developed the questionnaire using a rigorous questionnaire protocol to more deeply understand their utilization of metrics (Fowler, 2002).

3.3.3 Questionnaire development

We developed a metrics based questionnaire with 16 queries based on our research on metrics, the definition of a high volume semiconductor facility and the definition of a small technology based highly flexible facility and the nature of the highly flexible facility which we developed in our literature review. All five facilities in our study responded. All of the respondents and their firms remain anonymous due to the International Journal of Entrepreneurial Behaviour & Research sensitivity of their work assignments. We provide our survey results in our results section below. The first question served as a general introductory inquiry into the subject of metrics in highly flexible facilities as well as the high volume facility. The second question was developed to investigate the origin of highly flexible facility metrics. Specifically the degree to which these managers see them as highly borrowed from the high volume facilities. The third question inquired into the percentage of high volume facility metrics that had relevance to their particular situation. Question four focuses on actual metric use and their effectiveness for the efficient operation of their facilities.

The next set of questions was designed to introduce the concepts of global and local metrics. We asked the respondents through question five if the facilities used both global and local metrics as we defined them and question number six asked if high volume facility metrics emphasized wafer moves. Question seven queried the facility use of lot moves or how many times a unique start material set or lot is moved in a given facility. Question eight asked if high volume facilities metrics focused on a single process and question nine dealt with high volume metric use and technology experimentation. Questions ten and eleven were used to ascertain information about highly flexibility facilities strategic intent and the need for new metrics around these concepts for them. The next question (question 12) was a departure from the previous style of inquiry. Each individual was asked to pick from a list or provide examples of metrics they used that are non-traditional and used in their facility. Question 13 asked the respondents if their global metrics were of use and question 14 asked them to express the number of global metrics

they used. Similarly question simply asked the respondents if they used local metrics were of use and questions asked them to express the number of local metrics they used. We provided our respondents with our definitions of global and local metrics.

Section 3.4 Results

The results are found in Table four. Four out of the five entities responded to the first question strongly agreed that the use of metrics is an enormous benefit to the management of the facility. The lone stand out was neutral in the subject area and came from a highly flexible facility. All respondents to the second question stated that they agreed that the metrics for highly flexible small technology based facilities were derived from semiconductor high volume facilities. The response to question three of if these high volume facilities metrics applicability varied. Two highly flexible facility respondents stated that the percentage of high volume facility metrics that were useful ranged from 0 to 25%. The other two highly flexible facility respondents answered with 26% to 50% and 51% to 75% respectively.

The fourth question focused on metric value. Three of the highly flexible facility respondents stated that they strongly believed little value was gained from their use, one highly flexibility manager responded with a statement that any metrics were better than no metrics at all and the high volume facility manager was quite pleased with their use. The facilities managers responded to question five and six concerning the use of both global and local metrics and high volume use of wafer moves in exactly the same manner. Four individuals strongly agreed with the statement, with one individual disagreeing. All respondents to question seven, the utility of lot moves agreed or strongly agreed that lot moves were viewed as a better performing metric than wafer moves in highly flexible facilities. All five respondents either agreed or strongly agreed that high volume metrics being focused on a single process (question 8) and further that they stifled innovation (question 9).

All respondents to question 10 agreed strongly that the strategic intent of highly flexible facilities is vastly different from that of a high volume facility. Similarly the managers response to

question 11 or the need for new operational and strategic metrics was strong with three out of the four agreed strongly and the fourth individual agreeing. The nontraditional metrics usage question provided a variety of responses. The first highly flexible facility manager reported that lot moves and the number of multi-technology based products were how their center measured performance. This was echoed by another respondent who also mentioned lot moves, but added that process steps metrics were also important. The third respondent sought percent of facility capacity usage as a metric. The fourth respondent answered that patents and the number of research papers produced was a principal metric for the organization. The high volume facilities manager response was that wafer starts and yield are the most important metrics.

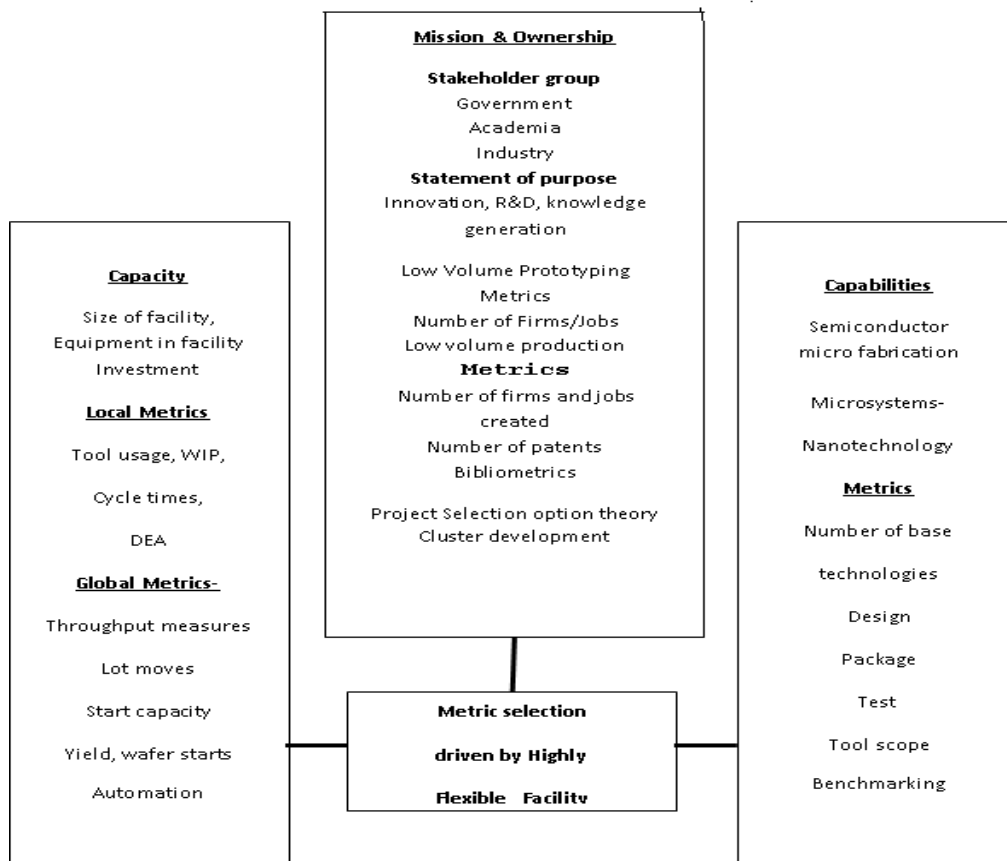
The respondent's answers to question 13 and 15 were that they all indicated that global and local metrics were important if not as a management tool then as a reporting tool. Similarly the answers to questions 14 and 16 were identical. The high volume facility manager responded that they used metrics in almost all of their management practice but less than 10 key ones for both global and local metrics. Three of the four highly flexible facilities managers responded that 0 to 2 global metrics were used and 0 to 2 local metrics were used. Only one highly flexible facility used 3 to 5 global and local metrics.

Very few global or integrated process metrics are being used by those interviewed with the exception of the high volume facility, yet they all state a necessity for one that is accurate. Most suggested that highly flexible facility metrics should focus on lot moves. All five stated once more that they employ local or tool based metrics. Two of the fabrication facilities stated they utilized local metrics. One of the individuals interviewed listed the number of papers that are published and the patents that are applied for as their global metric. This is in direct contrast to the last question of whether or not global metrics would benefit the highly flexible facilities and their stakeholders. We have shown that these types of facilities are different by nature and require different metrics to operate efficiently. Further, we have shown that a great variety of metrics exists that can be applied to highly flexible facilities. Next we have synthesized a metrics model for highly flexible facilities.

Section 3.5 A metrics selection model for highly flexible facilities

Our literature review and case study finding suggests a metrics model that allow for selectivity from a general set of metrics that could meet the diverse needs of a small technology based highly flexible facility. We provide groupings of specific metrics designed to directly support the managerial requirements generated by the missions and capabilities of small tech highly flexible facilities in our selection model. The model is designed to assist these facilities to accurately assess, operationally utilize and present their strategic effectiveness. Our model is founded on the separation of manufacturing facilities into distinct categories. The model is selective in nature to mimic the differing missions and technologies employed by each highly flexible facility (Hayes and Wheelwright, 1979). We have provided a three factor approach based on mission focus, capability (competence) scope, and capacity (figure 1).

Figure 3.1 Metric Selection Model



We operationalized mission by the facilities inherent nature (Hayes and Wheelwright, 1979). The mission metric selection is at the top of the model. We develop a set of metrics that can assist managers to demonstrate strategic value of the facility through a variety of innovation and R&D metrics that speak to both facility mission and stakeholder value.

The tasks of the highly flexible facility often include: increased innovation, knowledge generation, R&D, prototyping, and low volume production. We individually operationalize these factors. We use bibliometric measures as the metric for R&D, knowledge generation and innovation. The bibliometric metrics are innovation awards, journal articles, citation rates and licenses. Further some highly flexible facilities are tasked with low volume product production which is usually tied to a specific stakeholder group. Here we utilize capacity measures. Finally, most ownership is focused on regional development, job and wealth creation. Here metrics are for example number of employees, firm attraction and spinouts. We next turn our attention to capacity. We operationalize capacity through a portfolio capacity and complexity approach.

Wafer starts are important for these facilities and bounded by complexity. The portfolio would be different for each highly flexible facility and include activities such as parts produced, processes developed, inventions and papers developed. Local capacity metrics are based on modified high volume facility metrics. These metrics must include tool change set up time included in tool usage, as well as process flow metrics such as work in process. For the global metric capacity segment some facilities might use wafer starts but lot movers is the most important element.

The final aspect to model is capabilities and highly flexible facilities operate the three small technologies root technologies such as semiconductor fabrication, MEMS and nanotechnology. Each of these base technologies is similar, but unique in their approach to metrics. Here we considered the metrics for design, packaging and testing as can be seen from figure 1.

Section 3.6 Discussion and conclusions

Building upon the current literature, we examined the differences in metrics for these

outwardly similarly but vastly different complementary asset based facilities. Most of the metrics in place now at highly flexible facilities are based upon those historically used by high volume facilities. While these metrics work well under the automated processes that are universally used in semiconductor based high volume facilities, they do not fit the essential needs for small tech based highly flexible facilities. Given the information that was gained from the questionnaire, highly flexible facility managers prefer to use lot moves as the primary metric in their facilities. Further, there is no misuse of high volume facility metrics in highly flexible facilities they simply do not fit the needs of highly flexible facilities.

We have shown the metrics derived from high volume semiconductor based facilities retard the effectiveness of these facilities. The uses of these metrics are actually putting these facilities at greater risk of being eliminated in today's climate. We have shown how metrics literature can be used to operationalize strategic entrepreneurial action. We have also provided a basis for a metrics selection model for small technologies based highly flexible facilities.

This work provides the basis for the development of new metrics based on innovation and R&D metrics to depict highly flexible facilities strategic value to stakeholders. Moreover this work suggests the modification of some global and local high facility metrics for capacity, mission and capability measures, and sets a direction for new metric development.

All respondents mentioned that the current set of metrics in use today actual hampers the innovation portion of many highly flexible facilities mandate. Their use inhibits the core mission of highly flexible facilities. Finally, that direct implementation of high volume facility metrics do little to assist highly flexible facility management in reaching either their strategic or operational goals or foster poor operations management.

The authors seek to assist in the effective management of highly flexible small technology based facilities. They are an essential complimentary asset for both regional economic development and entrepreneurial action. They are the potential harbingers and underpinnings of the next generation Kondratieff wave and due to current management measures and the economic climate they are at risk. This article is the harbinger for future investigation into the area of

metrics for critical complementary assets necessary for entrepreneurship and regional development. Our limitations are associated with the limitations of a case study approach. The next step would be an empirical test of our model.

Table 3.5 Definitions and acronyms

Readability term used	Industry term and definition for this paper	Common acronym in use or in literature
Facility	Refers to a production facility	Foundry
Small technology	A grouping term Referring to nanotechnology, semiconductor microfabrication, microsystems or micro electro mechanical systems	Microfabrication, Nano, MEMS
Highly flexible facilities	A grouping term that refers in this paper to facilities that perform semiconductor fabrication, nanotechnology, and micro electro mechanical systems. These facilities are characterized by low volume production as well as research, product and process development.	The two acronyms in use for these foundries are: MTPF (Multi-technology Production facilities) MTLVHM (Multitechnology, Low Volume, High Mix facilities or foundries)
High Volume facilities	This designation is for high volume foundries with single technology single Product focus	The two acronyms that are in common use are: HVF (High volume facility) HVSF (High Volume Semiconductor foundry or facility)
Cycle time	The time it takes a product to go through a complete process	CT
Work in process	Work in process is the status of any product as it progresses through a process	WIP
Complementary metal–oxide–semiconductor (CMOS)	The dominant classification of surface semiconductor processing. In this group of processes are HMOS, DMOS and others	CMOS
Bipolar	One of two dominate classifications of surface semiconductor process. It has been increasingly supplanted by CMOS	Bipolar

This paper has both academic and practitioner utility. We have utilized terms design for reader retention and flow. However some policy makers, industry strategist and some academics will be more familiar with these more precise terms

Section 3.7 References

- Abby, A., and Dickson, J. (1983), "R&D work climate and innovation in semiconductors", *Academy of Management Journal*, Vol. 26 No. 2, pp. 362-368.
- Adams, J. D., Chiang, E. P., and Jensen, J. L. (2003), "The influence of federal laboratory R&D on industrial research", *Review of Economics and Statistics*, Vol. 85 No., pp. 1003- 1020.
- Anson, S., Kautt, M., Walsh, S. T., and Bittner, K. (2008), "Academic infrastructure and competence centers for a potentially evolving nano-manufacturing industry", *International Journal of Technology Transfer and Commercialization*, Vol. 7 No. 4, pp. 436-455.
- Appleyard, M. M., and Brown, C. (2001), "The influence of employment practices on manufacturing performance in the semiconductor industry", *Industrial Relations*, Vol. 40 No. 3, pp. 436-471.
- Baglieri, E., Chiesa, V., Grando, A., and Manzini, R. (2001), *Evaluating intangible assets: The measurement of R&D performance*. Research Division Working Paper No. 01-49, Milano.
- Barney, J., and Wright, K., Jr. (2001), "The Resource-Based View of the Firm: Ten Years After 1991", *Journal of Management*, Vol. 27 No. 6, pp. 625-641.
- Benson, R. F., Cunningham, S. P., and Leachman, R. C. (1995), "Benchmarking manufacturing performance in the semiconductor industry", *Production and Operations Management*, Vol. 4 No. 3, pp. 201-216.
- Bergek, A., and Norrman, C. (2008), "Incubator best practice: A framework", *Technovation*, Vol. 28 No. 1-2, pp. 20-28.
- Bonal, J., Ortega, C., Rios, L., Aparico, S., Fernandez, M., Sanchez, A., and Malvar, S. (1996), "Overall Fab Efficiency," paper presented at the Advanced Semiconductor Manufacturing Conference IEEE, 1996.
- Chen, C., and Han, L. M. (2006), "Using DEA to evaluate R&D performance in the integrated semiconductor firm", *International Journal of the Computer, Internet and Management*, Vol. 14 No. 3, pp. 50-59.
- Chen, H., Chen, J., Li, S., and Wei, Z. (2007), "Double dimension control method for performance measure on R&D process", *Wireless Communications, Network and Mobile Computing*, pp. 6209-6214.

Comerford, R. (1993), "Flexible factory: case studies", IEEE Spectrum, Vol. 30 No. 9, pp. 28-29.
Corbett, J., McKeown, P. A., Peggs, G. N., and Whatmore, P. (2000), "Nanotechnology:

International Developments and Emerging Products", Manufacturing Technology, Vol. 49 No. 2, pp. 523-545.

Cordero, R., Walsh, S., and Kirchhoff, B. (2005), "Motivating performance in innovative manufacturing plants", Journal of High Technology Management Research, Vol. 16 No. 1, pp. 88-99.

Covin, J. G., and Miles, M. P. (1999), "Corporate entrepreneurship and the pursuit of competitive advantage", Entrepreneurship Theory and Practice, Vol. 23 No. 3, pp. 47-65.

Croft, T., Toeante, H., and Baker, T. (2001), "Labor Modeling in a dynamic environment," paper presented at the Semiconductor Manufacturing Symposium, 2001 IEEE International, 2001.

Damanpour, F. (1996), "Organizational Complexity and Innovation: Developing and Testing Multiple Contingency Models", Management Science, Vol. 42 No. 5, pp. 693- 716.

Dietrich, J. M. (2004), "Life cycle process management for environmentally sound and cost effective semiconductor manufacturing," paper presented at the International Symposium on Electronics and the Environment (ISEEÆ04), Scottsdale, AZ, 2004.

Drongelen-K., I. C., and Bilderbeek, J. (1999), "R&D performance measurement - More than choosing a set of metrics", R&D Management, Vol. 29 No. 1, pp. 35-46.

Eijkel, K., Knol, E., and Walsh, S. (2006), Converging Technologies: Architectural Innovation in Perspective, STT, Den Haag.

Eisenhardt, K. M., and Graebner, M. E. (2007), "Theory building from cases: Opportunities and challenges", Academy of Management Journal, Vol. 50 No. 1, pp. 25-32.

Elders, J., and Walsh, S. (1999), " "TMP" Total Micro Products B.V.", Groen, A. (Ed.) Micro-Electro-Mechanical-Systems Company in Commercializing Knowledge: Examples of Entrepreneurship at the University of Twente, University of Twente, Enschede, pp. 51-54.

Ernst, D. (2010), "Why is Chip Design Moving to Asia? - Drivers and Policy Implications," <http://www.nishogakusha-u.ac.jp/pdf/session2/01.pdf>. (Accessed 19.12.2010).

Fallon, M., Walton, A. J., Newsam, M. I., Axelrad, V., and Granik, Y. (1995), "Integration of costing, yield and performance metrics into the TCAD environment through the combination OF DOE and RS," paper presented at the International Symposium On Semiconductor Manufacturing, 1995.

Foster, J., and Nugent, T. (2000), "Implantation of best known methods," paper presented at the Advanced semiconductor manufacturing conference IEEE/SEMI, 2000. Fowler, F. J. (2002), *Survey Research Methods*, Sage, Newbury Park, CA.

Globalfoundries (2009), "Global Foundries Breaks Ground on Worlds Most advanced Semiconductor Foundry," <http://www.techpowerup.com/forums/archive/index.php/t-100054.html>. (Accessed 10.12.2010).

Goldratt, E. M., and Cox, J. (2004), *The goal*, North River Press, Great Barrington.

Goodall, R., Fandel, D., Allan, A., Lander, P., and Huff, H. (2002), "Long term productivity mechanisms of the semiconductor industry," paper presented at the American Electrochemical Society Semiconductor Silicon, 2002.

Guidi, R. L., Paradis, D. E., Whitfiel, M. T., Poag, F. D., and Jenson, D. P. (1999), "Strategy and metrics for wafer handling automation in legacy semiconductor fab", *IEEE Transactions on Semiconductor Manufacturing*, Vol. 12 No. 1, pp. 102-108.

Hallas, J. F., Kim, J. D., and Mosier, C. T. (1996), "An investigation of operating methods of 0.25 micron semiconductor manufacturing," paper presented at the Winter Stimulation Conference, 1996.

Harms, R., Reschke, H., Kraus, S., and Fink, M. (2010), "Antecedents of innovation and growth: Analyzing the impact of Entrepreneurial Orientation and goal-oriented management", *International Journal of Technology Management*, Vol. 52 No. 1-2, pp. 135-152.

Hauser, J. R., and Zettelmeyer, F. (1997), "Metrics to evaluate R, D&E", *Research Technology Management*, Vol. 40 No. 4, pp. 32-38.

Hayes, R. H., and Wheelwright, S. C. (1979), "Link Manufacturing Process and Product Life Cycles", *Harvard Business Review*, Vol. 57 No. 1-2, pp. 133-140.

Herrmann, J. W., Conaghan, B. F., Lecordier, L. H., Mellacheruvu, P., Nguyen, M. Q., Rubloff, G. W., and Shi, R. Z. (2000), "Understanding the impact and process changes with a heterogeneous semiconductor manufacturing simulation environment," paper presented at the Winter Simulation Conference, 2000.

Hitt, M. A., Ireland, R. D., Camp, S. M., and Sexton, D. L. (2001), "Guest EditorsÆ Introduction to the Special Issue Strategic Entrepreneurship: Entrepreneurial Strategies for Wealth Creation", *Strategic Management Journal*, Vol. 22 No. 6/7, pp. 479-491.

Hitt, M. R., Ireland, D., Sirmon, D. G., and Trahms, C. (2011), "Strategic Entrepreneurship: Creating Value for Individuals, Organizations and Society", *Academy of Management Perspectives*, Vol. 25 No. 2, pp. 57-75.

Ireland, R. D., and Webb, J. (2007), "Strategic Entrepreneurship: Creating Competitive Advantage Through Streams of Innovation", *Business Horizons*, Vol. 50 No. 1, pp. 49- 59.

Ishii, Y., and Watanabe, S. (2002), "Research and development of production control information system tool," paper presented at the Ninth International Symposium on Semiconductor Manufacturing, 2002.

ITRS (2008), "International Technology Roadmap for Semiconductors ITRS 2008 update," <http://www.itrs.net/links/2008ITRS/Home2008.htm>. (Accessed 12.12.2010).

Jacobs, J. H., Etman, L. F. P., Rooda, J. E., and Van Campen, E. J. (2001), "Quantifying Operational Time Variability: the Missing Parameter for Cycle Time Reduction," paper presented at the Advanced Manufacturing Conference. IEEE/SEMI, 2001.

Katzy, B. R., and Crowston, K. (2008), "Competency rallying for technical innovation - The case of the Virtuelle Fabrik", *Technovation*, Vol. 28 No. 10, pp. 679-692.

Kautt, M., Walsh, S., and Bittner, K. (2007), "Global distribution of micro-nano technology and fabrication centers: A portfolio analysis approach", *Technology Forecasting and Social Change*, Vol. 74 No., pp. 1697-1717.

Kilby, J. (2001), "Turning potential into realities: The invention of the integrated circuit", *ChemPysChem*, Vol. 2 No. 8-9, pp. 482-489.

Kim, J. H., and Lee, T. E. (2003), "Schedule stabilization and robust timing control for time-constrained cluster tools," paper presented at the IEEE International Conference on Robotics and Automation, 2003.

Kirzner, I. (1997), "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach.", *Journal of Economic Literature*, Vol. 35 No. 1, pp. 60-85.

Kuratko, D. F., and Audretsch, D. B. (2009), "Strategic Entrepreneurship: Exploring different

perspectives of an emerging concept”, *Entrepreneurship Theory & Practice*, Vol. 33 No. 1, pp. 1- 17.

Leachman, R. C., and Hodges, D. A. (1996), “Benchmarking semiconductor manufacturing”, *Semiconductor Manufacturing*, *IEEE Transactions*, Vol. 9 No. 2, pp.158-169.

Li, Y. H., Huang, J. W., and Tsai, M. T. (2009), “Entrepreneurial orientation and firm performance: The role of knowledge creation process”, *Industrial Marketing Management*, Vol. No. 38, pp. 440-449.

Limanond, S., Si, J., and Tsakalis, K. (1998), “Monitoring and control of semiconductor manufacturing processes”, *IEEE Control Systems*, Vol. 18 No. 6, pp. 46-58.

Linton, J., and Walsh, S. (2008), “A theory of innovation for process-based innovations such as nanotechnology”, *Technological Forecasting and Social Change*, Vol. 75 No. 5, pp. 583-594.

Linton, J. D., and Walsh, S. T. (2004), “Integrating innovation and learning curve theory: An enabler for moving nanotechnologies and other emerging process technologies into production”, *R&D Management*, Vol. 34 No. 5, pp. 517-526.

Matzler, K., Schwarz, E., Deutinger, N., and Harms, R. (2008), “The Relationship between Transformational Leadership, Product Innovation and Performance in SME”, *Journal of Small Business and Entrepreneurship*, Vol. 21 No. 2, pp. 139-151.

Maynard, D. N., Kerr, D. S., and Whiteside, C. (2003), “Cost of yield,” paper presented at the Advanced manufacturing Conference IEEE/SEMI, 2003.

Meyers, M. H., Tertzakian, P., and Utterback, J. M. (1997), “Metrics for managing research and development in the context of the product family”, *Management Science*, Vol. 43 No. 1, pp. 88- 111.

Meyersdorf, D., and Yang, T. (1997), “Cycle time reduction for semiconductor wafer fabrication facilities,” paper presented at the Advanced Semiconductor manufacturing Conference, IEEE/SEMI, 1997.

Michelin, G., and Berg, D. (1985), “Evaluating research - ROI is not enough”, *Harvard Business Review*, Vol. 28 No. 3, pp. 15-22.

Mihm, J., Loch, C., and Huchzermeier, A. (2003), “Problem solving oscillations in complex engineering projects”, *Management Science*, Vol. 49 No. 6, pp. 733-750.

Miller, D. (2004), "Semiconductor Capital Equipment Manufacturers", Industry Report, Vol. Aug. 24 No. 2004, pp. 1-22.

Mintzberg, H. (1994), *The Rise and Fall of Strategic Planning*, Free Press, New York.

Montoya-Torres, J. R. (2006), "Manufacturing performance evaluation in wafer semiconductor factories", *International Journal of Productivity and Performance Management*, Vol. 55 No. 3-4, pp. 300-310.

Mozumder, P. K., and Loewenstein, L. M. (1992), "Method for semiconductor process optimization using functional representations of spatial variation and selectivity", *IEEE Transactions on Components, Hybrids and Manufacturing Technology*, Vol. 15 No. 3, pp. 311-316.

Mozumder, P. K., Saxena, S., and Taylor, K. (1994), "Simultaneous control for multiple nonuniformity metrics using site models and monitor wafer controls," paper presented at the Advanced Manufacturing Conference. IEEE/SEMI, 1994.

Myers, D. R., McWhorter, P. J., Converse, C., and Makal, L. A. (2000), "Implications of intelligent, integrated microsystems for product design and development," proceedings of the IEEE Engineering Management Society International Engineering Management Conference, 2000 "Leading Technology Change: Management Issues and Challenges", 2000, pp. 325-330.

Nath, P., Nachiappan, S., and Ramanathan, R. (2010), "The impact of marketing capability, operations capability and diversification strategy on performance: A resource- based view", *Industrial Marketing Management*, Vol. 39 No. 2, pp. 317-329.

Naughton, A. B. (2005), "Aligning tool set metrics for operation in a multi technology high mix low volume manufacturing environment," <http://dspace.mit.edu/handle/1721.1/34852>. (Accessed 10.10.2010).

Ofek, E., and Sarvary, M. (2003), "R&D, marketing and the success of the next generation products", *Marketing Science*, Vol. 22 No. 3, pp. 355-370.

Pich, M. T., Loch, C. H., and Meyer,(2002), "On uncertainty, ambiguity and complexity in project management", *Management Science*, Vol. 48 No. 8, pp. 1008-1027.

Prahalad, C., and Hamel, G. (1990), "The core competence of the corporation", *Harvard Business Review*, Vol. 68 No. 3, pp. 79-91.

Romig, A., Baker, A., Johannes, J., Zipperian, T., Eijkel, K., Kirchoff, B., Mani, H. S., Rao, C. R. N., and Walsh, S. (2007), "An introduction to nanotechnology policy: Opportunities and constraints

for emerging and established economies”, *Technological Forecasting and Social Change*, Vol. 74 No. 9, pp. 1634-1642.

Saarenketo, S., Puumalainen, K., Kuivalainen, O., and KylΣheiko, K. (2009), “A knowledge-based view of growth in new ventures”, *European Business Review*, Vol. 21 No. 6, pp. 531-546.

Sattler, L., Glassey, R. C., and Saeed, B. I. (1997), “Benchmarking semiconductor manufacturing performance using a pairwise-comparison method”, *IEEE Transactions on Semiconductor Manufacturing*, Vol. 10 No. 2, pp. 317-321.

Sattler, L., and Schlueter, R. (1998), “Semiconductor metrics: conflicting goals or increasing opportunities, paper presented at the Advanced Semiconductor Manufacturing Conference and Workshop, Boston, MA, 1998.

Schumann, P. A., Ransley, D. L., and Prestwood, D. C. (1995), “Measuring R&D Performance”, *Research Technology Management*, Vol. 38 No. 3, pp. 45-55.

Shane, S. (2001), “Technology Regimes and New Firm Formation”, *Management Science*, Vol. 47 No. 9, pp. 1173-1190.

SIA (2008), “Semiconductor Sales Slowing,” 16
http://www10.edacafe.com/nbc/articles/view_article.php?articleid=620281. (Accessed 12.12.2010).

Smith, T., Boning, D., Fang, S., Simon, F., Shinn, G., and Stefani, J. (1999), “A Study of Within-Wafer Non-Uniformity Metrics”, in *International workshop on Statistical Metrology*, pp. 46-49.

Spencer, A. S., Kirchhoff, B. A., and White, C. (2008), “Entrepreneurship, Innovation, and Wealth Distribution: The Essence of Creative Destruction”, *International Small Business Journal*, Vol. 26 No. 1, pp. 9-26.

Szakonyi, R. (1994), “Measuring R&D Effectiveness - I”, *Research Technology Management*, Vol. 37 No. 2, pp. 27-32.

Teece, D. J. (1988), “Capturing Value from Technological Innovation: Integration, Strategic Partnering, and Licensing Decisions”, *Interfaces*, Vol. 18 No. 3, pp. 46-61.

Terziovski, M. (2010), “Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: a resource-based view”, *Strategic Management Journal*, Vol. 31 No. 8, pp. 892-902.

Thukral, I., Von Her, J., Walsh, S., Groen, A., Van de Sijde, P., and Akmaliah, A. K. (2008), "Entrepreneurship, Emerging Technologies, Emerging Markets", *International Small Business Journal*, Vol. 26 No. 1, pp. 101-116.

Van Heeren, H., Butler, P., Walsh, S. T., Elders, J., Cho, D.-I., and Yang, Y. (2003), "Status and Future of Microsystems/MEMS Foundries", in MANCEF (Ed.) *International Roadmap on*

MEMS, Microsystems, Micromachining and Top Down Nanotechnology, MANCEF, Naples, FL, pp. 435-455.

Wagner, L. C. (2001), "Failure Analysis Challenges," paper presented at the International symposium on the physical and failure analysis of integrated circuits, 2001.

Walsh, S. (2004), "Roadmapping a Disruptive Technology: A Case Study The Emerging Microsystems and Top-Down Nanosystems Industry", *Technological Forecasting and Social Change*, Vol. 71 No. 1, pp. 161-185.

Walsh, S., Boylan, R., Carr, W., Warrington, R., and Elders, J. (1996), "The strategic development of HARM manufacturing technologies", *Microsystems Technologies*, Vol. 43 No. 1, pp. 11-26.

Walsh, S., and Linton, J. (2000), "Infrastructure for Emerging Markets Based on Discontinuous Innovations", *Engineering Management Journal*, Vol. 12 No. 2, pp. 23-31.

Walsh, S., Linton, J., Grace, R., Marshall, S., and Knutt, J. (2000), "MEMS, microsystems, micro machines: Commercializing an emergent disruptive technology", Rai-Choudhury, P. (Ed.) *MEMS and MOEMS technology and applications*, SPIE Press, Bellingham, WA, pp. 479-514.

Walsh, S. T., and Linton, J. D. (2011), "The Strategy-Technology Firm Fit Audit: A Guide to Opportunity Assessment and Selection", *Technological Forecasting and Social Change*, Vol. 78 No. 2, pp. 199-216.

Werner, B. M., and Souder, W. E. (1994), "Measuring R&D performance - state of the art", *Research Technology Management*, Vol. 40 No. 2, pp. 34-42.

Williamson, O. E. (1985), *The Economic Institutions of Capitalism*, Free Press, New York. Wu, B. P. F. (2002), "Innovations for economical 300/450 IC fabricators," proceedings of the *Advanced Manufacturing Conference. IEEE/SEMI, 2002*, pp. 150-154.

Yin, R. K. (2009), *Case Study Research: Design and Methods*, Sage, Thousand Oaks, Calif.

Section 4

A strategic model for firms: Who seek to embrace Nanomanufacturing

By

Robert Tierney*
University of New Mexico,
New Mexico, USA
E-mail: rtierney@unm.edu
*Corresponding author

Steven Walsh
Albert Franklin Black Professor of Entrepreneurship,
Anderson Schools of Management,
The University of New Mexico,
New Mexico, USA
E-mail: walsh@unm.edu

Reproduced with permission from Inderscience Publishing. Article originally appeared in
International Journal of Technology Transfer and Commercialisation 2008 Volume 7 Number 2/3 pp.171-
181.

Citations presented in accordance to journal requirements

Section 4.1 Abstract and Keywords

The term ‘nanotechnology’ has captured the technological and economic interest of technologists and business professionals alike. The commercial interest in nanotechnology is overwhelming and the term often misrepresented. This is especially evident in nanotechnology market projections, which have risen dramatically over the past 5–10 years as more and more traditional ‘product families’ are engulfed by the diffusion terminology and then are included in these projections. Nanomanufacturing is seen as a potential Schumpeterian or Kondratief waves (Schumpeter, 1934, 1942; Kondratief, 1937); yet manufacturing processes have been shown to be greatly different in various industrial sectors. The hurdles and problems facing the companies are as diverse as those sectors. This paper seeks to make a contribution by offering a categorization scheme for nanomanufacturing based on the types of hurdles that firms are quite likely to encounter and provide some case base examples of both evolutionary and revolutionary nanomanufactured products.

Keywords: nanomanufacturing; nanoscale science; MEMS; microsystems technology; disruptive technology; top-down nanotechnology; bottom-up nanotechnology.

Section 4.2 Introduction

The authors initiate the discussion on nanomanufacturing through a definition of the term nanomanufacturing. This definition cannot be made without an understanding of both nanotechnology and nanoscience. Nanomanufacturing, nanotechnology and nanoscience are three words, which are often used interchangeably. The authors in the introduction will provide a definition for these terms that will provide the basis for our argument.

Nanomanufacturing has been singled out as a key enabler for the future of many regional manufacturing sectors including manufacturing in the USA, Canada, Brazil, Spain, France, the UK, Germany, Japan and many of the traditional G14, but also has been highlighted by emerging economies such as China, India, Taiwan and Singapore. Yet, little infrastructure exists for true controlled nanomanufacturing. Indeed, many of the pioneering nanomanufacturing firms such as Ferrofluidics started in 1968 with their ferrofluids bearing for hard disks do not even use the term nanomanufacturing.

Most regions or countries in the world are focused on creating availability of nanotechnology (Kautt et al., 2007) and initiation of nanomanufacturing infrastructure. Strong measurement and test infrastructure is vital for its success. For example, the USA's own NIST is responsible for providing traceability and currently is utilising SBIR programs and other measures to develop measurement capabilities and calibration standards. Some studies have stated that in the near future, a plurality of designed advanced materials and manufacturing processes will be built at the nanoscale (Walsh et al., 2005). Yet nanomanufacturing means more than nanotechnology; it requires infrastructure development in measurement science (metrology) and advanced instrumentation (Walsh and Linton, 2000). Nanomanufacturing concerns itself about measurement and test because if you cannot measure it, you cannot make it or manage it

(Walsh, 2004). Successful metrology infrastructure is essential for manufacturers to achieve the real promise of developing and manufacturing new nanomaterials, devices, and products as many new firms like Zyvex have had to learn (Thukral et al., 2008). The US National Nanotechnology Initiative (NNI) (www.nano.gov) states the vital importance of instrumentation and metrology with excerpts from their Grand Challenge workshop final report.

If this is what nanomanufacturing is, then what is nanotechnology and nanoscience on which it is based? Thoughts on nanotechnology were initiated by Feynman (1959) and developed through Nobel winning efforts have Smalley (2005) and others. Nanotechnology truly has caught the imagination of the world. Yet in Taniguchi, a giant name in technology commercialization, defined the field as:

“The name of ‘Nano-technology’ originates from this nanometer. In the processing of materials, the smallest bit size of stock removal, accretion or flow of materials is probably of one atom or one molecule namely 0.1–0.2 nm in length. Therefore, the expected limit size of fineness would be of the order of 1 nm. Accordingly, ‘Nano-technology’ mainly consists of the processing of separation, consolidation and deformation of materials by one atom or one molecule.” (Taniguchi, 1974)

Industries have been commercializing this technology based on bulk nanoreactions for hundreds of years (e.g., Steel) albeit passively. IBM in 1990 provided their LOGO a written effort with Xenon atoms spelling IBM. Technologists and firms were investigating nano- reactions in custom catalysts and microbiology from the 1930s and intensifying in the 1950s and 1960s. The commercial definition is attributed to Drexler (1986) as expressed in his work the *‘Engines of Creation’*. In any case, the definition has migrated with professional emphasis and the intensity of commercial interest.

Further pioneering firms utilizing nano-based solutions simply did not enjoy a common vocabulary to describe themselves. For example, Dr. Al Chorney, former Vice president of one of the first ‘Modern Day’ nanotechnology-based firms, Ferrofluidics

Inc., which was founded in the 1960s and now president of SC Fluids stated:

“...We simply did not know or use the term (Nanotechnology) to describe how our firm’s technology base provided unique value to our customers we just knew we built unique products based on a unique technology base ... it is gratifying to have the popular press and others give firms like ours a name.”

Here, we use the US NNI definition (www.nano.gov). It is often cited as one of the most useful and explicative. Furthermore, they acknowledge that many other definitions exist. They suggest that a certain technology can be considered a nanotechnology only if it involves all of the following three attributes:

- 1) Research and technology development at the atomic, molecular or macromolecular levels, in the length scale of approximately 1–100 nm range.
- 2) Creation and use of structures, devices and systems that have novel properties and functions because of their small and/or intermediate size.
- 3) An ability to control or manipulate on the atomic scale.

Nanotechnology is the third small manufacturing revolution based, but distinctly related to the first two revolutions: Semiconductor Micro Fabrication and Micro Electro Mechanical Systems (MEMS). Micro fabrication leverages the skill set of electrical engineers and MEMS those of mechanical engineers whereas nanotechnology leverages the skill sets of materials and chemical-based engineering and physical sciences.

What then is ‘Nanoscience’? How is it different than nanotechnology and nanomanufacturing? Here, the authors looked to the members of the Royal Academy of Science to seek a bifurcation of nanoscience and nanotechnology terminology (<http://www.royalsoc.ac.uk/landing>). They and other similar organizations separate nanoscience and nanotechnology for clarity of research definitions. To paraphrase, this group:

“Nanoscience is concerned with the study of novel phenomena and properties of materials that occur at extremely small length scales – ‘on the scale of atoms and molecules’. Whereas, *Nanotechnology* is the application of nanoscale science, engineering and technology to produce novel materials and devices, including materials for biological, medical applications and other commercial applications.”

Our effort is based on adding to this literature stream by delineating manufacturing categories, which are distinctly different and offer diverse challenges to firms that seek to create competitive advantages built on this technology base. We view nanomanufacturing as a firm’s or corporate effort to take advantage of nanotechnologies promise as an enabling (Linton and Walsh, 2008a), disruptive (Abernathy and Clark, 1985; Foster, 1986; Walsh et al., 2005; Christianson, 1997) technology that is the harbinger of the next Schumpeterian (1935) wave of economic change.

Section 4.3 Literature Review

Categorization can assist firms in developing tactical as well as manufacturing strategies. There is a foundation from which nanomanufacturing can occur with the best chance of success. As a basis of our effort, we build on these basis models as stated here.

Physical and service-based product manufacturing were segmented earlier through product and process innovation cycles (Linton and Walsh, 2003). Three distinct products vs. process innovation theories are linked directly to differing manufacturing regimes. Abernathy and Utterback (1978) theories are systems integration based and suggest that product innovation occurs prior to process innovation and this has been shown to be relevant for industries like automobiles and computer systems such as those developed like Dell. Barras (1986) effort dispelled the prevailing thought that product innovation always preceded process innovation and shows that, in fact, quite the contrary pattern is dominant in the service sector where indeed process or infrastructure innovation precedes that of product. This is most easily visualized by MacDonald’s having the infrastructure in place and in the 1980s initiating a new service product, such as breakfast. Finally,

Linton and Walsh (2008b) state that some materials manufactured products such as nanomanufacturing follow neither of these patterns, because product and process innovation occur simultaneously.

These patterns have implications on how firms introduce new manufacturing processes as well as measurement techniques such as total quality control. Further, these patterns suggest which firms are more likely to be adept at entering into nanomanufacturing efforts. Firms have rarely been shown to be adaptive in manufacturing in all three sectors and much more likely to have manufacturing, measurement and test processes that work well in only one. Yet, for those who are pioneers in nanomanufacturing, rarely do they have the luxury of a robust infrastructure and many, for example Zyvex, must develop their own testing vehicles as well as nanomaterials. They might be very good at only one practice, but how do these firms achieve results at the others to embrace nanotechnology in an era of Ferment where many will be expected not only to make the nanotechnology-based products, which they will focus on, but also to produce the manufacturing and test equipment they need to produce them.

One way to aid nano-pioneers is to provide them with a manufacturing tool that can assist them by placing themselves in a sector, which helps to understand the types of challenges that they are likely to face in the manufacturing environment. The literature above shows us the great variation in general manufacturing categories, but how can we segment the challenges of nanomanufacturing still finer to get a better understanding of the potential hurdles.

Section 4.4 Methods and Model Building

We utilize a case-based method (Eisenhardt, 1989) to help develop a theory-based model to explain the differing nanomanufacturing challenges a firm might face. Here,

we utilize three concepts that are based on previous efforts and are built from descriptive works on nanotechnology and management of technology theory. The three bifurcated concepts are:

- ‘Top-down vs. bottom-up’ (Walsh and Elders, 2003), a descriptive discussion concerning alternative manners of approaching nanomanufacturing.
- ‘Bulk vs. Anatomically Precise Manufacturing’ (Walsh et al., 2006a, 2006b) a descriptive term concerning nanotechnology used to determine the amount of direct engineering control concerning a nanomanufactured product.
- ‘Evolutionary vs. Revolutionary’ (Mansfield, 1968; Kirchhoff and Walsh, 2000).

These terms are derived from a management of technology theory and are focused on the use of a current technology product manufacturing paradigm (evolutionary) or a completely new one (revolutionary).

Nanotechnology is a part of both the second and third micro (and small technology) revolutions. This is seen most directly through the ‘top-down vs. bottom-up’ distinction. Top-down nanotechnology is a lithographic-based process that follows MEMS and semiconductor-like processes. The first small technology manufacturing revolution was semiconductor micro-fabrication, a lithographic-based technology that has used precise engineering control of nanotechnology since its beginning. This technology continues to leverage the skills of the electrical engineer and designer, as well as the materials and chemical engineering fabricators. This technology has a unit cell device and has been progressing along what is popularly called ‘Moore’s Law’ and top-down nanotechnology is extending this original technology product paradigm (Hamilton, 2003). It is interesting to note that nanotechnology has been employed in the manufacture of semiconductors (doping, dielectrics, etc.) since its inception. Furthermore, as the industry pushes down into the narrower conducting line widths

theorized by Moore's Law, many of the critical dimensions already are manufactured at the nanometre scale.

Further, 'top-down' nanotechnology is an extension of Microsystems technology or MEMS (Elders and Walsh, 2003). MEMS is commonly thought of as the second micro-manufacturing revolution. This technology leverages the skills of both electrical and mechanical designers at interfaces with biologists, chemists, physicists, and materials scientists and engineers to make thicker 3D microstructures. This technology is similar to their semiconductor micro-fabrication cousins since it is based on lithographic processes. Top-down nano-systems often focus on materials, fluidics, optical and biological systems. Terms such as Nano-Electro-Mechanical Systems (NEMS) are sometimes used to distinguish the Nano from the MEMS-based systems. Nano-patterning is an example of an NEMS process.

'Bottom-up' (Elders et al., 2003) nanotechnology is totally distinct from the first two waves of small technology manufacturing. First, it is not a lithography-based process. Bottom-up nanomanufacturing focuses on the build-up of structures, in a broad variety of applications, using atom-by-atom or molecule-by-molecule techniques sometimes controlling naturally occurring processes. It can be inorganic or organic in nature and emphasizes leveraging the skills of materials, molecular, chemical, biological, mechanical and electrical technology professionals.

The next categorization scheme that we wish to incorporate into our model is the differentiation between bulk and atomically addressed nanotechnology. This helps to align the competencies in an organization. This addresses the manner in which a manufacturing industry develops a product based on nanotechnology. This typology of effort is based on taxonomy of proactively engineered bottom-up nanotechnology. In this scheme, bulk nanotechnologies are differentiated from individually addressed

nanotechnologies (Rahal et al., 2005).

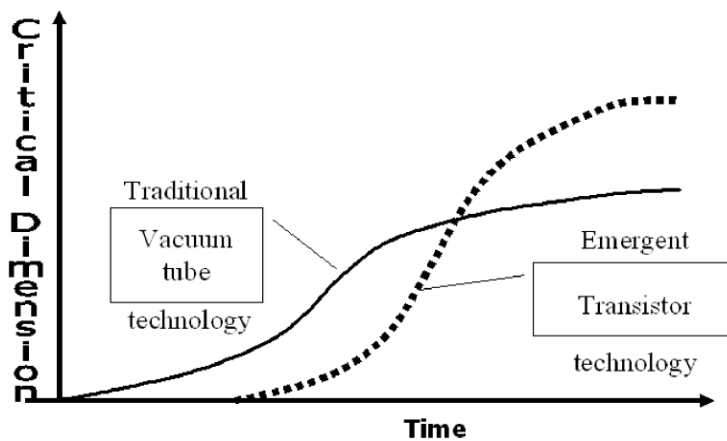
Different material manufacturers or active bulk nanotechnology manufacturers often separate bulk nanotechnologies into passive engineered and actively designed bulk nanotechnologies. Bulk nanotechnology is the production of inorganic or organic materials in such a manner as to obtain nanotechnology-based attributes in the materials that are being produced. This manufacturing methodology controls the development of nanometer-based materials for their inclusion in products. These nanoproducts are used to make existing materials better, faster and/or cheaper. For example, the steel industry and various chemical-based industries have been using bulk nanotechnology reactions to assist in the production and improvement of their products for centuries. This is an example of passive engineered bulk nanotechnology, which is now becoming active with the increased scientific and technical understanding.

Individually addressed nanotechnology is the atom-by-atom or molecule-by-molecule manufacture of organic or inorganic material. Individually addressed nanotechnology is often associated with self-assembly of biological materials, or chemical-based systems. They often require climate-controlled, particulate-controlled or other environmentally controlled chemically good manufacturing practice. This is a much more difficult type of manufacturing. These manufacturing technologies are newer than most bulk applications.

Finally, our model seeks to include the disruptive nature of nanotechnology. Nanotechnology's potential for strategic impact is directly proportional to the magnitude of the impact that it can provide to a firm in revolutionizing the way a current product is made. Revolutionary manufacturing occurs when a new technology product paradigm is developed, which provides an alternative pathway utilizing none of the skill sets used in the previous method to manufacture a

similar product. It is revolutionary and disruptive if that pathway is vastly superior to the previous pathway. Figure 4.1 shows a technology S-curve of a traditional power device (vacuum tubes) being eclipsed by a revolutionary and disruptive technology base (transistors) because of its ability to outperform the former on many critical dimensions including reliability cost, capacity and others; here we show the technology pathways on only one method.

Figure 4.1: Evolutionary vs. revolutionary technology pathways



Ex: Vacuum tubes v. transistors

A technology is potentially disruptive (creates a revolutionary manufacturing method) if it can alter the way to manufacture an existing product, and in doing so create a superior technology product paradigm. Further, the technology is also said to be disruptive if it can create a new technology product paradigm. In either case, a disruptive technology renders the base skills associated with the old technology useless, and makes the previously used infrastructure obsolete. When successful, a disruptive technology becomes the sustaining technology for the new industry. Finally, a disruptive technology does not have to change the form factors of a product and may be completely transparent to an intermediate or end-user. Nano-computing or the Nano-based Ferrofluidics bearing systems are examples of nanotechnologies acting as disruptive or

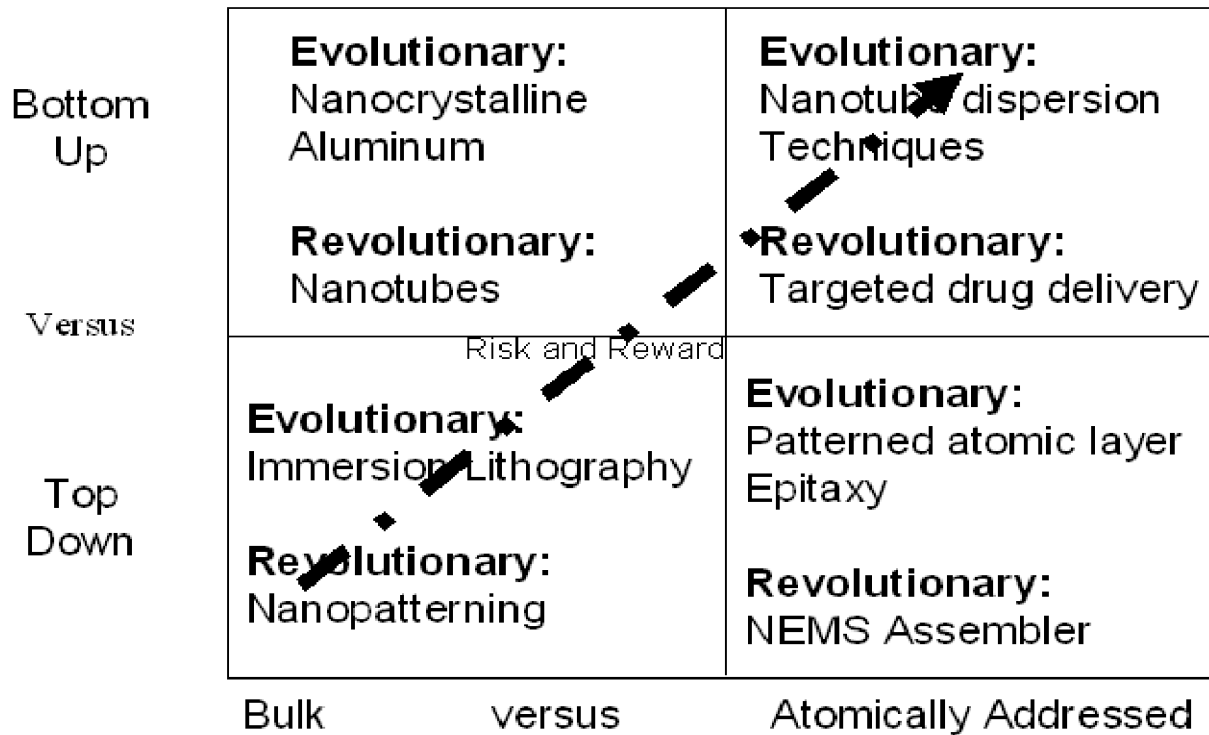
potentially disruptive technologies. This type of manufacturing technology development is often called ‘creative destruction’ (Abernathy and Clark, 1985) or ‘catching the wave’ (Bower and Christensen, 1995).

On the other hand, a technology is said to be evolutionary or sustaining when it supports the current technology/product paradigm. An example of evolutionary nanotechnology development is the creation of superior crystalline development (grain-size) in metals. The development of fine structures at the nanometer scale in sophisticated cold-rolled (of specially alloyed steels), the development of nano-crystalline aluminum and nano-crystalline powder technologies in ceramics are examples of nanotechnology acting as an evolutionary or sustaining technology. Marquis (1969) and Florida and Kinney (1990) and others have shown that this form of innovation takes advantage of existing manufacturing and marketing infrastructure and is embraced by existing customers.

Section 4.5 The Strategic Nanomanufacturing Model

Here, we specifically focus on three bifurcation schemes that when used in unison can assist firms that embrace nanotechnology (see Figure 2). Firms that utilize nanotechnology, as is basis for their search for strategic competitive advantage, can choose the type of nanomanufacturing environment they would like to pursue. In general, the risk and potential reward will increase as a firm moves away from the lower left-hand box. Further risk and reward will increase as the firm chooses more revolutionary options over evolutionary choices.

Figure 4.2: Strategic Nanomanufacturing models



Finally, the type of complementary manufacturing assets (Frohman, 1980; Prahalad and Hamel, 1990), which are available as a firm from the industry diminishes as the firm chooses more revolutionary manufacturing options. The firms will have to themselves develop more infrastructures, greatly increasing the hurdles to overcome in order to be successful, the same time making it much more difficult for a firm to compete if they are successful with their choices. The authors now provide some examples to highlight the difficulties that many firms face when embracing nanomanufacturing-based solutions.

Nanostructured materials are a revolutionary batch produced by manufacturing technology and are represented in the upper left-hand quadrant of our model shown in Figure 4.2. Nanostructured materials have the potential to destroy the advantages of

established firms' technical competencies. Consequently, the applications of innovations are not as apparent as those for evolutionary technologies or the risks for the nanomanufacturing firm on the market side. The technology is still at the science stage. Based on the characteristics of the technology, a laboratory such as Sandia National Laboratories might be sought as a complementary asset, to provide a funds-in research agreement with a duration of 1–5 years with partners that are either entrepreneurial and/or large firms. There is no guarantee that the manufacturing process would be a success inducing risk along the manufacturing side.

A firm might be interested in semiconductor nanolithography. Here, immersion technology might be applied to extend current semiconductor micro-lithographic techniques into the nanometer critical dimension level. This would place that firm in the lower left-hand quadrant of our strategic nanomanufacturing model, which we show in Figure 4.2. The market is shown here (semiconductor producers) limiting risk on the market side. Similarly, it is an extension of an existing technology product paradigm and would support existing infrastructure. It is an evolution rather than a revolution in product technology. One would expect existing firms in the field to embrace the developing challenge of 23 nm lithography on the half pitch. An example, ASML, the product leader, with well over 50% of the \$6–8 billion stepper market are on the 4th generation immersion lithographic equipment and dominate the nanometer lithography field utilizing mostly their internal complementary assets.

Revolutionary bottom-up atomically addressed nanomanufacturing opportunities shown in the top right-hand corner of our strategic nanomanufacturing model is perhaps the most difficult for any firm to address but holds true near monopolistic or Ricardian rent opportunities. Firms that produce drugs like Zevalin, which directly targets an infected cell in this case, non-Hodgkin's lymphoma, are producing products never before

attempted. They are fundamentally changing medical care from treating the system or the body to treating the disease at the cellular level. They encounter regulatory and market risks in a number of arenas. Further, they may create differing type one errors and type two errors that require new testing and metrology techniques for quality assurance and quality control. They will have to provide their own infrastructure in test, manufacturing, quality assurance and quality control.

Finally, we address those firms embracing top-down atomically addressed evolutionary nanomanufacturing shown in our model in the lower right-hand corner. Successful firms embracing this quadrant are probably going to be industry leaders (Mensch, 1993). An example would be IBM utilizing their analytical techniques embraced Patterned atomic layer Epitaxy. A consortium of established firms, including producers of existing equipment and manufacturers, are embracing these technologies. Products manufactured utilizing these nanomanufacturing technologies develop into the stands upon which other technologies are based.

Section 4.6 Conclusions and Future Efforts

The authors have presented a strategic nanomanufacturing choice model based on the existing literature. The examples in this model are relative and temporal. What is revolutionary today might well become the sustaining technology manufacturing base that is evolutionary ten years from now. Nanomanufacturing, in all of its forms, is risky business. Yet, it is an enabling technology that many believe to be the base for a new Schumpeterian economy wave. It is poised to create new industries and greatly change current industries.

This effort suggests that more study should be conducted into how a firm should strategically use external parents like national laboratories; how these and other complementary assets can be used to lower the risks for a firm to embrace nanotechnology.

Further, it suggests more study into the differing resource requirements necessary to embrace each of the four strategic nanomanufacturing quadrants. Finally, the authors are investigating an options type approach for established firms to embrace nanomanufacturing in its varied forms. Risk will increase as will the value of doing so with the knowledge of the potential model nanotechnologies have been bifurcated into 'top-down nano', which is a direct extension of microsystems lithographic systems into the nano-range and 'bottom-up nano', which is more of the atom-by-atom creation of materials-based system. Further, a finer distinction can be made between bulk version individually addressed nanotechnologies.

Section 4.7. References

- Abernathy, W.J. and Clark, K.B. (1985) 'Innovation: mapping the winds of creative destruction', *Research Policy*, Vol. 14, pp.3–22.
- Abernathy, W.J. and Utterback, J.W. (1978) 'A dynamic model of product and process innovation', *Technology Review*, Vol. 80, No. 7, pp.40–47.
- Barras, R. (1986) 'Towards a theory of innovation in services', *Research Policy*, Vol. 15, No. 4, pp.161–173.
- Bower, J.L. and Christensen, C.M. (1995) 'Disruptive technologies: catching the wave', *Harvard Business Review*, Vol. 73, No. 1, pp.43–53.
- Christensen, C.M. (1997) *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business School Press, Boston, Mass.
- Drexler, K.E. (1986) *Engines of Creation: The Coming Era of Nanotechnology*, Anchor Books, New York.
- Eisenhardt, K.M. (1989) 'Building theories from case study research', *Academy of Management Review*, Vol. 14, No. 4, pp.532–550.
- Elders, J. and Walsh, S. (Eds.) (2003) *International Roadmap on MEMS, Microsystems, Micromachining and Top Down Nanotechnology*, MANCEF, Naples, Florida, p.614.
- Feynman, R.P. (1959) 'There's plenty of room at the bottom, lecture at the American Physical Society, Caltech', *The Pleasure of Finding Things Out and the Meaning of It All*, Perseus Books Group, 2002.
- Florida, R. and Kinney, M. (1990) *The Breakthrough Illusion*, Basic, NY. Foster, R.N. (1986) *Innovation: The Attacker's Advantage*, McKinsey and company, New York. Frohman, A.L. (1980) 'Managing the company's technological assets', *Research Management*, Vol. 9, pp.20–24.
- Hamilton, S. (2003) 'Intel reseach extends Moor's law', *Computer*, Vol. 36, No. 1, pp.31–40.
- Kautt, M., Walsh, S. and Bittner, K. (2007) 'Global distribution of micro–nano technology and fabrication centers: a portfolio analysis approach', *Technology Forecasting and Social Change*, Vol. 74, pp.1697–1717.
- Kirchhoff, B. and Walsh, S. (2000) 'Entrepreneurship's role in commercialization of disruptive technologies', *Unternehmer und Unternehmensperspektive fur Klein-und Mittelunternehmen*, Dunker & Humbolt Berlin/St. Gallen, Band 13, pp.323–332.
- Kondratief, N.D. (1937) *Long Waves in Economic Life*, *Lloyds Bank Review*, July 1978.
- Linton, J. and Walsh, S. (2003) 'From bench to business', *Nature of Materials*, Vol. 2, May, pp.287–289.

- Linton, J. and Walsh, S. (2008b) 'A theory of innovation for process-based innovations such as nanotechnology', *Technological Forecasting and Social Change*, Available online, January.
- Linton, J.D. and Walsh, S. (2008a) 'Acceleration and extension of opportunity recognition for nanotechnologies and other emerging technologies', *International Small Business Journal*, Vol. 26, No 1, pp.83–101
- Mansfield, E. (1968) *The Economics of Technological Change*, W.W. Norton, New York.
- Marquis, D.G. (1969) 'The anatomy of successful innovations', in Tushman, M.L. and Moore, W. (Eds.): *Readings in the Management of Innovation*, 2nd ed., Ballinger, pp.79–87.
- Mensch, G.O. (1993) 'A managerial tool for diagnosing structural readiness for breakthrough innovations in large bureaucracies', in Kuhn, R.L. (Ed.): *Generating Creativity and Innovation in Large Bureaucracies*, Quorum Books, Westport, CT, pp.257–283.
- Prahalad, C.K and Hamel, G. (1990) 'The core competence of the corporation', *Harvard Business Review*, pp.79–91.
- Rahal, N., Walsh, S., Bryant, S., Hartley, F., Burns, D.H. and Yun, W. (2005) *An Analysis of Microtechnology and Nanotechnology Patent*, MANCEF, Naples, Florida, p.112.
- Ricardo, D. (1817) *Principals of Political Economy and Taxation*, J. Murray, London.
- Schumpeter, J.A. (1934) *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*, transl. of 2nd German edn., Oxford University Press, London.
- Schumpeter, J.A. (1942) *Capitalism, Socialism and Democracy*, 3rd edn., Harper, 1950, New York. Smalley, R.E. (2005) 'Future global energy prosperity: the terawatt challenge', *MRS Bulletin*, Vol. 30, pp.412–417.
- Taniguchi, N. (1974) *On the Basic Concept of Nanotechnology*, ICPE. Thukral, I., von Ehr, J., Walsh, S., Greon, A., van de Sijde, P. and Adham, K.A. (2008) 'Entrepreneurship, emerging technologies, emerging markets', *International Small Business Journal*, Vol. 26, No. 1, February, pp.101–116.
- Walsh, S. (2004) 'Roadmapping a disruptive technology: a case study 'The Emerging Microsystems and Top-Down Nanosystems Industry'', *Technological Forecasting and Social Change*, Elsevier Science, January 2004, Vol. 71, No. 1, pp.161–185.
- Walsh, S. and Elders, J. (Eds.) (2003) *International Roadmap on MEMS, Microsystems, Micromachining and Top Down Nanotechnology*, MANCEF, Naples, Florida, p.614.
- Walsh, S. and Linton, J. (2000) 'Infrastructure for emerging markets based on discontinuous innovations', *Engineering Management Journal*, Vol. 12, No. 2, pp.23–31.
- Walsh, S., Boylan, R., McDermott, C. and Paulson, A. (2005) 'The semiconductor silicon industry roadmap: epochs driven by the dynamics between disruptive technologies and core competencies', *Technological Forecasting and Social Change*, Vol. 72, No. 2, February, pp.213–236.

Walsh, S., Eijkel, K., Hruby, J., Kubiak, G., Scott, M., Brokaw, J., Saile, V., White, C. and Walsh, S. (2006a) 'The technological and commercial promise of nanopatterning', *Journal of Microlithography, Microfabrication, and Microsystems (JM3)*, Vol. 1, Nos. 1–6, p.011001.

Walsh, S., Eijkel, K., Hruby, J., Kubiak, G., Scott, M. and Saile, V. (2006b) 'The technological and commercial promise of nanopatterning', *Journal of Microlithography, Microfabrication, and Microsystems (JM³)*, Vol. 1, Nos. 1– 6, p.011001.

Walsh, S., Williams, D., Cellucci, T., Linton, J., Newberry, D., Walsh, D., Atherton, P., Eijkel, K., Tahal, N. and Giasolli, R. (2005) *International Nanotechnology Atomically Precise Manufacturing Roadmap*, MANCEF, Naples, Florida, p.131.

Websites

The Royal Society Nanoscience and nanotechnology website: <http://www.royalsoc.ac.uk/landing.asp?id=1210>

The US National nanotechnology Institute, WWW.nano.gov

Section 5

Publish or Perish: How Are Research and Reputation Related?

By

Jonathan D. Linton, Robert Tierney and Steven T. Walsh

Reproduced with permission from Elsevier Publishing Inc. Article originally appeared in Serials Review 2011 (37) pp. 244-257.

Citations presented in accordance to journal requirements

Section 5.1 Abstract and Keywords

A study of twenty-seven fields in 350 highly ranked universities examines the relationship between reputation and rank. We find that many metrics associated with research prowess significantly correlate to university reputation. However, the next logical step, looking at the relationship that links different academic fields with the reputation of the university, did not always offer the expected results. The phrase “publish or perish” clearly has very different meanings in different fields.

Keywords: Academic reputation; Interdisciplinary studies; Publish or perish; University research reputation

Section 5.2 Introduction

Does research status have a direct link to ranking of a university? A better understanding of the relationship between research and ranking is worthwhile as great emphasis is placed both on rankings¹⁻⁷ and research activity¹⁻⁴. In fact, rankings of programs, departments, faculties and universities appear to be of great interest in helping outside stakeholders assess relative quality^{1, 3-12}. Consequently, the basis of rankings is important regardless of their accuracy. While universities have the role of creating, storing, and disseminating knowledge, there appears to be general agreement that evaluation of an institute of higher learning weighs heavily on the creation of information research. This study explores the reality of this assumption.

In an environment that places a tremendous value on research (creation of knowledge) the message to professors at universities for the last half century has been publish or perish¹³⁻²³. The publish or perish message has been consistent for decades regardless of one's geographical location^{4, 24-29} or field of study^{22,23,28-35}. This mantra has raised a variety of concerns among academics, including self-plagiarism,³⁶ proliferation of articles and publications^{23,37-41}, increases in number of authors per article⁴¹⁻⁴³ and the assessment of research contribution⁴⁴⁻⁴⁶ being replaced by a focus on counting the number of articles.^{47,48} Further questions regarding quality and quantity have been raised by the role that the Internet^{34,49-52} plays in the dissemination of information and the emerging movement of open access publishing.⁵³⁻⁵⁶ Attempts to address concerns regarding issues of quality and quantity have resulted in a number of alternatives to evaluation, including citation counts,^{4,57-59} journal impact scores,^{52,60-63} Hirsch Indices,^{52,64,65} journal reputation studies,^{48,63,66-69} and Internet citation rates.^{70, 71}

The result has been a proliferation of measures to assess research, researchers, research outlets, and the locations in which the research occurs. By empirically assessing the relationship

between institution ranking and research production, a better understanding of the relationship between the perceived quality of institutions, the creation of knowledge and the storing of knowledge is possible. As perceived ranking is critical to a university in terms of recruiting donors, faculty, staff and students as well as engaging other stakeholders; the question of whether research is a driver of reputation is a critical question. It also offers insights into whether or not the “publish or perish” should be encouraged by university administrations. This is clearly a critical question when addressing support for library resources and acquisitions — the repositories and access point to published materials.

To better understand the role of reputation and publishing, one can determine whether a statistical relationship does in fact exist between the two. In order to address the concern raised over proliferation and lack of quality,⁵⁶ it is critical to pick an archival source that acts as some reasonable measure of quality. Consequently an archival database such as Scopus is advisable, as it tracks a select group of journals and allows one to obtain a variety of publication metrics. The unit of analysis in this study is that of the university; however, similar studies could be conducted to assess the role of research on faculties, departments, research groups or programs. Having addressed the question of level of analysis, suitable metrics to compare research and reputation are now considered.

5.2.1 Determination of an Institution's Reputation

There is tremendous variation in the manner in which programs, departments, faculties, and universities are assessed. Each stake-holder may use a combination of these assessments to make their personal evaluation. Ranking systems have been developed by both public and private organizations to consider the relevant ranking institutions in specific countries, such as Canada,⁷² Germany,⁷³ Taiwan,⁴ UK,⁷⁴ the USA,¹¹ and internationally⁷⁵⁻⁷⁸ or in specific fields of study.^{2, 8,}

⁹ Unsurprisingly, rankings are both controversial and differ at least somewhat in their results.⁷⁹⁻⁸¹

Arguments in support of or against any of the metrics can and have been made in a variety of sources.⁸²⁻⁸⁴ The most prominent international rankings are “Academic Ranking of World Universities” (AWRU),⁷⁵ “Quacquarelli Symonds Limited Ranking of World Universities” (QS),⁷⁶ “Webometrics Ranking of World Universities” (WR),^{77,85} and “Higher Education Evaluation and Accreditation Council of Taiwan” (HEEACT).⁷⁸ All four ranking systems offer similar results. However, the greatest differences are offered by QS and WR.⁸⁶ Consequently, these two ranking systems are the basis of the analysis in this paper. To rank each university, QS utilizes a composite measure of five components: academic peer review (40 percent), recruiter assessment (10 percent), faculty student ratio (20 percent), research citations (20 percent) and international orientation (10 percent). Academic peer review is based on the opinions of thousands of academics making statements regarding the quality of other universities. Recruiter review scores are based on the opinions of the relative quality of universities by thousands of recruiters regarding the quality of graduates. Faculty student ratio rewards universities that have fewer students per faculty member, as this is likely to translate into more meaningful engagement and a better learning experience. Citations per faculty member are determined by dividing the total number of citations that have occurred over the last five years in the Scopus database by the number of faculty members at the university. International orientation is based equally on the percentage of faculty and percentage of students that are classified as international

WR bases its analysis on Web-based metrics, or more specifically, size (20 percent), rich files (15 percent), visibility (50 percent), and scholarly activity (15 percent). Size is the number of Web pages recovered by the Google, Yahoo, and Bing search engines. Rich files is the volume of Adobe Acrobat (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft

Powerpoint (.ppt) files associated with the university's Web site. Visibility is the number of unique external links associated with a Web site according to Yahoo Site Explorer. Scholarly activity is the number of items published according to Google Scholar and Scimago SIR over the appropriate and most recent five-year period. Having considered the widely available ranking systems of universities, the relationship between research and reputation is now considered.

5.2.2 The Relationship between Research and Reputation

A series of hypotheses is now developed to test questions relating research and reputation using different metrics. Following the tradition of Popperian falsification, the numbered hypothesis of interest is tested (H_n) and the alternative hypotheses (H_{na}) are offered — in case the numbered hypothesis is in fact proven to be false. While the quantity of research has been flagged as a potentially dangerous metric,^{57, 87, 88} it is clearly an important metric. Consequently, consideration should be given to the relationship between research quantity and institution ranking. Hence,

H1. The quantity of research and institution ranking are unrelated.

H1a. Institutions with higher rankings will have a larger volume of research.

H2. The quantity of research in a field and institution ranking are unrelated.

H2a. Institutions with higher rankings will have a larger volume of research in a given field.

Different fields of study within a university have different traditions regarding the research produced in terms of not only volume, but also other metrics such as citation frequency, Hirsch index and number of coauthors. Consequently, the strength of relation between a university and research performance in a given academic field will depend on the relative importance of a given

field to research, productivity and the strength of the university in a given field. For example, the field of medicine tends to generate more peer reviewed journal articles than an area such as humanities. Consequently, traditional measures of research will not relate as strongly to reputation in the humanities as compared to medicine. Alternatively, research activity in a specific field may not lend itself to a notable increase in ranking, due to the given field being considered relatively unimportant. To examine whether the relative importance of a field differs from its measured importance, it is necessary to compare the relationship between normalized data (consider relative magnitude as opposed to magnitude). Hence,

H3. The relationship between research in a given field and institution ranking is the same for normalized and un-normalized data.

H3a. Research activity in certain fields is more important to university ranking than research activity in other fields.

While fields or departments are a logical separator for research, the unit of analysis for research is an author. The presence of researchers of high quality is critical for the attraction of research funds, junior researchers, grants, post-docs, visiting scholars, and graduate students. Therefore, it is worth considering the characteristics of the top researcher within the different fields at the ranked universities.^{35,89,90} As with our earlier hypotheses, quantity of publications can be considered as a proxy for research. Although in this case, the career number of publications by the most prolific author is considered — instead of the total number of publications associated with the university that the researcher is currently associated to. Hence,

H4. The quantity of research by the most prolific author in a field and the institution ranking are unrelated.

H4a. Institutions with higher rankings will have their most prolific author associated to a larger volume of research.

What about quality? The sheer volume of publication is, at best, a risky measure of quality. Consequently, it is critical to compare other measures. Hence the top researcher at an institute in a given field is also considered from the perspective of number of citations, number of different coauthors, Hirsch index, and number of Web citations. The number of journal citations or Web citations of a work refers to the number of separate documents that refer to a publication (and/or author) under consideration. The number of co-authors acts as a measure of quality as it is indicative of the number of people who are prepared to and have in the past worked with an author. Furthermore, a researcher with many partners is not only seen as desirable to work with, but also has had an opportunity to learn from working with many different people. The Hirsch index is the number of articles with at least the same number of citations. This measure is higher for researchers who frequently publish highly cited articles and is low for those who publish either infrequently and/or work that is rarely/never cited. For example, a Hirsch Index of 15, indicates that the author's 16th most cited paper has 15 or less cites and the author's 15th most cited papers have a minimum of 15 cites. Having considered how each of the metrics under consideration is linked to quality, the associated hypotheses are now offered:

H5. The number of citations of the research of the most prolific author in a field and the institution ranking are unrelated.

H5a. Institutions with higher rankings will have their most prolific author having an association with a larger number of citations to their work.

H6. The quantity of coauthors for the most prolific author in a field and the institution ranking are unrelated.

H6a. Institutions with higher rankings will have their most prolific author write with a larger number of coauthors.

H7. The Hirsch index of research by the most prolific author in a field and the institution

ranking are unrelated.

H7a. Institutions with higher rankings will have their most prolific author having a higher Hirsch index associated with their research.

H8. The number of Web citations of the research of the most prolific author in a field and the institution ranking are unrelated.

H8a. Institutions with higher rankings will have their most prolific author having an association with a larger number of Web citations to their work.

Finally, to take into consideration the possible effect of differences in the absolute magnitude of research related values in different fields, it is important to determine if there are significant differences between normalized and actual data. This leads to the hypotheses:

H9. The quantity of research by the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H9a. Quantity of research in some fields is more important to university ranking than research activity in other fields.

H10. The quantity of citations by the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H10a. Citations of the most prolific authors in some fields are more important

H11. The number of coauthors of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H11a. The number of coauthors in some fields is more important to university ranking than research activity in other fields.

H12. The Hirsch index of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H12a. The Hirsch index of the most prolific author in some fields is more important to

university ranking than research activity in other fields.

H13. The quantity of Web citations of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H13a. The quantity of Web citations of the most prolific author in some fields is more important to university ranking than research activity in other fields.

Section 5.3 Method for Research Data Collection

To assess the relationship between a university's reputation and its research one requires a list of highly reputable universities, the relative position of universities on the list, and the research associated with each of these institutions. The two prominent international ranking systems that were identified earlier as the most different⁸⁶ in results— QS⁷⁶ and WR⁷⁷—were utilized. Two ranking systems were considered in order to see to what extent the results might be dependent on a given ranking system. If the results are the same regardless of the ranking system used, the validity of the findings is more robust. Also in the process, we are able to see what sort of difference may occur from one ranking system to another. As we did in fact find that sometimes substantial differences exist in ranking of universities between different rating systems, we have considered both of the systems in both data collection and analysis. The ranking data reflect WR 2010 and QS 2009 list of the top 250 universities — 350 universities in total.

For each university identified as being among the top 250 universities on QS and/or WR, detailed data on research activity were collected. For collection of research data, a database that would act as a filter for quality and at the same time is comprehensive was desired. Two databases, ISI Web of Science and Scopus, provided the best coverage. While ISI Web of

Science has been in use for a very long period of time, scholars in social science disciplines have expressed concerns regarding the ISI journal coverage being much narrower than in the natural sciences. Consequently, Scopus (www.scopus.com) was determined as suitable source of research information, due to its broader coverage of sources.

For each of the universities identified, data were collected manually from Scopus using the following procedure:

- (1) Affiliation tab was chosen.
- (2) Name of the University was placed in the entry box and search was initiated.

(3) A list of all universities affiliations with the name was provided by the database. The boxes of any associated organization, institute or department were clicked to gain a complete record of university research activity. This often required further investigations using Web searches to determine whether an organization was affiliated with a university. Once the appropriate boxes were checked, the “show documents” box was clicked.

(4) The number at the top left of the “new — total documents” for the selected university was recorded. Now that the total number of publications for the institution was recorded, the process for collecting data for each field of research was followed for each university.

(5) On the left side of the screen, fields of research were identified with the associated number of publications in brackets. The values in parentheses were recorded as the total number of publications for the university under consideration in the field under consideration. Having collected the information on the field of research, one identified and collected information on the most active researcher in a given field at a given university.

(6) The list of articles for a given field was isolated. In order to do this one must eliminate the multidisciplinary category for each search. Using medicine as example, there is a selection box located on the left side of each listing. Medicine's “box” was selected and the “limit box” located at the top of the search parameters was also selected. This procedure brought a new screen with the appropriate category. This can be verified by the looking at the query entry at the top of the page, it should read (LIMIT-TO (SUBJAREA, “MEDICINE”) OR LIMIT-TO (SUBJAREA, “MULT”)). The query line is edited to remove the “MULT” category, reducing the final part of the query to (LIMIT-TO (SUBJAREA, “MEDICINE”)).

(7) Having conducted this step, the most prolific author is the first name in the author's list. By clicking the selection box associated with the first author one gains access to all of the publications associated with that one specific author.

(8) On the next screen, the author's name on the most recent publication was located and selected.

This results in the provision of a new screen with the details of the selected author. The name of the author, number of publications, number of citations, number of coauthors, Hirsh factor, and number of Web references were all recorded and associated to the appropriate university and field of research in the data-base created for statistical analysis. (The screen images associated with the process are offered in Appendix 1.) If a selected author was found to be a faculty member at a different university, the next most prolific author was selected. In a few cases, no authors were found at the university under consideration; in those cases zeroes were entered into the database describing the activity of the most prolific author. The process was conducted until the information for all 350 universities was completed.

In some cases the “more” button needed to be clicked to reveal all fields of research. Information was collected for all twenty-seven fields on the Scopus database for each university: Medicine, Physics and Astronomy, Biochemistry, Engineering, Chemistry, Materials Science, Immunology, Earth Sciences, Environmental Sciences, Pharmacology, Neurosciences, Social Sciences, Psychology, Health Professions, Economics, Decision Sciences, Business, Agriculture, Mathematics, Computer Science, Chemical Engineering, Multidisciplinary, Nursing, Veterinary, Arts and Humanities, Dentistry, and Undetermined

Upon completion of data entry and spot-checking of data to verify data entered is correct, the data were uploaded into the statistical processing package — SPSS. Correlation analysis was conducted between university rankings and the variables on research activity to see if variables

move in the same direction, move in opposite directions, or have no relationship whatsoever in changes in value. Regression analysis was conducted to determine the relationship between different fields of research and the university ranking. In all cases the numeric ranking of each university was considered as the dependent variable, with the different academic fields of each university providing the independent variables to be regressed against the dependent. Through regression analysis, we were able to test to see if one or more of the independent variables has a linear (straight line) relationship with the dependent variable. In addition by considering the R^2 value an indication is given of how much variation is explained by the linear regression — with a value between 0 and 1 representing the percentage of variation explained. Finally, test statistics were used to statistically evaluate whether the results suggest that regression coefficients are significantly different from zero and in the case of comparing different sets of data to each other, whether or not the data are from different populations — i.e., difference in results is a function in difference in underlying population and not just a function of sampling

Section 5.4 Results

H1. The quantity of research and institution ranking are unrelated.

H1a. Institutions with higher rankings will have a larger volume of research.

WR 2010 and QS 2009 correlations are -0.586 and -0.569 , respectively. As these correlations are statistically significant: H_1 is rejected and H_{1a} is supported

H2. The quantity of research in a field and institution ranking are unrelated.

H2a. Institutions with higher rankings will have a larger volume of research in a given field.

H2. This is rejected and H2a is supported as all relations are statistically significant, except for the dental research category in the WR 2010 data. See Table 1.

H3. The relationship between research in a given field and institution ranking are the same for normalized and un-normalized data.

H3a. Research activity in certain fields is more important to university ranking than research activity in other fields.

H3. This is not rejected as there is no significant difference between normalized and actual data for either WR 2010 or QS 2009 ($T\text{-Stat}=0$). Only five of fifty-four of the total quantity of research in the different fields are statistically significantly related to reputation of the university under consideration. See Table 2.

H4. The quantity of research by the most prolific author in a field and the institution ranking are unrelated.

H4a. Institutions with higher rankings will have their most prolific author associated to a larger volume of research.

WR 2010 and QS 2009 correlations are statistically significant, except for five of fifty-four categories: H_4 is rejected and H_{4a} is supported. See Table 3.

H5. The number of citations of the research of the most prolific author in a field and the institution ranking are unrelated.

H5a. Institutions with higher rankings will have their most prolific author having an association with a larger number of citations to their work.

Table 5.1. Correlation between total quantity of research in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	-0.423	-.335
Physics	-0.404	-.369
Biochemistry	-0.513	-.453
Engineering	-0.374	-.430
Chemistry	-0.465	-.413
Materials Science	-0.263	-.185
Immunology	-0.453	-.281
Earth Sciences	-0.336	-.278
Environment	-0.277	-.305
Agriculture	-0.174	-.284
Mathematics	-0.417	-.314
Computer Science	-0.402	-.363
Chemical		
Engineering	-0.250	-.206
Multidisciplinary	-0.462	-.411
Pharmacology	-0.269	-.168
Neuroscience	-0.439	-.357
Social Sciences	-0.394	-.508
Psychology	-0.394	-.558
Health Professions	-0.324	-.214
Economics	-0.483	-.550
Decision Sciences	-0.421	-.537
Business	-0.326	-.527
Nursing	-0.348	-.286
Veterinary	-0.169	-.206
Arts	-0.303	-.286
Dentistry	-0.248	-0.101
Undetermined	-0.417	-.178

Table 5.2. Coefficients for regression between total quantity of research in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). QS $R^2=0.411$, adjusted 0.377, WR $R^2=0.555$, adjusted 0.499

Category	QS - actual	Normalized	WR - actual	Normalized
Medicine	-0.001	-0.274	-0.001	-0.181
Physics	0.000	-0.047	-0.001	-0.106
Biochemistry	-0.001	-0.154	-0.002	-0.193
Engineering	-0.001	-0.100	-0.001	-0.096
Chemistry	-0.001	-0.045	-0.002	-0.098
Materials Science	0.000	0.022	0.002	0.060
Immunology	-0.003	-0.093	0.015	0.352
Earth Sciences	-0.001	-0.023	-0.003	-0.094
Environment	-0.002	-0.052	0.001	0.023
Agriculture	0.004	0.175	-0.002	-0.081
Mathematics	0.000	0.004	0.005	0.104
Computer Science	-0.006	-0.159	-0.002	-0.051
Chemical Engineering	0.000	0.008	0.000	-0.004
Multidisciplinary	0.000	-0.002	-0.013	-0.174
Pharmacology	0.000	-0.007	-0.001	-0.032
Neuroscience	0.002	0.080	-0.003	-0.072
Social Sciences	0.005	0.140	-0.003	-0.061
Psychology	0.014	0.302	-0.020	-0.328
Health Professions	0.007	0.077	0.003	0.032
			-0.007	-0.055
Economics	-0.054	-0.482		
	-0.007		0.005	0.031
Decision Sciences		-0.041		
	0.022		-0.028	-0.150
Business		0.145		
	-0.014		0.009	0.071
Nursing		-0.112		
	-0.004			
Veterinary		-0.040	-0.005	-0.131
	-0.005		-0.010	-0.069
Arts		-0.042		
	0.011		0.017	0.103
Dentistry		0.074		
	-0.020			
Undetermined		-0.103	0.076	0.319

WR 2010 and QS 2009 correlations are statistically significant, except for one of fifty-four categories: H_5 is rejected and H_{5a} is supported. See Table 4.

H6. The quantity of coauthors for the most prolific author in a field and the institution ranking are unrelated.

H6a. Institutions with higher rankings will have their most prolific author write with a larger number of coauthors.

Table 5.3. Correlation between total quantity of research for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	-0.309	-.120
Physics	-0.234	-.223
Biochemistry	-0.259	-.215
Engineering	-0.179	-.282
Chemistry	-0.258	-.300
Materials Science	-0.207	.229
Immunology	-0.286	-.149
Earth Sciences	-0.242	-.263
Environment	-0.167	-.249
Agriculture	-0.264	-.206
Mathematics	-0.201	-.086
Computer Science	-0.340	-.275
Chemical		
Engineering	-0.230	-.206
Multidisciplinary	-0.259	-.196
Pharmacology	-0.208	-.229
Neuroscience	-0.319	-.202
Social Sciences	-0.364	-.310
Psychology	-0.309	-.256
Health Professions	-0.184	-0.05
Economics	-0.099	-.296
Decision Sciences	-0.248	-.287
Business	-0.148	-.260
Nursing	-0.183	-.195
Veterinary	-0.155	-.192
Arts	-0.184	-0.091
Dentistry	-0.180	-.172
Undetermined	-0.220	-.285

Table 5.4. Correlation between total number of citations for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	-0.106	-.155
Physics	-0.217	-.256
Biochemistry	-0.294	-.315
Engineering	-0.208	-.314
Chemistry	-0.289	-.282
Materials	-0.294	-.297
Immunology	-0.271	-.251
Earth Sciences	-0.230	-.271
Environment	-0.184	-.171
Agriculture	-0.183	-.145
Mathematics	-0.165	-.135
Computer	-0.243	-.343
Chemical		
Engineering	-0.242	-.229
Multidisciplin	-0.296	-.192
Pharmacology	-0.253	-.255
Neuroscience	-0.299	-.257
Social	-0.256	-.292
Psychology	-0.295	-.247
Health	-0.228	-.137
Economics	-0.137	-.286
Decision	-0.258	-.248
Business	-0.223	-.251
Nursing	-0.237	-.227
Veterinary	-0.184	-.149
Arts	-0.180	-0.084
Dentistry	-0.206	-.152
Undetermined	-0.222	-.212

WR 2010 and QS 2009 correlations are statistically significant, except for fifteen of fifty-four categories: H_6 is rejected and H_{6a} is supported. See Table 5.

H7. The Hirsch index of research of the most prolific author in a field and the institution ranking are unrelated.

H7a. Institutions with higher rankings will have their most prolific author having a higher Hirsch index associated with their research.

Table 5.5. Correlation between total number of coauthors for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	-0.133	-.193
Physics	-0.166	-.086
Biochemistry	-0.091	-.071
Engineering	-0.148	-.196
Chemistry	-0.237	-.180
Materials Science	-0.165	-.090
Immunology	-0.225	-.141
Earth Sciences	-0.203	-.009
Environment	-0.265	-.264
Agriculture	-0.168	-.052
Mathematics	-0.240	-.110
Computer Science	-0.265	-.277
Chemical		
Engineering	-0.249	-.136
Multidisciplinary	-0.095	-.079
Pharmacology	-0.185	-.153
Neuroscience	-0.275	-.146
Social Sciences	-0.216	-.337
Psychology	-0.283	-.158
Health Professions	-0.152	-0.098
Economics	-0.117	-.255
Decision Sciences	-0.211	-.206
Business	-0.121	-.240
Nursing	-0.132	-.187
Veterinary	-0.180	-.221
Arts	-0.058	-0.091
Dentistry	-0.206	-0.06
Undetermined	-0.243	-.269

Table 5.6. Correlation between Hirsch index for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	-0.360	-.224
Physics	-0.283	-.192
Biochemistry	-0.323	-.290
Engineering	-0.266	-.399
Chemistry	-0.216	-.040
Materials Science	-0.264	-.259
Immunology	-0.313	-.279
Earth Sciences	-0.318	-.074
Environment	-0.217	-.269
Agriculture	-0.246	-.188
Mathematics	-0.203	-.107
Computer Science	-0.326	-.396
Chemical		
Engineering	-0.356	-.177
Multidisciplinary	-0.080	-.079
Pharmacology	-0.248	-.167
Neuroscience	-0.338	-.281
Social Sciences	-0.311	-.367
Psychology	-0.346	-.277
Health Professions	-0.204	-0.105
Economics	-0.189	-.297
Decision Sciences	-0.265	-.260
Business	-0.265	-.260
Nursing	-0.244	-.296
Veterinary	-0.207	-.208
Arts	-0.149	-0.116
Dentistry	-0.176	-.138
Undetermined	-0.128	-.266

WR 2010 and QS 2009 correlations are statistically significant, except for seven of fifty-four categories: H_7 is rejected and H_{7a} is supported. See Table 6.

H8. The number of Web citations of the research of the most prolific author in a field and the institution ranking are unrelated.

H8a. Institutions with higher rankings will have their most prolific author having an association with a larger number of web citations to their work.

H_8 is not rejected. Thirteen of fifty-four categories are statistically significantly different. See Table 7.

H9. The quantity of research by the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H9a. Quantity of research in some fields is more important to university ranking than research activity in other fields.

H9 is not rejected. Ten of fifty four categories are statistically significantly different. See Table 8

H10 The quantity of citations by the most prolific author in a field and the institution ranking are the same for normalized and unnormalized data

H10a Citations of the most prolific authors in some fields are more important to university ranking than research activity in other fields.

H10 is not rejected. Six of fifty-four categories are statistically significantly different. See Table 9

H11 the number of coauthors of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data

H11a. The number of coauthors in some fields is more important to university ranking than research activity in other fields

Table 5.7. Correlation between Web references to the most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level)

Category	QS actual	WR actual
Medicine	0.105	.041
Physics	0.015	.034
Biochemistry	-0.028	.059
Engineering	-0.127	.075
Chemistry	-0.159	-.083
Materials Science	0.010	-.061
Immunology	-0.013	-.007
Earth Sciences	-0.078	-.056
Environment	0.069	-.105
Agriculture	-0.190	-.102
Mathematics	-0.051	-.070
Computer Science	-0.124	-.179
Chemical		
Engineering	-0.151	-.076
Multidisciplinary	-0.131	-.123
Pharmacology	-0.132	-.127
Neuroscience	0.011	-0.066
Social Sciences	-0.143	-.164
Psychology	0.042	-0.089
Health Professions	-0.085	-0.085
Economics	-0.060	-0.041
Decision Sciences	-0.046	-0.081
Business	-0.100	-0.06
Nursing	0.021	-.143
Veterinary	0.015	-0.116
Arts	-0.130	-0.116
Dentistry	0.106	-.131
Undetermined	-0.062	-0.095

H₁₁ is not rejected. Five of fifty-four categories are statistically significantly different. See Table 10.

H₁₂. The Hirsch index of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

Table 5.8. Coefficients for regression between total quantity of research for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). QS R² =0.352 and WR R² =0.368. Columns 3 and 5 (normalized) indicate that QS and WR data are rescaled so that all variables are normal – they have the same minimum and maximum value – thereby, avoiding bias from differences in variable magnitude

Category	QS Actual	Normalize d	WR Actual	Normalize d
Medicine	-0.021	-0.081	0.065	0.223
Physics	0.004	0.014	-0.001	-0.004
Biochemistry	0.002	0.008	0.004	0.012
Engineering	0.028	0.087	-0.018	-0.056
Chemistry	-0.016	-0.064	-0.020	-0.073
Materials Science	-0.016	-0.067	-0.030	-0.108
Immunology	-0.022	-0.076	-0.013	-0.044
-	-	-	-	-
Earth Sciences	0.076	-.121	-0.119	-0.170
Environment	0.011	0.025	-0.042	-0.088
Agriculture	-0.063	-0.123	-0.016	-0.032
Mathematics	-0.015	-0.027	0.029	0.052
Computer Science	-0.059	-0.168	-0.039	-0.114
Chemical Engineering	-0.038	-0.100	0.007	0.016
-	-0.034	-0.086	-0.011	-0.026
Multidisciplinary	-	-	-	-
Pharmacology	0.009	0.032	0.006	0.016
Neuroscience	-0.006	-0.014	0.001	0.003
Social Sciences	-0.084	-0.156	-0.089	-0.163
Psychology	-0.058	-0.120	-0.030	-0.058
-	0.009	0.023	0.036	0.061
Health Professions	-	-	-	-
Economics	0.066	0.112	-0.092	-0.121
Decision Sciences	-0.033	-0.069	-0.057	-0.107
Business	0.019	0.030	-0.0097	-0.136
Nursing	0.032	0.078	-0.026	-0.052
Veterinary	0.015	0.038	-0.024	-0.046
Arts	-0.041	-0.073	0.059	0.098
-	-	-	-0.027	-0.040
Dentistry	0.039	-0.122	-	-
Undetermined	-0.052	-0.110	-0.094	-0.183

Table 5.9. Coefficients for regression between total number of citations for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). WR $R^2 = 0.348$, QS $R^2 = 0.319$. Columns 3 and 5 (normalized) indicate that QS and WR data are rescaled so that all variables are normal – they have the same minimum and maximum value – thereby, avoiding bias from differences in variable magnitude

Category	QS - actual	Normalized WR - actual	Normalized	Normalized
Medicine	0.000	-0.004	0.000	-0.025
Physics	0.000	0.009	-0.001	-0.079
Biochemistry	0.000	-0.053	-0.001	-0.163
Engineering	0.000	0.021	-0.002	-0.156
Chemistry	-0.001	-0.134	-0.001	-0.063
Materials Science	-0.001	-0.079	-0.001	-0.054
Immunology	-0.001	-0.071	-0.001	-0.095
Earth Sciences	-0.003	-0.111	-0.005	-0.172
Environment	0.0001	0.122	0.001	0.084
Agriculture	-0.001	-0.168	-0.001	-0.103
Mathematics	-0.002	-0.080	0.002	0.063
Computer Science	-0.001	-0.060	-0.003	-0.163
Chemical Engineering	-0.001	-0.090	0.001	0.073
Multidisciplinary	-0.001	-0.081	0.000	-0.012
Pharmacology	0.000	0.016	0.001	0.106
Neuroscience	-0.001	-0.115	0.000	-0.033
Social Sciences	-0.001	-0.096	-0.002	-0.134
Psychology	-0.002	-0.150	-0.001	-0.045
Health Professions	0.000	-0.025	0.001	0.050
Economics	0.004	0.216	-0.003	-0.093
Decision Sciences	0.018	0.004	0.000	-0.008
Business	-0.003	-0.141	-0.002	-0.082
Nursing	0.001	0.068	0.000	0.017
Veterinary	0.001	0.083	0.001	0.036
Arts	-0.001	-0.044	0.001	0.075
Dentistry	-0.002	-0.060	0.001	0.030
Undetermined	-0.002	-0.124	-0.003	-0.154

H12a. The Hirsch index of the most prolific author in some fields is more important to university ranking than research activity in other fields.

Table 5.10. Coefficients for regression between total number of coauthors for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). WR $R^2 = 0.276$, QS $R^2 = 0.221$. Columns 3 and 5 (normalized) indicate that QS and WR data are rescaled so that all variables are

normal – they have the same minimum and maximum value – thereby, avoiding bias from differences in variable magnitude

Category	QS - Normalized actual	QS - Normalized	WR - Normalized actual	WR - Normalized
Medicine	-0.18	-0.15	-0.13	-0.05
Physics	0.20	0.09	0.25	0.09
Biochemistry	0.18	0.16	0.18	0.07
Engineering	-0.01	-0.01	-0.11	-0.05
Chemistry	-0.14	-0.04	-0.02	-0.01
Materials				
Science	-0.10	-0.05	0.15	0.05
Immunology	0.08	0.03	0.17	0.06
Earth Sciences	0.00	-0.00	0.00	-0.00
Environment	-0.23	-0.11	-0.24	-0.12
Agriculture	-0.02	-0.01	0.03	0.02
Mathematics	-0.17	-0.12	-0.04	-0.02
Computer				
Science	-0.21	-0.12	-0.30	-0.16
Chemical				
Engineering	-0.13	-0.06	-0.04	-0.02
Multidisciplinary	0.00	0.10	0.01	0.01
Pharmacology	0.02	0.01	-0.15	-0.07
Neuroscience	-0.12	-0.06	-0.01	-0.01
Social Sciences	-0.05	-0.04	-0.20	-0.15
Psychology	-0.16	-0.10	0.11	0.07
Health				
Professions	0.03	0.02	0.09	0.06
Economics	0.04	0.03	-0.13	-0.09
Decision				
Sciences	-0.015	-0.10	-0.13	-0.09
Business	0.00	0.00	-0.22	-0.16
Nursing	0.08	0.06	-0.10	-0.07
Veterinary	-0.03	-0.02	-0.12	-0.09
Arts	0.00	0.01	-0.04	-0.04
Dentistry	0.00	0.00	0.08	0.07
Undetermined	-0.21	-0.17	-0.19	-0.16

Table 5.11. Coefficients for regression between Hirsch index for most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). WR $R^2 = 0.356$, QS $R^2 = 0.317$. Columns 3 and 5 (normalized) indicate that QS and WR data are rescaled so that all variables are normal – they have the same minimum and maximum value – thereby, avoiding bias from differences in variable magnitude.

Category	QS - Normalized actual	WR - Normalized actual	QS - Normalized actual	WR - Normalized actual
Medicine	-0.40	-0.11	0.09	0.02
Physics	-0.18	-0.03	0.04	0.01
Biochemistry	-0.06	-0.02	-0.59	-0.14
Engineering	-0.21	-0.04	-1.38	-0.25
Chemistry	-0.12	-0.03	0.21	0.05
Materials Science	-0.15	-0.03	-0.31	-0.07
Immunology	-0.16	-0.04	-0.33	-0.08
Earth Sciences	-0.76	-0.15	0.03	0.01
Environment	0.50	0.10	-0.35	-0.07
Agriculture	-0.52	-0.09	0.10	0.02
Mathematics	-0.23	-0.04	0.22	0.03
Computer Science	-0.01	-0.07	-0.84	-0.15
Chemical Engineering	-0.69	-0.13	0.47	0.09
Multidisciplinary	-0.00	-0.05	0.00	-0.02
Pharmacology	-0.35	-0.09	0.24	0.06
Neuroscience	0.07	0.02	-0.07	-0.02
Social Sciences	-0.31	-0.07	-0.52	-0.12
Psychology	-0.43	-0.10	-0.10	-0.02
Health Professions	-0.05	-0.01	0.43	0.08
Economics	0.38	0.06	-0.72	-0.10
Decision Sciences	-0.01	-0.00	-0.06	-0.01
Business	-0.52	-0.09	-0.25	-0.04
Nursing	0.06	0.02	-0.42	-0.10
Veterinary	0.19	0.04	-0.05	-0.01
Arts	-0.12	-0.03	-0.01	-0.00
Dentistry	-0.30	-0.08	0.40	0.08
Undetermined	-0.16	-0.05	-0.53	-0.10

H12 is not rejected. One of fifty-four categories is statistically significantly different. See Table 11.

H13. The quantity of Web citations of the most prolific author in a field and the institution ranking are the same for normalized and un-normalized data.

H13a. The quantity of Web citations of the most prolific author in some fields is more important to university ranking than research activity in other fields.

H13 is not rejected. Six of fifty-four categories are statistically significantly different. See Table 1.

Section 5.5 Discussions

The alternative hypotheses 1, 2 and 4 through 7 are clearly supported and suggest a strong relationship between multiple measures of research productivity and the reputational ranking of universities. However, attempts to better understand the relationship between different fields of research and reputation did not provide the anticipated relations. As one considers hypotheses 3 and 9 through 12, it is apparent that while there is a statistically significant relationship between research and ranking, this relationship offers neither clear insights into the relative importance of different fields of research nor whether some fields are critical to a universities' reputation while other fields have little or no effect. While statistically significant correlations suggest that the different academic fields have a strong relation with the reputation, regression models suggest that many of these fields offer statistically insignificant relations to the exact ranking of a University. What this suggests is that although a relationship exists between research and ranking, there is much greater subtlety than a simple causal relationship. Neither a university's activity in a given academic field of research nor a focus on star faculty in a given academic field of research provides statistically generalizable insights into a university's reputational ranking. Through further consideration of the results, we can see that the slogan publish or perish is one that needs to be interpreted differently as one considers different parts of a university — central administration, faculties, and libraries

Table 5.12. Coefficients for regression between Web references to the most prolific researcher in a given field and institution ranking (bold font indicates significance at the 1 percent level or better, normal font indicates significance at the 5 percent level, smaller font indicates statistically insignificant at the 5 percent level). WR $R^2 = 0.186$, QS $R^2 = 0.185$. Columns 3 and 5 (normalized) indicate that QS and WR data are rescaled so that all variables are normal – they have the same minimum and maximum value – thereby, avoiding bias from differences in variable magnitude.

Category	QS - actual	Normalized	WR - actual	Normalized
Medicine	0.00	0.09	0.00	0.05
Physics	0.00	0.08	0.00	0.05
Biochemistry	0.00	0.09	0.00	0.08
Engineering	0.00	-0.08	0.00	0.12
Chemistry	0.00	-0.12	0.00	-0.08
Materials Science	0.00	0.07	0.00	-0.04
Immunology	0.00	0.03	0.00	0.03
Earth Sciences	0.00	-0.05	0.00	-0.05
Environment	0.00	0.18	0.00	-0.08
Agriculture	0.00	-0.29	0.00	-0.16
Mathematics	0.00	-0.10	0.00	-0.04
Computer Science	0.00	-0.10	0.00	-0.18
Chemical Engineering	0.00	-0.14	0.00	-0.04
Multidisciplinary	0.00	0.16	0.00	0.19
Pharmacology	0.00	0.04	0.00	-0.11
Neuroscience	0.00	-0.01	0.00	-0.02
Social Sciences	0.00	-0.22	0.00	-0.25
Psychology	0.00	0.06	0.00	-0.04
Health Professions	0.00	0.05	0.00	0.12
Economics	0.00	-0.02	0.00	-0.03
Decision Sciences	0.00	-0.03	0.00	-0.09
Business	0.00	-0.06	0.00	0.02
Nursing	0.00	0.06	0.00	-0.14
Veterinary	0.00	0.00	0.00	-0.09
Arts	0.00	-0.03	0.00	0.09
Dentistry	0.00	0.11	0.00	-0.15
Undetermined	0.00	-0.09	0.00	-0.12

Clearly the norms of what is seen as important differ greatly between academic fields. For example, authors of seminal mathematical work may publish very few papers that have tremendous impact. Consider John Nash, who published quite sparingly on his Nobel Prize winning work in game theory,^{91,92} yet he has been very influential and offers a great deal more to the field than many mathematicians and mathematics departments of universities that are much more prolific. The nature of these norms is not readily identifiable through statistical analysis. However, a number of insights can be

obtained that are useful on their own and offer further help in determining how to better assess differences between fields. These insights on assessing the reputation/research link will now be briefly discussed.

As indicated earlier, correlations between all the different measures of research and reputation had a statistically significant negative correlation with rank as expected (higher rank school/ greater research prominence) except in the case of Web presence. While a few fields such as Agriculture, Computer Science, Dentistry, and Social Sciences even had statistically significant relations in terms of a regression analysis, we found overall Web references are not yet important in most fields. For other metrics the correlation between institution, reputation and field performance with a given metric was almost always statistically significant.

A notable exception is Arts where it was found that correlations were frequently statistically insignificant. This could suggest that research in Arts does not have a significant effect on a university's reputation. However, it is more likely that the manner in which quality is assessed in arts is just different, such as a focus on publishing books, book chapters and music compositions. Of the twenty-seven fields considered with each of the two ranking systems, fifteen categories – Agriculture, Arts, Biochemistry, Business, Chemistry, Dentistry, Earth Sciences, Economics, Health Professions, Materials Sciences, Mathematics, Medicine, Multidisciplinary, Physics, and Undetermined – have a statistically insignificant correlation with one of the five research performance metrics. The occasional absence of expected statistically significant relations calls for further consideration of the nature of research and contribution to the field. It also speaks to the lack of broad applicability to publish or perish. Having considered the correlation analysis presented in Tables 1 and 3 through 7, regression analysis and correlation coefficients are now considered.

Consideration of regression coefficients offers insight through identifying the few fields that do have a clear explanatory relationship between the research performance criteria and a university's reputation. While a paired t-test found no difference between normalized and non-normalized data, this finding could be indicative of a general lack of statistical significance and not pertain to the few fields that have regression coefficients with a clear statistical relation to performance. When considering total publications in a field Economics, Immunology, Psychology, Veterinary, and Undetermined all have statistically significant regression coefficients. This suggests a relation between overall activity in this field and university reputation.

For the citation rate of the most prolific author, only Biochemistry, Computer Science, Earth Sciences, Economics, and Undetermined have statistically significant regression coefficients. Once again Economics appears as having a statistically significant regression coefficient. This suggests that either economics research has an impact on a university's reputation in terms of both the department and the presence of prolific and highly cited scholars or that reputable universities tend to attract and retain prolific and influential researchers.

The relation between the number of coauthors for the most prolific author and institution ranking has statistically significant regression coefficients for only the following fields: Business, Computer Science, Social Sciences and Undetermined. It is likely that the limit of 150 coauthors per researcher results in the inability to detect relationships between university reputation and coauthor numbers. Fields, such as Medicine and many of the natural sciences that are characterized by papers with a large number of authors, result in researchers reaching the 150 limit placed by Scopus quite quickly. This limit is reached quickly for a number of reasons like the involvement of large laboratories or multi-institutional teams in research, as opposed to research activities that involve a single

researcher, two colleagues, or perhaps a student writing under supervision. In fields with sole-authorship or small group teams like Business, Computer Science, and Social Sciences the 150 co-author limit is not problematic. An interesting follow-up question is whether networks that are internal to a university, locality, region, national or international are most important. This is an important question as it indicates what are the most appropriate university efforts to facilitate and maintain research relations external to a university. It is also a complex problem as it is not only a function of field, but also the nature of the research. The presence of expensive infrastructure on fundamental research could easily bias the findings if not appropriately controlled for in areas like the natural sciences.

Only Earth Sciences has a statistically significant regression coefficient linking the Hirsh index of the most prolific author with university reputation ranking. This speaks to the critical link between Earth Sciences, star faculty, university reputation and citations as both the total number of citations and Hirsh Index for the most prolific author has coefficients with a statistically significant relationship in a regression predicting the university reputation.

Finally, Web references, the only indicator that was found to have little correlation between rank and occurrence, offer statistically significant correlation coefficients between number of Web references and university reputation in the following fields: Agriculture, Computer Science, Dentistry, and Social Sciences. It is worth returning to the question of Web references and reputation in several years to see if there is a substantial change in the influence that the Web has in relation to different fields of research. While the Web has been increasing in importance and value for over a decade, it still is in its infancy in terms of enhancing and/or replacing the traditional role of peer reviewed serials and libraries.

While overall the results suggest that the research and reputation of a university have a

significant link to each other, it remains unclear whether the research is a significant cause of the universities reputation or that universities that have a strong reputation happen to be places where a great deal of research is conducted. However, it is clear that there are substantial differences in the relationship not only between research in different fields, but also the nature of research excellence and productivity from field-to-field. As researchers and research administrators tend to be field specific, these differences face little understanding both within and outside of the university environment. Consequently, a better understanding of these between field differences would assist not only with the link between reputation and research—but also what “publish or perish” implies in different academic fields. The term “publish or perish” as a general statement is incorrect. While there is a statistical relation between top publishing departments and the most prolific scholars, regression coefficients are statistically insignificant.

Section 5.6 Implications

For the central administration of a university this study illustrates that while a relation exists between research and reputation, simple metrics cannot be used to quantify the relationship. There are significant differences between the manner in which quality is measured across different academic fields. Consequently, one needs to better understand the differences between academic fields so as to better calibrate the inputs and outputs that can be expected from an academic field.

The lack of clear relationships between reputation and research metrics for a variety of academic fields suggests that there is no clear relation between a field and the university reputation. In other words, it is possible that the absence of a specific academic field from a university does not inherently disadvantage its standing in the global academic community and that a university can rise to prominence due to excellence in a variety of different academic fields. In summary, there is no one clear path to prominence and

reputation. While librarians are aware of the nuances and substantial differences in norms between academic fields, few others in a university are. Consequently, articles such as this are helpful in illustrating the complexities faced when trying to appropriately balance the needs of very different academic fields simultaneously.

Section 5.7 Conclusions

Research and reputation are related to each other. The nature of this relationship is unclear. There needs to be a better understanding of the relationship between reputation and research in different fields so that incentives and knowledge infrastructure that are the most appropriate for fostering research are offered. It is not possible to take a “one size fits all approach” so terms such as “publish or perish” or an excessive reliance on simple metrics should be avoided. Further study is needed at the field level to better understand the relationship between activity and performance. Failure to understand this can lead to decisions by a central administration or the library that unwittingly undermines the goal of fostering excellence in the university's core missions and at the same time undermines the national and international reputation. While the Web has been increasing in importance and value for over a decade, it still is in its infancy in terms of enhancing and/or replacing the traditional role of peer-reviewed serials and libraries

Section 5.8 References

1. J.F. Volkwein and K.V. Sweitzer, (2006). "Institutional prestige and reputation among research universities and liberal arts colleges." *Research in Higher Education*, 47 (2) (2006): 129–48.
2. S.A. Kirk, H.J. Kil, H.J. and K. Corcoran, "Picky, picky, picky: ranking graduate schools of social work by student selectivity." *Journal of Social Work Education* 45 (1) (2009): 65–87.
3. K. Auspurg, T. Hinz , and J. Güdler, (2008). Emergence of an academic elite? The impact of universities' size and reputation on research funding. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie* 60 (4) (2008): 653–85.
4. M.-H. Huang, H.-W. Chang and D.-Z. Chen, "Research evaluation of research oriented universities in Taiwan from 1993 to 2003," *Scientometrics* 67 (3) (2006): 419–35.
5. M.N. Bastedo and N. Bowman, "U.S. News and World Report college rankings: modeling institutional effects on organizational reputation," *American Journal of Education* 116 (2) (2010): 163–83.
6. G. Boulton, "University rankings: diversity, excellence and the European initiative," *Procedia — Social and Behavioral Sciences* 13 (2011): 74–82.
7. N.A. Bowman and M.N. Bastedo, "Anchoring effects in world university rankings: exploring biases in reputation scores," *Higher Education* 61 (4) (2011): 431–44.
8. V. Safón, "Measuring the reputation of top US business schools: a MIMIC modeling approach," *Corporate Reputation Review* 12 (3) (2009): 204–28.
9. V. Safón, "Factors that influence recruiters' choice of b-schools and their MBA graduates: evidence and implications for b-schools," *The Academy of Management Learning and Education* 6 (2) (2007): 217–33.
10. N.A. Bowman and M.N. Bastedo, "Getting on the front page: organizational reputation, status signals, and the impact of U.S. news and world report on student decisions," *Research in Higher Education* 50 (5) (2009): 415–36.
11. J. Brennan, R. Brodnick and D. Pinckley, "De-Mystifying the U.S. news rankings: how to understand what matters, what doesn't and what you can actually do about it," *Journal of Marketing for Higher Education* 17 (2) (2007): 169–88.
12. P. Cyrenne and H. Grant, "University decision making and prestige: an empirical study," *Economics of Education Review* 28 (2) (2009): 237–48.

13. Anon, "Publish or perish," *Nature* 193 (4817) (1962): 709.
14. R.J. Good, "Publish or perish — some solutions," *Chemical and Engineering News* 42 (36) (1964): 4–5.
15. A. Mackay, "Publish or perish," *Nature* 250 (5469) (1974): 698.
16. S. Lofthouse, "Thoughts on "publish or perish,"" *Higher Education* 3 (1) (1974): 59–80.
17. A.S. Relman, "Publish or perish—or both," *The New England Journal of Medicine* 297 (13) (1977): 724–5.
18. G.F. Nash and D.C. Walsh, "Research plans for current basic surgical trainees: still publish or perish?," *Annals of the Royal College of Surgeons of England* 82 (10 Suppl) (2000): 336–7.
19. S.Y. Rhee, "Carpe diem. Retooling the "publish or perish" model into the "share and survive" model," *Plant Physiology* 134 (2) (2004): 543–7.
20. P. Clapham, "Publish or perish," *BioScience* 55 (5) (2005): 390–1.
21. H.K. Schachman, "From "publish or perish" to "patent and prosper","" *Journal of Biological Chemistry* 281 (11) (2006): 6889–903.
22. M. De Rond and A.N. Miller, "Publish or perish: bane or boon of academic life?," *Journal of Management Inquiry* 14 (4) (2005): 321–9.
23. M. Angell, "Publish or perish: a proposal," *Annals of Internal Medicine* 104 (2) (1986): 261–2.
24. B.A. Solagberu, "Literature search in medical publications," *West African Journal of Medicine* 21 (4) (2002): 329–31.
25. D. Yimin, "Chinese academy of sciences: in China, publish or perish is becoming the new reality," *Science* 291 (5508) (2001): 1477–9.
26. J. Qiu, "Publish or perish in China," *Nature* 463 (7278) (2010): 142–3.
27. L. de Meis, A. Velloso, D. Lannes, M.S. Carmo and C. de Meis, "The growing competition in Brazilian science: rites of passage, stress and burnout," *Brazilian Journal of Medical and Biological Research* 36 (9) (2003): 1135–41.
28. T. Plümper and C.M. Radaelli, "Publish or perish? Publications and citations of Italian political scientists in international political science journals, 1990–2002," *Journal of European Public Policy* 11 (6) (2004): 1112–27.
29. M.M. De Villiers and S.F. Malan, "Publish or perish: how is pharmacy research coping in a changing South Africa?," *South African Journal of Science* 93 (8) (1997): 355–8.

30. A.P. Smith, "Publish or perish: the write thing for nursing," *Nursing Economics* 22 (6) (2004): 342–3.
31. G. Parchomovsky, "Publish or perish," *Michigan Law Review* 98 (4) (2000): 926–51.
32. W.B. Mitchell and M. Reichel, "Publish or perish: a dilemma for academic librarians?" *College and Research Libraries* 60 (3) (1999): 232–43.
33. N.A. Frost, N.D. Phillips and T.R. Clear, "Productivity of criminal justice scholars across the career," *Journal of Criminal Justice Education* 18 (3) (2007): 428–43.
34. B. McKercher, "A citation analysis of tourism scholars," *Tourism Management* 29 (6) (2008): 1226–32.
35. U. Bunz, "Publish or perish: a limited author analysis of ICA and NCA journals," *Journal of Communication* 55 (4) (2005): 703–20.
36. L.F. Noè and D.J. Batten, "'Publish or perish': the pitfalls of duplicate publication," *Palaeontology* 49 (6) (2006): 1365–7.
37. M.-Y. Wang, Z.-X. Zhou, H.-L. Fang and X.-L. Liu, "The bibliometric characteristics of Chinese Medical Core Journals," *Serials Review* 37 (1) (2011): 9–13. doi:[10.1016/j.serrev.2010.11.002](https://doi.org/10.1016/j.serrev.2010.11.002).
38. W. Sadée, "Publish or perish, and the journal glut," *Pharmaceutical Research* 7 (4) (1990): 433–4.
39. E.C. Halperin, "Publish or perish — and bankrupt the medical library while we're at it," *Academic Medicine* 74 (5) (1999): 470–2.
40. M. Gad-El-Hak, "Publish or perish — an ailing enterprise?," *Physics Today* 57 (3) (2004): 61–2.
41. D.M. Chiu and T.Z.J. Fu, "'Publish or perish' in the internet age — a study of publication statistics in computer networking research," *Computer Communication Review* 40 (1) (2010): 34–43.
42. S. Shaban, "Multiple authorship trends in prestigious journals from 1950 to 2005," *Saudi Medical Journal* 28 (6) (2007): 927–32.
43. T.D. Englebrecht, S.A. Hanke and Y. Kuang, "An assessment of patterns of coauthorship for academic accountants within premier journals: evidence from 1979–2004," *Advances in Accounting* 24 (2) (2008): 172–81.
44. F.P. de Villiers, "Publish or perish—the growing trend towards multiple authorship," *South African Medical Journal* 66 (23)

(1984): 882–3.

45. G. Holden, G. Rosenberg, K. Barker and P. Onghena, “An assessment of the predictive validity of impact factor scores: implications for academic employment decisions in social work,” *Research on Social Work Practice* 16 (6) (2006): 613–24.
46. Xue-L. li, Hong-ling Fang, Mei-ying. and Wang, *Serials Review*, 37 (3) (2011): 157-161.
47. Anon., “E-publish or perish,” *Economist* 395 (8676) (2010).
48. P. Śleszyński, “The position of Polish geographical journals and series as seen in the Google Scholar databases,” *Przegląd Geograficzny* 81 (4) (2009): 551–78.
49. P. Jacsó, “Calculating the h-index and other bibliometric and scientometric indicators from Google Scholar with the Publish or Perish software,” *Online Information Review* 33 (6) (2009): 1189–200.
50. M. Dazey and B. Parks, “Thoughts on Open Access: an interview with Diane Graves,” *Serials Review* 36 (2) (2010): 112–5.
51. B.N. Lizotte, “Publish or perish: the electronic availability of summary judgments by eight district courts,” *Wisconsin Law Review* (1) (2007): 107–49.
52. J. Cohen, “Publish or perish—is open access the only way forward?,” *International Journal of Infectious Diseases* 10 (6) (2006): 417–8.
53. H. Chanson, “Research quality, publications, and impact in civil engineering into the 21st century. Publish or perish, commercial versus open access, internet versus libraries?,” *Canadian Journal of Civil Engineering* 34 (8) (2007): 946–51.
54. P. Vinkler, “The π -index: a new indicator for assessing scientific impact,” *Journal of Information Science* 35 (5) (2009): 602–12.
55. T. Eisenberg and M.T. Wells, “Ranking and explaining the scholarly impact of law schools,” *The Journal of Legal Studies* 27 (1998): 3732 PART I.
56. G. Franco, “Publish or perish: the scientific productivity of academics in the field of Occupational Medicine,” *Medicina del Lavoro* 100 (3) (2009): 163–70.
57. H.M. Ortner, “The impact factor and other performance measures — much used with little knowledge about,” *International Journal of Refractory Metals and Hard Materials* 28 (5) (2010): 559–66.
58. M. Pautasso and H. Schäfer, “Peer review delay and selectivity in ecology journals,” *Scientometrics* 84 (2) (2010): 307–15.

59. V.A. Cartwright and C.N.J. McGhee, "Ophthalmology and vision science research. Part 1: understanding and using journal impact factors and citation indices," *Journal of Cataract and Refractive Surgery* 31 (10) (2005): 1999–2007.
60. N. Bontis and A. Serenko, "A follow-up ranking of academic journals," *Journal of Knowledge Management* 13 (1) (2009): 16–26.
61. M. Ouimet, P.-O. Bédard, and F. Gélineau, "Are the h-index and some of its alternatives discriminatory of epistemological beliefs and methodological preferences of faculty members? The case of social scientists in Quebec," *Scientometrics*, 88 (1) (2011): 91-106.
62. D. Truex, M. Cuellar and H. Takeda, "Assessing scholarly influence: using the Hirsch indices to reframe the discourse," *Journal of the Association for Information Systems* 10 (7) (2009): 560–94.
63. S.L. Sellers, S.G. Mathiesen, R. Perry and T. Smith, "Evaluation of social work journal quality: citation versus reputation approaches," *Journal of Social Work Education* 40 (1) (2004): 143–60.
64. F. Schläpfer, "How much does journal reputation tell us about the academic interest and relevance of economic research?," *Gaia* 19 (2) (2010): 140–5.
65. A. Parameswaran and R. Sebastian, "The value of South and Southeast Asian Studies Journal Rankings," *Serials Review* 32 (3) (2006): 154–63.
66. L.V. Ellis and G.C. Durden, "Why economists rank their journals the way they do," *Journal of Economics and Business* 43 (3) (1991): 265–70.
67. A.-W.K. Harzing and R. van der Wal, "Google Scholar as a news source for citation analysis," *Ethics in Science and Environmental Politics* 8 (1) (2008): 61–73.
68. H. Long, L.N. Boggess and W.G. Jennings, "Re-assessing publication productivity among academic "stars" in criminology and criminal justice," *Journal of Criminal Justice Education* 22 (1) (2011): 102–17.
69. D.R. Euben, "Publish or perish: the ever-higher publications hurdle for tenure," *Academe* 88 (4) (2002): 78.
70. M. Heesacker and T.R. Elliott, "My dog's better than your dog: publication counts and quality of clinical psychology PhD training," *Clinical Psychology: Science and Practice* 14 (2) (2007): 175–8.
71. R. Plomp, "The highly cited papers of professors as an indicator of a research group's scientific performance," *Scientometrics* 29 (3) (1974): 377–93.
72. Macleans, "Canadian University Rankings," <http://oncampus.macleans.ca/education/rankings/> accessed August 23, 2011.
73. DAAD, "German University Rankings," <http://www.daad.de/deutschland/hochschulen/hochschulranking/06543.en.html> accessed August 23, 2011.

74. Guardian, "UK University Rankings," <http://www.guardian.co.uk/education/table/2011/may/17/university-league-table-2012> accessed August 23, 2011.
75. ARWU, "Academic Ranking of World Universities," <http://www.arwu.org/index.jsp> accessed August 23, 2011.
76. QS, "Quacquarelli Symonds Limited Ranking of World Universities," <http://www.topuniversities.com/university-rankings/world-university-rankings> accessed August 23, 2011.
77. WR, "Webometrics Ranking of World Universities," <http://www.webometrics.info/> accessed August 23, 2011.
78. HEEACT, "Higher Education Evaluation and Accreditation Council of Taiwan," <http://www.heeact.edu.tw/mp.asp?mp=4> accessed August 23, 2011.
79. J. Billaut, D. Bouyssou and P. Vinke, "Should we believe the Shanghai ranking? An MCDM view," *Scientometrics* 84 (1) (2010): 237–63.
80. S. Marginson and M. van der Wende, "To rank or to be ranked: the impact of global rankings on higher education," *Journal of Studies in International Education* 11 (3/4) (2007): 306–29.
81. Răzvan V. Florian, "Irreproducibility of the results of the Shanghai academic ranking of world universities," *Scientometrics* 72 (1) (2007): 25–32.
doi:[10.1007/s11192-007-1712](https://doi.org/10.1007/s11192-007-1712)
82. N.C. Liu and Y. Cheng, "The Academic Ranking of World Universities — methodologies and problems," *Higher Education in Europe* 30 (2) (2005): 127–36.
83. N.C. Liu and Y. Cheng, "Examining major rankings according to the Berlin principles," *Higher Education in Europe* 33 (2/3) (2008): 201–8.
84. A.F.J. van Raan, "Fatal attraction — conceptual and methodological problems in the ranking of universities by bibliometric methods," *Scientometrics* 62 (1) (2005): 133–43.
85. Isidro F. Aguillo, Judit Bar-Ilan, Mark Levene and Jose Luis Ortega, "Comparing university rankings," *Scientometrics* 85 (2010): 243–56.
86. I.F. Aguillo, B. Granadino, J.L. Ortega and M. Fernandez, "Webometric ranking of world universities: introduction, methodology, and future developments," *Higher Education in Europe* 33 (2/3) (2008): 234–44.
87. Andrejs Rauhvargers, *Global University Rankings and Their Impact*, European University Association, Brussels, 2011.
88. H. Andersen, "Influence and reputation in the social sciences — how

much do researchers agree?," *Journal of Documentation* 56 (6) (2000): 674–92.

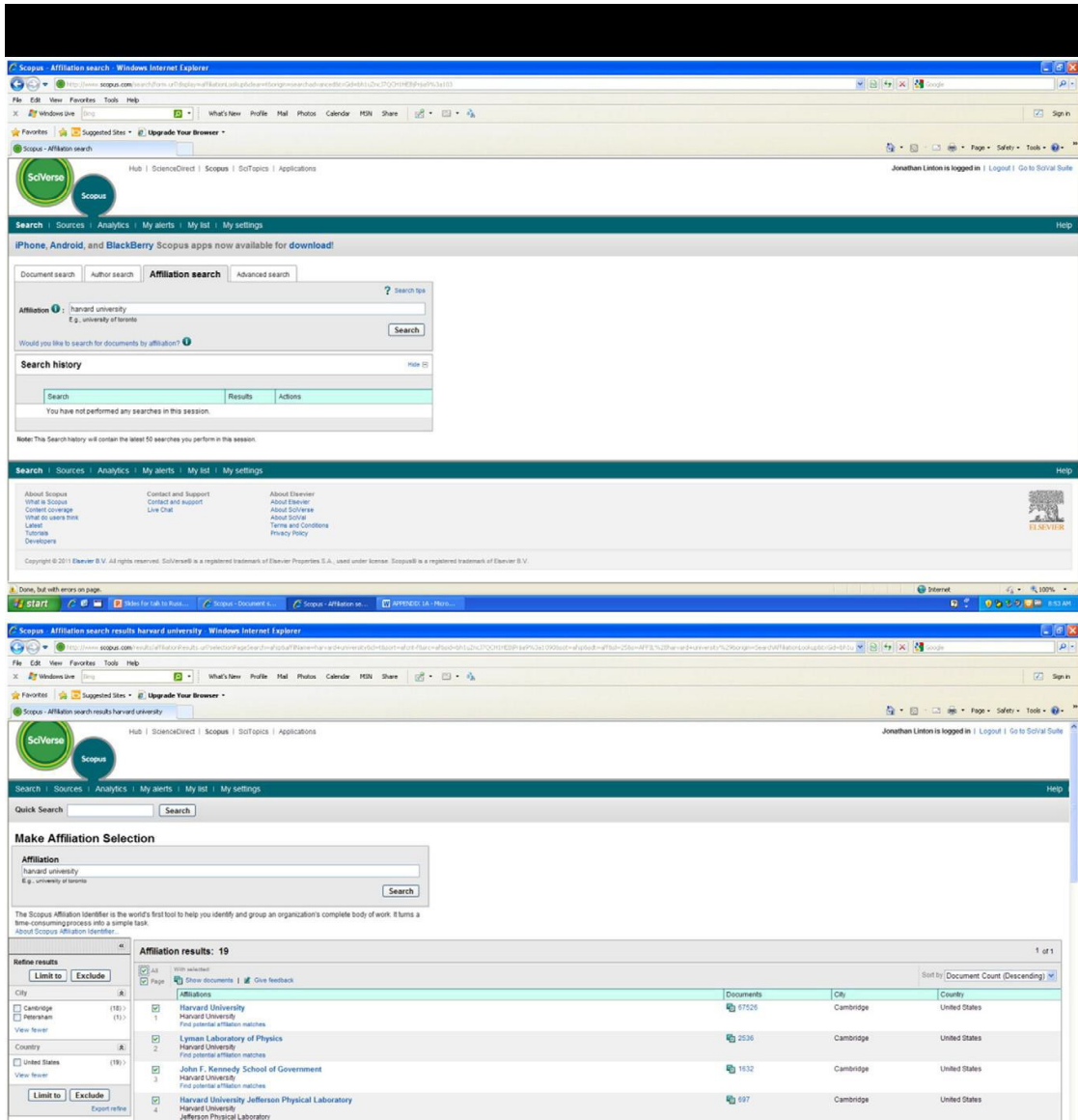
89. B.L. Andersen, S.J. Beck, R.A. Bornstein, C.F. Emery, M.A. Fristad, J.K. Kiecolt-Glaser, D.R. Strunk, J.F. Thayer, M.W. Vasey and K.O. Yeates, "Problematic methods in the assessment of scholarly productivity in clinical PhD programs," *Clinical Psychology: Science and Practice* 15 (1) (2008): 102–4.

90. T.J. Gaeta, "Authorship: 'law' and order," *Academic Emergency Medicine* 6 (4) (1999): 297–301.

91. J.F. Nash, "Equilibrium points in N-person games," *Proceedings of the National Academy of Science on the United States of America* 36 (1) (1950): 48–9.

92. J.F. Nash, "The bargaining problem," *Econometrica* 18 (1950): 155–61.

Appendix I. Screen Images of Steps Used to Collect Data



Scopus - Document search results

Document results: 72,016

Search within results

Refine results

Year

Author Name

Subject Area

Document Type

Document title	Author(s)	Date	Source title	Citations
1 Genetology, ontogeny, and the narrative arc of origins	Smart, D.L.	2011	French Historical Studies 34 (1), pp 21-35	1
2 Showing the needs of students with learning disabilities in inclusive mathematics classrooms: The role of scheme based instruction on mathematical problem solving	Jenkins, A.K., Star, J.R.	2011	Theory Into Practice 50 (1), pp 12-19	0
3 A macroprudential approach to financial regulation	Hanson, S.G., Kashyap, A.K., Stein, J.C.	2011	Journal of Economic Perspectives 25 (1), pp 3-28	2
4 The basis of shared intentions in human and robot cognition	Dominey, P.F., Wainstein, F.	2011	New Ideas in Psychology 29 (3), pp 260-274	0
5 The reconstruction of liberal education: A foundational syllabus	Beil, C.	2011	Arbuthnot Review 69 (1), pp 26-33	0
6 Does extinction wield an axe or pruning shears? How interactions between phylogeny and ecology affect patterns of extinction	Green, W.A., Hurl, G., Wing, S.L., Dilchick, W.A.	2011	Paleobiology 37 (1), pp 72-91	0
7 French Historical Studies: Introduction	Smart, D.L.	2011	French Historical Studies 34 (1), pp 1-6	0
8 A proleptic pronoun: Textual identity in Grammelshausen's Simpleximus Teutsch	Frishman, I.T.	2011	German Quarterly 84 (1), pp 4-20	0
9 Consumer financial protection	Campbell, J.V., Jackson, H.E., Mathan, B.C., Tufano, P.	2011	Journal of Economic Perspectives 25 (1), pp 91-114	0
10 Translating F.O. Matthiessen	Garber, M.	2011	Platen 30 (3), pp 94-106	0

Scopus - Document search results

Document results: 8,525

Search within results

Refine results

Year

Author Name

Document title

Author(s)

Date

Source title

Citations

Document title	Author(s)	Date	Source title	Citations
1 Probabilistic reasoning in patients with body dysmorphic disorder	Reese, H.E., Mohanty, R.J., Wilhelm, S.	2011	Journal of Behavior Therapy and Experimental Psychology 42 (3), pp 270-278	0
2 Spatiotemporal delivery of bone morphogenetic protein enhances functional repair of segmental bone defects	Kozlowski, Y.M., Biewerski, J.D., Dupont, N.M., Bagn, M., Huebner, N., Mooney, D.J., Hutmacher, D.W., Goldberg, R.E.	2011	Bone 49 (3), pp 485-492	0
3 Genetic differentiation and the evolution of cooperation in chimpanzees and humans	Langergraber, K., Schubert, G., Rowley, C., Wrangham, R., Zommers, Z., Vigilant, L.	2011	Proceedings of the Royal Society B: Biological Sciences 278 (1717), pp 2540-2552	0
4 Technologies for micromanipulating, imaging, and phenotyping small invertebrates and vertebrates	Yank, M.F., Rohde, C.S., Fardo-Martin, C.	2011	Annual Review of Biomedical Engineering 13, pp 185-217	0
5 Bioengineering heart muscle: A paradigm for regenerative medicine	Vargak-Nizakbas, G., Luk, K.O., Tandon, N., Chien, K.R.	2011	Annual Review of Biomedical Engineering 13, pp 245-267	0

Scopus Author details (McNally, Richard J.) - Windows Internet Explorer

Scopus - Author details (McNally, Richard J.)

Search | Sources | Analytics | My alerts | My list | My settings

Quick Search [] Search

Print | E-mail | Request author detail corrections

McNally, Richard J.

Find potential author matches

Personal

Name: McNally, Richard J.
 Other formats: McNally, R. J. | McNally, Richard
 Author ID: 7102581234
 Affiliation: Harvard University, Department of Psychology, Cambridge, United States

Research

Documents: 214 [Author Evaluator](#) | [Add to my list](#) | [Set alert](#) | [Set feed](#)
 References: 2581
 Citations: 5413 [View citation overview](#) | [Set alert](#)
 h-index: 34 [View h-Graph](#) The h index considers Scopus articles published after 1995.
 Co-authors: 150 (maximum 150 co-authors can be displayed)
 Web search: 43688
 Subject area: Psychology, Medicine

Documents

This author has published 214 documents in Scopus (Showing the 2 most recent)

Reese, H.E., McNally, R.J., Heim, S., Amir, N. Attention training for reducing spider fear in spider-phobic individuals (2010) *Journal of Anxiety Disorders*

Reese, H.E., McNally, R.J., Wilhelm, S. Facial asymmetry detection in patients with body dysmorphic disorder (2010) *Behaviour Research and Therapy*

[View details of all 214 documents by this author](#)

Inform me when this author publishes new documents in Scopus
[Set alert](#) [Set feed](#)

Cited by since 1996

This author has been cited 5413 times in Scopus (Showing the 2 most recent)

Houtgan, J.E., Goodman, R.L., Southern-Grove, H.A. Discrepancies in parents' and children's reports of child emotion regulation

Section 6

What are Research Expectations? A Comparative Study of Different Disciplines

By

Jonathan D. Linton a, □, Robert Tierney b, Steven T. Walsh c
a University of Ottawa, Ottawa, Canada
b NIKOS, University of Twente, Enschede, The Netherlands
c University of New Mexico, Albuquerque, NM, USA

*Reproduced with permission from Elsevier Publishing Inc. Article originally
appeared in Serials Review December 2012 Volume 38 Number 4 pp. 229-234*

Citations presented in accordance to journal requirements

Section 6.1 Abstract and Keywords

This paper is intended to assist professors, administrators, librarians and other members of university level committees that must consider research expectations and research quality in academic fields that they lack. While this is not a problem for field experts, it is a difficulty when people are asked to make decisions in areas of study other than their own. This is commonly the case for senior university professors, librarians and administrators in regards to university wide decisions. The paper investigates this gap, through a study of 27 academic fields in 348 highly regarded universities. We find that there are almost always statistically significant differences in activity between academic fields, regardless of the metric one considers. However, it is possible to understand these differences by comparing the distribution of a known academic field to that of a field that one is not familiar with. Tables and information are provided to assist in the comparison of different fields of study on metrics such as: departmental publications and researcher level metrics of publications, citations, H-index, and total number of co-authors. The information can also be used to support decisions associated with promotion to senior posts such as endowed chairs and professorships. Information regarding specific universities and researchers are included in the data supplement

Keywords: Research, Metrics, Interdisciplinary, H index, Citations, evaluation

Section 6.2 Introduction

Assessing a field of study is considered difficult. However, understanding the boundaries of a field and the relative quality of different outlets in the field is critical to decisions regarding tenure and promotion. Consequently, many articles have been written in a wide range of fields to help researchers better understand and evaluate their own field (Bontis & Serenko, 2009; Dubois & Reeb, 2000; Fisher, Shanks, & Lamp, 2007; Guidry et al., 2004; Linton & Thongpapanl, 2004; Thongpapanl, 2012). It is even more difficult to evaluate the work of scholars in a different field (Henderson, Ganesh, & Chandy, 1990; D. A. Johnston, personal communication, August 15, 2012; K. Malloy, personal communication, August 14, 2012; G. T. Solomon, personal communication, August 14, 2012; D. W. Walsh, personal communication, August 14, 2012; F.S. Wu, personal communication, August 14, 2012). While citation and publication rate are frequently put forward as proxies of research quality and relevance (Anon, 1962; Clapham, 2005; de Meis, Velloso, Lannes, Carmo, & de Meis, 2003; De Rond & Miller, 2005; De Villiers & Malan, 1997; Good, 1964; Lofthouse, 1974; Mackay, 1974; Mitchell & Reichel, 1999; Nash & Walsh, 2000; Parchomovsky, 2000; Plümper & Radaelli, 2004; Qiu, 2010; Relman, 1977; Rhee, 2004; Smith, 2004; Yimin, 2001), differences between fields are not taken into account (Shin & Cummings, 2010). As this gap still exists, this paper takes a step towards forming a better understanding of the differences that exist in research expectations between fields within a university. This is critical as librarians are often asked to offer insights into the nature and quality of a professor's research portfolio. Although the library science community is aware of the inherent differences in publication, authorship, and citation patterns that exist from faculty to-faculty and even between departments within the same faculty, this academic field knowledge may not be readily accepted by the researchers and administrators that populate the faculties of an academic or research institution. Consequently, a paper that moves us towards a better understanding of the inherent differences between fields by providing information on how

research activity varies between fields is a valuable contribution and useful reference document. Such a contribution assists librarians when they are tasked with either offering insights into the relative quality of a candidate that is being considered by a university or providing guidance on advising what level of research activity is roughly equivalent to the activity in another field. It also offers librarians with some supporting information about the relevant importance of journals to different fields, and this information can help with decision-making regarding acquiring or discontinuing publications. Hence, this paper examines research and researcher activity in different fields for highly regarded universities (Linton, Tierney, & Walsh, 2011).

There are a variety of reasons for members of a university community to understand differences in research expectations in different fields. Senior administrators, librarians, and professors need to understand the norms of the different academic fields within the universities' portfolio. Previous experience in a single academic department does not prepare academics for this role as they move to tasks that are more interdisciplinary in nature. While this knowledge will develop over time, the learning process can be accelerated through reading about differences in between-field norms, as is offered here and in the supplement.

Comparing between field norms is critical for hiring and promotion committees that involve university community members from a number of different fields. As this is commonplace in universities, it is an activity that needs to be understood as it is not possible to just assume that everyone will be able to identify good research and contributions in a field without understanding the difference in norms that separate an individual's field from that under consideration. Without appropriate baseline quantitative information for between-field calibration, the richness and value of qualitative assessment cannot be fully utilized. Particular attention to what constitutes substantive research activity is of particular value for decisions on promotion to full or chaired professor. Finally, an assessment of the differences in relative levels of activity of different parts of a university community can

provide useful information to assist with decisions relating to acquisition of books, journals, and databases for the library science community.

In summary, this paper offers:

- 1.) A quantitative basis for better understanding differences in research expectations between different fields within and across institutions;
- 2.) Consideration of the common metrics to describe research activity—number of publications, total number of citations, number of co-authors, and Hirsch index (the number that represents both frequency of publication and citation simultaneously—i.e., an index of 10 states that at least 10 papers are cited 10 or more times (Truex, Cuellar, & Takeda, 2009),
- 3.) Assistance to members of university committees in better understanding differences in norms—critical for providing baseline information across discipline decisions on tenure, promotion, and selection for honors such as chairs and special status such as distinguished professor;
- 4.) Provides equivalency in research metrics for consideration of personnel within a field or across fields;
- 5.) Offers a benchmark of what very prolific researchers' activity is in different fields of highly respected universities and how this varies;
- 6.) Provides useful insights for assessments on what constitutes a prolific researcher in different fields, which is important for recruiting and retention.

Section 6.3 Methods

In order to compare research output between fields, it is important to have a large group of universities that are active in most or all fields considered. The universities should be from a variety of different geographic locations to reflect possible differences in

expectations and the nature of output in different countries. It was determined that these goals could be accomplished by selecting the top universities from an international ranking of universities. There are a number of different ranking systems of both a regional and international nature (Aguillo, Bar-Ilan, Levene, & Ortega, 2010; Aguillo, Granadino, Ortega, & Fernandez, 2008). To avoid over reliance on a single ranking system and the inherent biases of that particular system, we selected the top 250 universities from the two most divergent international ranking systems (Aguillo et al., 2008, 2010). More specifically, this study is based on the QS (QS, 2011) (Quacquarelli Symonds Limited) and WR (WR, 2011) (Webometrics) lists of top universities globally. Through the consideration of the top 250 universities for each of these rankings a list of 348 institutions were obtained. Repetition of data collection may result in slightly different numbers reflecting the separate counting of different parts of the same organization. For example, the University of London is made up of a number of semi- autonomous institutions. At the time of writing of this article, the University of Manchester and University of Manchester Institute of Science and Technology (UMIST) had merged into a single institution, and there are discussions of making a similar merger between the University of Leiden, Delft University and Erasmus University in the Netherlands. The data collection follows the same procedure as in Linton et al. (2011), and hence it is only reviewed briefly here.

For each university, data were collected manually from Scopus (www.scopus.com) in the following manner: (1) affiliation tab was chosen. (2) A search of the desired university is initiated. (3) Once the search is complete, all associated organizations, institutes or departments are checked to gain a complete record of university research activity. The show documents box was selected. (4) One now identifies and collects information on the most active researcher in a given field at a given university. (5) The list of articles for a given field is isolated—to do this one must eliminate the multidisciplinary category for each

search. Having conducted this step, the most prolific author is the first name in the author list. The box associated with the first author is selected to gain access to all of the publications associated with that author. (6) On the next screen, the author's name on the most recent publication is located and selected. The name of the author, number of publications, number of citations, number of coauthors, and Hirsch index are all recorded and associated to the appropriate university and field of research in our database. If the selected author is found to be a faculty member at a different university, the next most prolific author is selected. In a few cases, no authors were found at the university under consideration. In these cases, zeroes were entered into the database describing the activity of the most prolific author. The process was conducted until information for all the universities was completed.

Information regarding the most prolific authors in each field at each university was placed into an Excel spreadsheet. This supplement—a set of 27 tables—provides the detailed data used in this study and can be found at (<http://www.research.uottawa.ca/docs/researchexpectations.pdf>). The data supplement includes numerical ranks for all institutions corresponding to each of the fields specified on Tables 1 to 5 of this paper. The statistical routines provided within Microsoft Excel were used to determine the percentile values associated with the different variables. Percentiles are a useful way to summarize the data as they give a quick simple way of depicting the underlying data. They represent the ordering of universities in a line from lowest to highest value and allow us to list the magnitude of each research related metric for the 1st (lowest value—min), 35th (10th percentile), 87th (25th percentile), (50th percentile—median), 251st (75th percentile), 313th (90th percentile), and 348th (highest value—max). In addition, T-tests were used to compare the values of the same variable to determine if the values from the different fields are samples that come from the same population or if the samples are clearly from different underlying populations—that is the

difference is statistically significant. The simplifying assumptions of paired T-tests and a single standard deviation describing both variables are avoided as this might bias the results. Summary statistics and results of the analysis are provided below in the next section.

Section 6.4. Results

6.4.1 Consideration of Overall Data

The distribution of the total number of publications in each field is summarized in Table 1. From this information, it is possible to see that there is a tremendous variation between fields of study. Furthermore, by examining the supplement (see Section 3.2), one can see there are substantial variations in research performance within a university. In some cases this is a result of a university having no activity in an area, as we see from zero or near zero minimum values for the 27 fields listed in Table 6.1. Maximum values are often non-representative due to an unusual situation such as interdisciplinary researchers having all their publications from a number of different fields counted.

Table 6.1

Total publications for each area of study for 348 top universities: minimum, various percentile levels, and maximum value.

Category	Min	10th	25th	50th	75th	90th	Max
Medicine	2	578	1,762	8,438	16,824	26,447	127,212
Astronomy and Physics	0	1,008	2,495	4,961	8,194	1,348	42,552
Biochemistry, Genetics and Molecular Biology	0	854	2,185	5,729	9,881	15,039	53,935
Engineering	0	587	1,490	3,708	6,996	12,218	34,750
Chemistry	0	876	1,845	3,069	4,853	8,117	21,812
Materials	0	370	737	1,735	2,995	5,526	17,515
Immunology and Microbiology	0	93	287	949	2,141	3,510	19,363
Earth and Planetary Science	0	85	283	919	2,300	3,564	18,103
Environmental Science	0	319	566	1,048	1,991	3,125	8,127
Agriculture/Biological Science	0	97	261	1,239	2,783	5,329	18,452
Mathematics	0	413	735	1,315	2,273	3,667	8,610
Computer Science	0	438	724	1,313	2,350	4,089	11,261
Chemical Engineering	0	168	388	747	1,427	2,525	7,860
Multidisciplinary	0	59	105	256	504	1,116	8,485
Pharmacology, Toxicology and Pharmaceuticals	0	115	325	989	1,920	3,070	15,915
Neuroscience	0	104	298	909	2,152	3,396	25,837
Social Science	0	259	495	1,061	2,014	3,343	19,732
Psychology	0	78	321	776	1,579	2,675	6,940
Health Professions	0	13	49	202	623	1,226	4,932
Economics, Econometrics and Finance	0	71	171	339	621	1,225	5,889
Decision Science	0	95	167	294	505	807	1,926
Business Management	0	90	146	341	571	981	3,330
Nursing	0	12	65	177	426	944	3,364
Veterinary	0	5	23	73	224	1,240	5,106
Arts and Humanities	0	2	9	130	388	800	5,108
Dentistry	0	3	8	44	346	889	3,508
Undefined	0	7	24	104	333	658	2,768

Table 6.2

Total publications for most prolific author for 348 top universities: minimum, various percentile levels, and maximum value.

Category	Min	10th	25th	50th	75th	90th	Max
Medicine	10	99	183	321	506	1,693	127,212
Astronomy and Physics	0	138	240	355	476	614	1,930
Biochemistry, Genetics and Molecular Biology	0	134	197	284	404	644	1,693
Engineering	0	116	170	254	365	495	1,930
Chemistry	0	156	224	349	517	727	1,641
Materials	0	121	189	280	411	597	1,930
Immunology and Microbiology	0	74	129	205	317	468	1,641
Earth and Planetary Science	0	47	77	122	191	286	741
Environmental Science	0	64	110	166	253	357	1,175
Agriculture/Biological Science	0	56	91	143	233	353	841
Mathematics	0	53	83	139	228	378	681
Computer Science	0	69	116	196	308	420	1,201
Chemical Engineering	0	87	114	208	324	455	1,245
Multidisciplinary	0	33	63	136	249	372	1,019
Pharmacology, Toxicology and Pharmaceuticals	0	80	138	238	354	525	1,641
Neuroscience	0	72	121	196	309	471	1,019
Social Science	0	35	65	131	223	348	701
Psychology	0	44	84	149	241	358	792
Health Professions	0	23	57	113	219	331	1,100
Economics, Econometrics and Finance	0	19	33	58	105	170	681
Decision Science	0	25	45	76	148	265	1,020
Business Management	0	14	32	57	113	200	574
Nursing	0	0	45	96	193	339	1,206
Veterinary	0	0	52	124	198	318	1,995
Arts and Humanities	0	1	9	26	74	206	488
Dentistry	0	0	13	82	157	265	67
Undefined	0	0	25	73	162	280	63

Table 6.3

Total citations for most prolific author for 348 top universities: minimum, various percentile levels, and maximum value.

Category	Min	10th	25th	50th	75th	90th	Max
Medicine	2	569	1762	4114	9282	18285	57461
Astronomy and Physics	0	743	1625	2837	4875	10127	39219
Biochemistry, Genetics and Molecular Biology	0	858	1894	3590	7734	13185	48832
Engineering	0	347	685	1376	2810	5900	75622
Chemistry	0	740	1639	3247	7619	14380	49335
Materials	0	588	1157	2454	4634	9593	75622
Immunology and Microbiology	0	591	1261	2668	5919	11069	68805
Earth and Planetary Science	0	246	595	1224	2125	3978	23768
Environmental Science	0	387	909	2052	3576	5654	43621
Agriculture/Biological Science	0	278	722	1332	2577	4572	43621
Mathematics	0	123	299	714	1707	3403	14794
Computer Science	0	165	378	1131	2513	4693	28740
Chemical Engineering	0	388	847	1663	3192	5702	75622
Multidisciplinary	0	97	359	1571	4284	11805	47418
Pharmacology, Toxicology and Pharmaceuticals	0	322	979	2139	4212	7552	49335
Neuroscience	0	501	1237	2623	5772	8775	43932
Social Science	0	85	302	1005	2927	7460	47418
Psychology	0	233	662	1781	3575	6873	39863
Health Professions	0	52	288	968	2591	5037	32401
Economics, Econometrics and Finance	0	48	135	322	792	2093	14794
Decision Science	0	74	183	491	1130	2075	75622
Business Management	0	27	140	406	997	2026	10348
Nursing	0	0	142	761	2806	6440	47418
Veterinary	0	0	281	1089	2459	5051	23842
Arts and Humanities	0	0	4	66	483	3043	24291
Dentistry	0	0	43	533	1352	2635	13096
Undefined	0	0	74	464	1511	4451	37338

Table 6.4

H- index for most prolific author for 348 top universities: minimum, various percentile levels, and maximum value.

Category	Min	10th	25th	50th	75th	90th	Max
Medicine	0	10	21	35	47	62	113
Astronomy and Physics	0	14	20	28	36	43	82
Biochemistry, Genetics and Molecular Biology	0	16	22	33	43	56	110
Engineering	0	9	13	19	27	37	105
Chemistry	0	12	20	29	39	52	150
Materials	0	11	17	26	34	43	105
Immunology and Microbiology	0	12	18	27	41	54	124
Earth and Planetary Science	0	8	13	20	27	37	86
Environmental Science	0	11	17	24	33	41	93
Agriculture/Biological Science	0	8	15	20	28	36	93
Mathematics	0	6	9	14	22	29	61
Computer Science	0	7	10	16	27	36	75
Chemical Engineering	0	9	15	22	30	41	105
Multidisciplinary	0	3	11	19	35	53	99
Pharmacology, Toxicology and Pharmaceuticals	0	7	14	22	34	43	112
Neuroscience	0	11	19	28	40	51	100
Social Science	0	4	9	17	27	43	99
Psychology	0	7	14	23	32	44	91
Health Professions	0	3	9	15	26	39	77
Economics, Econometrics and Finance	0	3	6	9	14	23	75
Decision Science	0	2	7	11	17	23	115
Business Management	0	3	6	11	17	22	64
Nursing	0	0	6	13	25	39	107
Veterinary	0	0	9	17	28	39	87
Arts and Humanities	0	0	1	4	12	28	78
Dentistry	0	0	3	11	19	31	67
Undefined	0	0	0	8	18	32	63

Table 6.5

**Number of coauthors for most prolific author for 348 top universities:
minimum, various percentile levels, and maximum value.**

Category	Min	10th	25th	50th	75th	90th	Max
Medicine	2	108	150	150	150	150	150
Astronomy and Physics	0	125	150	150	150	150	150
Biochemistry, Genetics and Molecular Biology	0	150	150	150	150	150	150
Engineering	0	73	127	150	150	150	150
Chemistry	0	12	20	29	39	52	150
Materials	0	111	150	150	150	150	150
Immunology and Microbiology	0	110	150	150	150	150	150
Earth and Planetary Science	0	57	104	150	150	150	150
Environmental Science	0	69	128	150	150	150	150
Agriculture/Biological Science	0	53	112	150	150	150	150
Mathematics	0	25	46	89	150	150	150
Computer Science	0	54	98	150	150	150	150
Chemical Engineering	0	79	125	150	150	150	150
Multidisciplinary	0	31	73	150	150	150	150
Pharmacology, Toxicology and Pharmaceuticals	0	80	150	150	150	150	150
Neuroscience	0	80	137	150	150	150	150
Social Science	0	16	48	129	150	150	150
Psychology	0	36	85	150	150	150	150
Health Professions	0	22	70	150	150	150	150
Economics, Econometrics and Finance	0	7	17	36	81	150	150
Decision Science	0	15	32	59	127	150	150
Business Management	0	8	21	49	109	150	150
Nursing	0	0	6	13	25	39	150
Veterinary	0	0	86	150	150	150	150
Arts and Humanities	0	0	1	13	96	150	150
Dentistry	0	0	17	98	150	150	150
Undefined	0	23	92	150	150	150	150

Consequently, it is suggested for the purpose of comparison that minimal and maxima are ignored. To illustrate the extent of the difference, Medicine is compared to Arts and Humanities. With a 90th percentile value of 800 a high publishing Arts and Humanities faculty compares well against a 10th percentile Medicine university (578), but poorly against a university at above the 25th percentile (1,762). The 25th, 50th, and 75th percentiles are 1,762; 8,438; and 16,824 for Medicine and 9, 130, and 388 for Arts and Humanities. This constitutes a difference of a factor of 42 and 196, for the 75th and 25th percentile respectively. Clearly corrections are needed not only in terms of differences between areas of study, but consideration must be given in relation to actual placement on a distribution as a percentile, since multipliers to correct for research activity vary

with movement along the respective distributions. Having considered total publications for an area of study, the performance of the top performer in terms of publications is now considered.

Much of what can be said about patterns and interpretation of the most prolific author in an area of study (Table 6.2) is similar to what can be said about the area of study (Table 6.1). There is, however, one additional insight worth mentioning. Universities with a higher activity level (and rank) tend to be the beneficiaries of multiple strong researchers—not a single star research performer. The lower performing universities are often to a large extent reliant on the productivity of a single researcher (or research group). The number of citations associated with the most prolific author (Table 6.3) is exceedingly low (in some fields at the level of zero up till and possibly beyond the 10th percentile). As the percentile level increases the relative difference between the least cited area of study and most cited area of study declines significantly. For example, at 25 percent the minimum value is 4 (Arts and Humanities) and the maximum value is 1,762 (Medicine)—a difference of almost 450 times. While at the 90th percentile the minima (2,026—Business) and maxima (18,285—Medicine) are separated by a factor of about 9 times. The H-index (Table 6.4), unsurprisingly, offers much greater consistency between different fields of study. If one discounts Arts and Humanities and Undefined, the range between minima (9) and maxima (35) at the 50 percent level is four. This declines to a factor of two as

(1) Publication volume (Table 1): Immunology and Social Sciences, Chemical Engineering and Psychology.

(2) Publications of most prolific author (Table 2): Decision Science and Undefined.

(3) Citations of most prolific author (Table 3): Engineering and Social Sciences,

Computer Science and Health Professions, Chemical Engineering and Psychology.

(4) H-index of most prolific author (Table 4): Computer Science and Veterinary.

(5) Number of coauthors for most prolific author (Table 5): Engineering and Neurosciences, Multidisciplinary and Veterinary, Management and Undefined, Management and Dentistry.

This lack of direct comparability is a critical finding as it suggests that it is inappropriate and incorrect to base one's knowledge on the norms of one area of research on the quality of a candidate or department in another area of research. However, Tables 6.1–6.5 are very helpful in that they allow for determination of equivalencies between percentiles in one field with an equivalent level in another field. In other words, if a researcher's performance is at the 50th percentile level in their field of study one can equate this to a different field of study and in this way obtain a better understanding of whether the researcher's performance is superior or inferior to what it may seem otherwise. For example, in Arts and Humanities an H-index score of 4 (50th percentile) is equivalent to an H-index of 35 (50th percentile) in the field of Medicine.

While such information is not a replacement for expertise in a specific academic field, people making decisions at a university level can use this information to better relate between a field where they have academic field expertise and the field under consideration for which they lack academic field knowledge. The information in Tables 6.1–6.5 alerts one to the tremendous differences between academic fields and offers some insights into these differences. Such information does of course have its limitations. For example, in specialty areas such as Dentistry and Veterinary Science, there are zero values and very low values at the lower percentile rankings. This absence of activity typically indicates an absence of the specialty from the university under consideration. In fact, absence of an activity accounts for values of zero not only for the minimum in many tables, but also at the 10th percentile level in some cases. As there are tremendous differences in the specialization of universities around the world, it is unsurprising that the minimum value of most fields of study is

zero—an absence of any specialist activity in these areas. Having considered the reason for extreme values (an absence) at the low end of the rankings, surprisingly high values at the high end of the spectrum are considered. Authors who are very prolific often have interdisciplinary activity. This activity opens up the possibility of greater access to funding, increased research quality through practice, and a superior network of co-authors. As there are significant differences in publishing norms from one field to another, multidisciplinary activity increases the likelihood of domination of two or more fields. If one is very prolific in a field that has higher publication or citation rates, it is likely that one's activity will be the most prolific in other fields that one's work also touches on.

For example, if one considers total publications (Table 6.2) for the most prolific author, the maximum value is held by the same multidisciplinary researcher/author in the following cases: Medicine and Biochemistry, Astronomy and Engineering and Materials, and Chemistry and Immunology and Pharmaceuticals. While in the example of total citations for the most prolific author (Table 6.3), the maximum value of total citations is received by the same multidisciplinary researcher in the following cases: Engineering and Materials, Chemistry and Pharmacology, Environmental Science and Agriculture, Nursing and Social Science and Multidisciplinary. Hence, we can see that the presence of interdisciplinary researchers at the top of the rankings and the absence of a field of study from a number of universities has a significant influence at the bottom of the rankings. Consequently, to really understand the difference from one field to another, it is best to avoid the tails of the ranking (maximum, minimum and perhaps even 10th and 90th percentiles) and focus more on the values between the inter-quartiles (25th to 75th percentile). This also contributes to the very low direct comparability between differences in fields of study.

It is important to note that there are many important aspects of research that are not captured in this study. In fields such as Arts and Humanities, the roles of books are critical but overlooked here.

In an effort to capture a wide range of journals, data from Scopus were utilized. While Scopus is more inclusive than the ISI Web of Science, it has limitations. This study in part reflects and reports the limitations associated not only with the sources selected by Scopus but also with the quality of the database. The most notable example of this is that Scopus will not show more than 150 coauthors. Hence, in Table 6.5, there is an abnormally large number of 150s reported, as 150 refers to all numbers with a magnitude of 150 or greater. Other items that are considered important in some fields and are subject to great variation between fields, but not considered here include the following: total number of pages published, citation intensity (citations/year), number of pages, and impact factor of journals and similar metrics being adjusted to reflect the number of authors or order of authors on each paper. Furthermore, presence of work in open access outlets, repositories, reports, and working papers are also overlooked by this approach. The implications of absence of additional sources of information from this study differ depending on the field under consideration. While it is not clear whether or not this in itself warrants further study in the future, it is clear that the insights from the use of this paper should be supplemented through consultation with academic field experts in the case of many decisions.

Having noted general limitations associated with the method of data collection, issues that are specific to Scopus are now briefly described. In addition to concerns regarding the possibility of transcription errors with such a large volume of data to be processed, information changes over time. While steps were taken during data collection and auditing to limit the effect of these concerns, the data are also included as a supplement, so it can be checked and appropriate corrections can be noted by interested parties. Throughout the data collection process a number of other factors were noted as possibly giving incomplete or misleading information: change in database formatting during the data collection process, incorrect spelling of author name in the database resulting in one person having two or more identities, or error in affiliation resulting in a university being credited/not credited for a researcher.

It has already been noted that inclusivity is a characteristic that made Scopus more attractive than ISI Web of Science for this study. While Scopus includes more journals than the ISI Web of Science, Scopus limits itself to 27 research categories. For finer grained consideration of differences between fields, the ability to consider a larger range of categories is attractive. However, the 27 categories offered in this study provide a substantial and suitable base. An alternative choice of database for this type of study is to utilize Google Scholar with or without Harzing's Publish or Perish engine (Dazey & Parks,2010; Harzing & van derWal, 2008; Jacsó, 2009). While this engine is popular due to its inclusivity of sources, the authors have found that the engine has issues of consistency. While it should consistently provide higher citation results than either Web of Science or Scopus, the authors have found this is not always the case. In future studies, however, the use of this database may assist in overcoming the gaps that Web of Science and Scopus have in relation to books, book chapters, or influential non-academic publications. Having considered the results, their interpretation, and the strengths and weaknesses of the method utilized, the data supplement is now considered.

6.4.2 Consideration of Supplementary Data

The data utilized to produce the five summary tables is available at <http://www.research.uottawa.ca/docs/researchexpectations.pdf>. While full disclosure is a sufficient reason to provide this information, there are more practical uses for it. Prior to consideration of the uses of such data, it is worth offering some background information. The data for all 348 universities is provided in alphabetical order for all 27 academic fields. A sample of the data supplement is offered in Table 6.6. In addition to the metrics offered regarding publication number (department and most prolific researcher), citations, H-index, and number of coauthors; the name of the most prolific author is included. Such information is of great assistance when trying to make decisions regarding highly senior university-wide research positions such as institute or distinguished professors as one is able to compare the output metrics of a professor with the most prolific research

professors at the top universities around the world in the same field.

This can also offer guidance for awards that hold honor at a national level such a Tier I CRC chair or a Humboldt Fellowship. These values offer critical guidance and prevent hurdles from being set ridiculously high or undeservedly low through arguments that a certain field typically has very low publication and citation thresholds. If there is interest for a university to broaden its capabilities, such information is helpful in assisting in identifying what high performing faculty may look like in a field where the institution lacks local expertise. Of course there is more to excellence than the magnitude of numbers such as volume, citation and H-index, but access to such values from a neutral source such as the supplement is helpful. Having discussed and considered the implications of the publishing data in a summarized form (Tables 6.1–6.5) and its raw format (Table 6.6 and supplement), conclusions are now considered.

Section 6.5 Conclusions

This study of 348 universities found that in almost all cases there are statistically significant differences in what constitutes research activity when comparing 27 separate fields of study. Consequently, one must be very careful when utilizing knowledge from one academic field to make decisions regarding research activity and quality in another academic field. Librarians can offer guidance to administrators and university committees on the estimated equivalent levels of publications, citations, and H-indices using information provided by this study. While consulting with academic field experts is still advised, information comparing two separate areas provides a more complete picture to personnel at their university. This information can be used either in the absence of an academic field expert or to ensure that an academic field expert is not overly generous or stingy in how they assess high performance in their stated field of academic field expertise. By comparing quartiles or median on dimensions such as departmental publications, author papers, author citations, author H-index, or co-authors; one can at least partially calibrate the quality of researchers and departments in different areas of study. Such information assists in consideration of the most

appropriate acquisitions, cancelations, and formats. The relative dependence on journals helps determine and justify the balance of journals between different fields and also between journals and books. In other words fields that place a strong emphasis on journal articles warrant extensive access to serials, if the university wishes to maintain or grow research activities in this field. In fields that consider journal articles to be of a lower importance, the focus should be more on book acquisition and less on journals.

It is important to note that universities' reputations are developed in different ways. Consequently, highly ranked universities may lack certain specialties and have differing levels of research performance in the specialties that they do have. There is substantial room for further consideration of this topic; this paper is intended as a starting point for a dialog about how research activity differs across different areas of study.

Table 6.6
Sample of supplement data listing medical publications data for 31 universities by
alphabetical order—both number and rank are provided.

Medical Publications Data	Department Publications	Range	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Co-authors
Aalto University	761	305	R. Hari	301	193	7,650	108	48	73	150
Aarhus University	19494	70	H.T. Sorensen	537	76	8,413	96	40	128	150
Arizona University	3774	223	J. He	537	76	8,416	96	40	128	150
Ateneo de Manila University	13	347	U.M. Carajal	29	345	20	345	0	347	5
Auburn University	1917	257	C.J. Diskin	1,578	2	304	327	8	324	64
Australian National University	5952	199	A.F. Jorm	377	143	9,729	84	47	80	150
Boston College	1026	290	J.J. Paris	78	323	227	330	6	330	60
Boston University	26336	36	D'Gostino	645	50	47,024	3	91	3	150
Brandeis University	1509	272	J.C. Hall	195	253	3,134	202	44	101	150
Brigham Young University	1739	262	E.D. Bigler	224	237	2,421	233	26	225	150
Brown University	12873	124	V. Mor	314	180	7,278	113	46	89	150
California Institute of Technology (Caltech)	2196	248	E.H. Davidson	314	180	5,324	141	47	80	150

Cardiff University	18205	80	M.J. Owen	732	29	25,019	20	17	17	150
Carnegie Mellon University	1530	270	S. Cohen	162	273	10,566	75	36	160	150
Case Western Reserve University	20639	65	G. Perry	507	87	964	298	65	24	150
Chalmers University of Technology	639	311	S. Nillson	110	305	1,611	268	27	216	150
Charles University	12250	127	M. Michal	365	147	1,887	249	25	238	150
Chinese University of Hong Kong	7296	183	T.B. Ng	409	124	2,912	209	38	143	150
Chulalongkorn University	4569	213	V. Wimanitkit	645	50	733	303	9	319	120
City University of Hong Kong	578	313	P.K.N. Yu	87	317	459	319	15	288	51
City University of New York	7683	178	T. Raphan	135	291	1,224	288	21	259	105
Colorado State University	4136	215	I.M. Orme	255	219	5,468	135	42	116	150
Columbia University	44637	9	H.C. Neu	514	84	4,740	160	4	334	150
Cornell University	30207	25	R.B. Devereaux	722	32	700	304	68	20	150
Curtin University	2125	249	A. H. Lee	205	250	1,003	296	17	283	15
University of Technology Dalhousie	9394	162	K. Rockwood	299	196	5,230	143	44	101	150
University of Dartmouth	10196	152	J.A. Baron	321	173	12,099	61	52	61	150
College Delft	1229	280	J. Dankelman	82	319	350	324	10	313	120
University of Technology Drexel	10488	147	D. Kaye	79	322	1,739	262	25	238	150
Duke University	42208	11	R.M. Califf	1,084	8	57,461	1	100	2	150
Durham University	1523	271	A. Unsworth	149	279	847	301	15	288	109

Section 6.6 References

Aguillo, I. F., Bar-Ilan, J., Levene, M., & Ortega, J. L. (2010). Comparing university rankings. *Scientometrics*, 85, 243–256.

Aguillo, I. F., Granadino, B., Ortega, J. L., & Fernandez, M. (2008). Webometric ranking of world universities: Introduction, methodology, and future developments. *Higher Education in Europe*, 33(2/3), 234–244.

Anon (1962). Publish or perish. *Nature*, 193(4817), 709.

Bontis, N., & Serenko, A. (2009). A follow-up ranking of academic journals. *Journal of Knowledge Management*, 13(1), 16–26.

Clapham, P. (2005). Publish or perish. *BioScience*, 55(5), 390–391.

Dazey, M., & Parks, B. (2010). Thoughts on Open Access: An interview with Diane Graves. *Serials Review*, 36(2), 112–115.

de Meis, L., Velloso, A., Lannes, D., Carmo, M. S., & de Meis, C. (2003). The growing competition in Brazilian science: Rites of passage, stress and burnout. *Brazilian Journal of Medical and Biological Research*, 36(9), 1135–1141.

De Rond, M., & Miller, A. N. (2005). Publish or perish: Bane or boon of academic life? *Journal of Management Inquiry*, 14(4), 321–329.

De Villiers, M. M., & Malan, S. F. (1997). Publish or perish: How is pharmacy research coping in a changing South Africa? *South African Journal of Science*, 93(8), 355–358.

Dubois, F. L., & Reeb, D. (2000). Ranking the international business journals. *Journal of International Business Studies*, 31, 689–704.

Fisher, J., Shanks, G., & Lamp, J. (2007). A ranking list for information systems journals.

Australasian Journal of Information Systems, 14(2), 5–18.

Good, R. J. (1964). Publish or perish—Some solutions. *Chemical and Engineering News*, 42(36), 4–5.

Guidry, J. A., Guidry, B. N., Hollier, L., Johnson, L., Tanner, J. R., & Veltsos, C. (2004). Surveying the cites: A ranking of marketing journals using citation analysis. *Marketing Education Review*, 14(1), 45–59.

Harzing, A. -W. K., & van derWal, R. (2008). Google Scholar as a new source for citation analysis. *Ethics in Science and Environmental Politics*, 8(1), 61–73.

Henderson, G. V., Jr., Ganesh, G. K., & Chandy, P. R. (1990). Across-discipline journal awareness and evaluation: Implications for the promotion and tenure process. *Journal of Economics and Business*, 42(4), 325–351.

Jacsó, P. (2009). Calculating the H-index and other bibliometric and scientometric indicators from Google Scholar with the Publish or Perish software. *Online Information Review*, 33(6), 1189–1200.

Linton, J. D., & Thongpapanl, N. (2004). Ranking of technology and innovation management journals. *Journal of Product Innovation Management*, 21(2), 123–139.

Linton, J. D., Tierney, R., & Walsh, S. T. (2011). Publish or perish: How are research and reputation related? *Serials Review*, 37, 244–257.

Lofthouse, S. (1974). Thoughts on “publish or perish”. *Higher Education*, 3(1), 59–80. Mackay, A. (1974). Publish or perish. *Nature*, 250(5469), 698.

- Mitchell, W. B., & Reichel, M. (1999). Publish or perish: A dilemma for academic librarians? *College and Research Libraries*, 60(3), 232–243.
- Nash, G. F., & Walsh, D. C. (2000). Research plans for current basic surgical trainees: Still publish or perish? *Annals of the Royal College of Surgeons of England*, 82(10 Suppl.), 336–337.
- Parchomovsky, G. (2000). Publish or perish. *Michigan Law Review*, 98(4), 926–951.
- Plümper, T., & Radaelli, C. M. (2004). Publish or perish? Publications and citations of Italian political scientists in international political science journals, 1990–2002. *Journal of European Public Policy*, 11(6), 1112–1127.
- Qiu, J. (2010). Publish or perish in China. *Nature*, 463(7278), 142–143. QS (2011). Quacquarelli Symonds Limited ranking of world universities. Retrieved August 23, 2011 from <http://www.topuniversities.com/university-rankings/world-university-rankings>
- Relman, A. S. (1977). Publish or perish—Or both. *The New England Journal of Medicine*, 297(13), 724–725.
- Rhee, S. Y. (2004). Carpe diem. Retooling the “publish or perish” model into the “share and survive” model. *Plant Physiology*, 134(2), 543–547.
- Shin, J. C., & Cummings, W. K. (2010). Multilevel analysis of academic publishing across disciplines: Research preference, collaboration, and time on research. *Scientometrics*, 85(2), 581–594.
- Smith, A. P. (2004). Publish or perish: The write thing for nursing. *Nursing Economics*, 22(6), 342–343.
- Thongpapanl, N. (2012). The changing landscape of technology innovation

management: An update ranking of journals in the field. *Technovation*, 32(5), 257–271.

Truex, D., Cuellar, M., & Takeda, H. (2009). Assessing scholarly influence: Using the Hirsch indices to reframe the discourse. *Journal of the Association for Information Systems*, 10(7), 560–594.

WR (2011). Webometrics ranking of world universities. Retrieved August 23, 2011 from <http://www.webometrics.info/>

Yimin, D. (2001). Chinese academy of sciences: In China, publish or perish is becoming the new reality. *Science*, 291(5508), 1477–1479.

Section Seven: Conclusions and Discussions

Section 7.1

The findings are diverse and highlight the tribulations that measurements and metrics play in both knowledge and the small technology entrepreneurship. Each investigation represented a novel method of examining measurements and metrics. In Section Two the pharmaceutical industry was examined. This is critical from a research implications/limitations scope. The pharmaceutical industry's current roadmaps dilemmas stem from the fundamental differences between many of today's innovations and earlier ones. Many current innovations are using technology differently; they are more heavily constrained and are thus accepting new business models. The innovations are increasingly being shaped by drivers. Current roadmapping techniques do not translate well to this new reality. If this is so, then these innovative health care resources may be at peril, along with firm, regional and country economic development. A new roadmapping technique is needed. From a practical point of view, the article develops an operational and strategic landscaping technique metrics management approach for the pharmaceutical industry distinctive characteristics and leverages the first and second generation roadmapping techniques.

In Section Three the metrics were examined of highly flexible facilities. Here Owing to the MTPF centers' novelty and outward similarity to high volume semiconductor fabrication (HVF) facilities, they are laden with ineffective operation and strategic management practices. Metrics are the standard for both operational and strategic management of HVF facilities, yet their

application to this new type of center is proving ineffectual. The research implications are immense for regional economic growth. These new types of regional economic resources may be at risk. A new approach is needed to reduce the jeopardy of managing these flexible facilities and insure the success for the facility and the encompassing economic region.

Section four examines the state of nanomanufacturing. This innovative blend of multidisciplinary sciences has problems crossing into the business world. Nanomanufacturing, in all of its forms is risky business. Yet many contend that nanotechnology is an enabling technology that many believe to be the base for a new Schumpeterian economy wave. The study presents a strategic model to better enable the users of nanotechnology to set strategic policy. The study shows that there is little comprehension when it comes to nanomanufacturing and complementary assets. The investigation discusses the use of complementary assets that can be used to lower the risks for a firm to embrace nanotechnology. Practical implications are both new and established firms that embrace the nanotechnology discipline need direction in the use of complementary assets.

Section Six launches an investigation into academia with measurement at the fore front. The paper shows that there needs to be a better understanding of the relationship between reputation and research in different fields so that incentives and knowledge infrastructure that are the most appropriate for fostering research are utilized. There is a lack of understanding of metrics and university ranking. If this is true, then there is cause for concern about the employment of faculty members and their research activities as compared to others. This investigation is also useful entrepreneurs whom seek guidance from academia. The authors developed a foundation for administrators, university personal and entrepreneurs whom seek to find the best qualified individuals for their specific requirements.

In Section Seven the study found that there is statistically significance difference when comparing 27 separate individual fields. Accordingly, one must be very careful when utilizing knowledge from one domain to make decisions regarding the level of research performance or quality in another domain and especially research that can transfer to the world beyond academia. The lack of clear associations between reputation and research metrics for a variety of academic fields suggests that there is no clear relation between a field and the university reputation. The authors developed an insight into metrics and university rankings. This allows comparisons to be made by administrators, faculty and entrepreneurs in seeking out those individuals that best represent their interests.

Section 7.2 Future Research

The tribulations of measurement and metrics for both small technology and knowledge entrepreneurship are significant. Not with standing, normal factors as increased governmental regulations, competition and financial limitations are hindering the process. If academia and entrepreneurs can find mutual interests in metrics, then both are placed in a “Win/Win “situation.

Future research into the area of small technology and the role of universities can be take several paths. An investigation launched into the prolific publishers of academic research with the keywords of MEMS and Nanotechnology for each of the 27 different fields is needed to narrow the information available. Then this information could be placed in a plot which locates locally and regionally, the scholars that are researching a particular subject. Such information would be valuable to entrepreneurs, economic developers and strategists for governments.

A second information path that could be taken is that clusters. The subject of clusters and small technology has not been explored for years. With the worldwide growth of

nanotechnology companies the subject has out raced the research. Areas of concern are intellectual property, academic publications and funding. Others areas that need to be investigated are the differences between established nanotechnology clusters and emerging economic centers and are there any advantage to being first establish.

Section 8 Acknowledgements

The journey of this adventure had been at times long and difficult. However, it was worth the price of admission. To any body that walked this path before me realizes that one does not walk alone. There are many individuals, both in a mentor and support roles that provide the buttresses that are needed. First, I would like to thank the members of my committee. Dr. K.I. van Oudenhoven-van der Zee for her time and effort. Dr. Steven Walsh, who saw a spark and then nurtured it. Steve also turn into a genuine friend, which we have several interest, one of which is restoration of older automobiles. Dr. Jonathan Linton, who introduced me into the world of statistics. Having never taken a formal statistics class before and I soon realized how powerful statistics are and how much there is to know and how little I know. I thank you Dr. Linton for your patience and having influenced myself to continue more work into the world of statistics. Dr. Aard Groen, whom gave myself a chance at the program and offered valuable insights to the world of entrepreneurship research. Thank you very much Dr. Groen and I hope to collaborate with you someday. Dr. Rainer Harms and his truly wonderful tips and hints on writing the thesis and suggestions during the process. Thank you very much Dr. Harms. Dr. Miriam Luizink, whom I collaborated with and offered insight and valuable feedback,. Thank you Dr. Luizink. I would like to thank Dr. Jan Kratzer for taking time and effort to be on my committee. I can only hope to continue an academic career with the same distinction as my committee members.

Of course there is support staff that without them, nothing would happen. Two individuals that need to be recognized are Ms. Monique Zuithof-Otten and Ms. Hela Klaczynski. Both of these individuals went out of their way to help me along the process. Thank you both so much. Also, I would like to thank Martin Stienstra for allowing me to stay at his house for a week last year. Thank you Martin

To those who know me realize that I am passionate about the game of ice hockey. I played as a youth and through out my career as a “goon” I loved every minute. Later in life I turn into a referee and again found the love of a sport. Not only did officiating games help pay the bills, but also provide the comic relief that was needed at many times. I only wished I carried a voice recorder to remember all the

items that transpire between players and officials. I can not thank the members of the NMHRC enough whom I worked with especially Mike Smith, Rick Wenner, Dann Allison, Mike McCullough and Marc Hempel.

There are three individuals that are specifically responsible for my career development in USA Hockey. Those individuals are Kelly Colyer, Butch Mousseau and Paul Wilkinson. As I ascended the USA Hockey official's ladder, I realized there was much more to learn than just the typical calls. Interesting that that calling a good game parallels life. Kelly, thank you for life lessons (yes I'll try to keep my mouth shut) and the opportunity to reach the level of calling a ACHA game and working at the Jr. level. Kelly showed how to set goals and then reach them through hard work and perseverance. Butch Mousseau, for your ability to communicate with players and officials. You kicked me in the butt when needed, but also gave valuable feedback and praise. For that I am internally grateful. Paul Wilkinson for your ability to teach a group of individuals. The energy and enthusiasm was great and I only hope to achieve those levels.

To the last person on the list, but first in my heart. I could go on for several pages and still not express the gratitude enough for Liz Davenport. I can not thank Liz enough for the support she has given me over the years and I can not think of a better person to go through life with. Thanks so much for your support and understanding. Love you. Also, I would like to mention Xena, Einstein, Smelly and Walter (our dogs), who always knew when it was time to take a break and go for a walk.

Appendix A

Detailed of Data Utilized in *What are Research Expectations? A comparative study of different academic disciplines*

Discipline	Page
Sample comparison with more recent data	212-214
Medicine	215-225
Astronomy and Physics	226-236
Biochemistry, Genetics and Molecular Biology	237-246
Engineering	247-256
Chemistry	257-266
Materials	267-276
Immunology and Microbiology	277-286
Earth and Planetary Science	287-296
Environmental Science	297-306
Agricultural/Biological Sciences	307-316
Mathematics	317-326
Computer Science	327-336
Chemical Engineering	337-346
Computer Science	347-356
Multidisciplinary	357-366
Pharmacology, Toxicology, Pharmaceuticals	367-376
Social Sciences	377-386
Psychology	387-396
Health Professions	397-406
Economics, Econometrics, Finance	407-416
Decision Sciences	417-426
Business Management	427-436
Nursing	437-446
Veterinary	447-456
Arts and Humanities	457-466
Dentistry	467-476
Undefined	477-486

Supplement for Linton, Tierney and Walsh, *Serials Review* (2012),

Sample Comparison With More Recent Data

A drawback of the formation of a database such as this is with time the data changes, people become inactive and the entry of new people does not become apparent. All other things being equal, the values should be fairly consistent as new researchers will replace older researchers that have become inactive. However, the databases that track publications are not only dynamic due to the addition of newer issues and volumes of journals. There is a tendency to add additional journals over time, some of the journals are increasing the number of articles they publish in a given period and the number of authors is gradually increasing. In addition, an author may accidentally be represented numerous times as being different people due to different affiliations or different representation of their name, in some cases this splitting of a single person into two or more records can result in a reduction in the apparent magnitude of publications, citations, h-index and coauthors.

Consequently, it is useful to consider newer data to get an indication of how the metrics are changing over time. To reproduce the entire database on an annual basis is a tremendous amount of time and effort. However, to update the metrics for the authors in a few different schools and make a note of the percentage change is manageable. Consequently, we have chosen the three universities that the authors are associated with to act as exemplars. If data updating the tables for other universities is submitted to us (drjdlinton@gmail.com) by others, we will integrate the data into this section and credit the sender. If you decide to do this, please follow the format we have provided to ensure visual consistency without the need for reformatting.

Field	Department Publications		Prolific Author	Author Publications		Authors Citations		Author H-Index	
	Value	Increase		Value	Increase	Value	Increase		
Medicine	12,556	15%	R.H. Glew	296		2,623	60%	19	6%
Astronomy	6,504	23%	J. Antos	668		13,531	367%	57	43%
Biochemistry	5,090	17%	R.H. Glew	296	-5%	2,623	60%	19	6%
Engineering	5,218	17%	M.S. El-Genk	323		1,613	164%	17	42%
Chemistry	2,376	51%	R.T. Paine	201	146%	2,489		18	
Materials	2,005	78%	J. Brueck	351		4,680		34	
Immunology	1,630	155%	V. Deretic	178		10,727	-25%	49	-10%
Earth Science	2,212	189%	C.K. Shearer	133	-5%	2,130		21	
Environmental	1,998	233%	J.H. Brown	210		4,167	102%	46	21%
Agricultural	2,263	1786%	R.P. Berrens	71	20%	674	174%	14	26%
Math	1,788	140%	W. Kucharz	64		176	111%	6	11%
Computer Science	1,981	201%	S.B.Kim	551		20,873		63	15%
Chemical Engineering	976	185%		323	-14%	1,613		17	17%
Mutlidisciplinary	470	197%		35		1,043	-43%	6	
Pharmacology	1,377	145%	M.S. El-Genk	281		7,561		36	
Neuroscience	1,632	138%		93	14%	2,222	102%	27	-68%
Social Science	2,608	28%		236	16%	13,083		41	
Psychology	1,526	79%	C. Klein	236	7%	13,083		41	
Health Professions	933	6564%	L.A. Sklar	42	27%	312	-92%	7	91%
Decision Sciences	204	4%	C.F. Valenzuela	20	9%	249		7	42%
Economics	297	74%	W.R. Miller	71		674		14	20%
Business	457	136%	W.R. Miller	73	-52%	586	266%	13	20%
Nursing	775	223%	S. Kalishman	64		286	164%	9	13%
Veterinary	81	145%	J. Young	126		2,422	153%	23	
Arts	592	11740%	R.P. Berrens	16	91%	101	88%	6	-15%
Dentistry	24	300%	S.T. Walsh	84	20%	635	75%	12	
Undefined	213	752%	P.T. Clements	140	59%	2,055	41%	15	
			E.S. Loker		16%		41%		
			D.L. Van Colt		24%		66%		
			R.L. Williams				72%		-15%
			H.W. Kelly				102%		
					-51%		162%		75%
							101%		0%

University of New Mexico – Summary of Changes between August 12, 2012 and Original Data Collection

Field	Department Publications		Prolific Author	Author Publications		Authors Citations		Author H-Index	
	Value	Increase		Value	Increase	Value	Increase		
Medicine	14,453	29%	D. Kreswski	428	39%	10,729	114%	41	32%
Astronomy	3,674	21%	X. Bao	286	33%	2,224	193%	22	29%
Biochemistry	7,485	19%	S.F. Perry	308	38%	6,055	220%	31	24%
Engineering	6,534	82%	H. Alper	476	15%	8,426	128%	35	25%
Chemistry	3,768	10%	H. Alper	476	15%	8,426	128%	35	25%
Materials	1,902	156%	J.C. Scaiano	579	99%	4,686	1224%	34	55%
Immunology	1,297	175%	S.A. Sattar	138	10%	2,366	118%	21	31%
Earth Science	1,576	467%	J. Veizer	149	4%	6,751	124%	35	17%
Environmental	1,916	191%	D. Krewski	428	39%	10,729	114%	41	32%
Agricultural	1,949	879%	J.I. Arnason	304	35%	4,796	115%	31	41%
Math	2,166	213%	D. Sankoff	171	205%	4,047	6324%	23	360%
Computer Science	4,214	253%	I. Stojmenovic	266	36%	3,382	111%	23	21%
Chemical Engineering	1,679	156%	T. Matsuura	373		4,941	133%	32	28%
Mutlidisciplinary	282	10%	G.A. Wells	560		22,645	3%	81	16%
Pharmacology	1,797	114%	R.L. Singhal	243	-16%	848	44%	2	0%
Neuroscience	2,126	121%	Z. Merali	153		5,631	95%	44	22%
Social Science	2,666	224%	P. Firestone	65	3%	1,409	58%	16	33%
Psychology	1,606	67%	Z. Merali	153	14%	5,631	95%	44	22%
Health Professions	763	5769%	I.D. Graham	225		4,647		34	
Decision Sciences	428	14%	M.G. Tyshenko	51		73		5	
Economics	387	93%	M. Lavoie	34	-10%	244	-37%	9	-19%
Business	574	171%	J.D. Linton	139		914		16	
Nursing	912	171%	I.D. Graham	225	5%	4,647	3550%	34	400%
Veterinary	70	27%	H.L. Davies	117		2,377		26	
Arts	717	23800%	P. Kanaroglou	99		1,428		19	
Dentistry	18	0%	D.S.K. Park	132	-10%	8,727	-67%	55	-25%
Undefined	281	1305%	L.P. Renaud	171		2,986		15	
							148%		33%
					-12%				
							-49%		-6%
					65%				

University of Ottawa – Summary of Changes between August 12, 2012 and Original Data Collection

Field	Department Publications		Prolific Author	Author Publications		Authors Citations		Author H-Index	
	Value	Increase		Value	Increase	Value	Increase		
Medicine	1,639	209%	C.A. Van Blitterswijk	375	30%	9,934	151%	56	37
Astronomy	5,393	24%	D.N. Reinhoudt	820	13%	21,023		75	14
Biochemistry	2,007	567%	D.N. Reinhoudt	820	13%	21,023		75	14
Engineering	7,086	26%	J.A.M. Kuipers	228	29%	4,796	-8%	37	42
Chemistry	3,059	25%	D.N. Reinhoudt	820	13%	21,023		75	14
Materials	3,967	34%	D.N. Reinhoudt	820	13%	21,023		75	14
Immunology	137	16%	J.J.H. Rasker	163	10%	2,993		25	14
Earth Science	512	8433%	H. Rogalla	318	9%	3,373	-8%	22	16
Environmental	1,016	555%	K. Sehsan	153	28%	3,170		29	21
Agricultural	252	769%	A.Y. Hoekstra	64	100%	882		14	75
Math	2,345	178%	G.J. Woeginger	297	16%	2,379	179%	23	35
Computer Science	3,767	54%	J.A.M. Kuipers	228	29%	4,796		37	42
Chemical Engineering	2,481	125%	J.A.M. Kuipers	228	29%	4,796	-8%	37	42
Mutlidisciplinary	80		J.J. Rasker	163	6%	2,993		25	19
Pharmacology	220		J.A.N. Feijen	523	50%	9,669		52	33
Neuroscience	283	-4%	E. Marani	220	15%	1,673		17	21
Social Science	1,551		A. Nijholt	154	62%	510	-8%	10	43
Psychology	488	23%	E. Taal	100	43%	1,705		22	29
Health Professions	256	233%	H.B.K. Boom	99		1,028		9	13
Decision Sciences	615	305%	W.M. Albers	47		185	51%	7	
Economics	214	105%	A.Y. Hoekstra	64	-1%	882	73%	14	
Business	692	27%	M. Reichert	142		1,591	100%	17	-30
Nursing	72	18%	E. Taal	100		1,705	488%	22	
Veterinary	NA	80%	NA	NA		NA	83%	NA	
Arts	138	168%	P. Benneworth	15	-19%	168	179%	7	75
Dentistry	21	414%	C.A. Van Blitterswijk	375		9,934	179%	56	70
Undefined	84	NA	J. Greve	397		9,123	60%	42	29
					100%		61%		N
		13700%			42%		59%		40
		133%			43%		202%		37
		4100%			NA		104%		20
					25%		91%		
					30%				

University of Twente – Summary of Changes between August 12, 2012 and Original Data Collection

Medical Publications Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	761	305	R. Hari	301	193	7,650	108	48	73	150
Aarhus University	19,494	70	H.T. Sorensen	537	76	8,413	96	40	128	150
Arizona State University	3,774	223	J. He	132	293	501	316	12	304	150
Ateneo de Manila University	13	347	U.M. Carajal	29	345	20	345	0	347	5
Auburn University	1,917	257	C.J. Diskin	1,578	2	304	327	8	324	64
Australian National University	5,952	199	A.F. Jorm	377	143	9,729	84	47	80	150
Boston College	1,026	290	J.J. Paris	78	323	227	330	6	330	60
Boston University	26,336	36	R.B. D' Gostino	645	50	47,024	3	91	3	150
Brandeis University	1,509	272	J.C. Hall	195	253	3,134	202	44	101	150
Brigham Young University	1,739	262	E.D. Bigler	224	237	2,421	233	26	225	150
Brown University	12,873	124	V.Mor	314	180	7,278	113	46	89	150
California Institute of Technology (Calt...	2,196	248	E.H. Davidson	314	180	5,324	141	47	80	150
Cardiff University	18,205	80	M.J Owen	732	29	25,019	20	71	17	150
Carnegie Mellon University	1,530	270	S. Cohen	162	273	10,566	75	36	160	150
Case Western Reserve University	20,639	65	G. Perry	507	87	964	298	65	24	150
Chalmers University of Technology	639	311	S. Nillsson	110	305	1,611	268	27	216	150
Charles University	12,250	127	M. Michal	365	147	1,887	249	25	238	150
Chinese University of Hong Kong	7,296	183	T.B. Ng	409	124	2,912	209	38	143	150
Chulalongkorn University	4,569	213	V. Wiwanitkit	645	50	733	303	9	319	120
City University of Hong Kong	578	313	P.K.N. Yu	87	317	459	319	15	288	51
City University of New York	7,683	178	T. Raphan	135	291	1,224	288	21	259	105
Colorado State University	4,136	215	I.M. Orme	255	219	5,468	135	42	116	150
Columbia University	44,637	9	H.C. Neu	514	84	4,740	160	4	334	150
Cornell University	30,207	25	R.B. Devereoux	722	32	700	304	68	20	150
Curtin University of Technology	2,125	249	A. H. Lee	205	250	1,003	296	17	283	15
Dalhousie University	9,394	162	K. Rockwood	299	196	5,230	143	44	101	150
Dartmouth College	10,196	152	J.A. Baron	321	173	12,099	61	52	61	150
Delft University of Technology	1,229	280	J. Dankelman	82	319	350	324	10	313	120
Drexel University	10,488	147	D.Kaye	79	322	1,739	262	25	238	150
Duke University	42,208	11	R.M. Califf	1,084	8	57,461	1	100	2	150
Durham University	1,523	271	A. Unsworth	149	279	847	301	15	288	109

Ecole Normale Supérieure de Lyon	275	334	F.L. Cosset	180	264	3,172	200	46	89	150
École Normale Supérieure, Paris	464	323	N.Josso	140	286	1,248	286	22	252	150
École Polytechnique	184	339	Y. Lecarpentier	189	258	1,956	244	18	276	150
Ecole Polytechnique Fédérale de Lausanne	952	295	G. Wagniers	123	298	1,823	257	27	216	150
Eindhoven University of Technology	698	309	K. Nicolay	241	227	4,278	168	35	167	150
Emory University	27,730	32	H.E. Grossniklaus	328	170	3,369	190	26	225	150
Erasmus University Rotterdam	32,877	19	P.W. Serruys	1,206	5	39,197	6	85	4	150
ETH Zurich (Swiss Federal Institute of Technology)	3,879	218	P. Boesiger	284	203	5,124	147	42	116	150
Florida International University	1,452	274	R.J.Herrera	103	308	1,410	278	20	268	150
Florida State University	3,181	228	A.G. Marshall	553	72	11,525	70	47	80	150
Freie Universität Berlin	14,041	113	R. Felix	1,036	11	10,489	76	41	124	150
Friedrich Alexander Universität Erlangen Nürnberg	15,426	97	E.G. Hahn	699	39	12,039	64	51	65	150
Fudan University	9,022	168	Z.Y. Tang	381	140	3,109	203	34	175	150
Georg August Universität Göttingen	14,153	112	H.W. Roesky	530	77	7,608	109	34	175	150
George Mason University	431	325	L.A. Liotta	288	200	14,970	47	65	24	150
George Washington University	11,632	131	T.O. Cheng	778	24	2,630	219	19	270	150
Georgetown University	14,549	106	I. Brook	316	177	2,540	225	27	216	150
Georgia Institute of Technology	1,647	265	A.P. Yoganathan	402	128	2,363	235	26	225	150
Georgia State University	2,097	250	J.M. De Castro	109	306	1,346	280	20	268	46
Goteborg University	16,368	89	K. Blennow	395	134	6,896	118	55	53	150
Harvard University	7,353	180	D.L. Hartl	310	184	7,031	117	44	101	150
Hebrew University of Jerusalem	11,549	132	A. Ornoy	220	238	1,801	260	22	252	150
Heidelberg Universität	24,323	41	E. Ritz	1,227	4	22,594	24	58	45	150
Hokkaido University	16,368	89	M. Asaka	510	86	5,089	150	35	167	150
Hong Kong Polytechnic University	2,070	252	P. Cho	101	312	572	313	15	288	101
Hong Kong University of Science & Techno...	485	321	M.Lung	76	325	578	312	15	288	150
Humboldt-Universität zu Berlin	15,231	98	F.C. Luft	101	312	18,233	36	62	36	150
Imperial College London	20,959	63	S.R. Bloom	1,165	6	29,192	15	64	28	150
Indian Institute of Technology Bombay (I...	175	340	R.R. Puniyani	51	338	163	338	6	330	48
Indian Institute of Technology Delhi (II...	277	332	D. Mohan	111	303	385	322	7	326	150
Indian Institute of Technology Kanpur (I...	148	343	R.K. Gupta	243	224	1,599	269	23	246	150
Indiana University Bloomington	9,264	165	J.S. Skinner	214	243	4,074	177	39	136	150
Indiana University Indianapolis	18,510	77	L.H. Einhorn	439	108	9,301	87	42	116	150

Iowa State University	1,174	283	P.G. Halbur	133	292	1,875	251	28	209	150
Johns Hopkins University	75,020	2	J.I. Epstein	444	104	9,823	82	62	36	150
Kansas State University	821	302	D.C. Poole	211	244	2,845	212	26	225	150
Katholieke Universiteit Leuven	11,902	130	D. Collen	729	30	29,711	14	68	20	150
Keio University	13,331	121	M. Kitajima	700	38	1,016	295	34	175	150
King Fahd University of Petroleum & Minerals	83	344	F. Abu-Jarad	56	336	167	337	7	326	53
King Saud University	4,056	217	M.M. Al-Qattan	247	222	1,336	281	18	276	128
Kobe University	10,292	151	Y. Kuroda	348	158	2,200	239	27	216	150
Korea Advanced Institute of Science & Technology	503	320	Z.H. Cho	207	246	1,334	282	9	319	150
Korea University	2,558	238	K.H. In	81	320	531	315	10	313	150
Kyoto University	35,181	16	O. Yoshida	803	20	12,900	58	32	185	150
Kyushu University	22,402	54	K. Sugimachi	1,693	1	30,331	12	64	28	150
La Trobe University	3,452	226	R.J. Mitchell	75	326	885	300	10	313	150
Lancaster University	740	307	N.J. Fullwood	77	324	1,095	294	21	259	150
Leiden University	25,108	39	J.J. Bax	798	21	16,724	41	57	48	150
Linköping University	9,959	154	R. Sjødahl	225	235	2,892	210	25	238	150
London School of Economics and Political Science	1,216	282	M.R.J. Knapp	240	229	3,887	181	38	143	150
Loughborough University	1,572	266	C. Williams	125	295	1,991	243	18	276	150
Louisiana State University	18,465	78	C. Bouchard	621	56	23,796	21	47	80	150
Ludwig-Maximilians-Universität München	32,406	20	H.J. Moller	792	22	14,781	48	53	59	150
Lund University	26,893	35	B. Ahren	676	45	11,205	71	47	80	150
Maastricht University	18,574	76	H.J.J. Wellens	564	69	10,805	74	43	108	150
Macquarie University	1,648	264	R.M. Rapee	148	280	3,290	195	28	209	150
Mahidol University	10,544	145	N.J. White	780	23	28,420	17	67	22	150
Masaryk University	2,373	242	I. Rektor	181	262	1,125	293	21	259	150
Massachusetts Institute of Technology	7,175	186	R.J. Wurtman	715	33	11,570	69	26	225	150
McGill University	31,098	24	T. Tulandi	276	205	2,842	213	29	205	150
McMaster University	20,271	66	G.H. Guyatt	819	19	45,932	4	79	10	150
Michigan State University	11,265	134	I.H. Chaudry	693	42	15,076	46	46	89	150
Michigan Technological University	280	331	S.Zhang	30	344	224	332	9	319	36
Monash University	13,911	115	D.M. DeKrester	458	98	5,421	138	37	154	150
Montana State University	986	292	M.T. Quinn	141	284	5,692	134	37	154	150
Moscow State University	2,373	242	N.S. Egorov	365	147	146	339	4	334	150

Nagoya University	16,824	87	Y. Nimura	549	74	9,202	89	38	143	150
Nanjing University	933	297	J.S. Li	316	177	1,575	274	23	246	150
Nanyang Technological University	868	298	E.C.Teo	56	336	220	333	10	313	42
National Taiwan University	13,650	120	P.R. Hsueh	417	118	4,252	169	36	160	150
National Tsing Hua University	721	308	P.S. Weng	121	300	225	331	4	334	150
National University of Ireland, Galway	1,535	269	B.E. Leonard	381	140	3,487	188	33	183	150
National University of Singapore	8,958	169	S.S. Ratnam	372	145	1,487	275	7	326	150
New Mexico State University	617	312	B.A. Smith	102	310	1,689	263	13	299	150
New York University	28,518	28	I. Krozon	413	120	4,101	175	31	190	150
Newcastle University	10,682	142	K.G.M.M. Alberti	703	35	20,548	32	44	101	150
North Carolina State University	3,678	224	T.F.C. MacKay	141	284	2,366	234	38	143	150
Northeastern University	1,990	255	J.J. Gozzo	95	314	211	335	3	340	44
Northwestern University	27,540	34	R. Patterson	439	108	2,778	215	13	299	150
Norwegian University of Science & Technology	4,083	216	S. Kaasa	258	218	8,770	92	47	80	150
Ohio State University	23,407	47	M.C. Nahara	456	99	2,571	222	21	259	150
Oklahoma State University	1,762	261	T.W. Allen	51	338	12	346	2	343	2
Open University UK	817	303	C.M. Pound	59	334	585	311	16	285	45
Oregon State University	3,018	232	P.D. Whanger	206	249	1,824	256	19	270	150
Osaka University	23,348	48	H. Matsuda	982	14	11,749	67	43	108	150
Peking University	9,809	157	L. Wei	111	303	240	329	8	324	150
Pennsylvania State University	15,523	95	L.M. Demers	375	144	5,998	129	31	190	150
Pohang University of Science And Technology	264	335	V.C. Sung	85	318	1,821	258	26	225	150
Portland State University	840	301	H. Livneh	57	335	484	317	12	304	35
Princeton University	2,243	247	J. Trussell	193	255	2,488	231	27	216	150
Purdue University	6,273	197	L.A. Geddes	425	114	2,233	238	10	313	150
Queen's University	8,255	176	J.C. Nickel	289	199	4,632	161	35	167	150
Queen's University of Belfast	6,853	194	J.W. Dundee	489	93	1,587	273	0	347	150
Queensland University of Technology	2,640	237	D.A. Atchison	144	283	964	298	17	283	103
Radboud University, Nijmegen	25,078	40	P.C.M. Van De Kerkhof	520	82	6,270	125	31	190	150
Rensselaer Polytechnic Institute	757	306	G. Moss	69	331	220	333	3	340	31
Rheinisch Westfälische Technische Hochschule Aach	7,219	185	V. Schumpelick	571	65	4,754	159	32	185	150
Rheinische Friedrich Wilhelms Universität Bonn	13,738	119	B. Luderitz	565	68	4,989	153	31	190	150
Rice University	1,224	281	L.V. McTire	265	211	5,208	144	30	199	150

Rochester Institute of Technology	314	330	J.P. Hornak	34	341	205	336	4	334	47
Royal Institute of Technology, KTH	781	304	J. Sundberg	138	288	769	302	12	304	138
Royal Melbourne Institute of Technology	951	296	J. A. Hawley	174	267	2,644	218	34	175	150
Rutgers	7,139	188	D. Mechanic	200	251	4,399	166	29	205	150
Saint-Petersburg State University	578	313	A.P. Kozlov	49	340	296	328	12	304	150
San Diego State University	3,416	227	J.F. Sallis	319	176	14,082	50	64	28	150
Sapienza University of Rome	2	348	F. Botti	10	348	58	343	4	334	39
Sciences Po Paris	26	346	D. Tabuteau	15	347	2	348	1	345	8
Seoul National University	6,211	198	J.G. Chi	306	189	3,084	204	21	259	150
Shanghai Jiao Tong University	4,734	211	L. He	650	49	8,548	95	39	136	150
Simon Fraser University	2,073	251	T.D. Sterling	124	297	590	310	3	340	69
Stanford University	41,245	12	C. Guilleminault	591	59	13,385	53	52	61	150
State University of New York Buffalo	167	341	J. Zhang	193	255	471	318	12	304	150
Stockholm University	2,999	233	R.Room	174	267	1,942	246	24	244	150
Stony Brook University	10,557	144	P.F. Cohn	357	155	1,628	266	10	313	150
Syracuse University	9,650	158	S.V. Faraone	701	36	31,524	11	80	9	150
Tartu University (University of Tartu)	1,828	259	T. Jurimae	102	310	428	320	14	296	81
Technical University of Denmark	1,295	278	F.M. Aarestrup	169	270	3,068	206	37	154	150
Technion	7,024	190	P. Lavie	298	197	4,916	156	34	175	150
Technische Universität Berlin	1,097	284	U.Boenick	94	315	119	340	5	332	134
Technische Universität Chemnitz	78	345	S. Gauggel	32	342	362	323	12	304	65
Technische Universität Dresden	5,136	208	H.U. Wittchen	381	140	19,949	33	72	14	150
Technische Universität München	16,058	91	J. Ring	1,012	13	13,550	52	49	71	150
Tel Aviv University	19,517	69	Y. Shoenfeld	1,234	3	21,469	30	55	53	150
Texas A&M University	6,680	196	F.W. Bazer	423	115	3,366	191	39	136	150
Texas Tech	5,422	205	J.I. Martinez-Lopez	262	216	12	346	1	345	5
Tohoku University	18,687	74	H. Sasano	617	57	12,136	60	48	73	150
Tokyo Institute of Technology	1,077	288	N. Okada	177	265	2,783	214	36	160	150
Trinity College Dublin	7,299	181	J. Freely	315	179	2,491	230	25	238	150
Tsinghua University	1,083	286	J. Bai	412	122	1,151	292	16	285	150
Tufts University	14,196	111	M.E. Falagas	420	116	3,076	205	31	190	150
Universidad Autonoma de Madrid	8,438	173	M. Nistal	263	213	1,598	270	15	288	150
Universidad de Chile	7,173	187	A. Csendes	338	164	2,169	240	22	252	150

Universidad de Granada	8,438	173	M. Nistal	263	213	1,598	270	15	288	150
Universidad del País Vasco	2,650	236	G. Quindos	176	266	2,553	223	21	259	150
Universidad Nacional Autónoma de México ...	5,397	206	M. Selman	192	257	4,010	178	38	143	150
Universidad Politecnica de Madrid	513	318	G. Salcedo	122	299	1,311	283	27	216	150
Universidade de São Paulo	25,923	38	F.Q. Cunha	261	217	4,126	174	34	175	150
Universidade Estadual de Campinas	6,886	192	L.A. Velloso	151	277	1,831	255	25	238	150
Università degli Studi di Firenze	14,500	108	G.F. Gensini	390	137	3,916	180	34	175	150
Università degli Studi di Padova	21,069	62	A. Girolami	70	329	1,919	247	21	259	112
Università Di Bologna	14,910	101	A. Tosti	441	106	4,248	171	26	225	150
Università di Pisa	10,342	149	A.R. Genazzani	699	39	10,364	77	40	128	150
Universitat Autònoma de Barcelona	9,847	156	J. Egozcue	321	173	2,616	220	30	199	150
Universität Bielefeld	1,407	275	H.J. Markowitsch	243	224	3,728	184	31	190	150
Universität Bremen	1,839	258	F. Petermann	358	152	1,595	272	27	216	150
Universität d'Alacant	1,049	289	C. Alvarez	165	271	617	308	9	319	150
Universitat de València	5,762	203	A. Pellicer	345	159	4,814	158	45	96	150
Universität Frankfurt am Main	18,889	73	D. Hoelzer	561	70	11,683	68	45	96	150
Universität Freiburg	11,278	133	M. Schumacher	527	79	8,235	100	40	128	150
Universität Hamburg	6,873	193	K. Puschel	442	105	1,452	277	15	288	150
Universität Karlsruhe	843	300	M.Zoller	226	234	3,016	208	25	238	150
Universität Leipzig	11,957	129	M.C. Angermeyer	402	128	4,426	165	37	154	150
Universität Munster (Westfälische Wilhelms-Univers	13,904	116	E. Nieschlag	163	272	3,742	183	42	116	150
Universität Politecnica de Catalunya	248	336	J.A. Planell	207	246	1,873	252	28	209	150
Universität Regensburg	9,071	167	J. Scholmerich	452	101	6,304	124	40	128	150
Universität Stuttgart	665	310	K. Pfizenmaier	181	262	4,252	169	28	209	150
Universität Trier	443	324	D.H. Hellhammer	160	274	4,945	155	42	116	150
Universität Tübingen	14,270	110	C.D. Clausson	566	67	8,341	98	40	128	150
Universität Wien (University of Vienna)	19,772	68	M. Marberger	413	120	6,414	121	45	96	150
Universität Zu Köln	14,826	103	V. Diehl	735	27	13,333	54	53	59	150
Université Catholique de Louvain	7,383	179	J.M. Lachapelle	269	210	2,452	232	14	296	150
Université de Liege	6,985	191	G.E. Pierard	1,023	12	8,003	104	31	190	150
Université de Montréal	14,523	107	S. Nattel	429	113	7,588	110	57	48	150
Université de Nice Sophia Antipolis	2,021	254	J. Gugenhelm	243	224	2,357	236	24	244	150
Université Laval	9,211	166	C. Bouchard	701	36	29,931	13	63	33	150

Universite Libre de Bruxelles	10,432	148	R.Kiss	469	96	3,559	186	32	185	150
Université Paris Sorbonne	514	317	B. Portha	160	274	1,893	248	22	252	150
Universite Paris-Sud 11	4,770	210	G. Simonneau	329	168	9,845	81	62	36	150
Université Pierre et Marie Curie	6,759	195	D. Costagliola	294	198	5,442	136	39	136	150
Universiti Malaya (University of Malaya)	3,857	219	K.L. Goh	118	301	984	297	18	276	150
University College Cork	1,721	263	F. Shanahan	303	192	7,040	116	42	116	150
University College Dublin	3,777	222	J.M. Fitzpatrick	440	107	3,468	189	26	225	150
University College London	43,488	10	D.P. Milailaidus	739	26	8,348	97	41	124	150
University do Porto	3,101	229	H. Barros	273	209	1,770	261	22	252	150
University of Aberdeen	9,308	163	S.H. Ralston	275	208	5,891	131	52	61	150
University of Adelaide	8,686	171	M.Horowitz	589	60	13,034	57	45	96	150
University of Alabama	29,771	26	G.R. McGwin	308	186	4,227	172	40	128	150
University of Alberta	18,129	81	P. Armstrong	324	172	9,275	88	51	65	150
University of Amsterdam	28,694	27	H.R. Buller	237	232	8,761	93	56	52	150
University of Antwerp	8,553	172	P.P. DeDeyn	410	123	6,824	119	41	124	150
University of Arizona	18,577	75	D.S. Alberts	239	231	5,424	137	35	167	150
University of Athens	16,875	86	C. Stefanadis	643	52	8,307	99	40	128	150
University of Auckland	9,612	159	P.D. Gluckman	465	97	8,995	90	48	73	150
University of Barcelona	10,901	140	E. Montserrat	358	152	5,901	130	37	154	150
University of Basel	17,197	84	A. Gratwohl	567	66	15,675	42	58	45	150
University of Bath	996	291	B.V.L.Potter	355	156	3,191	199	36	160	150
University of Bergen	10,565	143	P.M. Ueland	333	167	9,797	83	50	68	150
University of Bern	19,422	71	N.P. Lang	363	150	4,837	157	38	143	150
University of Birmingham	15,600	94	G.Y.H. Lip	1,046	10	15,513	43	57	48	150
University of Bristol	12,546	125	G.D. Smith	498	90	13,875	51	63	33	150
University of British Columbia	25,994	37	M.R. Hayden	516	83	21,990	28	70	18	150
University of Calgary	13,817	118	M.D. Hollenberg	401	131	5,205	145	43	108	150
University of California, Berkley	13,957	114	L. Packer	553	72	9,432	86	52	61	150
University of California, Davis	23,547	45	M.E. Gershwin	835	18	15,366	45	50	68	150
University of California, Irvine	15,900	92	N.D. Vaziri	472	95	5,119	148	44	101	150
University of California, Los Angeles	61,436	4	R.W. Busuttil	589	60	16,783	40	60	41	150
University of California, Riverside	2,465	240	A.W. Norman	313	182	3,026	207	9	319	150
University of California, San Diego	33,691	18	E. Barrett-Conner	349	157	17,273	39	65	24	150

University of California, San Francisco	59,718	5	H.I. Maibach	1,156	7	15,464	44	35	167	150
University of California, Santa Barbara	429	326	S. Mitragotri	103	308	1,851	253	29	205	94
University of California, Santa Cruz	210	338	A.L. Fink	207	246	6,307	123	51	65	150
University of Cambridge	17,892	82	L.D. Hall	276	205	1,886	250	19	270	150
University of Canterbury	421	327	J.G. Chase	131	294	321	325	13	299	150
University of Cape Town	10,531	146	T.D. Noakes	398	133	4,475	164	38	143	150
University of Central Florida	1,345	277	A. Liberman	68	332	93	342	5	332	64
University of Chicago	36,237	15	R.M. Lang	362	151	306	326	38	143	150
University of Cincinnati	21,364	59	M.R. First	305	190	3,313	192	26	225	150
University of Colorado at Boulder	1,545	268	D.R. Seals	250	220	5,081	151	38	143	150
University of Connecticut	14,666	105	D.K. Das	395	134	6,747	120	47	80	150
University of Copenhagen	22,603	53	C.F. Deacon	105	307	2,003	242	30	199	150
University of Delaware	868	298	L. Snyder-Mackler	138	288	1,802	259	26	225	150
University of Dundee	8,343	175	B. J. Lipworth	433	112	5,365	139	46	89	150
University of Edinburgh	15,168	99	I.J. Deary	506	88	11,172	72	47	80	150
University of Florida	27,864	31	W.M. Mendenhal	403	127	5,869	132	39	136	150
University of Geneva	21,267	60	R. Rizzolli	358	152	6,321	122	39	136	150
University of Georgia	5,781	202	J.N. Moore	185	260	1,191	290	14	296	150
University of Ghent	14,874	102	F. Haesebrouck	434	111	2,863	211	28	209	150
University of Glasgow	15,746	93	G.D.O. Lowe	697	41	17,657	38	59	43	150
University of Gothenburg	2,257	246	C. Ohlsson	264	212	7,414	112	42	116	150
University of Groningen	20,850	64	E.G.E. De Vries	641	53	13,315	55	46	89	150
University of Helsinki	19,239	72	J. Kaprio	335	165	7,859	107	47	80	150
University of Hong Kong	12,217	128	S.T. Fan	640	54	18,042	37	62	36	150
University of Houston	3,658	225	R.E. Lewsi	147	281	1,945	245	28	209	150
University of Illinois	11,261	135	B.S. Katzenellenbogen	286	202	8,860	91	55	53	150
University of Illinois, Chicago	24,037	42	G.A. Fishman	304	191	3,237	198	23	246	150
University of Indonesia	979	294	F. Partono	74	327	605	309	2	343	95
University of Iowa	31,840	22	M.A. Pfaller	680	44	31,582	10	79	10	150
University of Kansas	13,069	123	F. Wolfe	321	173	13,042	56	54	56	150
University of Kentucky	14,935	100	D.A. Butterfield	385	138	8,095	103	61	40	150
University of Lausanne	5,515	204	J. Tscopp	334	166	18,405	35	85	4	150
University of Leeds	17,283	83	P. Emery	575	63	2,312	237	66	23	150

University of Leicester	7,099	189	N.J. Samani	240	229	6,110	127	38	143	150
University of Liverpool	15,508	96	C.A. Hart	248	221	4,095	176	36	160	150
University of Ljubljana	4,705	212	F. Strle	151	277	1,399	279	26	225	150
University of London (Kings College of London)	127,212	1	K.H. Nicolaides	892	16	25,807	19	64	28	150
University of Manchester	18,327	79	A.J. Silman	556	71	22,895	23	72	14	150
University of Manitoba	12,443	126	C.N. Bernstein	230	233	6,070	128	38	143	150
University of Maryland	4,960	209	C.E.Hill	117	302	1,628	266	18	276	150
University of Maryland Baltimore County	22,902	50	M/M. Levine	399	132	8,222	101	43	108	150
University of Massachusetts	1,467	273	P.M. Clarkson	174	267	3,246	197	27	216	150
University of Melbourne	22,112	56	R. Bellomo	542	75	10,310	78	45	96	150
University of Miami	22,676	52	C. Ricordi	525	80	12,606	59	44	101	150
University of Michigan	51,188	7	F. Morady	495	91	7,862	106	43	108	150
University of Minnesota	38,475	14	A.R. Folsom	635	55	35,756	8	79	10	150
University of Missouri	16,775	88	J.D. Tobias	402	128	2,515	229	23	246	150
University of Nebraska	2,437	241	T.J. Housch	189	258	1,204	289	21	259	131
University of New Hampshire	1,078	287	D. Finkelhor	140	286	5,112	149	26	225	50
University of New Mexico	10,920	139	R.H. Glew	312	183	1,636	265	18	276	150
University of New South Wales	13,091	122	D.A. Cooper	523	81	23,176	22	57	48	150
University of North Carolina, Chapel Hill	35,003	17	D.A. Savitz	372	145	7,093	114	40	128	150
University of North Texas	1,984	256	J.W. Simpkins	283	204	3,838	182	37	154	150
University of Notre Dame	476	322	F.J. Castellino	382	139	3,296	194	29	205	150
University of Nottingham	9,414	161	I.A. MacDonald	445	103	4,984	154	36	160	150
University of Oklahoma	11,159	138	J.N. George	220	238	4,147	173	34	175	150
University of Oregon	2,761	235	J.T. Rosenbaum	300	195	3,518	187	27	216	150
University of Oslo	23,753	43	S.E. Kjeldsen	416	119	10,292	79	43	108	150
University of Otago	11,197	136	J. Crane	247	222	4,376	167	30	199	150
University of Ottawa	11,177	137	D. Krewski	309	185	5,015	152	31	190	150
University of Oxford	23,630	44	A.L. Harris	339	162	12,091	62	83	6	150
University of Pennsylvania	5,870	200	A. Alavi	674	46	5,129	146	46	89	150
University of Pittsburgh	51,833	6	L.H. Kuller	879	17	37,595	7	81	8	150
University of Quebec	7,706	177	C. Bouchard	705	34	28,823	16	63	33	150
University of Queensland	14,788	104	T.H. Marwick	409	124	7,486	111	49	71	150
University of Reading	2,065	253	C.M. Williams	91	316	1,842	254	32	185	150

University of Rochester	21,507	58	A.J. Moss	583	62	22,141	25	46	89	150
University of Saskatchewan	5,227	207	K. Prasad	125	295	1,472	276	19	270	150
University of Science and Technology of China	392	329	Z. Tain	184	261	1,260	285	18	276	150
University of Sheffield	9,910	155	R. Eastell	307	188	9,567	85	54	56	150
University of South Carolina	5,798	201	R.R. Pate	210	245	7,907	105	43	108	150
University of South Florida	13,862	117	H. Friedman	435	110	2,527	227	22	252	150
University of Southampton	9,524	160	S.T. Holgate	1,060	9	39,705	5	72	14	150
University of Southern California	28,284	29	L. Bernstein	365	147	9,906	80	43	108	150
University of St Andrews	509	319	H.T.O. Davies	328	170	5,329	140	44	101	150
University of Surrey	3,082	231	J. Arendt	215	242	3,309	193	32	185	150
University of Sussex	2,365	244	C. Abraham	70	329	1,288	284	19	270	88
University of Sydney	22,019	57	P. Mitchell	419	117	6,219	126	48	73	150
University of Technology, Sydney	984	293	H.T. Nguyen	225	235	674	306	11	310	150
University of Tennessee Knoxville	4,526	214	B.T. Rouse	341	161	5,283	142	36	160	150
University of Texas at Austin	2,280	245	A.J. Welch	301	193	3,252	196	26	225	150
University of Tokyo	27,586	33	M. Omata	967	15	22,053	27	64	28	150
University of Toronto	62,513	3	G. Koren	754	25	12,085	63	48	73	150
University of Tsukuba	8,792	170	H. Akaza	491	92	2,530	226	23	246	150
University of Twente	530	316	C.A. Van Blitterswijk	288	200	3,950	179	41	124	150
University of Utah	22,314	55	M.L. Slatery	276	205	8,158	102	48	73	150
University of Vermont	10,019	153	R.P. Tracy	339	162	22,112	26	82	7	150
University of Victoria	1,808	260	R.E. Rhodes	80	321	687	305	19	270	79
University of Virginia	22,910	49	R.F. Edlich	572	64	2,545	224	13	299	150
University of Warwick	2,783	234	G.F. Medley	137	290	2,017	241	21	259	150
University of Washington	50,019	8	L. Corey	511	85	27,474	18	78	13	150
University of Waterloo	1,556	267	R.L. Hughson	263	213	3,170	201	31	190	150
University of Western Australia	10,298	150	L.J. Beilin	503	89	14,725	49	48	73	150
University of Western Ontario	14,388	109	R.A.Hegele	447	102	5,749	133	39	136	150
University of Wisconsin	32,376	21	R. Klein	487	94	8,555	94	65	24	150
University of Wollongong	1,402	276	J.R. Steele	65	333	638	307	15	288	90
University of York	3,803	221	M. Drummond	308	186	4,566	162	30	199	150
University of Zurich	10,857	141	A. Aguzzi	394	136	11,126	73	60	41	150
Univesitas Gadjah Mada	277	332	Y. Mahendrahata	18	346	23	344	4	334	36

Uppsala University	22,848	51	L.Lind	329	168	4,511	163	35	167	150
Utah State	421	327	R.W. Sidwell	241	227	2,576	221	28	209	150
Utrecht University	28,107	30	D.E. Grobbee	530	77	21,406	31	70	18	150
Vanderbilt University	20,200	67	F.P. Guengerich	663	47	32,945	9	58	45	150
Victoria University of Wellington	227	337	J. Cumming	31	343	100	341	7	326	65
Vienna University of Technology	158	342	S. Miksch	72	328	399	321	11	310	106
Virginia Polytechnic Institute	1,088	285	D.S. Lindsay	344	160	2,712	217	30	199	150
Vrije Universiteit, Brussels	7,290	184	M.Noppen	147	281	1,166	291	22	252	150
VU University Amsterdam	23,530	46	H.M. Pinedo	691	43	19,029	34	54	56	150
Wageningen University	1,292	279	M.B. Katan	406	126	12,024	65	50	68	150
Wake Forest University	17,042	85	S.R. Feldman	454	100	3,619	185	35	167	150
Waseda University	532	315	E. Tsuchida	661	48	7,048	115	35	167	150
Washington State University	3,841	220	T.E. Besser	160	274	2,753	216	33	183	150
Washington University in St. Louis	31,216	23	M.J. Welch	724	31	11,837	66	42	116	150
Wayne State University	21,083	61	R.J. Romero	594	58	21,849	29	59	43	150
West Virginia University	7,297	182	J.E. Riggs	217	240	1,673	264	11	310	150
Yale University	40,756	13	R.A. Flavell	734	28	56,589	2	113	1	150
Yonsei University	9,280	164	Y. Jang	199	252	2,517	228	23	246	150
York University	2,468	239	R.J. Burke	216	241	1,225	287	16	285	150
Zhejiang University	3,094	230	Q. Xia	194	254	563	314	13	299	150

Astronomy and Physics Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	6,279	137	R.M. Nieminen	394	148	6,455	71	40	49	150
Aarhus University	5,398	164	F. Besenbacher	358	170	6,475	70	47	19	150
Arizona State University	7,887	98	D.J. Smith	558	50	7,513	54	33	116	150
Ateneo de Manila University	26	346	R.A. Guerrero	23	343	117	340	4	341	85
Auburn University	2,188	274	M.S. Pindzola	321	200	1,750	251	27	182	150
Australian National University	10,036	57	Y.S. Kivshar	687	25	1,578	263	49	14	150
Boston College	1,194	304	Z.F. Ren	220	274	8,085	48	43	35	150
Boston University	7,149	114	H.E. Stanley	480	83	10,348	33	57	6	150
Brandeis University	2,282	269	G. Apollinari	405	138	4,553	97	43	35	150
Brigham Young University	1,498	292	D. Henderson	368	162	3,013	162	29	150	150
Brown University	7,454	108	G.A. Alves	292	223	2,690	190	33	116	150
California Institute of Technology (Calt...)	28,914	6	R. Kass	552	55	6,497	69	32	122	150
Cardiff University	2,683	255	P.M. Snowton	176	296	682	319	17	288	150
Carnegie Mellon University	8,550	84	D. Bortoletto	459	103	4,662	93	42	46	150
Case Western Reserve University	4,504	188	P.L. Taylor	149	306	699	317	11	325	106
Chalmers University of Technology	8,610	83	T. Claeson	319	201	2,245	223	19	268	150
Charles University	5,593	158	V. Sechovsky	437	117	1,123	289	17	288	150
Chinese University of Hong Kong	3,236	232	S.P. Wong	264	246	1,146	286	18	276	150
Chulalongkorn University	673	324	V. Sa-Yakanit	46	340	119	339	3	342	41
City University of Hong Kong	4,696	179	P.K. Chu	887	13	6,609	68	29	150	150
City University of New York	4,142	207	F.H. Pollak	345	182	3,444	140	20	256	150
Colorado State University	2,784	249	H.R. Band	286	227	2,449	200	25	207	150
Columbia University	12,771	40	M. Abolins	263	248	2,224	225	31	135	150
Cornell University	18,566	17	D.L. Hartill	468	97	4,111	108	30	143	150
Curtin University of Technology	537	331	J. D. Gale	195	283	5,005	86	32	122	150
Dalhousie University	2,304	268	J.R. Datin	406	137	7,651	52	50	12	150
Dartmouth College	2,774	250	K.D. Paulson	371	160	2,809	178	40	49	150
Delft University of Technology	7,926	97	C.W.E. Van Eijk	402	144	2,316	214	28	163	150
Drexel University	2,690	254	D.H. Feng	100	330	934	301	6	337	123
Duke University	7,027	119	G. Apollinari	405	138	4,567	96	43	35	150
Durham University	6,499	130	A. Martin	290	225	8,566	43	35	90	150

Ecole Normale Supérieure de Lyon	1,382	298	S. Ciliberto	90	332	1,549	266	26	191	101
École Normale Supérieure, Paris	4,616	183	G. Bastard	160	302	2,638	194	17	288	150
École Polytechnique	8,138	90	E. Gabathuler	434	119	4,572	95	34	98	150
Ecole Polytechnique Fédérale de Lausanne	7,468	107	G. Margaritondo	513	64	4,204	105	25	207	150
Eindhoven University of Technology	5,440	161	W.J.W. DeJonge	372	158	3,461	139	30	143	150
Emory University	1,551	289	J.M. Bowman	304	214	2,441	202	29	150	150
Erasmus University Rotterdam	645	327	J.W. Wiladimiroff	417	128	3,192	152	20	256	150
ETH Zurich (Swiss Federal Institute of Technology)	14,559	30	H.R. Ott	473	92	3,936	111	29	150	150
Florida International University	1,408	296	M.U. Khandaker	126	318	2,039	232	28	163	150
Florida State University	8,192	88	K.W. Kemper	313	205	1,249	281	23	232	150
Freie Universität Berlin	7,183	113	G. Kaindl	339	185	3,183	153	22	237	150
Friedrich Alexander Universität Erlangen Nürnberg	8,789	78	P.G. Reinhar	340	184	3,250	149	29	150	150
Fudan University	6,122	142	X.Wang	222	273	2,855	171	22	237	150
Georg August Universität Göttingen	5,710	152	K.P.Lieb	556	52	6,702	65	35	90	150
George Mason University	1,458	294	D.L. Hartill	247	257	2,375	210	30	143	150
George Washington University	1,872	282	E. Della Torre	178	295	522	326	10	330	118
Georgetown University	1,018	312	J.K.Freericks	128	316	1,180	282	17	288	73
Georgia Institute of Technology	9,402	67	V. Landman	281	233	8,015	49	46	24	150
Georgia State University	1,094	307	S.T. Manson	238	262	1,483	270	22	237	150
Goteborg University	9,737	65	B. Kasemo	374	156	6,704	64	47	19	150
Harvard University	16,197	25	D. Amidei	501	69	9,346	39	43	35	150
Hebrew University of Jerusalem	7,534	104	I. Felner	371	160	2,838	173	26	191	150
Heidelberg Universität	8,767	79	J.W. Gary	592	40	8,695	41	39	65	150
Hokkaido University	10,037	56	H. Hasegawa	557	51	18,907	9	27	182	150
Hong Kong Polytechnic University	3,482	227	H.L.W. Chang	617	35	1,978	237	26	191	150
Hong Kong University of Science & Techno...	3,755	218	H.S. Kwok	494	72	3,379	145	32	122	150
Humboldt-Universität zu Berlin	132	340	R. Chaoui	161	300	1,170	283	20	256	150
Imperial College London	17,472	22	P.L. Knight	319	201	7,429	56	45	31	150
Indian Institute of Technology Bombay (I...	2,273	271	B.D. Padalia	146	308	866	303	8	333	146
Indian Institute of Technology Delhi (II...	3,111	237	K.L. Chopra	332	190	2,746	180	7	334	150
Indian Institute of Technology Kanpur (I...	3,246	231	R.K. Thareja	110	326	613	323	15	307	86
Indiana University Bloomington	7,141	115	G. Giacomelli	611	37	10,265	34	37	75	150
Indiana University Indianapolis	229	337	M. Wang	51	339	80	342	6	337	45

Iowa State University	10,563	54	P.C. Canfield	404	141	4,979	87	43	35	150
Johns Hopkins University	11,893	48	A. Barbaro-Galtieri	563	46	10,870	25	47	19	150
Kansas State University	3,583	223	C.D. Lin	297	220	2,251	222	25	207	150
Katholieke Universiteit Leuven	7,979	95	V.V. Moshchalkow	583	42	6,816	63	34	98	150
Keio University	4,226	201	M. Obara	502	68	2,701	187	20	256	150
King Fahd University of Petroleum & Minerals	1,376	299	B.S. Yilbas	391	150	1,093	292	19	268	150
King Saud University	727	321	M.S. Abdalla	74	334	254	334	10	330	42
Kobe University	4,453	192	E. Duchovni	456	107	3,752	120	34	98	150
Korea Advanced Institute of Science & Technology	7,680	100	K.J. Chang	504	67	15	343	34	98	150
Korea University	474	333	B.G. Cheon	302	217	3,210	151	39	65	150
Kyoto University	27,754	7	Y. Maeno	367	164	2,811	177	45	31	150
Kyushu University	9,752	64	T. Okada	237	263	1,726	253	21	249	150
La Trobe University	942	317	J. Liesegang	3	346	5	346	2	344	4
Lancaster University	3,056	239	P.V.E. McClintock	324	198	1,053	293	22	237	150
Leiden University	6,222	138	J.A. Mydosh	389	151	2,923	166	22	237	150
Linköping University	4,340	197	B. Monemar	486	78	2,697	188	25	207	150
London School of Economics and Political Science	166	339	C.Howson	35	342	115	341	3	342	5
Loughborough University	2,816	247	A.S.Aexandrov	165	299	1,473	272	21	249	53
Louisiana State University	5,148	171	J.P. Draayer	256	251	861	305	17	288	150
Ludwig-Maximilians-Universität München	8,663	80	M. Boutenur	324	198	3,509	136	33	116	150
Lund University	9,397	68	B. Asmen	409	133	3,568	134	29	150	150
Maastricht University	212	338	P. Lambin	395	147	5,360	79	39	65	150
Macquarie University	1,321	300	B.C. Sanders	188	288	2,021	234	25	207	150
Mahidol University	438	334	I.M. Tang	154	305	252	335	7	334	107
Masaryk University	1,134	306	V. Holy	186	292	1,845	248	17	288	150
Massachusetts Institute of Technology	34,017	3	M. Brinkley	527	59	25,309	4	46	24	150
McGill University	3,140	235	D.B. MacFarlane	338	187	3,140	154	18	276	150
McMaster University	6,628	125	J.P. Carbotte	424	124	1,677	256	18	276	150
Michigan State University	8,892	74	B.A. Brown	482	81	5,102	83	43	35	150
Michigan Technological University	1,468	293	D.R. Beck	120	320	422	331	11	325	47
Monash University	3,107	238	T.J.Hicks	106	327	221	337	5	340	79
Montana State University	1,711	286	V.H. Schimdt	143	309	760	311	15	307	150
Moscow State University	20,569	15	A.M. Zheltikov	549	56	3,894	113	30	143	150

Nagoya University	16,692	23	M. Uneno	469	96	2,284	217	28	163	150
Nanjing University	9,931	59	Y.W. Du	478	84	3,047	160	29	150	150
Nanyang Technological University	7,489	105	S.F. Yoon	461	102	1,853	244	22	237	150
National Taiwan University	8,952	73	Y.F. Chen	686	26	6,676	66	36	80	150
National Tsing Hua University	7,951	96	I.N. Lin	393	149	2,268	219	24	221	150
National University of Ireland, Galway	582	328	C. Dainty	73	335	372	333	13	316	112
National University of Singapore	9,333	69	C. K. Ong	414	129	2,823	176	27	182	150
New Mexico State University	2,143	276	J.G. Boissevain	161	300	3,606	128	34	98	150
New York University	6,468	133	J.K. Percus	195	283	1,809	249	10	330	130
Newcastle University	2,716	252	P.R. Bridden	354	176	2,973	163	33	116	150
North Carolina State University	7,125	116	R.J. Nemanich	421	126	5,792	76	31	135	150
Northeastern University	4,824	176	S.S. Banerjee	898	10	14,731	14	46	24	150
Northwestern University	12,013	45	C.A. Mirkin	352	179	15,071	13	73	2	150
Norwegian University of Science & Technology	3,217	233	I. Brevik	167	298	873	302	17	288	96
Ohio State University	11,654	49	H. Kagan	409	133	3,582	133	22	237	150
Oklahoma State University	2,609	258	V.V. Tokmenin	156	304	617	321	13	316	150
Open University UK	1,084	309	N.J. Mason	196	282	1,308	278	22	237	150
Oregon State University	2,701	253	G.T. Evans	99	331	376	332	6	337	56
Osaka University	25,984	9	Y. Onuki	785	14	9,418	38	45	31	150
Peking University	9,905	60	Q. Gong	379	154	1,530	267	20	256	150
Pennsylvania State University	15,245	29	A. Lakhtakia	547	57	5,267	82	29	150	134
Pohang University of Science And Technology	4,666	180	S.I. Lee	374	156	2,707	185	28	163	150
Portland State University	649	326	J.Jiao	120	320	1,361	276	18	276	150
Princeton University	29,891	5	H. Rabitz	645	33	10,986	23	35	90	150
Purdue University	12,018	44	G. Apollinari	408	135	4,719	92	44	34	150
Queen's University	3,809	217	V.H. Smith	244	260	1,376	275	20	256	150
Queen's University of Belfast	4,515	186	F.P. Keenan	424	124	1,737	252	24	221	150
Queensland University of Technology	780	320	R.L. Frost	602	38	8,154	46	40	49	150
Radboud University, Nijmegen	4,961	174	R. Clare	223	272	2,295	216	28	163	150
Rensselaer Polytechnic Institute	5,629	156	T.M. Lu	329	192	2,578	196	25	207	150
Rheinisch Westfälische Technische Hochschule Aach	8,530	85	K.W. Bell	464	99	3,797	119	35	90	150
Rheinische Friedrich Wilhelms Universität Bonn	8,647	82	E. Dočovni	464	99	3,862	115	34	98	150
Rice University	5,766	148	F. B. Dunning	256	251	1,045	295	18	276	150

Rochester Institute of Technology	1,224	302	B.W. Smith	122	319	1,110	290	18	276	150
Royal Institute of Technology, KTH	8,815	76	K.V. Rao	308	209	2,655	193	19	268	150
Royal Melbourne Institute of Technology	1,069	310	W. Van Megan	103	329	1,896	240	13	316	150
Rutgers	10,101	55	A. Beretvas	511	65	10,234	35	46	24	150
Saint-Petersburg State University	7,479	106	V.M. Shabaev	140	313	576	324	24	221	125
San Diego State University	1,227	301	S.B. Oseroff	149	306	2,258	221	19	268	150
Sapienza University of Rome	0	347		0	347	0	347	0	347	0
Sciences Po Paris	0	347		0	347	0	347	0	347	0
Seoul National University	8,994	71	B. Lee	414	129	1,847	247	31	135	150
Shanghai Jiao Tong University	6,613	126	H.Y. Fan	364	166	782	309	22	237	137
Simon Fraser University	3,205	234	M.L.W. Thewalt	225	270	1,634	261	13	316	150
Stanford University	18,076	19	J.S. Harris	911	8	11,966	20	48	18	150
State University of New York Buffalo	33	344	M. Haka	36	341	663	320	7	334	110
Stockholm University	4,024	209	B. Asman	410	131	3,587	130	29	150	150
Stony Brook University	10,992	53	D.B. Fossan	270	241	1,253	280	18	276	150
Syracuse University	4,020	211	S. Stone	237	263	1,998	236	28	163	150
Tartu University (University of Tartu)	1,458	294	M. Kirm	183	294	851	306	18	276	150
Technical University of Denmark	5,788	147	J.M. Hvam	269	245	2,173	228	27	182	150
Technion	9,811	62	J. Goldberg	430	120	3,707	124	34	98	150
Technische Universität Berlin	6,492	131	B. Bimberg	967	7	18,234	10	57	6	150
Technische Universität Chemnitz	2,194	273	D.R.T. Zahn	364	166	1,762	250	21	249	150
Technische Universität Dresden	5,721	150	D.B. MacFarlane	527	59	7,291	57	32	122	150
Technische Universität München	13,444	38	M. Stutzman	465	98	6,621	67	41	47	150
Tel Aviv University	11,190	51	G. Alexander	553	54	8,485	44	34	98	150
Texas A&M University	8,812	77	M.O. Scully	474	89	5,040	85	36	80	150
Texas Tech	2,255	272	C. Bromberg	470	95	4,216	104	46	24	150
Tohoku University	23,118	12	A. Inoue	1,930	1	38,085	2	71	3	150
Tokyo Institute of Technology	17,906	21	H. Takezoe	492	75	4,010	110	32	122	150
Trinity College Dublin	3,019	242	J.M.D. Coey	533	58	12,766	18	37	75	150
Tsinghua University	13,582	36	G. Sin	456	107	808	308	14	311	150
Tufts University	2,433	263	A. Vilenkin	188	288	3,641	126	25	207	67
Universidad Autonoma de Madrid	7,574	102	F. Flores	333	188	2,392	208	25	207	150
Universidad de Chile	1,895	280	M.T. Garland	210	279	1,136	287	17	288	150

Universidad de Granada	7,574	102	F. Flores	333	188	2,392	208	25	207	150
Universidad del País Vasco	3,739	219	P.M. Echenique	326	196	3,122	156	36	80	150
Universidad Nacional Autónoma de México ...	9,835	61	O. Pizio	141	312	429	330	14	311	78
Universidad Politecnica de Madrid	3,028	241	E. Munoz	234	266	1,869	242	26	191	150
Universidade de São Paulo	12,230	41	V.S. Bagnato	298	219	1,879	241	19	268	150
Universidade Estadual de Campinas	6,219	139	M. Knobel	193	285	2,211	226	23	232	150
Università degli Studi di Firenze	6,138	141	A. Bay	493	73	4,735	91	40	49	150
Università degli Studi di Padova	10,006	58	R. Contri	584	41	6,324	72	32	122	150
Università Di Bologna	8,156	89	G. Giacomelli	577	44	10,349	32	34	98	150
Università di Pisa	6,460	134	A. Hocker	355	172	2,896	167	28	163	150
Universitat Autònoma de Barcelona	4,542	184	J.P. Lees	766	15	15,909	12	49	14	150
Universität Bielefeld	3,687	220	F. Karsch	246	258	3,249	150	35	90	150
Universität Bremen	2,620	257	D. Hommel	443	111	3,416	141	28	163	150
Universitat d'Alacant	1,199	303	A. Belendez	216	276	698	318	20	256	94
Universitat de València	6,016	143	T.J. Abye	556	52	8,264	45	36	80	150
Universität Frankfurt am Main	7,221	112	W. Greiner	889	11	12,843	17	35	90	150
Universität Freiburg	5,482	159	J.W. Gary	723	20	10,564	29	40	49	150
Universität Hamburg	8,194	87	I.P. Duerdoth	488	76	3,751	121	34	98	150
Universität Karlsruhe	8,966	72	W.D. Apel	458	105	3,464	138	31	135	150
Universität Leipzig	4,264	200	J. Karger	350	180	2,311	215	29	150	150
Universität Munster (Westfälische Wilhelms-Univers	4,351	194	R. Pottgen	438	116	1,485	269	29	150	150
Universität Politecnica de Catalunya	3,525	226	L. Torner	303	215	2,336	212	34	98	150
Universität Regensburg	4,758	177	W.Wegscheider	408	135	4,421	100	36	80	150
Universität Stuttgart	7,597	101	F. Scholz	339	185	2,722	183	23	232	150
Universität Trier	73	342	A. Jabs	16	344	8	345	1	346	4
Universität Tübingen	5,454	160	A. Faessler	717	22	7,480	55	33	116	150
Universität Wien (University of Vienna)	5,651	153	H. Kuzmany	270	241	3,359	146	30	143	150
Universität Zu Köln	6,674	124	P. Von Brentano	484	79	2,163	230	33	116	150
Université Catholique de Louvain	3,428	228	X. Gonze	131	315	3,631	127	27	182	143
Université de Liege	4,310	198	M. Ausloos	405	138	1,947	238	24	221	150
Université de Montréal	4,515	186	J.W. Gary	723	20	10,564	29	40	49	150
Université de Nice Sophia Antipolis	2,495	261	D. Sornette	290	225	3,397	144	37	75	150
Université Laval	2,930	244	S.L. Chin	270	241	2,411	205	41	47	150

Universite Libre de Bruxelles	5812	146	D. Baye	186	292	1635	260	19	268	150
Université Paris Sorbonne	231	336	J. Bouchez	67	338	703	316	12	323	150
Université Paris-Sud 11	21065	14	A. Revcolevsich	427	123	3896	112	37	75	150
Université Pierre et Marie Curie	15441	27	M. Begalli	143	309	996	297	19	268	150
Universiti Malaya (University of Malaya)	2278	270	S.W. Ng	1108	4	3409	143	16	302	150
University College Cork	1541	290	G. Huyet	133	314	516	327	16	302	150
University College Dublin	1801	283	S. Malik	226	269	730	314	18	276	150
University College London	12022	43	A.A. Carter	472	94	4015	109	35	90	150
University do Porto	719	322	J.B. Sousa	208	280	774	310	14	311	150
University of Aberdeen	2122	277	J.N. Low	429	121	977	299	17	288	150
University of Adelaide	2830	246	A.W. Thomas	354	176	2743	181	36	80	150
University of Alabama	3901	213	A. Bay	493	73	4775	90	40	49	150
University of Alberta	7353	109	D. Axen	403	142	5480	78	34	98	150
University of Amsterdam	6873	121	K.H.J. Buschow	1148	3	13899	16	20	256	150
University of Antwerp	4345	195	F.M. Peeters	674	28	9761	37	39	65	150
University of Arizona	14000	32	J.V. Moloney	440	113	3598	129	34	98	150
University of Athens	3838	215	W.D. Apel	482	81	3662	125	32	122	150
University of Auckland	1779	284	D.F. Walls	260	250	4284	102	24	221	150
University of Barcelona	6607	127	M. Davier	514	63	5311	81	31	135	150
University of Basel	3636	222	H.J. Guntherodt	458	105	7158	59	40	49	150
University of Bath	2400	265	P.S.J. Russell	353	178	7077	61	53	10	150
University of Bergen	2175	275	B. Stugu	326	196	3503	137	34	98	150
University of Bern	4378	193	H.U. Gudel	449	109	4840	88	39	65	150
University of Birmingham	8829	75	J.W. Gary	476	86	4165	106	36	80	150
University of Bristol	7323	110	G.S. Abrams	578	43	8689	42	40	49	150
University of British Columbia	9032	70	J.W. Gary	476	86	4131	107	36	80	150
University of Calgary	1394	297	T. Ziegler	368	162	7997	50	49	14	150
University of California, Berkley	31444	4	M.L. Cohen	648	32	24662	5	43	35	150
University of California, Davis	8099	91	C. Bromberg	474	89	4818	89	46	24	150
University of California, Irvine	7242	111	A.A. Maradudin	484	79	3881	114	18	276	150
University of California, Los Angeles	18314	18	A. Barbaro-Galtieri	563	46	10870	25	47	19	150

University of California, San Francisco	979	315	M. Roach	236	265	4,310	101	43	35	150
University of California, Santa Barbara	14,493	31	J.S. Speck	517	62	12,657	19	57	6	150
University of California, Santa Cruz	4,160	205	H.R. Band	187	290	2,168	229	22	237	150
University of Cambridge	26,740	8	D. Ritchie	746	16	11,571	21	43	35	150
University of Canterbury	1,535	291	G.E. Sredman	119	322	482	328	13	316	87
University of Cape Town	1,088	308	J. Cleymans	112	325	996	297	16	302	150
University of Central Florida	4,875	175	S.T. Wu	448	110	2,487	199	31	135	150
University of Chicago	15,519	26	S.A. Rice	575	45	7,665	51	26	191	150
University of Cincinnati	4,146	206	R. Kass	613	36	7,126	60	32	122	150
University of Colorado at Boulder	13,098	39	N.A. Clark	294	222	5,357	80	28	163	150
University of Connecticut	4,468	190	Y. Hahn	214	278	615	322	11	325	68
University of Copenhagen	8,657	81	R.A. Broglia	376	155	2,017	235	21	249	150
University of Delaware	5,614	157	G.C. Hadjipanayis	459	103	4,483	98	28	163	150
University of Dundee	1,021	311	J.N. Low	429	121	1,048	294	17	288	150
University of Edinburgh	5,715	151	A. Hocker	264	246	2,632	195	27	182	150
University of Florida	11,954	47	S.J. Pearton	1,420	2	20,761	8	54	9	150
University of Geneva	6,156	140	N. Gisin	362	168	6,892	62	51	11	150
University of Georgia	2,316	267	H.F. Schaefer	1,098	5	21,762	7	47	19	46
University of Ghent	4,539	185	R. Baets	250	256	2,029	233	24	221	150
University of Glasgow	6,489	132	G. Apollinari	510	66	10,081	36	46	24	150
University of Gothenburg	28	345	M. Bath	70	337	204	338	16	302	108
University of Groningen	6,538	128	J.T.M. De Hosson	501	69	3,826	118	30	143	150
University of Helsinki	5,739	149	J. Keinonen	307	211	2,396	206	26	191	150
University of Hong Kong	3,256	230	A.B. Djursic	254	255	2,276	218	24	221	150
University of Houston	5,249	168	D.J. Kouri	345	182	1,339	277	16	302	150
University of Illinois	24,008	11	H. Morkoc	1,052	6	14,330	15	43	35	150
University of Illinois, Chicago	4,100	208	V. Bhatngar	302	217	3,338	147	36	80	150
University of Indonesia	89	341	K. Kagawa	87	333	233	336	12	323	107
University of Iowa	4,497	189	V.B Golubev	309	207	1,647	257	26	191	150
University of Kansas	2,910	245	H. Severini	256	251	1,848	245	26	191	150
University of Kentucky	3,549	225	P.C. Eklund	292	223	9,082	40	43	35	150
University of Lausanne	1,011	313	A. Bay	348	181	3,833	117	35	90	150
University of Leeds	5,440	161	I.M. Ward	671	29	7,570	53	24	221	150

University of Leicester	2,751	251	M.Lester	200	281	864	304	21	249	150
University of Liverpool	8,092	92	A. Hocker	355	172	2,837	174	28	163	150
University of Ljubljana	3,898	214	M. Danilov	400	145	4,482	99	39	65	150
University of London (Kings College of London)	25,235	10	J.W. Gary	732	17	10,600	27	40	49	150
University of Manchester	13,609	35	I.P. Duerdoth	488	76	3,745	122	34	98	150
University of Manitoba	2,572	259	G. Williams	115	324	525	325	14	311	85
University of Maryland	20,301	16	S. Das Sarma	478	84	6,119	73	40	49	150
University of Maryland Baltimore County	2,796	248	C.R. Menyuk	318	203	2,697	188	24	221	150
University of Massachusetts	5,139	172	H.R. Band	286	227	2,393	207	25	207	150
University of Melbourne	5,647	154	M.Hazumi	306	212	3,858	116	39	65	150
University of Miami	1,158	305	R.M. Leblanc	306	212	2,512	198	26	191	150
University of Michigan	574	329	H.P. Chan	245	259	2,233	224	29	150	150
University of Minnesota	13,668	34	D.G. Truhlar	888	12	27,089	3	64	5	150
University of Missouri	7,069	117	W.Y. Ching	297	220	3,320	148	27	182	150
University of Nebraska	4,023	210	D.J. Sellmyer	366	165	2,685	191	28	163	150
University of New Hampshire	1,890	281	D. Doughty	116	323	1,679	255	27	182	150
University of New Mexico	5,283	166	J. Antos	271	240	2,896	167	40	49	150
University of New South Wales	5,951	145	M.A. Green	403	142	3,051	159	28	163	150
University of North Carolina, Chapel Hill	4,296	199	P.H. Frampton	233	267	1,464	273	17	288	130
University of North Texas	1,559	288	W.E. Acree	439	115	1,475	271	26	191	150
University of Notre Dame	6,533	129	J.K. Furdyna	559	49	8,144	47	29	150	150
University of Nottingham	5,984	144	M. Henini	631	34	5,964	75	31	135	150
University of Oklahoma	2,319	266	H. Severini	256	251	1,848	245	26	191	150
University of Oregon	3,962	212	H.R. Band	286	227	2,415	204	25	207	150
University of Oslo	5,275	167	T. Camporesi	329	192	2,763	179	27	182	150
University of Otago	569	330	K.C. Gordon	191	287	1,638	259	22	237	150
University of Ottawa	3,048	240	X. Bao	215	277	758	312	17	288	130
University of Oxford	22,783	13	N.H. March	682	27	2,661	192	15	307	150
University of Pennsylvania	117,283	1	A. Hocker	355	172	2,837	174	28	163	150
University of Pittsburgh	7,693	99	J.T. Yates	602	38	16,262	11	37	75	150
University of Quebec	3,332	229	S.L. Chin	273	237	2,323	213	40	49	150
University of Queensland	3,553	224	G.J. Milburn	270	241	5,538	77	34	98	150
University of Reading	2,420	264	R.C. Newman	228	268	1,381	274	13	316	150

University of Rochester	12,010	46	A. Beretvas	272	238	2,891	170	40	49	150
University of Saskatchewan	2,442	262	A. Hirose	127	317	456	329	11	325	124
University of Science and Technology of China	11,383	50	G.C. Guo	421	126	3,092	157	31	135	150
University of Sheffield	6,841	123	M. Hopkinson	522	61	4,278	103	32	122	150
University of South Carolina	3,684	221	J.R Wilson	495	71	2,952	164	28	163	150
University of South Florida	951	316	G.S. Nolas	143	309	1,166	284	22	237	150
University of Southampton	8,359	86	D.J. Richardson	655	31	11,416	22	50	12	150
University of Southern California	8,082	94	K. Maki	476	86	3,016	161	26	191	150
University of St Andrews	3,829	216	W. Sibbett	440	113	2,538	197	28	163	150
University of Surrey	5,165	170	S.R.P. Silva	327	194	3,416	141	32	122	150
University of Sussex	4,214	202	P.D. Townsend	360	169	2,733	182	23	232	150
University of Sydney	6,378	136	D.R. McKenzie	372	158	4,616	94	28	163	150
University of Technology, Sydney	697	323	M.R. Phillips	157	303	824	307	17	288	150
University of Tennessee Knoxville	6,844	122	H.R Band	286	227	2,418	203	25	207	150
University of Texas at Austin	16,434	24	D.L. Kwong	689	24	7,254	58	38	73	150
University of Tokyo	42,552	2	Y. Tokura	901	9	39,219	1	82	1	150
University of Toronto	13,715	33	A. Mandelis	308	209	1,127	288	19	268	150
University of Tsukuba	9,756	63	Y. Masumoto	358	170	3,124	155	24	221	150
University of Twente	4,342	196	D.N. Reinhoudt	724	19	22,809	6	66	4	150
University of Utah	6,453	135	G.B. Stringfellow	310	206	2,360	211	18	276	150
University of Vermont	868	319	J. Yang	72	336	724	315	20	256	33
University of Victoria	2,673	256	G. Vasseur	410	131	2,721	184	26	191	150
University of Virginia	8,090	93	L. Andrews	698	23	10,877	24	39	65	150
University of Warwick	4,701	178	V.B. Golubev	309	207	1,647	257	26	191	150
University of Washington	13,465	37	T.H. Burnett	218	275	1,153	285	21	249	150
University of Waterloo	5,634	155	P.F. Bernath	462	101	3,076	158	28	163	150
University of Western Australia	2,520	260	L. Faraone	275	235	749	313	17	288	150
University of Western Ontario	4,459	191	T.K. Sham	303	215	2,263	220	20	256	150
University of Wisconsin	18,061	20	V. Barger	473	92	5,065	84	38	73	150
University of Wollongong	1,633	287	S.X. Dou	561	48	6,118	74	34	98	150
University of York	2,941	243	R. Wadsworth	284	231	1,550	265	25	207	150
University of Zurich	4,194	203	A. Linden	396	146	2,706	186	25	207	150
Univesitas Gadjah Mada	49	343	M. Yasin	11	345	11	344	2	344	30

Uppsala University	9,506	66	D. Bertrand	386	152	3,586	131	32	122	150
Utah State	665	325	R.W. Schunk	187	290	958	300	11	325	150
Utrecht University	6,968	120	G. Blasse	474	89	3,510	135	14	311	150
Vanderbilt University	4,639	181	J.H. Hamilton	435	118	1,271	279	20	256	150
Victoria University of Wellington	996	314	H.J. Trodahl	176	296	1,033	296	15	307	150
Vienna University of Technology	7,041	118	G. Strasser	332	190	1,511	268	26	191	150
Virginia Polytechnic Institute	5,096	173	H. Aihara	241	261	2,123	231	34	98	150
Vrije Universiteit, Brussels	898	318	D. Bertrand	386	152	3,586	131	32	122	150
VU University Amsterdam	3,127	236	R. Griessen	275	235	2,446	201	30	143	150
Wageningen University	414	335	F.A.M. Leermakers	192	286	1,596	262	18	276	150
Wake Forest University	493	332	R.T. Williams	106	327	1,097	291	13	316	150
Waseda University	5,243	169	A. Beretvas	272	238	2,892	169	40	49	150
Washington State University	2,032	279	L.S. Wang	283	232	3,724	123	49	14	150
Washington University in St. Louis	5,392	165	D.G. Sarantites	327	194	1,869	242	23	232	150
Wayne State University	4,183	204	C.L. Plager	279	234	1,688	254	24	221	150
West Virginia University	1,751	285	M.S. Seehra	225	270	1,573	264	20	256	150
Yale University	11,040	52	A. Hocker	355	172	2,847	172	28	163	150
Yonsei University	5,418	163	J.H. Kang	314	204	2,924	165	36	80	150
York University	2,082	278	D.K. Bohme	263	248	1,920	239	21	249	150
Zhejiang University	12,106	42	D. Yang	441	112	2,181	227	26	191	150

Biochemistry, Genetics and Molecular Biology	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	1,091	304	M. Leisole	121	319	1,183	296	18	294	144
Aarhus University	9,721	89	T.F. Orntoft	232	227	5,538	116	44	79	150
Arizona State University	1,241	298	D. Gust	233	225	5,180	132	38	125	150
Ateneo de Manila University	14	346	F.M. Dayrit	17	343	193	341	5	341	30
Auburn University	2,099	264	C.R. Clark	108	326	471	329	11	325	75
Australian National University	7,333	137	P.G. Board	265	190	3,299	195	30	197	150
Boston College	1,098	303	E.R. Kantrowitz	152	296	853	314	16	307	150
Boston University	11,672	62	L.A. Cupples	372	106	13,386	34	57	31	150
Brandeis University	3,601	218	G.A. Petsko	333	133	8,811	68	31	185	150
Brigham Young University	663	322	M.L. Lee	377	104	5,085	136	32	179	150
Brown University	5,187	184	D.E. Cane	251	198	2,498	230	36	145	150
California Institute of Technology (Calt...	6,770	145	E.H. Davidson	314	150	5,324	125	47	68	150
Cardiff University	7,986	121	W.G. Jiang	319	144	3,447	188	34	164	150
Carnegie Mellon University	2,707	246	C. Ho	260	195	231	340	26	236	150
Case Western Reserve University	12,239	58	M.A. Smith	1,133	7	23,902	15	75	9	150
Chalmers University of Technology	1,530	287	B. Norden	319	144	5,480	120	36	145	150
Charles University	6,518	150	M. Stiborva	164	290	982	310	23	251	150
Chinese University of Hong Kong	4,199	209	T.B. Ng	409	85	2,912	212	38	125	150
Chulalongkorn University	1,550	286	V. Wiwanitkit	645	34	733	320	9	332	120
City University of Hong Kong	840	316	M. Yang	167	285	2,083	249	23	251	150
City University of New York	4,627	198	R. Bittman	249	203	3,526	181	27	229	150
Colorado State University	5,025	188	A.T. Tu	201	257	832	315	9	332	150
Columbia University	7,568	132	I.B. Weinsten	485	67	8,608	73	46	73	46
Cornell University	23,447	14	H.A. Scheraga	1,035	9	20,644	21	44	79	150
Curtin University of Technology	589	325	E. Chang	315	149	295	338	8	338	132
Dalhousie University	4,595	199	M.W. Gray	189	264	3,731	169	29	208	150
Dartmouth College	5,879	169	B.L. Trumpower	144	305	2,659	222	20	278	150
Delft University of Technology	2,329	257	J.J. Heijnen	307	158	4,837	147	45	77	150
Drexel University	4,372	203	M.C. Phillips	184	268	4,527	151	42	89	150
Duke University	20,440	19	R.J. Lefkowitz	752	21	43,621	3	93	3	150
Durham University	2,257	260	J.A.K. Howard	792	16	10,618	54	46	73	150
École Normale Supérieure de Lyon	984	310	V. Laudet	181	273	4,926	145	40	107	150
École Normale Supérieure, Paris	2,129	262	P. Sinay	242	213	2,581	226	27	229	150
École Polytechnique	1,128	301	S.Z. Zard	236	222	2,176	244	28	220	150

Ecole Polytechnique Fédérale de Lausanne	2,100	263	U. Van Stockar	150	298	1,182	297	20	278	150
Eindhoven University of Technology	1,424	293	E.W. Meijen	493	60	11,926	45	67	15	150
Emory University	1,151	300	A. Padwa	612	43	9,843	59	35	155	15
Erasmus University Rotterdam	10,888	73	S.W.J. Lamberts	672	27	19,529	22	50	54	150
ETH Zurich (Swiss Federal Institute of Technolo	9,885	86	K. Wuthrich	591	45	39,101	5	57	31	150
Florida International University	887	312	R.J. Herrera	103	327	1,410	287	20	278	150
Florida State University	3,394	224	A.G. Marshall	553	51	11,525	49	47	68	150
Freie Universität Berlin	8,220	116	W. Saenger	403	88	7,926	84	35	155	150
Friedrich Alexander Universität Erlangen Nürn	6,705	146	W. Hillen	238	219	4,830	148	32	179	150
Fudan University	5,771	173	Y. Xie	270	186	997	309	16	307	150
Georg August Universität Göttingen	9,566	91	G.H. Braus	138	310	1,635	274	23	251	150
George Mason University	169	340	L.A. Liotta	288	170	14,970	32	65	17	150
George Washington University	3,138	235	W.B. Weglicki	219	235	1,695	270	14	317	150
Georgetown University	6,466	155	R.B. Dickson	301	161	7,393	95	47	68	150
Georgia Institute of Technology	3,039	237	A.S. Teja	211	245	1,662	271	15	314	142
Georgia State University	1,591	285	W.D. Wilson	197	261	2,835	218	29	208	150
Goteborg University	10,109	83	B. Norden	320	143	5,308	127	36	145	150
Harvard University	9,881	87	E.J. Corey	935	12	31,203	8	48	64	150
Hebrew University of Jerusalem	11,667	63	A. Levitzki	302	160	7,958	82	37	138	150
Heidelberg Universität	12,556	54	K.Beyreuther	426	78	11,343	51	54	39	150
Hokkaido University	15,181	34	A. Matsuda	652	32	8,380	78	34	164	150
Hong Kong Polytechnic University	1,364	295	A.S.C. Chan	252	197	4,268	157	39	115	150
Hong Kong University of Science & Techno...	1,691	280	Y.H. Wong	160	291	1,902	260	22	259	150
Humboldt-Universität zu Berlin	2,015	268	B. Dorken	331	135	7,575	91	48	64	150
Imperial College London	15,113	35	A. Dell	332	134	5,483	118	40	107	150
Indian Institute of Technology Bombay (I...	1,069	305	P. Mathur	141	308	428	332	14	317	138
Indian Institute of Technology Delhi (IL...	1,040	306	M.N. Gupta	174	278	1,338	290	22	259	101
Indian Institute of Technology Kanpur (I...	993	309	V. K. Singh	378	101	3,706	171	28	220	150
Indiana University Bloomington	6,828	143	J.C. Huffman	780	18	12,354	42	33	172	150
Indiana University Indianapolis	7,672	129	G. Weber	270	186	1,988	252	14	317	150
Iowa State University	6,461	156	J.A. Olson	206	250	1,988	252	16	307	150
Johns Hopkins University	31,570	4	D. Sidransky	395	92	21,296	20	77	6	150
Kansas State University	3,540	220	K.J. Kramer	201	257	1,923	258	22	259	150
Katholieke Universiteit Leuven	9,324	98	E. DeClercq	1,641	2	335	337	72	11	150
Keio University	6,668	147	N. Shimizu	815	15	28,088	11	57	31	150
King Fahd University of Petroleum & Minerals	249	335	A.A. Isab	138	310	497	326	14	317	98

King Saud University	1,442	291	J.S. Mossa	113	324	721	321	10	330	147
Kobe University	7,232	139	K. Chihara	441	74	4,487	153	31	185	150
Korea Advanced Institute of Science & Technol	2,771	244	S.Y. Lee	186	266	2,357	239	30	197	150
Korea University	3,882	213	C.W. Kim	102	328	802	317	15	314	150
Kyoto University	34,660	2	S. Shimizu	349	119	2,846	216	32	179	150
Kyushu University	16,428	28	K. Sugimachi	1,693	1	30,331	9	64	18	150
La Trobe University	2,548	249	D.G. Stephenson	136	312	1,561	279	21	271	87
Lancaster University	311	329	R.D. Bardgett	121	319	3,032	206	39	115	150
Leiden University	13,522	42	J. Reedijk	1,013	11	17,105	26	41	97	57
Linkoping University	3,439	222	K.E. Magnusson	237	221	2,894	213	18	294	150
London School of Economics and Political Science	176	338	P.F. Urbach	23	342	139	342	4	343	15
Loughborough University	1,162	299	M.R. J. Elsegood	322	140	2,938	210	28	220	150
Louisiana State University	10,447	78	N.G. Bazan	398	90	4,960	141	40	107	150
Ludwig-Maximilians-Universität München	14,821	39	W. Neupert	355	115	5,422	122	55	37	150
Lund University	16,663	27	B. Mattiasson	593	44	8,060	81	31	185	150
Maastricht University	4,989	190	J.F.C. Glatz	270	186	3,459	187	40	107	150
Macquarie University	1,666	281	R.S. Vagg	87	334	385	336	5	341	53
Mahidol University	2,789	243	S. Fucharoen	286	172	1,888	263	21	271	150
Masaryk University	1,649	282	J. Marek	144	305	860	313	18	294	150
Massachusetts Institute of Technology	14,332	40	R. Langer	920	13	48,832	1	93	3	150
McGill University	17,985	24	N. Soneberg	390	93	12,554	41	77	6	150
McMaster University	7,569	131	R.M. Epand	416	82	5,120	133	35	155	150
Michigan State University	10,013	84	J.M. Tiedje	369	108	12,332	43	54	39	150
Michigan Technological University	619	323	R.L. Luck	93	330	502	325	12	323	112
Monash University	8,449	111	D.M. DeKrester	458	72	5,421	123	37	138	150
Montana State University	1,712	278	M.T. Quinn	141	308	5,692	112	37	138	150
Moscow State University	12,433	57	A.B. Rubin	335	128	549	324	11	325	150
Nagoya University	14,922	37	T. Mizuno	469	70	2,284	243	28	220	150
Nanjing University	2,431	255	H.Y. Chen	432	75	5,237	128	42	89	150
Nanyang Technological University	1,816	275	J.H. Tay	246	207	2,050	250	31	185	150
National Taiwan University	6,057	165	S.M. Peng	629	38	9,555	62	41	97	150
National Tsing Hua University	2,306	258	T.H. Lu	150	298	1,086	302	22	259	150
National University of Ireland, Galway	1,482	289	B.E. Leonard	381	100	3,487	186	33	172	150
National University of Singapore	7,718	126	S.F.Y. Li	208	248	3,550	177	28	220	150
New Mexico State University	1,113	302	J. Y. Wang	613	42	8,542	76	76	8	150
New York University	13,093	47	N.E. Geacintor	330	136	2,503	228	33	172	150

Newcastle University	7,331	138	W. Clegg	615	41	7,787	86	37	138	150
North Carolina State University	6,217	161	T.R. Klaenhammer	194	263	3,933	164	28	220	150
Northeastern University	1,843	274	B.L. Karger	247	204	5,378	124	36	145	150
Northwestern University	13,111	46	V.C. Jordan	505	58	16,046	28	42	89	150
Norwegian University of Science & Technology	2,710	245	H.E. Krokan	142	307	3,288	198	33	172	150
Ohio State University	15,432	33	L.A. Paquette	1,166	6	9,902	58	31	185	150
Oklahoma State University	2,501	252	C.A. Yu	171	282	1,573	276	23	251	150
Open University UK	852	314	S.P.R. Rose	292	167	132	343	4	343	12
Oregon State University	5,264	183	P.D. Whanger	206	250	1,824	266	19	287	150
Osaka University	25,702	10	N. Taniguchi	554	50	12,937	40	47	68	150
Peking University	6,494	151	C.S. Tang	299	164	1,258	293	19	287	150
Pennsylvania State University	13,164	45	S.J. Benkovic	492	61	1,588	275	40	107	150
Pohang University of Science And Technology	1,770	277	P.G. Suh	222	234	3,205	201	34	164	150
Portland State University	598	324	L.I. Crawshaw	43	341	283	339	8	338	83
Princeton University	5,099	186	A.J. Levine	350	118	27,728	12	62	20	150
Purdue University	11,112	68	D.J. Morre	460	71	2,450	234	24	246	150
Queen's University	5,504	179	R.Ross	153	295	3,992	161	14	317	150
Queen's University of Belfast	3,803	214	P.G. Johnston	182	271	3,724	170	34	164	150
Queensland University of Technology	1,309	296	G. Smith	203	255	982	310	17	302	118
Radboud University, Nijmegen	11,028	70	J.H. Veerkamp	319	144	3,914	165	31	185	150
Rensselaer Polytechnic Institute	1,497	288	R.J. Linhardt	449	73	6,664	102	42	89	150
Rheinisch Westfalische Technische Hochschule	3,582	219	P.C. Heinrich	310	155	7,101	96	38	125	150
Rheinische Friedrich Wilhelms Universitat Bonn	8,419	112	K. Sandhoff	341	123	5,114	134	41	97	150
Rice University	2,869	242	G.J. Schroepfer	212	242	1,076	305	14	317	150
Rochester Institute of Technology	128	342	R.D. Frisina	67	338	919	312	18	294	96
Royal Institute of Technology, KTH	1,980	270	M. Uhlem	334	130	7,414	93	43	84	150
Royal Melbourne Institute of Technology	855	313	J. A. Hawley	174	278	2,644	224	34	164	150
Rutgers	9,369	96	C.S. Yang	387	94	10,707	53	59	25	150
Saint-Petersburg State University	2,067	266	S.G. Inge-Vechtomon	122	318	823	316	9	332	150
San Diego State University	1,449	290	C.C. Glembotski	97	329	3,524	182	29	208	150
Sapienza University of Rome	0	347		0	347	0	347	0	346	0
Sciences Po Paris	0	347		0	347	0	347	0	346	0
Seoul National University	8,132	118	Y.J. Surh	199	259	4,196	160	39	115	150
Shanghai Jiao Tong University	3,751	215	L. He	650	33	8,548	74	39	115	150
Simon Fraser University	2,472	253	R. Gries	119	322	679	322	16	307	150
Stanford University	25,017	12	I.L. Weissman	590	46	40,038	4	31	185	150

State University of New York Buffalo	33	345	W.S. Durfee	15	344	122	344	7	340	34
Stockholm University	5,010	189	G. Widmalm	212	242	1,382	288	21	271	150
Stony Brook University	7,960	122	G.D. Prestwich	489	64	8,679	71	51	51	150
Syracuse University	4,910	191	M.M. Meguid	354	117	3,184	203	30	197	150
Tartu University (University of Tartu)	1,407	294	J. Jarv	92	332	387	335	9	332	123
Technical University of Denmark	3,278	230	J. Nielsen	428	77	5,208	130	41	97	150
Technion	4,764	193	A. Ciechamover	178	274	11,394	50	41	97	150
Technische Universität Berlin	3,731	216	F. Bohlmann	780	18	4,938	144	0	346	150
Technische Universität Chemnitz	307	331	H. Lang	295	165	1,858	265	24	246	150
Technische Universität Dresden	3,047	236	R.B. Salzer	123	317	785	318	19	287	150
Technische Universität München	9,358	97	A. Bacher	382	98	3,509	184	38	125	150
Tel Aviv University	9,787	88	R. Nussinov	349	119	5,211	129	46	73	150
Texas A&M University	10,270	81	J.E. Womack	364	111	3,609	174	27	229	150
Texas Tech	3,476	221	R.A. Bartsch	345	121	2,817	219	25	240	150
Tohoku University	15,485	31	H. Sasano	617	40	12,136	44	48	64	150
Tokyo Institute of Technology	6,815	144	M. Yoshida	283	175	3,544	178	38	125	150
Trinity College Dublin	306	332	K.F. Tipton	341	123	3,063	205	22	259	150
Tsinghua University	3,993	212	H.M. Zhou	235	223	1,062	307	20	278	150
Tufts University	6,896	141	J. M. Ordovas	492	61	10,540	55	50	54	150
Universidad Autonoma de Madrid	6,483	153	M. Salas	251	198	1,412	285	22	259	150
Universidad de Chile	4,356	204	M.T. Garland	210	247	1,136	299	17	302	150
Universidad de Granada	6,483	153	M. Salas	251	198	1,412	285	22	259	150
Universidad del País Vasco	2,508	251	F.M. Goni	235	223	3,400	190	35	155	150
Universidad Nacional Autónoma de México ...	6,341	158	R.A. Toscano	288	170	1,489	280	16	307	150
Universidad Politecnica de Madrid	1,019	307	F. Garica-Olmedo	83	335	1,332	291	16	307	99
Universidade de São Paulo	12,900	49	R. Curi	378	101	2,812	220	29	208	150
Universidade Estadual de Campinas	4,260	207	S. Marangoni	189	264	1,012	308	21	271	150
Università degli Studi di Firenze	7,712	127	C.T. Supuran	644	36	15,592	29	59	25	150
Università degli Studi di Padova	11,251	67	C. Toniolo	557	49	8,730	70	32	179	150
Università Di Bologna	8,364	113	C. Franceschi	510	57	15,123	31	53	43	150
Università di Pisa	6,489	152	A. Lucacchini	310	155	1,353	289	19	287	150
Universitat Autònoma de Barcelona	5,529	178	J. Egozcue	321	142	2,616	225	30	197	150
Universitat Bielefeld	2,294	259	A. Puhler	309	157	7,674	89	40	107	150
Universität Bremen	1,632	283	J. Bullerdiek	241	216	1,650	272	26	236	150
Universitat d'Alacant	971	311	M. Yus	432	75	5,013	139	44	79	150
Universitat de València	4,541	201	A. Moya	184	268	3,615	173	31	185	150

Universität Frankfurt am Main	8,987	104	H. Ruterjans	165	288	1,572	277	21	271	150
Universität Freiburg	8,987	104	N. Pfanner	233	225	3,747	168	53	43	150
Universität Hamburg	6,065	164	H. Steinhart	271	185	2,353	240	26	236	150
Universität Karlsruhe	1,966	271	M.Zoller	226	231	3,016	208	25	240	150
Universität Leipzig	6,373	157	A.G. Beck-Sickinger	216	238	3,266	199	31	185	150
Universität Munster (Westfälische Wilhelms-Un	8,261	114	A. Steinbuchel	301	161	2,998	209	39	115	150
Universität Politecnica de Catalunya	201	337	C. Aleman	268	189	1,431	284	22	259	150
Universität Regensburg	6,051	166	R. Jaenicke	285	174	5,906	110	32	179	150
Universität Stuttgart	2,185	261	R.D. Schmid	165	288	2,698	221	34	164	150
Universität Trier	258	334	D.H. Hellhammer	160	291	4,945	143	42	89	150
Universität Tübingen	9,488	94	F. Lang	643	37	17,517	25	60	24	150
Universität Wien (University of Vienna)	9,312	99	E. Kenndler	211	245	2,511	227	31	185	150
Universität Zu Köln	7,484	134	V. Diehl	735	22	13,333	35	53	43	150
Université Catholique de Louvain	5,627	175	A. Goffeau	232	227	8,644	72	38	125	150
Universite de Liege	4,886	192	J. Balthazart	319	144	2,412	236	38	125	150
Université de Montréal	8,994	103	M. Bouvier	215	239	5,481	119	49	62	150
Université de Nice Sophia Antipolis	2,579	248	G. Alihaud	219	235	4,700	150	30	197	150
Universite Laval	7,432	135	C. Bouchard	701	25	29,931	10	63	19	150
Universite Libre de Bruxelles	6,211	162	P. Robberecht	318	148	2,862	215	28	220	150
Université Paris Sorbonne	332	328	C. Rolland	79	336	415	334	10	330	80
Universite Paris-Sud 11	8,600	110	G. Kroemer	378	101	22,582	17	105	2	150
Université Pierre et Marie Curie	8,686	109	J.C. Tabet	240	218	1,889	262	21	271	150
Universiti Malaya (University of Malaya)	2,074	265	S.W. Ng	1,108	8	3,409	189	16	307	150
University College Cork	2,020	267	D. Van Sinderen	121	319	1,730	269	29	208	150
University College Dublin	3,387	225	A.R. Manning	176	276	439	330	11	325	150
University College London	19,227	21	G. Burnstock	1,019	10	32,401	7	62	20	150
University do Porto	781	320	I. Azevedo	156	293	622	323	12	323	150
University of Aberdeen	5,471	180	C.J. Secombes	261	194	2,469	233	36	145	150
University of Adelaide	6,073	163	M.I. Bruce	407	86	2,501	229	26	236	150
University of Alabama	13,283	43	C.T. Curiel	547	53	6,871	98	70	13	150
University of Alberta	13,200	44	B.D. Sykes	402	89	9,534	63	39	115	150
University of Amsterdam	11,601	65	R.J.A. Wanders	765	20	14,694	33	53	43	150
University of Antwerp	4,180	210	L. Moens	396	91	4,373	155	40	107	150
University of Arizona	12,170	59	V.J. Hruby	788	17	16,959	27	42	89	150
University of Athens	5,896	168	E. Patsouris	247	204	1,256	294	20	278	150
University of Auckland	5,135	185	B.C. Baguley	363	112	3,317	193	30	197	150

University of Barcelona	8,023	119	X. Solans	495	59	4,210	159	30	197	150
University of Basel	8,257	115	U. Aebi	275	182	6,504	104	52	49	150
University of Bath	3,009	239	B.V.L. Potter	355	115	3,191	202	36	145	150
University of Bergen	4,711	194	R.K. Berge	246	207	2,485	231	27	229	150
University of Bern	7,425	136	A. Azzi	272	184	3,571	175	31	185	150
University of Birmingham	10,407	79	P.M. Stewart	344	122	6,694	101	51	51	150
University of Bristol	9,519	93	F.G.A. Stone	662	29	2,049	251	17	302	150
University of British Columbia	15,438	32	S.G. Withers	365	110	4,451	154	44	79	150
University of Calgary	3,302	228	H.J. Vogel	243	212	3,518	183	30	197	150
University of California, Berkley	19,747	20	L. Packer	553	51	9,432	64	52	49	150
University of California, Davis	18,734	22	B.D. Hammock	623	39	11,246	52	41	97	150
University of California, Irvine	11,027	71	J.K. Lanyi	262	193	2,867	214	40	107	150
University of California, Los Angeles	27,957	7	H.P. Koeffler	656	31	22,457	18	58	29	150
University of California, Riverside	5,560	177	A.W. Norman	313	151	3,026	207	9	332	150
University of California, San Diego	24,188	13	M. Karin	407	86	45,776	2	110	1	150
University of California, San Francisco	28,200	6	S.B. Prusiner	213	241	7,579	90	71	12	150
University of California, Santa Barbara	1,438	292	T.C. Bruice	547	53	7,848	85	30	197	150
University of California, Santa Cruz	2,388	256	A.L. Fink	207	249	6,307	106	51	51	150
University of Cambridge	21,305	17	S. O'Rahilly	336	127	11,652	46	61	22	150
University of Canterbury	348	326	J.A. Gerrard	75	337	493	327	18	294	114
University of Cape Town	3,180	232	G. Gade	176	276	1,085	303	21	271	150
University of Central Florida	847	315	H.W. Daniell	135	313	2,923	211	36	145	150
University of Chicago	17,758	25	D.F Steiner	329	137	5,015	138	33	172	150
University of Cincinnati	9,631	90	E.G. Kranias	251	198	3,964	163	41	97	150
University of Colorado at Boulder	5,948	167	T.R. Cech	312	152	8,896	66	49	62	150
University of Connecticut	8,921	106	P. Setlow	322	140	2,482	232	34	164	150
University of Copenhagen	15,818	30	P.E. Nielsen	312	152	736	319	43	84	150
University of Delaware	3,264	231	A.L. Rheingold	1,575	3	25,528	13	54	39	150
University of Dundee	6,640	148	P. Cohen	413	84	24,957	14	75	9	150
University of Edinburgh	12,000	61	P.J. Sadler	386	95	4,775	149	38	125	150
University of Florida	14,891	38	S.P. Kalra	292	167	5,113	135	38	125	150
University of Geneva	9,917	85	J.C. Sanchez	173	281	5,424	121	41	97	150
University of Georgia	9,547	92	J. Travis	238	219	4,984	140	32	179	150
University of Ghent	9,059	101	J. Vandekerckhove	373	105	9,351	65	50	54	150
University of Glasgow	9,431	95	G. Milligan	369	108	5,599	114	43	84	150
University of Gothenburg	790	319	C. Ohlsson	264	191	7,414	93	42	89	150

University of Groningen	10,290	80	A.J.M. Driessen	278	180	4,369	156	43	84	150
University of Helsinki	12,010	60	S. Knuutila	370	107	5,682	113	44	79	150
University of Hong Kong	5,561	176	F.Chen	184	268	1,473	281	25	240	150
University of Houston	2,672	247	G.E. Fox	126	316	3,495	185	15	314	150
University of Illinois	14,282	41	B.S. Katzenellenboge	286	172	8,860	67	55	37	150
University of Illinois, Chicago	10,838	74	R.J. Solaro	242	213	3,263	200	38	125	150
University of Indonesia	174	339	P.A.W. Rogers	177	275	2,345	242	29	208	150
University of Iowa	12,757	50	R.J. Linhardt	477	68	6,712	100	42	89	150
University of Kansas	7,871	124	R.T. Borchardt	473	69	5,183	131	30	197	150
University of Kentucky	8,864	107	D.A. Butterfield	385	96	8,095	80	61	22	150
University of Lausanne	4,670	197	J. Tscopp	334	130	18,405	24	85	5	150
University of Leeds	8,854	108	A.J. Turner	275	182	4,491	152	35	155	150
University of Leicester	5,729	174	N.S. Scrutton	205	253	1,748	268	27	229	150
University of Liverpool	7,538	133	H.H. Rees	217	237	1,252	295	18	294	150
University of Ljubljana	3,282	229	D. Mikavcic	174	278	1,130	300	29	208	150
University of London (Kings College of London)	53,935	1	M.B. Hursthouse	1,280	4	12,992	39	38	125	150
University of Manchester	12,741	51	S.G. Oliver	247	204	6,339	105	38	125	150
University of Manitoba	6,878	142	J.A. Wright	203	255	2,443	235	20	278	150
University of Maryland	16,903	26	R.R. Colwell	488	65	8,320	79	35	155	150
University of Maryland Baltimore County	12,653	52	J.R. Lakowicz	533	55	13,119	37	53	43	150
University of Massachusetts	4,278	206	K. Shetty	156	293	1,067	306	23	251	120
University of Melbourne	11,613	64	C.L. Masters	488	65	11,609	47	59	25	150
University of Miami	7,662	130	P.J. Walsh	283	175	3,989	162	39	115	150
University of Michigan	10,563	76	R.J. Kaufman	335	128	9,792	60	59	25	150
University of Minnesota	20,671	18	L. Que	384	97	5,819	111	53	43	150
University of Missouri	10,468	77	G.Y. Sun	244	210	2,161	246	27	229	150
University of Nebraska	3,386	226	V.N. Gladyshev	150	298	2,352	241	39	115	150
University of New Hampshire	1,249	297	S.A. Sower	128	315	1,078	304	20	278	150
University of New Mexico	4,342	205	R.H. Glew	312	152	1,636	273	18	294	150
University of New South Wales	6,248	160	I.W. Dawes	149	301	2,167	245	29	208	150
University of North Carolina, Chapel Hill	15,021	36	K. H. Lee	417	81	4,846	146	39	115	150
University of North Texas	1,798	276	J.W. Simpkins	283	175	3,838	166	37	138	150
University of Notre Dame	2,545	250	F.J. Castellino	382	98	3,296	196	29	208	150
University of Nottingham	7,094	140	S.E. Harding	242	213	1,933	255	22	259	150
University of Oklahoma	5,335	182	B.A. Roe	245	209	15,315	30	45	77	150
University of Oregon	3,318	227	B.W. Matthews	303	159	8,777	69	36	145	150

University of Oslo	11,363	66	H. Stenmark	148	303	5,514	117	50	54	150
University of Otago	4,253	208	W.P. Tate	152	296	1,954	254	20	278	150
University of Ottawa	6,282	159	S.F. Perry	224	233	1,895	261	25	240	150
University of Oxford	22,141	16	R.A. Dwek	327	139	8,546	75	57	31	150
University of Pennsylvania	27,321	8	S.J. Benkovic	491	63	7,722	88	41	97	150
University of Pittsburgh	18,398	23	V.E. Kagan	415	83	5,312	126	35	155	150
University of Quebec	6,592	149	V. Luu-The	215	239	3,528	179	22	259	150
University of Queensland	9,270	100	D.J. Craik	334	130	3,527	180	41	97	150
University of Reading	3,167	234	M.G.B. Drew	733	23	7,560	92	37	138	150
University of Rochester	11,032	69	R.A. Bambara	205	253	2,400	238	34	164	150
University of Saskatchewan	4,696	195	J.R. Dimmock	168	284	1,090	301	19	287	150
University of Science and Technology of China	1,594	284	X. Yao	111	325	1,446	282	23	251	150
University of Sheffield	7,917	123	D.W. Rice	206	250	3,386	192	28	220	150
University of South Carolina	3,713	217	A. L. Hugues	280	179	6,211	107	37	138	150
University of South Florida	5,362	181	S.M. Sebti	229	229	4,955	142	50	54	150
University of Southampton	5,823	171	A.G. Lee	241	216	2,840	217	24	246	150
University of Southern California	12,637	53	A. Warshel	264	191	7,768	87	50	54	150
University of St Andrews	3,168	233	C. Glidewell	645	34	3,399	191	22	259	150
University of Surrey	719	321	C. Loannides	244	210	1,928	256	18	294	150
University of Sussex	4,696	195	M. Wallis	117	323	418	333	11	325	70
University of Sydney	10,137	82	P.W. Kuchel	277	181	1,908	259	23	251	150
University of Technology, Sydney	146	341	G.M. Nicholson	47	340	439	330	19	287	102
University of Tennessee Knoxville	4,125	211	J.M. Becker	197	261	1,871	264	24	246	150
University of Texas at Austin	8,217	117	J.L. Sessler	421	80	6,004	109	50	54	150
University of Tokyo	34,283	3	S. Yokoyama	580	47	11,579	48	50	54	150
University of Toronto	28,406	5	S. Grinstein	425	79	10,284	56	57	31	150
University of Tsukuba	7,700	128	M. Yamamoto	575	48	21,360	19	70	13	150
University of Twente	301	333	D.N. Reinhoudt	724	24	22,809	16	66	16	150
University of Utah	12,478	55	R. White	340	126	9,666	61	23	251	150
University of Vermont	5,037	187	M.T. Nelson	171	282	6,074	108	47	68	150
University of Victoria	794	318	J. Ausio	166	286	2,095	248	24	246	150
University of Virginia	12,460	56	S. M. Hecht	329	137	3,820	167	27	229	150
University of Warwick	2,980	240	C. Robinson	341	123	3,180	204	35	155	150
University of Washington	25,667	11	M.H. Gelb	300	163	8,407	77	48	64	150
University of Waterloo	1,010	308	B.R. Glick	182	271	1,925	257	31	185	150
University of Western Australia	5,790	172	A. H. White	1,245	5	13,086	38	38	125	150

University of Western Ontario	7,737	125	D.T. Armstrong	212	242	2,129	247	19	287	150
University of Wisconsin	26,496	9	H.F. Deluca	841	14	13,121	36	36	145	150
University of Wollongong	344	327	R.J. W. Truscott	149	301	1,438	283	25	240	150
University of York	3,437	223	G.J. Davies	199	259	5,060	137	39	115	150
University of Zurich	9,027	102	A. Pluckthun	256	196	6,539	103	56	36	150
Univesitas Gadjah Mada	115	343	A. Junaidi	8	346	64	345	4	343	23
Uppsala University	4,564	200	B. Mannervik	9	345	6,721	99	29	208	150
Utah State	1,697	279	S.D. Aust	291	169	7,933	83	20	278	150
Utrecht University	15,909	29	J.F.G. Vliegthart	518	56	10,147	57	36	145	150
Vanderbilt University	12,967	48	F.P. Guengerich	663	28	32,945	6	58	29	150
Victoria University of Wellington	80	344	A.G. Clark	59	339	486	328	9	332	90
Vienna University of Technology	240	336	C.P. Kubicek	250	202	2,402	237	29	208	150
Virginia Polytechnic Institute	3,039	237	R.H. White	131	314	1,562	278	17	302	150
Vrije Universiteit, Brussels	309	330	J. Smitz	226	231	3,557	176	29	208	150
VU University Amsterdam	11,024	72	H.M. Pinedo	691	26	19,029	23	54	39	150
Wageningen University	2,446	254	A.G.J. Voragen	361	114	4,240	158	33	172	150
Wake Forest University	2,014	269	D.W. Bowden	186	266	2,659	222	30	197	150
Waseda University	802	317	E. Tsuchida	661	30	7,048	97	35	155	150
Washington State University	5,862	170	R. Croteau	283	175	3,313	194	46	73	150
Washington University in St. Louis	22,459	15	E. Di Cera	166	286	1,776	267	28	220	150
Wayne State University	10,764	75	K.V. Horn	229	229	3,624	172	25	240	150
West Virginia University	2,945	241	X. Shi	295	165	5,595	115	43	84	150
Yale University	8,021	120	D. Soll	362	113	3,296	196	33	172	150
Yonsei University	4,447	202	W. Lee	90	333	1,164	298	17	302	150
York University	1,878	273	D.A. Hood	93	330	1,293	292	22	259	99
Zhejiang University	1,906	272	P. Cen	146	304	40	346	11	325	150

Engineering Publications Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	6,996	88	K. Halonen	349	100	1,487	164	20	159	146
Aarhus University	1,043	290	F.Besenbacher	358	91	6,475	33	47	14	150
Arizona State University	9,655	48	D.K. Ferry	541	25	4,853	47	29	68	150
Ateneo de Manila University	19	345	G. Tangonan	69	333	600	269	6	332	147
Auburn University	5,179	124	J.K. Tugnait	244	185	1,142	197	16	213	38
Australian National University	4,033	159	B. Luther-Davies	423	58	3,861	64	37	35	150
Boston College	380	323	Z.F. Ren	220	211	8,085	20	43	16	150
Boston University	3,917	166	C.G. Cassandras	204	226	711	255	17	199	82
Brandeis University	239	334	J.A. Storer	62	338	390	306	8	319	28
Brigham Young University	3,001	196	R.M. Izatt	422	59	5,873	36	22	137	150
Brown University	3,742	174	A. Needleman	248	179	6,338	34	28	75	150
California Institute of Technology (Calt...)	19,095	10	P.P. Vaidyanathan	335	108	2,299	117	20	159	74
Cardiff University	3,823	173	F.W. Williams	229	200	993	216	12	269	150
Carnegie Mellon University	13,427	28	T. Kanade	370	84	9,377	16	37	35	150
Case Western Reserve University	5,036	130	A. Hiltner	459	46	3,321	72	29	68	150
Chalmers University of Technology	9,494	51	P.S. Kildal	311	122	936	225	20	159	150
Charles University	460	321	P. Lukac	193	234	689	260	15	226	150
Chinese University of Hong Kong	5,522	115	M.R. Lyu	236	193	858	230	15	226	150
Chulalongkorn University	1,477	263	S. Jitapunkul	89	321	70	342	4	342	66
City University of Hong Kong	8,866	59	K.M. Luk	385	77	1,627	155	21	147	150
City University of New York	1,322	276	F.H. Pollak	345	103	3,444	68	20	159	150
Colorado State University	4,458	146	J.J. Rocca	356	94	1,580	158	27	81	150
Columbia University	7,118	84	X. Wang	800	11	29,940	4	57	6	150
Cornell University	10,814	44	L.F. Eastman	547	24	6,999	26	36	38	150
Curtin University of Technology	1,941	244	E. Chang	315	119	295	320	8	319	132
Dalhousie University	1,980	240	Z. Chen	130	299	649	266	8	319	104
Dartmouth College	2,835	201	K.D. Paulsen	371	82	2,809	88	40	22	150
Delft University of Technology	15,323	23	L.P. Ligthart	308	124	493	291	12	269	150
Drexel University	4,759	138	P.R. Herczfeld	206	224	401	302	7	330	150
Duke University	6,089	100	A. Bejan	411	65	3,021	80	27	81	150
Durham University	2,041	237	A. Unsworth	149	284	847	231	15	226	109
Ecole Normale Supérieure de Lyon	529	316	Y. Robert	140	290	524	284	11	285	110
École Normale Supérieure, Paris	973	296	Y. Chen	149	284	1,027	209	16	213	150
École Polytechnique	2,373	217	J.M. Chomaz	87	322	821	238	21	147	74

Ecole Polytechnique Fédérale de Lausanne	7,128	83	M. Unser	347	102	4,859	46	31	57	150
Eindhoven University of Technology	7,043	87	G.D. Khoe	221	207	1,238	187	22	137	150
Emory University	873	300	G. Bao	307	126	2,318	114	27	81	150
Erasmus University Rotterdam	988	294	N.DeJong	184	241	1,696	150	25	108	150
ETH Zurich (Swiss Federal Institute of Technology)	9,522	50	W. Fichtner	358	91	1,572	159	20	159	150
Florida International University	2,595	209	M.A. Ebadian	200	229	426	299	13	258	107
Florida State University	1,552	259	J. Schwartz	162	267	586	270	14	247	150
Freie Universität Berlin	1,364	272	J. Schiller	48	340	119	339	6	332	54
Friedrich Alexander Universität Erlangen Nürnberg	6,085	101	R. Unbehauen	245	184	1,069	205	14	247	93
Fudan University	4,523	145	H.Min	97	318	132	335	5	336	137
Georg August Universität Göttingen	1,126	284	K.P.Lieb	556	23	6,702	29	35	41	150
George Mason University	2,534	211	S. Jajodia	266	164	2,252	119	26	94	150
George Washington University	2,874	200	M.E. Zaghoul	126	304	576	272	14	247	122
Georgetown University	654	310	S.K. Mun	193	234	800	241	11	285	150
Georgia Institute of Technology	23,445	3	J.Laskar	449	48	1,836	142	23	120	15
Georgia State University	973	296	Y. Pan	259	171	1,192	192	22	137	150
Goteborg University	9,919	46	B. Kasemo	374	80	6,704	28	47	14	150
Harvard University	4,041	158	G.M. Whitesides	918	7	75,622	1	105	1	150
Hebrew University of Jerusalem	1,939	245	S. Peleg	86	323	2,017	134	13	258	57
Heidelberg Universität	1,446	264	J. Wolfrum	217	213	1,592	156	24	112	150
Hokkaido University	6,861	91	M. Koshiba	441	51	2,331	111	28	75	150
Hong Kong Polytechnic University	10,978	43	C.K. Tse	300	129	1,445	169	23	120	150
Hong Kong University of Science & Techno...	7,502	75	M. Chan	304	127	1,019	211	14	247	150
Humboldt-Universität zu Berlin	81	343	W. Ebeling	221	207	1,095	202	18	187	150
Imperial College London	2,992	197	C.Toumazou	308	124	984	218	15	226	150
Indian Institute of Technology Bombay (I...	3,980	161	T. Kant	115	314	679	263	12	269	72
Indian Institute of Technology Delhi (II...	5,834	106	B. Singh	341	105	1,336	178	18	187	150
Indian Institute of Technology Kanpur (I...	3,887	169	A. Ghosh	180	247	721	254	16	213	150
Indiana University Bloomington	2,006	239	F.W. Putnam	280	147	3,936	60	18	187	150
Indiana University Indianapolis	208	336	Y. Laing	52	339	365	311	8	319	150
Iowa State University	7,602	73	K.A. Gschneidner	633	18	7,358	23	33	48	150
Johns Hopkins University	8,491	64	A. G. Andreou	192	236	981	219	15	226	140
Kansas State University	1,738	251	L.T. Fan	411	65	1,650	154	12	269	150
Katholieke Universiteit Leuven	7,926	72	W. Sansen	388	76	2,888	86	26	94	150
Keio University	6,123	98	K. Ohnishi	442	50	1,432	170	20	159	150
King Fahd University of Petroleum & Minerals	3,907	168	B.S. Yilbas	391	74	1,093	203	19	171	150

King Saud University	1,958	241	H.A. Attia	167	264	252	325	11	285	20
Kobe University	3,588	178	Y. Tomita	222	205	1,368	176	16	213	150
Korea Advanced Institute of Science & Technology	12,982	32	D.K. Sung	209	221	562	277	13	258	150
Korea University	4,575	142	S.J. Ko	182	245	828	236	11	285	150
Kyoto University	17,586	12	H. Hamada	477	43	1,186	193	15	226	150
Kyushu University	8,900	58	T. Ninomiya	238	191	569	275	11	285	150
La Trobe University	863	302	B.Soh	83	325	62	344	3	345	34
Lancaster University	834	304	K.C. Jones	448	49	6,609	31	54	10	150
Leiden University	1,578	256	A.T. Natarajan	348	101	4,704	50	33	48	150
Linköping University	3,559	180	L. Ljung	223	204	2,802	89	18	187	116
London School of Economics and Political Scie	274	331	K.P. Papadaki	26	345	49	345	4	342	16
Loughborough University	5,985	103	D.J. Evans	882	8	9,579	15	39	26	150
Louisiana State University	5,408	118	F.R. Fronczek	589	21	5,164	42	27	81	150
Ludwig-Maximilians-Universität München	1,948	243	H.P. Kriegel	171	258	2,404	109	20	159	111
Lund University	5,136	125	B. Sunden	236	193	701	257	15	226	133
Maastricht University	442	322	L.H.Koole	131	297	737	252	17	199	150
Macquarie University	1,217	281	K.P. Esselle	123	309	358	312	10	299	47
Mahidol University	369	325	P.P. Yupapin	126	304	72	341	7	330	105
Masaryk University	296	330	I. Ohidal	33	343	63	343	5	336	42
Massachusetts Institute of Technology	26,874	2	R. Langer	920	6	48,832	2	93	2	150
McGill University	8,220	69	M.P. Paidoussi	341	105	1,290	182	19	171	132
McMaster University	6,149	97	S. Haykin	270	159	3,077	76	20	159	150
Michigan State University	7,118	84	N. Xi	371	82	1,453	167	22	137	150
Michigan Technological University	3,407	182	E.C. Aifantis	233	197	2,194	122	19	171	150
Monash University	5,340	120	B. Shirinzadeh	138	292	292	321	12	269	77
Montana State University	1,160	282	M.H. Nehrir	71	331	544	282	11	285	52
Moscow State University	7,970	71	A.V. Priezhev	178	250	259	324	9	309	150
Nagoya University	12,597	33	T. Fukuda	1,122	4	5,847	37	28	75	150
Nanjing University	4,686	140	Y. Zheng	427	57	1,321	180	18	187	150
Nanyang Technological University	18,108	11	K.M. Liew	419	61	2,553	102	32	52	150
National Taiwan University	14,528	25	L.G. Chen	365	88	2,134	126	27	81	150
National Tsing Hua University	8,779	60	B.S. Chen	257	173	2,512	106	23	120	150
National University of Ireland, Galway	1,057	289	W.G. Hurley	86	323	424	300	10	299	59
National University of Singapore	16,475	18	L.W. Li	410	67	979	220	15	226	150
New Mexico State University	2,336	220	J. Ramirez	289	137	1,056	206	17	199	150
New York University	2,463	213	M. Sharir	345	103	2,106	129	19	171	150

Newcastle University	3,669	176	A.J. Morris	154	276	1,341	177	22	137	123
North Carolina State University	9,916	47	M.B. Steer	233	197	768	247	12	269	150
Northeastern University	4,725	139	F. Lombardi	244	185	494	290	12	269	143
Northwestern University	9,603	49	A. Routtenburg	179	248	2,579	99	17	199	150
Norwegian University of Science & Technology	5,791	107	T. Moan	198	231	493	291	11	285	150
Ohio State University	12,267	35	B. Bhushan	702	14	10,616	12	39	26	150
Oklahoma State University	2,764	202	R. Komanduri	177	251	1,699	149	23	120	150
Open University UK	1,364	272	L.E. Edwards	122	311	769	246	15	226	112
Oregon State University	3,933	165	U.K. Moon	157	273	895	228	15	226	150
Osaka University	16,636	17	M. Murata	471	45	2,518	104	21	147	150
Peking University	9,295	55	Y. Wang	341	105	737	252	12	269	150
Pennsylvania State University	17,562	13	R. Mittra	804	10	5,258	41	24	112	150
Pohang University of Science And Technology	4,228	153	B. Kim	191	237	764	248	18	187	150
Portland State University	1,490	262	M.A. Perkowski	151	281	500	289	13	258	144
Princeton University	9,320	54	N.K.Ha	282	143	1,538	161	22	137	136
Purdue University	20,105	8	K. Roy	522	28	4,317	54	31	57	150
Queen's University	5,242	123	H.T. Mouftah	409	68	1,122	200	14	247	150
Queen's University of Belfast	3,284	188	V.F. Fuses	317	117	669	264	13	258	150
Queensland University of Technology	2,221	228	S. Sridharan	152	280	378	307	10	299	122
Radboud University, Nijmegen	1,386	270	J.A. Jansen	390	75	4,052	59	42	18	150
Rensselaer Polytechnic Institute	9,295	55	M.S. Shur	780	12	12,043	11	51	13	150
Rheinisch Westfalische Technische Hochschule Aach	9,250	57	T. Gries	227	202	130	337	5	336	150
Rheinische Friedrich Wilhelms Universitat Bonn	1,350	275	P. Martini	72	330	103	340	5	336	72
Rice University	4,398	148	A.G. Mikos	352	96	8,229	19	60	4	150
Rochester Institute of Technology	2,413	216	S.G. Kandlikar	186	240	1,336	178	23	120	101
Royal Institute of Technology, KTH	8,235	68	H. Tenhuner	267	163	523	285	11	285	150
Royal Melbourne Institute of Technology	2,335	221	W. Wlodarski	154	276	959	223	20	159	150
Rutgers	7,372	77	M.V. Karwe	66	334	322	316	11	285	68
Saint-Petersburg State University	2,485	212	Y.G. Vlasov	133	296	807	240	22	137	150
San Diego State University	1,398	269	F.J. Harris	65	335	206	330	8	319	30
Sapienza University of Rome	0	348		0	348	0	348	0	348	0
Sciences Po Paris	7	347	C. Wilkinson	24	346	462	296	6	332	34
Seoul National University	12,206	36	S.K. Sul	282	143	2,516	105	27	81	150
Shanghai Jiao Tong University	16,947	14	Q. Zeng	252	175	395	304	9	309	150
Simon Fraser University	2,694	203	M. Saif	113	315	521	287	12	269	41
Stanford University	22,980	5	J.M. Cioff	394	72	5,156	43	31	57	150

State University of New York Buffalo	129	340	N.M. Nasrabadi	210	220	996	215	10	299	96
Stockholm University	828	305	C. Bohm	134	295	1,245	186	13	258	150
Stony Brook University	3,911	167	P.M. Djuric	171	258	1,130	199	17	199	101
Syracuse University	3,375	184	T.K. Sarkar	501	35	3,935	61	20	159	150
Tartu University (University of Tartu)	531	315	A. Aabloo	64	336	184	332	9	309	56
Technical University of Denmark	7,227	80	V. Tveraard	217	213	3,417	69	18	187	54
Technion	11,035	42	S. Shami	282	143	3,260	73	26	94	122
Technische Universität Berlin	6,514	96	D. Bimberg	967	5	18,234	6	57	6	150
Technische Universität Chemnitz	1,523	260	T. Gressner	288	138	693	259	13	258	150
Technische Universität Dresden	5,354	119	K.J. Wolther	168	262	195	331	8	319	150
Technische Universität München	8,458	66	P. Russer	374	80	629	267	12	269	150
Tel Aviv University	5,705	111	V. Shaked	228	201	2,162	124	23	120	71
Texas A&M University	16,712	16	K.Chang	368	85	2,564	101	26	94	150
Texas Tech	2,965	198	H. Temkin	295	132	2,942	85	30	63	150
Tohoku University	16,719	15	A. Inoue	1,930	1	38,085	3	71	3	150
Tokyo Institute of Technology	15,559	22	K. Iga	484	39	2,488	107	28	75	150
Trinity College Dublin	1,956	242	J.F. Donegan	187	239	827	237	17	199	150
Tsinghua University	34,750	1	X. Hong	384	79	572	274	11	285	150
Tufts University	1,691	252	M.N. Afsar	197	232	395	304	8	319	148
Universidad Autonoma de Madrid	1,416	267	J. Aracil	126	304	376	308	9	309	150
Universidad de Chile	1,068	288	A. Valencia	46	341	299	318	10	299	56
Universidad de Granada	1,416	267	J. Aracil	126	304	376	308	9	309	150
Universidad del País Vasco	2,154	231	M. De la Sen	405	70	561	278	16	213	71
Universidad Nacional Autónoma de México ...	1,571	258	L. Fridman	151	281	469	294	15	226	83
Universidad Politecnica de Madrid	5,488	117	J.A. Cobos	184	241	835	234	16	213	120
Universidade de São Paulo	3,293	186	A. Pessoa	94	320	427	298	13	258	135
Universidade Estadual de Campinas	4,105	156	A. Garcia	116	313	447	297	18	187	74
Università degli Studi di Firenze	4,117	155	R. Fantiacchi	275	149	1,014	212	15	226	150
Università degli Studi di Padova	6,123	98	G. Meneghesso	221	207	884	229	19	171	150
Università Di Bologna	6,525	95	L. Benini	292	133	2,965	83	29	68	150
Università di Pisa	2,230	227	D. De Rossi	215	216	2,272	118	23	120	150
Universitat Autonoma de Barcelona	1,803	247	X. Aymerich	161	268	786	243	15	226	101
Universitat Bielefeld	766	306	R. Ahlswede	172	257	2,042	133	9	309	69
Universität Bremen	2,686	204	F. Arndt	156	274	778	245	9	309	105
Universitat d'Alacant	983	295	J.M. Martinez	164	266	1,003	214	17	199	141
Universitat de València	1,750	250	M.V. Andres	189	238	1,658	153	26	94	127

Universität Frankfurt am Main	1,006	292	R. Tetzlaff	74	329	132	335	4	342	110
Universität Freiburg	2,106	233	W. Burgard	161	268	3,004	82	28	75	150
Universität Hamburg	503	317	H. Hartmann	272	155	2,954	84	35	41	150
Universität Karlsruhe	7,483	76	O. Dossel	161	268	368	310	10	299	150
Universität Leipzig	351	329	J. Karger	350	98	2,311	115	29	68	150
Universität Munster (Westfälische Wilhelms-Un	1,070	287	E. Nembach	137	293	483	293	11	285	98
Universität Politecnica de Catalunya	7,514	74	L. Puigjaner	200	229	1,153	196	18	187	150
Universität Regensburg	925	298	A. Penzkofer	248	179	1,681	151	26	94	150
Universität Stuttgart	7,215	81	H.J. Tiziani	215	216	1,592	156	21	147	150
Universität Trier	145	339	C. Meinel	125	308	289	322	8	319	93
Universität Tübingen	1,380	271	U. Weiner	161	268	2,575	100	31	57	150
Universität Wien (University of Vienna)	1,680	253	A.F. Fercher	181	246	3,213	75	35	41	150
Universität Zu Köln	843	303	J. Stutzki	127	301	1,009	213	19	171	150
Université Catholique de Louvain	3,248	190	D. Flandre	265	165	1,165	195	22	137	150
Université de Liege	2,368	218	P. Dular	117	312	331	315	11	285	82
Université de Montréal	2,353	219	G. Cloutier	183	243	681	262	17	199	150
Université de Nice Sophia Antipolis	1,497	261	R. Staraj	97	318	298	319	9	309	92
Université Laval	3,708	175	C.M. Gosselin	268	162	2,321	113	27	81	150
Université Libre de Bruxelles	1,675	254	P. Mandel	812	9	4,291	55	19	171	150
Université Paris Sorbonne	366	327	C. Rolland	79	326	415	301	10	299	80
Université Paris-Sud 11	3,883	170	J.M. Lourtios	174	255	1,374	175	21	147	150
Université Pierre et Marie Curie	5,038	129	G.A. Maugin	274	152	1,246	185	15	226	126
Universiti Malaya (University of Malaya)	1,312	277	H. Ahmad	63	337	42	347	3	345	82
University College Cork	1,795	248	A. Matewson	179	248	548	281	10	299	150
University College Dublin	1,880	246	J.T. Sheridan	207	222	789	242	21	147	139
University College London	7,317	78	I.W. Boyd	315	119	2,250	121	23	120	150
University do Porto	2,320	222	A.E. Rodrigues	327	113	2,143	125	27	81	150
University of Aberdeen	2,171	229	J.C. Jones	175	254	251	326	8	319	106
University of Adelaide	2,650	205	D. Abbott	368	85	1,862	141	27	81	150
University of Alabama	4,771	136	Y. Xiao	486	38	2,415	108	29	68	150
University of Alberta	8,775	61	W. Pedrycz	509	30	4,118	58	27	81	150
University of Amsterdam	2,296	225	T. Gevers	98	317	845	232	15	226	72
University of Antwerp	1,007	291	E.F. Vansant	284	141	2,674	96	27	81	150
University of Arizona	9,486	53	J.V. Moloney	440	52	3,598	67	34	45	150
University of Athens	2,067	235	D. Syvrides	137	293	540	283	12	269	124
University of Auckland	3,016	194	S.K. Nguang	127	301	755	249	19	171	66

University of Barcelona	1,578	256	J. Samitier	226	203	959	223	16	213	150
University of Basel	577	314	H.J. Guntherodt	458	47	7,158	25	40	22	150
University of Bath	3,942	164	D.A.S. Rees	112	316	561	278	14	247	59
University of Bergen	371	324	J. Sjoblom	251	177	1,475	165	19	171	150
University of Bern	479	319	H.P. Weber	292	133	2,397	110	24	112	150
University of Birmingham	5,668	112	P.S. Hall	212	219	1,170	194	17	199	150
University of Bristol	5,640	113	D.R. Bull	258	172	1,222	188	16	213	150
University of British Columbia	8,537	63	J.R. Grace	366	87	2,619	97	26	94	150
University of Calgary	4,686	140	O.P. Malik	401	71	1,743	145	19	171	150
University of California, Berkley	21,432	7	J.M. Prausnitz	532	26	12,154	10	30	63	150
University of California, Davis	5,036	130	Z.A. Munir	353	95	2,783	91	27	81	150
University of California, Irvine	6,739	92	E.J. Lavernia	493	36	3,891	62	32	52	150
University of California, Los Angeles	14,526	26	T. Itoh	567	22	7,658	21	37	35	150
University of California, Riverside	2,449	214	B. Bhanu	204	226	1,298	181	18	187	127
University of California, San Diego	11,296	40	C.W. Tu	422	59	3,358	71	29	68	150
University of California, San Francisco	878	299	D. Fried	144	289	782	244	23	120	129
University of California, Santa Barbara	8,478	65	U.K. Mishra	671	15	12,606	9	57	6	150
University of California, Santa Cruz	1,137	283	J.J. Garcia-Aceves	264	167	2,046	132	25	108	104
University of Cambridge	13,133	30	W.I. Milne	475	44	5,498	40	38	30	150
University of Canterbury	2,133	232	J.G. Chase	131	297	321	317	13	258	150
University of Cape Town	1,073	286	G.A. Ekama	127	301	1,220	189	15	226	83
University of Central Florida	7,152	82	J.J. Liou	271	157	746	251	12	269	150
University of Chicago	2,102	234	K. Doi	771	13	10,393	13	38	30	150
University of Cincinnati	5,952	105	D.P. Agrawal	330	110	1,788	143	19	171	150
University of Colorado at Boulder	8,562	62	C.N. Bowman	252	175	2,740	92	38	30	150
University of Connecticut	5,282	122	B. Javidi	429	54	2,124	127	43	16	150
University of Copenhagen	1,243	280	P. Klaboee	75	328	231	329	1	347	66
University of Delaware	5,740	109	S.I. Sandler	261	169	2,692	95	23	120	150
University of Dundee	1,442	265	R.K. Dhir	155	275	557	280	12	269	109
University of Edinburgh	2,559	210	T. Arslan	272	155	354	313	8	319	150
University of Florida	11,412	39	S.J. Pearton	1,420	2	20,761	5	54	10	150
University of Geneva	476	320	T. Pun	140	290	1,527	162	17	199	117
University of Georgia	639	312	G. Hoogenboom	161	268	1,043	207	17	199	150
University of Ghent	5,514	116	D. De Zutter	249	178	1,199	191	18	187	122
University of Glasgow	5,046	128	A. Asenov	246	182	1,140	198	23	120	150
University of Gothenburg	76	344	P. Thomsen	130	299	2,324	112	19	171	150

University of Groningen	867	301	H.J. Busscher	429	54	4,743	48	34	45	150
University of Helsinki	1,363	274	M. Ritala	280	147	3,015	81	38	30	150
University of Hong Kong	6,672	94	J. Lam	328	111	3,766	65	42	18	150
University of Houston	5,065	127	D. Luss	150	283	968	221	10	299	81
University of Illinois	23,442	4	T.S. Huang	660	16	9,148	17	39	26	150
University of Illinois, Chicago	6,048	102	A.A. Shabana	216	215	919	227	21	147	138
University of Indonesia	166	337	B. Kusumoputro	23	347	44	346	5	336	28
University of Iowa	4,912	132	S.M. Reddy	482	41	1,719	148	19	171	150
University of Kansas	1,425	266	K.S. Surana	154	276	243	328	5	336	66
University of Kentucky	4,529	144	H.S. Tzou	218	212	1,206	190	17	199	86
University of Lausanne	103	341	D. Haas	145	288	2,546	103	33	48	150
University of Leeds	6,710	93	J. Fisher	358	91	3,077	76	36	38	150
University of Leicester	2,012	238	I. Postlethwaite	244	185	936	225	16	213	150
University of Liverpool	4,567	143	D.J. Bacon	236	193	5,841	38	30	63	150
University of Ljubljana	4,221	154	F. Gubina	79	326	332	314	10	299	39
University of London (Kings College of London)	16,113	19	A.H. Aghvami	271	157	834	235	14	247	150
University of Manchester	12,114	37	L. Li	205	225	819	239	20	159	118
University of Manitoba	4,766	137	L. Shafai	222	205	514	288	9	309	126
University of Maryland	15,936	20	K.J. Liu	359	90	3,043	79	30	63	150
University of Maryland Baltimore County	3,183	191	C.R. Menyuk	318	116	2,697	94	24	112	150
University of Massachusetts	5,738	110	F.E. Karasz	484	39	4,988	45	26	94	150
University of Melbourne	5,071	126	R.S. Tucker	273	154	1,764	144	21	147	150
University of Miami	2,415	215	J.M. Parel	290	135	1,417	172	15	226	150
University of Michigan	1,000	293	D.J. Mooney	284	141	7,521	22	54	10	150
University of Minnesota	13,220	29	L.E. Sciven	414	64	5,603	39	19	171	150
University of Missouri	9,487	52	G.K. Venayagamoorthy	239	190	522	286	14	247	130
University of Nebraska	3,947	162	J. Yang	147	287	398	303	14	247	80
University of New Hampshire	1,106	285	M.L. McConnell	154	276	1,024	210	14	247	150
University of New Mexico	4,447	147	M.S. El-Genk	269	160	610	268	12	269	120
University of New South Wales	8,330	67	M.A. Bradford	233	197	699	258	14	247	72
University of North Carolina, Chapel Hill	2,611	208	B.M.W. Tsui	290	135	2,090	131	25	108	150
University of North Texas	589	313	W.E. Acree	439	53	1,475	165	26	94	150
University of Notre Dame	3,014	195	A. Varma	27	344	1,430	171	17	199	134
University of Nottingham	5,960	104	M. Henini	631	19	5,964	35	31	57	150
University of Oklahoma	3,880	171	C.W. Bert	265	165	1,877	140	15	226	113
University of Oregon	262	333	B.W. Matthews	303	128	8,777	18	36	38	150

University of Oslo	643	311	B.G. Svernlsson	300	129	2,191	123	24	112	150
University of Otago	233	335	T. Rades	174	255	1,091	204	23	120	150
University of Ottawa	3,582	179	H. Alper	415	63	3,689	66	28	75	150
University of Oxford	4,088	157	D.A. Hills	264	167	990	217	13	258	112
University of Pennsylvania	3,872	172	R.J. Gorte	274	152	4,479	53	42	18	150
University of Pittsburgh	3,947	162	A.C. Balazs	241	189	2,814	87	33	48	150
University of Quebec	4,302	152	S. Kaliaguine	323	115	4,280	56	35	41	150
University of Queensland	4,849	135	D.D. Do	310	123	2,101	130	23	120	109
University of Reading	2,163	230	K. Warwick	170	261	465	295	11	285	146
University of Rochester	3,993	160	P.M. Fauchet	351	97	5,053	44	32	52	150
University of Saskatchewan	3,293	186	R. Billinton	491	37	1,980	136	23	120	150
University of Science and Technology of China	7,075	86	S. Xu	221	207	250	327	8	319	139
University of Sheffield	7,997	70	M. Hopkinson	522	28	7,278	24	32	52	150
University of South Carolina	3,265	189	M.A. Sutton	196	233	2,591	98	29	68	150
University of South Florida	2,316	223	A. Kandel	246	182	1,248	184	16	213	150
University of Southampton	10,044	45	E. Rodgers	248	179	686	261	16	213	111
University of Southern California	12,312	34	T.G. Langdon	613	20	16,813	7	58	5	150
University of St Andrews	367	326	C. Glidewell	645	17	3,399	70	22	137	150
University of Surrey	4,909	133	J.F. Watts	234	196	1,995	135	21	147	150
University of Sussex	662	309	P.D. Townsend	360	89	2,733	93	23	120	150
University of Sydney	7,271	79	Y.W. Mai	419	61	4,659	51	30	63	150
University of Technology, Sydney	1,262	279	S. Vigneswaran	168	262	842	233	15	226	150
University of Tennessee Knoxville	4,865	134	P.K. Liaw	507	34	2,308	116	26	94	150
University of Texas at Austin	15,702	21	D.R. Paul	508	32	16,217	8	41	21	150
University of Tokyo	21,974	6	H. Fujita	527	27	4,236	57	26	94	150
University of Toronto	14,025	27	A.N. Venetsanopoulos	332	109	1,970	137	24	112	140
University of Tsukuba	4,365	149	T. Yatagai	275	149	1,255	183	19	171	150
University of Twente	5,625	114	J.A.M. Kuipers	177	251	1,722	147	26	94	133
University of Utah	5,777	108	G.T. Gullberg	260	170	1,557	160	18	187	150
University of Vermont	1,293	278	A.Campo	202	228	658	265	13	258	123
University of Victoria	3,533	181	T.A. Gulliver	269	160	566	276	12	269	131
University of Virginia	6,912	90	H.N.G. Wadley	281	146	1,728	146	26	94	150
University of Warwick	2,888	199	J.W. Gardner	148	286	1,943	138	21	147	150
University of Washington	11,053	41	Y. Kim	317	117	2,120	128	23	120	150
University of Waterloo	11,540	38	X. Shen	326	114	1,394	173	21	147	150
University of Western Australia	3,337	185	L.Faraone	275	149	749	250	17	199	150

University of Western Ontario	4,330	151	W.D. Greason	123	309	144	334	6	332	19
University of Wisconsin	13,059	31	Y.A. Chang	409	68	2,784	90	24	112	150
University of Wollongong	2,639	206	G.G. Wallace	508	32	9,671	14	40	22	150
University of York	682	308	E.R. Hancock	385	77	1,111	201	20	159	150
University of Zurich	352	328	A. Pluckthun	256	174	6,539	32	56	9	150
Univesitas Gadjah Mada	96	342	S. Kobayashi	244	185	1,500	163	21	147	150
Uppsala University	3,396	183	P.Stoica	509	30	6,961	27	34	45	150
Utah State	2,044	236	Y. Chen	183	243	574	273	15	226	146
Utrecht University	2,299	224	M.A. Viergever	313	121	6,626	30	38	30	150
Vanderbilt University	2,612	207	R.D. Schrimpf	350	98	1,377	174	26	94	150
Victoria University of Wellington	157	338	H.J. Trodahl	176	253	1,033	208	15	226	150
Vienna University of Technology	6,926	89	S. Selberherr	393	73	130	337	16	213	150
Virginia Polytechnic Institute	14,718	24	D.J. Inman	428	56	2,252	119	24	112	150
Vrije Universiteit, Brussels	18	346	A. Kropivnitskaya	38	342	177	333	9	309	150
VU University Amsterdam	1,583	255	D. Lenstra	207	222	1,672	152	22	137	150
Wageningen University	765	307	D. Hoekman	71	331	281	323	12	269	77
Wake Forest University	267	332	A. Atala	299	131	4,520	52	40	22	150
Waseda University	5,297	121	T. Osaka	479	42	3,258	74	31	57	150
Washington State University	3,636	177	J. Tang	171	258	962	222	25	108	150
Washington University in St. Louis	2,279	226	M.P. Dudukovic	287	139	1,895	139	27	81	150
Wayne State University	3,096	193	S.H. Lui	238	191	710	256	16	213	150
West Virginia University	3,174	192	N.N. Clark	166	265	578	271	11	285	150
Yale University	1,759	249	C. Horvath	285	140	4,708	49	32	52	150
Yonsei University	4,337	150	H.K. Baik	214	218	1,447	168	23	120	150
York University	503	317	A. Contin	328	111	3,866	63	39	26	150
Zhejiang University	19,962	9	K.F. Cen	1,175	3	3,060	78	19	171	150

Chemistry Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	1,816	262	K. Konttoni	178	297	1,850	248	25	212	150
Aarhus University	2,536	212	K.A. Jorgensen	271	224	5,843	105	58	18	150
Arizona State University	2,638	204	G.R. Pettit	570	73	13,412	37	35	110	150
Ateneo de Manila University	19	344	F.M. Dayrit	17	345	193	342	5	332	30
Auburn University	1,959	252	M.L. McKee	273	221	2,302	222	20	252	150
Australian National University	5,325	74	L. Radom	377	149	10,010	60	41	74	150
Boston College	1,133	296	A.H. Hoveyda	177	299	5,874	103	55	24	150
Boston University	1,879	258	H.E. Stanley	480	101	10,348	58	57	20	150
Brandeis University	1,813	263	I.R. Epstein	322	197	2,551	209	25	212	150
Brigham Young University	2,066	245	R.M. Izatt	422	122	5,873	104	22	238	150
Brown University	2,402	226	D.E. Cane	251	240	2,498	212	36	101	150
California Institute of Technology (Calt...)	8,297	34	H.B. Gray	606	60	14,432	35	46	55	150
Cardiff University	3,028	177	M.B. Hursthouse	1,322	5	14,637	33	39	85	150
Carnegie Mellon University	3,342	155	J.A. Pople	418	124	32,291	4	29	161	150
Case Western Reserve University	4,324	111	G.A. Olah	961	18	11,480	47	29	161	150
Chalmers University of Technology	3,267	161	B. Kasemo	374	151	7,056	92	48	50	150
Charles University	3,613	141	I. Cisarova	369	153	1,928	240	23	228	150
Chinese University of Hong Kong	2,200	239	T.C.W. Mak	803	28	10,230	59	40	80	150
Chulalongkorn University	1,535	275	P. Prasertthdam	211	273	852	306	16	287	150
City University of Hong Kong	1,242	288	N.B. Wong	155	314	1,859	245	23	228	150
City University of New York	2,452	220	R. Bittman	249	242	3,526	161	27	191	150
Colorado State University	2,945	183	A.I. Meyers	347	176	5,124	121	26	202	150
Columbia University	6,983	43	N.J. Turro	747	34	16,037	29	41	74	150
Cornell University	9,152	25	R. Hoffmann	484	100	11,595	46	25	212	150
Curtin University of Technology	702	320	R. DeMarco	71	340	384	335	14	299	92
Dalhousie University	2,252	235	J.R. Datin	406	135	7,651	87	50	44	150
Dartmouth College	1,354	283	G.W. Gribble	253	237	3,021	182	33	125	150
Delft University of Technology	3,603	142	J.A. Moulijn	632	52	1,068	295	51	38	150
Drexel University	1,496	279	F.A. Davis	221	263	3,528	160	36	101	150
Duke University	3,772	135	C.R. Hauser	393	142	1,662	258	6	328	150
Durham University	4,057	117	J.A.K. Howard	792	29	10,618	54	46	55	150
Ecole Normale Supérieure de Lyon	577	326	L. Emsley	145	317	1,677	256	31	137	150
École Normale Supérieure, Paris	1,522	277	C. Amatore	325	193	4,326	141	30	149	150
École Polytechnique	2,463	218	L. Ricard	342	180	2,669	202	26	202	150

Ecole Polytechnique Fédérale de Lausanne	2,961	182	M. Gratzel	663	42	41,017	2	79	4	150
Eindhoven University of Technology	3,451	149	E.W. Meijn	493	95	11,926	44	67	9	150
Emory University	3,207	163	A. Padwa	612	59	9,843	62	35	110	150
Erasmus University Rotterdam	221	335	G.J. Puppels	106	330	1,819	251	27	191	150
ETH Zurich (Swiss Federal Institute of Technology)	8,726	31	F. Diederich	428	121	10,475	57	51	38	150
Florida International University	712	319	A.M. Mebel	269	226	3,050	180	31	137	150
Florida State University	3,327	157	W. Herz	443	113	1,573	268	13	307	150
Freie Universität Berlin	5,389	71	P. Luger	219	266	2,890	187	20	252	150
Friedrich Alexander Universität Erlangen Nürnberg	5,557	66	R. Van Eldik	541	79	2,654	203	34	119	150
Fudan University	5,111	79	M. Zhou	193	288	1,219	288	29	161	131
Georg August Universität Göttingen	4,322	112	H.W. Roesky	530	83	7,608	88	34	119	150
George Mason University	221	335	G.W. Mustrush	166	303	304	337	6	328	103
George Washington University	699	321	A. Montaser	102	332	712	315	19	265	125
Georgetown University	1,518	278	M.T. Pope	157	309	3,339	169	23	228	150
Georgia Institute of Technology	4,701	94	E.C. Ashby	248	244	1,088	294	2	337	128
Georgia State University	880	313	D.W. Boykin	250	241	1,851	247	35	110	150
Goteborg University	4,781	91	B. Norden	320	199	5,308	116	36	101	150
Harvard University	8,111	36	E.J. Corey	935	20	31,203	5	48	50	150
Hebrew University of Jerusalem	7,032	42	I. Willner	486	99	102	343	67	9	150
Heidelberg Universität	4,581	100	R. Gleiter	431	118	2,528	210	20	252	150
Hokkaido University	9,660	22	J. Kobayashi	713	37	2,088	231	34	119	150
Hong Kong Polytechnic University	1,660	267	A.S.C. Chan	252	239	4,268	145	39	85	150
Hong Kong University of Science & Techno...	2,189	240	Z. Lin	210	274	2,818	191	29	161	150
Humboldt-Universität zu Berlin	48	341	F. Pragst	93	334	743	313	19	265	150
Imperial College London	10,882	14	D.J. Williams	1,198	9	30,718	6	57	20	150
Indian Institute of Technology Bombay (I...	2,230	236	P. Mathur	141	318	428	330	14	299	138
Indian Institute of Technology Delhi (II...	1,648	269	A.S. Brar	165	305	428	330	14	299	119
Indian Institute of Technology Kanpur (I...	2,569	209	V. Chandrasekhar	197	285	1,825	250	29	161	150
Indiana University Bloomington	5,463	69	J.C. Huffman	780	32	12,354	43	33	125	150
Indiana University Indianapolis	270	334	Q.H. Zheng	127	326	795	309	19	265	150
Iowa State University	8,853	29	J.H. Espenson	394	141	2,559	207	25	212	150
Johns Hopkins University	4,594	98	G.H. Posner	263	232	4,513	136	33	125	150
Kansas State University	2,557	210	D.W. Setser	309	203	1,359	279	14	299	150
Katholieke Universiteit Leuven	5,512	67	E. DeClercq	1,641	1	49,335	1	72	7	150
Keio University	3,095	171	S. Yamamura	375	150	1,628	263	20	252	150

King Fahd University of Petroleum & Minerals	1,156	293	H.M. Badawi	133	323	233	340	10	321	66
King Saud University	1,184	291	F.S. El-Ferly	129	325	923	303	13	307	150
Kobe University	3,083	172	M. Okubo	279	219	1,669	257	23	228	150
Korea Advanced Institute of Science & Technology	3,518	146	S.I. Pyun	240	252	1,421	275	21	246	134
Korea University	2,363	229	J. Ko	198	283	1,355	280	23	228	150
Kyoto University	21,812	1	K. Oshima	410	131	3,975	151	31	137	150
Kyushu University	9,755	20	S. Shinkai	823	27	22,798	13	60	14	150
La Trobe University	1,325	285	A.M. Bond	557	75	7,332	90	27	191	150
Lancaster University	529	329	K.C. Jones	448	111	6,609	95	54	26	150
Leiden University	4,471	106	J. Reedijk	1,013	16	17,105	25	41	74	150
Linköping University	1,483	281	I. Lundstrom	479	102	6,230	99	34	119	150
London School of Economics and Political Science	13	346	A.C. Atkinson	60	342	523	325	12	312	98
Loughborough University	2,910	185	A.G. Fogg	213	271	846	307	12	312	150
Louisiana State University	3,011	179	F.R. Fronczek	589	64	5,164	120	27	191	150
Ludwig-Maximilians-Universität München	6,177	57	H. Noth	390	144	2,943	186	28	181	150
Lund University	6,670	48	B. Lindman	415	125	5,550	110	34	119	150
Maastricht University	220	337	P.M. Fredrik	121	329	3,093	178	26	202	150
Macquarie University	559	327	R.S. Vagg	87	337	385	333	5	332	53
Mahidol University	996	307	V. Reutrakul	122	327	1,197	290	16	287	150
Masaryk University	1,290	286	J. Havel	177	299	1,121	292	21	246	150
Massachusetts Institute of Technology	12,006	11	D. Seyferth	577	66	4,515	135	9	325	150
McGill University	4,404	108	I.S. Bulter	285	213	1,460	273	15	293	150
McMaster University	3,479	148	R.J. Gillespie	214	269	1,270	285	17	278	150
Michigan State University	5,050	82	H. Hart	281	218	23	345	2	337	150
Michigan Technological University	860	314	R.L. Luck	93	334	502	327	12	312	112
Monash University	3,961	125	G.B. Deacon	356	165	2,968	184	28	181	150
Montana State University	1,270	287	T. Livinghouse	86	338	1,590	265	20	252	78
Moscow State University	14,415	5	I.P. Belletskaya	321	198	943	300	10	321	150
Nagoya University	10,223	15	R. Noyori	408	132	11,261	50	50	44	150
Nanjing University	5,612	64	H.Y. Chen	432	116	5,237	117	42	68	150
Nanyang Technological University	2,052	246	K.C. Tam	205	278	2,143	227	30	149	150
National Taiwan University	5,300	75	G.H. Lee	621	55	7,846	84	36	101	150
National Tsing Hua University	3,841	132	S.L. Wang	183	294	1,576	267	24	222	150
National University of Ireland, Galway	720	318	P. McAdle	156	310	600	322	10	321	150
National University of Singapore	600	325	J.J. Vittal	357	164	3,898	154	32	131	150
New Mexico State University	1,350	284	J. Y. Wang	613	58	8,542	75	76	6	150

New York University	2,837	191	D.I. Schuster	195	287	2,359	218	25	212	150
Newcastle University	3,671	137	W. Clegg	615	57	7,787	85	37	95	150
North Carolina State University	4,496	104	M.H. Whangbo	468	105	5,447	112	29	161	150
Northeastern University	2,112	244	B.L. Karger	247	245	5,378	113	36	101	150
Northwestern University	9,768	19	J.A. Ibers	655	47	9,166	69	20	252	150
Norwegian University of Science & Technology	2,413	223	S.J. Cyvin	150	315	518	326	5	332	126
Ohio State University	9,781	18	L.A. Paquette	1,166	11	9,902	61	31	137	150
Oklahoma State University	1,886	257	E.M. Holt	197	285	1,353	281	11	319	150
Open University UK	771	316	A.R. Bassindale	88	336	561	324	12	312	96
Oregon State University	3,069	174	J.D. White	193	288	2,244	224	22	238	150
Osaka University	15,905	4	S. Fukuzumi	525	84	9,763	64	47	53	150
Peking University	7,348	40	S. Gao	367	154	4,599	132	45	60	150
Pennsylvania State University	8,986	26	A.W. Castleman	435	115	4,280	143	30	149	150
Pohang University of Science And Technology	2,377	228	K.Kim	178	297	4,800	130	45	60	150
Portland State University	458	330	G.L. Gard	188	291	665	318	17	278	150
Princeton University	6,179	56	E.C. Taylor	391	143	2,401	217	10	321	150
Purdue University	12,019	10	H.C. Brown	1,100	13	12,460	42	18	274	150
Queen's University	2,756	199	E. Buncel	244	248	1,376	277	20	252	150
Queen's University of Belfast	2,987	180	D.R. Boyd	222	262	964	297	16	287	150
Queensland University of Technology	1,072	302	R.L. Frost	602	62	8,154	79	40	80	150
Radboud University, Nijmegen	2,860	188	B. Zwaneburg	289	212	2,003	235	20	252	150
Rensselaer Polytechnic Institute	2,411	224	K.T. Potts	162	306	1,237	286	2	337	150
Rheinisch Westfälische Technische Hochschule Aach	4,013	123	D. Enders	367	154	5,675	108	41	74	150
Rheinische Friedrich Wilhelms Universität Bonn	4,800	90	M. Nieger	413	128	28	344	28	181	150
Rice University	2,768	198	J.L. Margrave	421	123	4,735	131	23	228	150
Rochester Institute of Technology	295	333	S.G. Kandlikar	186	292	1,336	282	23	228	101
Royal Institute of Technology, KTH	3,940	127	P.M. Claessen	212	272	2,810	193	27	191	150
Royal Melbourne Institute of Technology	669	323	P.J. Marriott	208	276	1,465	272	28	181	150
Rutgers	5,233	77	R.A. Moss	348	175	1,487	270	19	265	150
Saint-Petersburg State University	4,972	85	V.Y. Kubushkin	146	316	948	299	28	181	150
San Diego State University	605	324	M.A. Ring	67	341	292	338	2	337	69
Sapienza University of Rome	0	348		0	348	0	347	0	343	0
Sciences Po Paris	1	347	A. Sontot	1	347	1	346	1	342	0
Seoul National University	6,252	54	K. Kim	220	264	2,771	194	29	161	150
Shanghai Jiao Tong University	2,504	216	D. Dan	367	154	2,982	183	81	3	150
Simon Fraser University	1,600	271	F.W.B. Einstein	238	253	1,661	259	13	307	150

Stanford University	9,898	16	C. Djerassi	880	25	4,364	140	2	337	150
State University of New York Buffalo	57	340	S. Kumar	365	157	1,806	252	19	265	150
Stockholm University	3,350	154	P.E.M. Siegbahn	331	190	6,057	101	43	65	150
Stony Brook University	2,941	184	I. Ojima	261	234	4,009	150	29	161	150
Syracuse University	2,660	202	J. Zubieta	518	86	17,598	22	56	22	150
Tartu University (University of Tartu)	1,045	306	E. Lust	137	320	385	333	17	278	80
Technical University of Denmark	3,335	156	J. Ulstrup	227	260	1,969	238	27	191	150
Technion	3,065	175	Y. Apeloig	161	307	1,980	237	20	252	150
Technische Universität Berlin	5,044	83	F. Bohlmann	780	32	4,938	126	0	343	150
Technische Universität Chemnitz	1,061	304	H. Lang	295	209	1,858	246	24	222	150
Technische Universität Dresden	3,097	170	W.D. Habicher	159	308	699	317	14	299	150
Technische Universität München	7,499	38	W.A. Herrmann	513	89	20,112	17	53	28	150
Tel Aviv University	2,784	197	J. Jortner	577	66	10,562	55	32	131	150
Texas A&M University	8,919	27	F.A. Cotton	882	24	18,645	20	40	80	150
Texas Tech	1,864	260	R.A. Bartsch	345	178	2,817	192	25	212	150
Tohoku University	12,908	9	Y.Yamamoto	653	48	15,193	31	52	32	150
Tokyo Institute of Technology	11,982	12	T. Yamamoto	532	82	8,140	80	33	125	150
Trinity College Dublin	1,690	265	W.J. Blau	405	136	4,875	127	39	85	150
Tsinghua University	5,890	59	Y.F. Zhao	496	93	1,421	275	19	265	150
Tufts University	1,156	293	D.R. Walt	202	281	3,524	162	35	110	150
Universidad Autonoma de Madrid	4,022	120	M. Yanez	291	210	2,337	219	29	161	150
Universidad de Chile	2,166	242	J.A. Squella	176	301	790	310	18	274	150
Universidad de Granada	4,022	120	M. Yanez	291	210	2,337	219	29	161	150
Universidad del País Vasco	3,081	173	T. Rojo	270	225	2,865	188	29	161	150
Universidad Nacional Autónoma de México ...	3,315	158	A.F. Jallout	273	221	601	321	14	299	150
Universidad Politecnica de Madrid	555	328	J. Losada	73	339	951	298	18	274	79
Universidade de São Paulo	6,632	50	E.E. Castellano	337	185	2,026	234	20	252	150
Universidade Estadual de Campinas	4,713	93	C. Airoidi	340	182	1,678	255	29	161	150
Università degli Studi di Firenze	5,421	70	C.T. Supuran	644	50	15,592	30	59	16	150
Università degli Studi di Padova	5,100	81	C. Toniolo	557	75	8,730	73	32	131	150
Università Di Bologna	7,459	39	V. Balzani	354	167	9,539	67	59	16	150
Università di Pisa	3,814	133	F. Calderazzo	210	274	930	302	14	299	150
Universitat Autonoma de Barcelona	3,406	152	A. Liedos	199	282	2,223	225	30	149	150
Universitat Bielefeld	1,889	256	H.G. Stammeler	249	242	1,886	242	25	212	150
Universität Bremen	1,606	270	E. Lork	205	278	916	304	17	278	150
Universitat d'Alacant	2,015	249	M.Yus	432	116	5,013	122	44	62	150

Universitat de València	5,890	59	F. Lloret	324	194	4,941	125	47	53	150
Universität Frankfurt am Main	4,020	122	M. Bolte	617	56	4,536	133	29	161	150
Universität Freiburg	3,653	139	H. Vahrenkamp	217	267	1,934	239	28	181	150
Universität Hamburg	3,677	136	H.R. Kricheldorf	467	106	3,351	168	31	137	150
Universität Karlsruhe	3,847	130	D. Fenske	302	205	4,044	149	39	85	150
Universität Leipzig	4,577	101	J. Karger	350	171	2,311	221	29	161	150
Universität Munster (Westfälische Wilhelms-Un	3,806	134	R. Frohlich	641	51	8,753	72	37	95	150
Universität Politecnica de Catalunya	810	315	C. Aleman	268	228	1,431	274	22	238	150
Universität Regensburg	3,864	129	H. Brunner	342	180	2,698	199	22	238	150
Universität Stuttgart	3,619	140	W. Kaim	449	109	3,520	163	31	137	150
Universität Trier	39	342	A. Meyer	261	234	8,788	71	52	32	150
Universität Tübingen	4,075	116	H. Oberhammer	265	230	1,223	287	15	293	150
Universität Wien (University of Vienna)	6,306	53	H. Novotny	299	206	1,693	254	0	343	136
Universität Zu Köln	2,690	201	G. Meyer	336	187	2,852	189	19	265	150
Université Catholique de Louvain	2,593	207	J.P. Declercq	215	268	1,640	261	19	265	150
Universite de Liege	2,506	215	R. Jerome	340	182	5,320	115	41	74	150
Université de Montréal	2,867	187	S. Hannessian	389	146	5,842	106	34	119	150
Université de Nice Sophia Antipolis	1,058	305	A. Cambon	122	327	567	323	13	307	125
Universite Laval	1,572	272	S. Kaliaguine	323	195	4,526	134	35	110	150
Universite Libre de Bruxelles	2,210	238	J.M. Ruyschaert	352	169	4,292	142	33	125	150
Université Paris Sorbonne	306	331	C. Duval	7	346	0	347	0	343	2
Universite Paris-Sud 11	7,932	37	R. Hocquemiller	203	280	1,369	278	20	252	150
Université Pierre et Marie Curie	8,673	33	B. Asman	408	132	3,558	158	29	161	150
Universiti Malaya (University of Malaya)	1,845	261	S.W. Ng	1,108	12	3,409	165	16	287	150
University College Cork	1,496	279	P.F. Fox	242	249	2,697	200	32	131	150
University College Dublin	1,793	264	A.R. Manning	176	301	439	329	11	319	150
University College London	8,704	32	R.J.H. Clark	349	173	2,278	223	27	191	150
University do Porto	1,545	274	A.E. Rodrigues	327	191	2,143	227	27	191	150
University of Aberdeen	2,347	230	J.N.Low	429	120	977	296	17	278	150
University of Adelaide	2,629	205	M.I. Bruce	407	134	2,501	211	26	202	150
University of Alabama	2,799	193	J.L. Atwood	571	72	14,695	32	43	65	150
University of Alberta	6,652	49	J.W. Lown	362	161	2,958	185	22	238	150
University of Amsterdam	4,529	103	D.J. Stufkens	253	237	1,867	244	23	228	150
University of Antwerp	2,787	196	E.F. Vansant	284	214	2,674	201	27	191	150
University of Arizona	4,935	86	V.J. Hruby	788	31	16,959	26	42	68	150
University of Athens	1,899	255	M. Koupparis	156	310	1,100	293	16	287	150

University of Auckland	2,534	213	W.A. Denny	490	96	4,960	123	38	92	150
University of Barcelona	6,694	47	X. Solans	495	94	4,210	147	30	149	150
University of Basel	3,133	168	J.P. Maier	340	182	1,628	263	26	202	150
University of Bath	2,525	214	M.F. Mahon	372	152	3,154	176	30	149	150
University of Bergen	891	311	P.M. Ueland	333	189	9,797	63	50	44	150
University of Bern	1,666	266	H.U. Gudel	449	109	4,840	128	39	85	150
University of Birmingham	4,607	97	J.F. Stoddart	559	74	27,990	7	78	5	150
University of Bristol	6,943	44	F.G.A. Stone	662	44	2,049	232	17	278	150
University of British Columbia	5,510	68	S.G. Withers	365	157	4,451	137	44	62	150
University of Calgary	2,403	225	M. Parvez	518	86	5,363	114	29	161	150
University of California, Berkley	13,645	6	G.A. Somorjai	693	39	18,065	21	46	55	150
University of California, Davis	5,666	62	M.M. Olmstead	572	71	11,329	49	42	68	150
University of California, Irvine	3,315	158	J.W. Ziller	362	161	6,696	94	37	95	150
University of California, Los Angeles	7,280	41	K.N. Houk	657	46	21,465	14	56	22	150
University of California, Riverside	3,539	144	D.T. Saywer	238	253	2,460	213	5	332	150
University of California, San Diego	4,820	89	A.L. Rheingold	1,473	4	25,525	10	52	32	150
University of California, San Francisco	1,950	253	P.A. Kollman	412	130	17,341	24	51	38	150
University of California, Santa Barbara	4,853	88	T.C. Bruice	547	77	7,848	83	30	149	150
University of California, Santa Cruz	1,125	297	A.L. Fink	207	277	6,307	97	51	38	150
University of Cambridge	13,410	7	P.R. Raithby	665	41	6,305	98	28	181	150
University of Canterbury	1,872	259	P.J. Steel	273	221	2,758	196	23	228	150
University of Cape Town	1,108	299	L.R. Nassimbeni	198	283	784	311	14	299	145
University of Central Florida	882	312	S.Seal	236	255	2,556	208	31	137	150
University of Chicago	5,583	65	S.A. Rice	575	68	7,665	86	26	202	150
University of Cincinnati	3,664	138	J.A. Caruso	278	220	2,647	204	31	137	150
University of Colorado at Boulder	4,363	110	T.R. Cech	312	201	8,896	70	49	48	150
University of Connecticut	2,347	230	S.L. Suib	390	144	4,126	148	36	101	150
University of Copenhagen	3,843	131	L.H. Skibsted	350	171	3,047	181	32	131	150
University of Delaware	5,042	84	A.L. Rheingold	1,575	3	25,528	9	54	26	150
University of Dundee	1,187	290	C.H. Rochester	257	236	1,636	262	12	312	150
University of Edinburgh	4,590	99	S. Parsons	573	70	8,207	78	42	68	150
University of Florida	8,907	28	A.R. Katritzky	1,585	2	17,397	23	48	50	150
University of Geneva	2,317	233	G. Bernardinelli	335	188	6,098	100	37	95	150
University of Georgia	4,454	107	H.F Schaefer	1,098	14	21,462	15	46	55	150
University of Ghent	3,312	160	N. De Kimpe	398	139	2,163	226	21	246	150
University of Glasgow	4,688	95	J.D. Connolly	224	261	1,200	289	150	1	150

University of Gothenburg	39	342	M. Ashton	56	343	450	328	15	293	121
University of Groningen	4,009	124	B.L. Feringa	487	98	8,559	74	60	14	150
University of Helsinki	3,499	147	M. Leskela	404	137	4,377	139	40	80	150
University of Hong Kong	2,439	222	C.M. Che	630	53	13,227	38	55	24	150
University of Houston	4,239	114	L. Kevan	627	54	5,508	111	26	202	150
University of Illinois	13,068	8	N.J. Leonard	356	165	1,833	249	3	336	150
University of Illinois, Chicago	3,959	126	G.A. Cordell	307	204	3,260	174	22	238	150
University of Indonesia	69	339	T.A. Ivandini	22	344	259	339	12	312	50
University of Iowa	2,896	186	D.J. Burton	247	245	1,543	269	15	293	140
University of Kansas	4,030	119	R.T. Borchardt	473	104	5,183	118	30	149	150
University of Kentucky	2,474	217	D.A. Butterfield	385	147	8,095	81	61	13	150
University of Lausanne	2,051	247	C. Floriani	349	173	3,431	164	30	149	150
University of Leeds	5,130	78	B.L. Shaw	347	176	815	308	6	328	150
University of Leicester	3,199	166	M.C.R. Symons	857	26	3,320	171	12	312	150
University of Liverpool	3,217	162	D.L. Cooper	245	247	1,584	266	17	278	150
University of Ljubljana	2,856	189	B. Stanovnik	284	214	855	305	26	202	150
University of London (Kings College of London)	21,334	2	M.B. Hursthouse	1,280	7	12,992	41	38	92	150
University of Manchester	11,138	13	R.N. Haszeldine	522	85	608	320	0	343	150
University of Manitoba	1,529	276	K.G. Standing	136	321	2,771	194	30	149	150
University of Maryland	4,085	115	J.C. Fettinger	234	256	3,283	173	30	149	150
University of Maryland Baltimore County	2,218	237	J.R. Lakowicz	533	81	13,119	39	53	28	150
University of Massachusetts	3,098	169	M.D. Rausch	319	200	3,917	152	24	222	150
University of Melbourne	3,926	128	F. Grieser	268	228	3,357	167	24	222	150
University of Miami	1,384	282	F.J. Millero	365	157	6,487	96	35	110	150
University of Michigan	9,438	23	E.F. Westrum	310	202	935	301	7	326	150
University of Minnesota	8,740	30	D.G. Truhlar	888	23	27,089	8	64	12	150
University of Missouri	4,882	87	N.P. Rath	337	185	2,446	215	22	238	150
University of Nebraska	2,855	190	N.H. Cromwell	156	310	367	336	0	343	117
University of New Hampshire	986	308	R.E. Lyle	133	323	2,031	233	25	212	150
University of New Mexico	1,569	273	R.T. Paine	234	256	3,337	170	20	252	150
University of New South Wales	3,205	164	T.P. Davis	499	92	5,580	109	53	28	150
University of North Carolina, Chapel Hill	6,313	52	T.J. Meyer	490	96	8,067	82	36	101	150
University of North Texas	1,918	254	W.E. Acree	439	114	1,475	271	26	202	150
University of Notre Dame	4,779	92	F.J. Castellino	382	148	3,296	172	29	161	150
University of Nottingham	5,735	61	A.J. Blake	606	60	10,509	56	43	65	150
University of Oklahoma	2,040	248	R. Frech	190	290	1,280	284	20	252	131

University of Oregon	1,659	268	J.F.W. Keana	184	293	1,801	253	17	278	150
University of Oslo	2,539	211	H. Fjellvag	299	206	2,448	214	28	181	150
University of Otago	1,124	298	J. Simpson	179	296	778	312	13	307	150
University of Ottawa	3,441	150	H. Alper	415	125	3,689	156	28	181	150
University of Oxford	9,740	21	R.G. Compton	917	22	16,202	28	51	38	150
University of Pennsylvania	5,110	80	R.M. Hochstrasser	476	103	5,715	107	46	55	150
University of Pittsburgh	6,025	58	J.T. Yates	602	62	16,262	27	37	95	150
University of Quebec	1,078	301	S. Kaliaguine	323	195	4,280	143	35	110	150
University of Queensland	2,809	192	C.H.L. Kennard	283	216	1,658	260	18	274	150
University of Reading	3,590	143	M.G.B. Drew	733	35	7,560	89	37	95	150
University of Rochester	2,791	195	S. Mukamel	545	78	4,806	129	44	62	150
University of Saskatchewan	2,189	240	P.G. Mezey	214	269	1,186	291	16	287	123
University of Science and Technology of China	5,378	72	Y. Qian	926	21	14,357	36	51	38	150
University of Sheffield	4,482	105	H. Adams	430	119	3,684	157	31	137	150
University of South Carolina	3,424	151	R.D. Adams	467	106	2,132	229	24	222	150
University of South Florida	1,093	300	S.M. Sebti	229	259	4,955	124	50	44	150
University of Southampton	5,276	76	M.B. Hursthouse	1,319	6	14,634	34	39	85	150
University of Southern California	3,533	145	G.A. Olah	960	19	11,774	45	29	161	150
University of St Andrews	3,201	165	C. Glidewell	645	49	3,399	166	22	238	150
University of Surrey	2,699	200	J.F. Watts	234	256	1,995	236	21	246	150
University of Sussex	4,574	102	P.B. Hitchcock	1,045	15	11,086	51	36	101	150
University of Sydney	4,650	96	T.W. Hambley	363	160	3,914	153	27	191	150
University of Technology, Sydney	299	332	M.B.Cortie	138	319	700	316	15	293	118
University of Tennessee Knoxville	3,038	176	G. Guiochon	685	40	10,957	52	42	68	150
University of Texas at Austin	9,788	17	A.J. Bard	790	30	24,581	11	53	28	150
University of Tokyo	17,460	3	A. Fujishima	415	125	11,336	48	52	32	150
University of Toronto	8,141	35	A.J. Lough	456	108	5,170	119	36	101	150
University of Tsukuba	3,178	167	M. Yamamoto	575	68	21,360	16	70	8	150
University of Twente	2,454	219	D.N. Reinhoudt	724	36	22,809	12	66	11	150
University of Utah	6,797	46	P.J. Stang	353	168	7,243	91	49	48	150
University of Vermont	1,198	289	W.E Geiger	180	295	2,571	206	21	246	150
University of Victoria	1,070	303	J. Ausio	166	303	2,095	230	24	222	150
University of Virginia	4,391	109	L. Andrews	698	38	10,877	53	39	85	150
University of Warwick	3,018	178	N.W. Alcock	343	179	2,829	190	27	191	150
University of Washington	6,566	51	Y. Xia	352	169	19,223	19	90	2	150
University of Waterloo	4,032	118	J. Pawliszyn	399	138	5,999	102	52	32	150

University of Western Australia	2,613	206	A. H. White	1,245	8	13,086	40	38	92	150
University of Western Ontario	3,381	153	R.J. Puddephatt	448	111	3,534	159	35	110	150
University of Wisconsin	9,416	24	R. West	516	88	8,371	76	31	137	150
University of Wollongong	917	310	G.G. Wallace	508	91	9,671	65	40	80	150
University of York	2,793	194	J.H. Clark	282	217	3,233	175	31	137	150
University of Zurich	2,015	249	A. Linden	396	140	2,706	198	25	212	150
Univesitas Gadjah Mada	87	338	N. Yoshioka	96	333	732	314	15	293	150
Uppsala University	5,649	63	B. Langstrom	540	80	9,566	66	42	68	150
Utah State	934	309	R.W. Sidwell	241	251	2,576	205	28	181	150
Utrecht University	6,237	55	A.L. Spek	997	17	19,866	18	52	32	150
Vanderbilt University	2,443	221	F.P. Guengerich	663	42	32,945	3	58	18	150
Victoria University of Wellington	699	321	N.F. Curtis	104	331	628	319	7	326	67
Vienna University of Technology	2,152	243	K. Merelter	297	208	2,421	216	29	161	150
Virginia Polytechnic Institute	2,582	208	J.E. McGarth	584	65	4,378	138	29	161	150
Vrije Universiteit, Brussels	18	345	M. Besancon	265	230	3,141	177	30	149	150
VU University Amsterdam	2,982	181	U.A.T. Brinkman	509	90	9,350	68	41	74	150
Wageningen University	2,013	251	A.G.J. Voragen	361	163	4,240	146	33	125	150
Wake Forest University	757	317	A.G. King	156	310	405	332	6	328	27
Waseda University	2,382	227	E. Tsuchida	661	45	7,048	93	35	110	150
Washington State University	2,346	232	R.D. Willett	269	226	214	341	17	278	150
Washington University in St. Louis	2,278	234	D.G. Sarantites	327	191	1,869	243	23	228	150
Wayne State University	4,317	113	C.F. Poole	242	249	2,717	197	31	137	143
West Virginia University	1,153	295	J.L. Peterson	220	264	3,718	155	26	202	150
Yale University	5,337	73	K.B. Wiberg	413	128	8,352	77	32	131	150
Yonsei University	2,643	203	M. Lee	136	321	1,318	283	25	212	150
York University	1,179	292	D.K. Bohme	263	232	1,920	241	21	246	150
Zhejiang University	6,910	45	K.F. Cen	1,175	10	3,060	179	19	265	150

Materials Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	3,621	73	L. Niiisto	268	186	2,633	165	30	124	150
Aarhus University	1,201	223	F.Besenbacher	358	112	6,475	62	47	29	150
Arizona State University	2,282	133	D.J. Smith	558	44	7,513	56	33	93	150
Ateneo de Manila University	8	345	A. Okamoto	117	316	580	314	12	307	150
Auburn University	1,759	170	J.W. Fergus	84	330	794	300	13	299	63
Australian National University	2,565	114	R.L. Withers	223	229	1,552	237	18	245	150
Boston College	360	314	Z.F. Ren	220	231	8,085	47	43	35	150
Boston University	1,077	237	T.D. Moustakas	251	202	3,626	115	24	182	150
Brandeis University	153	336	I.R. Epstein	322	138	2,551	169	25	177	150
Brigham Young University	356	317	M.L. Lee	377	102	5,085	77	32	101	150
Brown University	1,829	165	A. Wold	236	217	2,278	189	2	341	150
California Institute of Technology (Calt...)	4,205	59	M.A. Nicolet	285	168	1,742	219	10	318	150
Cardiff University	1,412	202	M.B. Hursthouse	1,322	3	14,637	18	39	57	150
Carnegie Mellon University	3,661	70	K. Matyjaszewski	713	25	37,767	5	93	2	150
Case Western Reserve University	3,749	66	A. Hiltner	459	74	3,321	128	29	134	150
Chalmers University of Technology	4,097	62	L. Borjesson	273	183	3,028	139	24	182	150
Charles University	1,757	171	V. Sechovsky	437	82	1,123	264	17	257	150
Chinese University of Hong Kong	935	245	S.P. Wong	264	188	1,146	263	18	245	150
Chulalongkorn University	1,168	228	P. Supaphol	139	301	1,204	258	23	195	150
City University of Hong Kong	2,997	89	P.K. Chu	887	16	6,609	61	29	134	150
City University of New York	542	289	F.H. Pollak	345	121	3,444	121	20	224	150
Colorado State University	738	260	C.E. Patton	213	237	829	298	15	287	150
Columbia University	1,820	167	N.J. Turro	747	21	16,037	16	41	49	150
Cornell University	4,619	48	C.K. Ober	338	128	5,139	76	36	76	150
Curtin University of Technology	490	299	I.M Low	112	318	484	319	10	318	90
Dalhousie University	949	243	J.R. Datin	406	91	7,651	52	50	25	150
Dartmouth College	735	262	I. Baker	237	216	1,206	256	14	291	150
Delft University of Technology	5,369	39	J.Schooman	331	132	2,822	148	30	124	150
Drexel University	1,966	152	Y. Wei	276	180	4,625	88	36	76	150
Duke University	1,182	226	H. Petroski	160	283	197	335	3	339	16
Durham University	2,207	136	J.A.K. Howard	792	17	10,618	29	46	31	150
Ecole Normale Supérieure de Lyon	349	321		212	240	2,351	181	29	134	150
École Normale Supérieure, Paris	698	266	R. Ferreira	160	283	2,638	164	17	257	150
École Polytechnique	1,965	153	J.P. Biolot	277	177	3,624	116	33	93	150

Ecole Polytechnique Fédérale de Lausanne	4,316	56	J.A.E. Manson	257	195	1,610	231	22	206	150
Eindhoven University of Technology	3,861	65	E. W. Meijn	493	58	11,926	26	67	8	150
Emory University	385	311	E.L. Choikof	201	249	3,176	134	31	110	150
Erasmus University Rotterdam	57	338	R. Kanaar	118	315	4,388	95	42	41	150
ETH Zurich (Swiss Federal Institute of Technology)	6,194	27	L/J. Gaucker	307	149	3,663	113	33	93	150
Florida International University	587	281	A.K. Agarwal	99	326	682	307	18	245	101
Florida State University	685	269	I.M. Navon	129	307	922	289	16	277	150
Freie Universität Berlin	1,687	180	G. Kaindl	339	127	313	329	22	206	150
Friedrich Alexander Universität Erlangen Nürnberg	4,675	47	P. Schmuki	335	131	3,322	127	53	18	150
Fudan University	4,307	58	W. Huang	1,141	6	13,096	23	53	18	150
Georg August Universität Göttingen	2,208	135	K.P.Lieb	556	45	6,702	60	35	84	150
George Mason University	220	332	M.V. Rao	135	302	1,820	213	20	224	150
George Washington University	472	301	E. Della Torre	178	271	522	317	10	318	118
Georgetown University	331	324	R.G. Weiss	213	237	2,466	173	30	124	150
Georgia Institute of Technology	6,441	22	C.P. Wong	472	72	2,208	194	28	149	150
Georgia State University	224	330	N. Dietz	109	319	327	328	11	313	150
Goteborg University	2,889	97	M. Willander	477	70	3,247	131	23	195	150
Harvard University	2,113	143	G.M. Whitesides	918	13	75,622	1	105	1	150
Hebrew University of Jerusalem	2,190	138	G. Marom	195	255	1,039	275	15	287	150
Heidelberg Universität	1,628	183	G. Huttner	230	225	2,468	172	19	235	150
Hokkaido University	6,287	24	T. Kakuchi	256	197	883	292	20	224	150
Hong Kong Polytechnic University	4,148	61	H.L.W. Chan	617	33	4,551	90	26	166	150
Hong Kong University of Science & Techno...	3,174	85	B.Z. Tang	317	141	2,846	147	41	49	150
Humboldt-Universität zu Berlin	1,598	186	E. Kemnitz	302	153	1,393	245	25	177	150
Imperial College London	7,352	17	A. R. Boccaccini	156	287	1,052	273	22	206	150
Indian Institute of Technology Bombay (I...	2,353	126	B.P. Kashyap	121	313	488	318	10	318	94
Indian Institute of Technology Delhi (II...	3,313	81	V.K. Kothari	166	277	223	333	5	337	90
Indian Institute of Technology Kanpur (I...	2,727	105	R. Balasubramamiam	200	250	861	294	17	257	150
Indiana University Bloomington	883	249	J.C. Huffman	780	20	12,354	25	33	93	150
Indiana University Indianapolis	55	340	M.C. Dinauer	144	298	3,880	108	42	41	150
Iowa State University	2,829	101	P.C. Canfield	404	92	4,979	80	43	35	150
Johns Hopkins University	2,175	140	S.H. Snyder	300	155	14,180	20	75	5	150
Kansas State University	591	280	H.X. Jiang	310	146	3,064	137	36	76	150
Katholieke Universiteit Leuven	4,786	45	J. Vleugels	185	267	616	310	16	277	138
Keio University	2,385	124	M. Senna	263	190	1,548	238	21	218	150

King Fahd University of Petroleum & Minerals	1,204	222	B.S. Yilbas	391	99	1,093	267	19	235	150
King Saud University	608	278	S.M. Darwish	61	336	165	337	8	330	49
Kobe University	2,110	145	M. Okubo	279	175	1,669	227	23	195	150
Korea Advanced Institute of Science & Technology	6,291	23	J.Y. Lee	16	341	24	342	3	339	88
Korea University	2,986	90	J. I. Jin	273	183	1,864	209	24	182	150
Kyoto University	18,415	2	T. Masuda	525	48	15,328	17	34	88	150
Kyushu University	6,752	21	Z. Horita	313	143	3,443	122	53	18	150
La Trobe University	331	324	J. Liesegang	43	338	881	293	12	307	134
Lancaster University	360	314	C.J. Lambert	134	303	1,201	259	16	277	145
Leiden University	1,719	176	J. Reedijk	1,013	8	17,105	13	41	49	150
Linköping University	2,403	122	O. Ingnas	374	105	7,314	57	42	41	150
London School of Economics and Political Science	9	344	LA Smith	154	290	2,418	178	31	110	150
Loughborough University	2,530	119	R.G. Faulkner	140	300	426	324	10	318	150
Louisiana State University	1,174	227	C.Z. Voyiadjis	227	226	1,029	276	19	235	109
Ludwig-Maximilians-Universität München	2,553	116	W. Beck	300	155	2,083	199	17	257	150
Lund University	2,604	112	L. Samuelson	486	63	5,319	74	48	26	150
Maastricht University	128	337	L.H. Koole	131	305	737	304	17	257	150
Macquarie University	442	306	T.L. Tansley	145	297	1,570	236	10	318	127
Mahidol University	528	291	C. Sirisinha	47	337	219	334	11	313	40
Masaryk University	504	297	V. Holy	186	265	1,845	211	17	257	150
Massachusetts Institute of Technology	9,809	9	D. Seyferth	577	40	4,515	91	9	327	150
McGill University	4,001	63	J.A. Szpunar	321	139	1,151	262	20	224	150
McMaster University	3,657	71	S. Zhu	236	217	2,358	180	30	124	150
Michigan State University	2,935	93	M.G. Kanatzidis	587	38	9,950	33	39	57	150
Michigan Technological University	1,468	193	G.Subhash	106	320	860	295	19	235	103
Monash University	3,206	83	Y. B. Cheng	250	203	1,680	224	22	206	150
Montana State University	516	295	V.H. Schimdt	143	299	760	302	15	287	150
Moscow State University	7,880	14	A.R. Khokhlov	414	87	3,733	112	37	68	150
Nagoya University	10,818	7	O. Takai	284	170	2,108	198	27	158	150
Nanjing University	5,634	34	R. Zhang	330	134	1,250	252	18	245	150
Nanyang Technological University	6,258	25	S.F. Yoon	242	210	1,853	210	22	206	150
National Taiwan University	5,565	36	G.H. Lee	621	32	7,846	51	36	76	150
National Tsing Hua University	5,666	32	J.G. Duh	275	181	1,421	244	19	235	150
National University of Ireland, Galway	351	320	D. Cunningham	156	287	600	311	10	318	150
National University of Singapore	7,722	15	E.T. Kang	510	52	8,654	40	37	68	150
New Mexico State University	460	304	J. Ramirez	289	165	1,056	272	17	257	150

New York University	613	276	R.Z. LeGeros	188	262	2,768	153	17	257	150
Newcastle University	1,091	234	P.R. Bridden	354	115	2,973	141	33	93	150
North Carolina State University	5,969	29	G. Lurovsky	410	88	3,254	130	31	110	150
Northeastern University	1,443	198	W.M. Reiff	200	250	2,258	192	13	299	150
Northwestern University	5,574	35	T.J. Marks	792	17	27,833	6	66	9	150
Norwegian University of Science & Technology	2,570	113	T. Grande	154	290	1,453	242	18	245	150
Ohio State University	4,456	53	B. Bhushan	702	26	10,616	30	37	68	150
Oklahoma State University	941	244	W.T. Ford	366	107	4,781	85	26	166	150
Open University UK	584	282	F.J. Berry	277	177	1,188	260	17	257	150
Oregon State University	1,522	192	A.W. Sleight	338	128	6,071	65	38	63	150
Osaka University	15,636	4	Y. Onuki	785	19	8,403	42	45	32	150
Peking University	5,516	37	Y.Wang	341	123	737	304	12	307	150
Pennsylvania State University	8,548	11	H.R. Allcock	480	67	2,751	154	31	110	150
Pohang University of Science And Technology	3,633	72	S. Lee	254	198	1,216	254	18	245	150
Portland State University	556	286	G.L. Gard	188	262	665	309	17	257	150
Princeton University	3,089	87	S. Wagner	404	92	2,433	177	31	110	150
Purdue University	4,678	46	N.A. Peppas	590	37	18,997	10	53	18	150
Queen's University	2,036	149	M. Sayer	206	245	2,188	195	17	257	150
Queen's University of Belfast	1,379	204	W. Sha	213	237	1,599	233	2	341	150
Queensland University of Technology	803	257	R.L. Frost	602	35	8,154	45	40	54	150
Radboud University, Nijmegen	1,333	208	J.A. Jansen	390	100	4,052	106	42	41	150
Rensselaer Polytechnic Institute	3,484	76	J.V. Crivello	242	210	2,035	201	25	177	111
Rheinisch Westfalische Technische Hochschule Aach	6,085	28	E. Lugscheider	331	132	1,334	248	17	257	150
Rheinische Friedrich Wilhelms Universitat Bonn	1,287	213	R. Viaden	147	295	358	325	9	327	150
Rice University	1,675	181	A.G. Mikos	352	117	8,229	43	60	12	150
Rochester Institute of Technology	522	293	R.P. Raffaele	120	314	840	296	17	257	150
Royal Institute of Technology, KTH	5,654	33	A.C. Albertsson	289	165	2,729	158	31	110	150
Royal Melbourne Institute of Technology	1,022	240	R.A. Shanks	176	273	1,119	265	18	245	150
Rutgers	3,259	82	M. Greenblatt	300	155	2,751	154	26	166	150
Saint-Petersburg State University	2,111	144	E.V. Charnaya	106	320	196	336	9	327	122
San Diego State University	372	313	E.A. Olevsky	101	324	592	312	18	245	109
Sapienza University of Rome	0	347		0	347	0	347	0	347	0
Sciences Po Paris	0	347		0	347	0	347	0	347	0
Seoul National University	7,149	18	H.E.Kim	257	195	2,459	174	29	134	150
Shanghai Jiao Tong University	7,616	16	D. Yan	367	106	2,982	140	31	110	150
Simon Fraser University	1,043	238	S. holdcroft	149	294	2,219	193	27	158	150

Stanford University	5,083	42	W.D. Nix	393	96	7,585	53	36	76	150
State University of New York Buffalo	19	343	W.S. Durfee	15	342	122	341	7	333	34
Stockholm University	1,135	230	M.Nygren	198	252	1,887	208	24	182	150
Stony Brook University	2,311	129	B.S. Hsiao	340	124	4,942	81	48	26	150
Syracuse University	675	273	J. Zubieta	518	50	17,598	12	56	15	150
Tartu University (University of Tartu)	656	274	K. Kukli	129	307	1,342	247	28	149	150
Technical University of Denmark	2,846	99	S. Morup	220	231	2,955	142	24	182	150
Technion	3,714	68	M. Narkis	269	185	2,024	203	23	195	150
Technische Universität Berlin	3,599	74	D. Bimberg	967	11	18,234	11	57	14	150
Technische Universität Chemnitz	1,876	159	D.R.T. Zahn	364	109	1,762	218	21	218	150
Technische Universität Dresden	4,513	51	P. Offermann	195	255	139	338	6	334	150
Technische Universität München	5,493	38	O. Nuyken	261	191	2,488	171	31	110	150
Tel Aviv University	1,703	178	R.L. Boxman	243	209	936	288	17	257	142
Texas A&M University	3,933	64	A. Clearfield	482	66	5,525	69	42	41	150
Texas Tech	541	290	M. Holtz	131	305	1,159	261	20	224	150
Tohoku University	17,515	3	A. Inoue	1,930	1	38,085	4	71	7	150
Tokyo Institute of Technology	14,609	5	T. Endo	1,002	10	9,558	37	31	110	150
Trinity College Dublin	1,413	201	J.M.D. Coey	533	46	12,766	24	37	68	150
Tsinghua University	12,540	6	L.Li	516	51	2,903	145	23	195	150
Tufts University	603	279	A. Vilenkin	188	262	3,641	114	25	177	67
Universidad Autonoma de Madrid	2,643	110	J.M. Martinez-Duart	212	240	997	281	16	277	150
Universidad de Chile	857	253	R. Quijada	117	316	750	303	18	245	150
Universidad de Granada	2,643	110	J.M. Martinez-Duart	212	240	997	281	16	277	150
Universidad del País Vasco	2,804	102	I. Mondragon	245	208	1,777	217	24	182	150
Universidad Nacional Autónoma de México ...	2,953	92	V.M. Castano	347	120	1,291	249	16	277	150
Universidad Politecnica de Madrid	1,543	191	E. Calleja	206	245	1,592	234	24	182	150
Universidade de São Paulo	3,727	67	O.N. Oliveira	328	135	1,935	206	27	158	150
Universidade Estadual de Campinas	2,083	147	C. Airoidi	340	124	1,678	225	29	134	150
Università degli Studi di Firenze	1,569	188	D. Gatteschi	490	60	9,603	35	54	16	150
Università degli Studi di Padova	3,555	75	P. Mazzoldi	304	152	1,807	216	27	158	150
Università Di Bologna	2,726	106	L. Angiolini	106	320	685	306	16	277	111
Università di Pisa	1,041	239	D De Rossi	215	234	2,272	191	23	195	150
Universitat Autonoma de Barcelona	1,386	203	M.D. Baro	186	265	1,712	221	22	206	150
Universitat Bielefeld	546	288	P. Jutzi	234	221	2,373	179	26	166	150
Universität Bremen	1,329	209	D.Hommel	443	79	3,416	123	28	149	150
Universitat d'Alacant	1,079	236	J.M. Martinez	164	278	1,003	280	17	257	141

Universitat de València	1,559	189	E. Coronado	337	130	5,474	70	44	33	150
Universität Frankfurt am Main	1,578	187	H. Baumann	129	307	445	321	11	313	150
Universität Freiburg	2,339	127	R. Mulhaupt	284	170	7,915	50	47	29	150
Universität Hamburg	1,283	214	R. Wiesendanger	281	173	2,692	161	34	88	150
Universität Karlsruhe	3,318	80	D. Gerthsen	246	207	1,704	223	27	158	150
Universität Leipzig	1,092	233	J. Karger	350	119	2,311	187	29	134	150
Universität Munster (Westfälische Wilhelms-Un	2,291	130	R. Pottgen	438	81	1,485	240	29	134	150
Universität Politecnica de Catalunya	2,448	120	J.. Gacén	291	162	126	340	5	337	92
Universität Regensburg	1,901	158	H. Brunner	342	122	2,698	160	22	206	150
Universität Stuttgart	4,395	54	F. Aldinger	478	69	4,059	105	35	84	150
Universität Trier	7	346	M. Stellmes	12	343	8	346	2	341	63
Universität Tübingen	1,547	190	E. Lindner	181	268	1,424	243	18	245	150
Universität Wien (University of Vienna)	2,541	118	P. Rogl	305	150	2,159	197	22	206	150
Universität Zu Köln	1,617	184	J. Zittartz	132	304	1,058	270	12	307	87
Université Catholique de Louvain	1,639	182	R. Legras	163	279	2,939	144	23	195	150
Universite de Liege	1,846	163	R. Jerome	340	124	5,320	73	41	49	150
Université de Montréal	1,226	219	M. LeClere	203	247	3,875	109	43	35	150
Université de Nice Sophia Antipolis	683	270	A. Cambon	122	312	567	315	13	299	125
Universite Laval	2,180	139	R.E. Prud' homme	232	223	1,818	214	18	245	150
Universite Libre de Bruxelles	893	248	M. Hou	92	328	461	320	14	291	133
Université Paris Sorbonne	575	283	M. Grabisch	81	331	671	308	14	291	44
Universite Paris-Sud 11	5,277	41	D. Jerome	299	158	2,560	167	23	195	150
Université Pierre et Marie Curie	5,684	31	C.Sanchez	305	150	5,945	67	44	33	150
Universiti Malaya (University of Malaya)	1,310	211	S.W. Ng	1,108	7	3,409	125	16	277	150
University College Cork	779	258	M.A. Morris	105	323	1,081	268	21	218	150
University College Dublin	697	268	A.R. Manning	176	273	439	322	11	313	150
University College London	3,696	69	C.R.A. Catlow	510	52	11,374	28	32	101	150
University do Porto	1,358	207	J.B. Sousa	208	244	774	301	14	291	150
University of Aberdeen	1,360	206	A.R. West	290	164	3,455	120	28	149	150
University of Adelaide	805	256	M.I. Bruce	407	90	2,501	170	26	166	150
University of Alabama	2,289	132	J.W Mays	293	161	4,006	107	39	57	150
University of Alberta	2,879	98	M.J. Brett	264	188	1,467	241	30	124	150
University of Amsterdam	1,922	155	K.H.J. Buschow	1,148	5	13,899	21	20	224	150
University of Antwerp	1,825	166	F.M. Peeters	674	27	9,761	34	39	57	150
University of Arizona	29,263	1	H.K. Hall	297	160	1,606	232	13	299	150
University of Athens	1,267	215	N. Hadjichrisidis	392	98	4,588	89	43	35	150

University of Auckland	1,227	217	W. Gao	242	210	1,949	205	21	218	150
University of Barcelona	2,892	96	X. Solans	495	56	4,210	103	30	124	150
University of Basel	1,021	241	H.J. Guntherodt	458	75	7,158	59	40	54	150
University of Bath	1,786	168	D.P. Almond	153	292	1,014	278	13	299	150
University of Bergen	224	330	J. Sletten	81	331	1,673	226	19	235	113
University of Bern	399	309	H.U. Gudel	449	76	4,840	84	39	57	150
University of Birmingham	4,316	56	I.R. Harris	316	142	1,548	238	19	235	150
University of Bristol	3,366	79	A. Keller	260	192	4,668	86	20	224	150
University of British Columbia	1,911	157	W.N. Hardy	252	200	4,389	94	34	88	150
University of Calgary	524	292	N.G. Shrive	4	346	9	345	1	346	10
University of California, Berkley	4,580	49	M.L. Cohen	648	30	24,662	7	43	35	150
University of California, Davis	2,290	131	Z.A. Munir	353	116	2,783	151	27	158	150
University of California, Irvine	1,220	220	E.J. Lavernia	493	58	3,391	126	32	101	150
University of California, Los Angeles	4,191	60	K.L. Wang	483	65	4,457	93	33	93	150
University of California, Riverside	1,004	242	Y. Yan	161	282	2,597	166	33	93	150
University of California, San Diego	2,211	134	M.B. Maple	663	29	10,479	31	32	101	150
University of California, San Francisco	360	314	S.B. Prusiner	233	222	8,047	49	73	6	150
University of California, Santa Barbara	4,458	52	A.C. Gossard	490	60	9,211	38	31	110	150
University of California, Santa Cruz	239	329	A. Shakouri	214	235	971	283	20	224	150
University of Cambridge	6,995	20	R.H. Friend	729	23	44,986	2	76	4	150
University of Canterbury	338	323	R.J. Blaikie	101	324	887	291	16	277	114
University of Cape Town	387	310	D.T. Britton	76	334	240	331	8	330	111
University of Central Florida	2,017	150	S.Seal	236	217	2,556	168	31	110	150
University of Chicago	548	287	L. Lu	162	280	2,713	159	27	158	150
University of Cincinnati	2,732	104	J.E. Mark	198	252	1,812	215	22	206	150
University of Colorado at Boulder	1,197	224	C.N. Bowman	252	200	2,740	156	38	63	150
University of Connecticut	2,163	141	S.L. Suib	390	100	4,126	104	36	76	150
University of Copenhagen	6,244	26	T. Bjornholm	123	311	2,019	204	27	158	150
University of Delaware	2,047	148	J.W. Gillespie	393	96	4,236	100	34	88	150
University of Dundee	568	284	R.K. Dhir	155	289	557	316	12	307	109
University of Edinburgh	727	264	S. Parsons	573	41	8,207	44	42	41	150
University of Florida	5,322	40	S.J. Pearton	1,420	2	20,761	9	54	16	150
University of Geneva	699	265	R. Flukiger	288	167	2,343	183	25	177	150
University of Georgia	881	250	R.B. King	595	36	4,374	98	22	206	150
University of Ghent	1,617	184	R. Baets	250	203	2,029	202	24	182	150
University of Glasgow	1,837	164	I.C. McNeill	151	293	955	287	6	334	101

University of Gothenburg	39	342	L. Emanuelsson	19	340	131	339	6	334	46
University of Groningen	1,753	172	J.T.M. De Hosson	501	55	3,826	110	30	124	150
University of Helsinki	1,773	169	M. Leskela	404	92	4,377	97	40	54	150
University of Hong Kong	1,317	210	A.B. Djuricic	254	198	2,276	190	24	182	150
University of Houston	1,459	195	C.W. Chu	364	109	4,904	83	32	101	150
University of Illinois	7,126	19	W.M. Kriven	190	259	1,285	250	22	206	150
University of Illinois, Chicago	1,299	212	S. Sivananthan	195	255	966	284	17	257	150
University of Indonesia	51	341	D. Hartanto	6	345	19	343	2	341	16
University of Iowa	503	298	M.E. Flatte	162	280	1,712	221	26	166	150
University of Kansas	472	301	T. Van Nguyen	39	339	1,009	279	14	291	28
University of Kentucky	1,227	217	H.S. Tzou	218	233	1,206	256	17	257	86
University of Lausanne	377	312	R. Roulet	81	331	329	327	8	330	109
University of Leeds	2,406	121	I.M. Ward	671	28	7,570	54	24	182	150
University of Leicester	930	246	J. Fawcett	302	153	2,326	185	23	195	150
University of Liverpool	1,735	175	D.J. Bacon	236	217	5,841	68	30	124	150
University of Ljubljana	2,398	123	J. Grum	124	310	239	332	10	318	55
University of London (Kings College of London)	7,985	13	I.W. Boyd	311	144	2,350	182	23	195	150
University of Manchester	8,152	12	G.E. Thompson	460	73	2,692	161	29	134	150
University of Manitoba	1,157	229	M.C. Chaturvedi	231	224	1,042	274	17	257	150
University of Maryland	2,560	115	S. Das Sarma	485	64	6,119	63	41	49	150
University of Maryland Baltimore County	737	261	J.R. Lakowicz	533	46	13,119	22	53	18	150
University of Massachusetts	1,938	154	T.P. Russell	494	57	10,209	32	63	11	150
University of Melbourne	1,850	162	D.N. Jamieson	174	275	1,098	266	20	224	150
University of Miami	445	305	R.M. Leblanc	190	259	1,929	207	26	166	150
University of Michigan	4,922	44	R.C. Ewing	436	83	3,151	135	38	63	150
University of Minnesota	2,893	95	W.W. Gerberich	420	84	2,886	146	29	134	150
University of Missouri	2,685	108	W.B. Yelon	318	140	2,335	184	19	235	150
University of Nebraska	1,433	199	P.A. Dowben	358	112	1,841	212	28	149	150
University of New Hampshire	353	319	J.E. Kranowski	66	335	591	313	10	318	56
University of New Mexico	1,124	231	S.R.J. Brueck	309	147	2,316	186	28	149	150
University of New South Wales	4,385	55	M.A. Green	403	95	3,051	138	28	149	150
University of North Carolina, Chapel Hill	1,433	199	T.J. Meyer	490	60	8,067	48	36	76	150
University of North Texas	678	271	W. Brostow	240	215	921	290	18	245	150
University of Notre Dame	845	255	J.K. Furdyna	559	43	8,144	46	29	134	150
University of Nottingham	2,160	142	M. Henini	631	31	5,964	66	31	110	150
University of Oklahoma	557	285	D.E. Resasco	179	269	2,951	143	32	101	150

University of Oregon	356	317	D.C. Johnson	265	187	4,476	92	29	134	150
University of Oslo	855	254	H. Fjellvag	299	158	2,448	175	28	149	150
University of Otago	311	326	J.A. Simpson	179	269	834	297	14	291	150
University of Ottawa	744	259	J.C. Sciano	291	162	354	326	22	206	150
University of Oxford	4,571	50	R.G. Compton	917	14	16,202	15	51	23	150
University of Pennsylvania	2,207	136	J.E. Fischer	418	86	9,589	36	42	41	150
University of Pittsburgh	1,368	205	A.C. Balazs	241	213	2,816	149	33	93	150
University of Quebec	1,444	197	S. Kaliaguine	323	137	4,280	99	35	84	150
University of Queensland	2,002	151	G.Q. Lu	309	147	5,294	75	43	35	150
University of Reading	1,453	196	M.G.B. Drew	733	22	7,560	55	37	68	150
University of Rochester	879	251	P.M. Fauchet	351	118	5,053	78	32	101	150
University of Saskatchewan	904	247	S.O. Kasap	225	227	957	286	19	235	150
University of Science and Technology of China	5,815	30	Y. Qian	926	12	14,357	19	51	23	150
University of Sheffield	4,954	43	M. Hopkinson	522	49	7,278	58	32	101	150
University of South Carolina	1,744	173	R.E. White	260	192	3,179	133	29	134	150
University of South Florida	631	275	A. Kumar	1,258	4	8,833	39	38	63	150
University of Southampton	1,870	160	M.T. Weller	222	230	1,270	251	14	291	150
University of Southern California	1,705	177	T.G. Langdon	613	34	16,813	14	58	13	150
University of St Andrews	868	252	I.D.W. Samuel	277	177	3,780	111	39	57	150
University of Surrey	2,787	103	S.R.P. Silva	327	136	3,416	123	32	101	150
University of Sussex	678	271	P.D. Townsend	360	111	2,733	157	23	195	150
University of Sydney	3,124	86	Y.W. Mai	419	85	4,659	87	30	124	150
University of Technology, Sydney	483	300	M.R. Phillips	157	285	824	299	17	257	150
University of Tennessee Knoxville	2,092	146	P.K. Liaw	507	54	2,308	188	26	166	150
University of Texas at Austin	3,065	88	J.B. Goodenough	146	296	5,461	71	29	134	106
University of Tokyo	10,812	8	Y. Tokura	901	15	38,181	3	82	3	150
University of Toronto	510	296	M.A. Winnik	445	78	5,334	72	37	68	150
University of Tsukuba	2,548	117	Y. Masumoto	358	112	3,124	136	24	182	150
University of Twente	2,963	91	D.N. Reinhoudt	724	24	22,809	8	66	9	150
University of Utah	2,926	94	Z.V. Vardeny	376	103	4,227	101	37	68	150
University of Vermont	421	307	T.B. Flanagan	250	203	1,024	277	13	299	150
University of Victoria	207	334	S. Dost	157	285	431	323	13	299	107
University of Virginia	1,864	161	H.N.G. Wadley	281	173	1,728	220	26	166	150
University of Warwick	1,267	215	C.F. McConville	203	247	1,625	228	21	218	150
University of Washington	3,477	77	J.C. Seferis	285	168	1,385	246	12	307	150
University of Waterloo	1,738	174	A. Nathan	311	144	1,066	269	17	257	150

University of Western Australia	1,464	194	B.W. Skelton	1,010	9	11,519	27	38	63	150
University of Western Ontario	1,916	156	R.J. Puddephatt	448	77	3,534	118	35	84	150
University of Wisconsin	2,723	107	Y.A. Chang	409	89	2,784	150	24	182	150
University of Wollongong	1,691	179	S.X. Dou	561	42	6,118	64	34	88	150
University of York	346	322	J.H. Clark	282	172	3,233	132	31	110	150
University of Zurich	418	308	H. Keller	189	261	2,659	163	28	149	150
Univesitas Gadjah Mada	56	339	M. Yasin	11	344	11	344	2	341	30
Uppsala University	3,183	84	S.Hogmark	198	252	2,071	200	26	166	150
Utah State	274	328	M.E. Wright	93	327	1,612	230	15	287	150
Utrecht University	2,313	128	G. Blasse	474	71	3,510	119	14	291	150
Vanderbilt University	1,192	225	S.T. Pantelides	376	103	4,997	79	36	76	150
Victoria University of Wellington	305	327	H.J. Trodahl	167	276	1,057	271	16	277	150
Vienna University of Technology	2,367	125	R. Grossinger	278	176	1,211	255	13	299	150
Virginia Polytechnic Institute	2,837	100	J.E. McGarth	584	39	4,378	96	29	134	150
Vrije Universiteit, Brussels	613	276	H.A.Terryn	195	255	961	285	20	224	150
VU University Amsterdam	520	294	R. Griessen	275	181	2,446	176	30	124	150
Wageningen University	471	303	M.A. Cohen Stuart	178	271	2,770	152	29	134	150
Wake Forest University	218	333	D.L. Carroll	209	243	4,926	82	37	68	150
Waseda University	2,666	109	T. Osaka	479	68	3,258	129	31	110	150
Washington State University	1,218	221	J.T. Dickerson	259	194	1,237	253	19	235	150
Washington University in St. Louis	735	262	K.L. Wooley	214	235	4,213	102	42	41	150
Wayne State University	1,114	232	S.K. Putatunda	85	329	281	330	11	313	68
West Virginia University	698	266	M.S. Seehra	225	227	1,573	235	20	224	150
Yale University	1,082	235	R.H Crabtree	366	107	8,595	41	48	26	150
Yonsei University	3,438	78	C.N. Whang	248	206	1,623	229	21	218	150
York University	183	335	A.B.P. Lever	241	213	3,572	117	24	182	150
Zhejiang University	8,825	10	D. Yang	441	80	2,182	196	26	166	150

Immunology and Microbiology Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	172	289	M. Leisola	121	275	1,183	269	18	261	144
Aarhus University	2,141	87	S. Thiel	146	234	2,617	177	36	117	150
Arizona State University	144	294	G.R. Pettit	570	22	13,412	28	35	125	150
Ateneo de Manila University	1	346	R. Tan-Palanca	1	345	1	345	1	338	0
Auburn University	825	194	B.L. Blagburn	182	196	1,796	217	20	239	150
Australian National University	2,418	72	A. Mullbacher	175	200	1,942	208	22	215	150
Boston College	112	304	E.R. Kantrowitz	152	228	853	300	16	278	150
Boston University	2,725	53	D.T. Felson	381	62	15,979	22	62	18	150
Brandeis University	498	225	A. Nisonoff	146	234	324	325	1	338	115
Brigham Young University	84	317	P.B. Savage	131	257	2,274	190	31	141	150
Brown University	1,081	164	C. Biron	139	247	7,271	69	46	55	150
California Institute of Technology (Calt...)	1,272	149	J.H. Strass	130	259	2,733	171	19	248	139
Cardiff University	2,314	74	A.D. Russell	262	120	2,058	200	26	176	120
Carnegie Mellon University	195	281	M.M. Domach	62	321	618	312	12	309	66
Case Western Reserve University	2,780	52	M.M. Ledermann	261	122	5,911	88	41	82	150
Chalmers University of Technology	177	287	L. Gustafsson	112	283	2,037	203	23	206	150
Charles University	744	200	J. Bartunkova	113	281	679	308	18	261	150
Chinese University of Hong Kong	182	284	T.B. Ng	409	52	2,912	165	38	104	150
Chulalongkorn University	842	192	S. Tanasupawat	79	307	298	327	12	309	118
City University of Hong Kong	54	327	N.F.Y. Tam	154	224	1,735	220	26	176	150
City University of New York	141	296	R. Bittman	249	134	3,526	146	27	165	150
Colorado State University	842	192	I.M. Orme	255	126	5,468	98	42	74	150
Columbia University	3,698	31	H.C. New	514	26	4,740	112	4	334	150
Cornell University	6,822	9	J. Laurence	216	160	1,288	256	13	302	150
Curtin University of Technology	211	279	W. B. Grubb	105	288	1,090	278	15	289	130
Dalhousie University	1,170	156	W.F. Doolittle	228	151	5,968	86	41	82	150
Dartmouth College	1,465	139	R.J. Noelle	192	184	7,628	64	46	55	150
Delft University of Technology	949	174	J.J. Heijnen	307	96	4,837	110	45	57	150
Drexel University	1,095	163	D.M. Murasko	102	289	1,173	272	15	289	150
Duke University	4,734	20	B.F. Haynes	342	76	7,727	62	35	125	150
Durham University	236	271	S.W. Lindsay	97	292	1,592	227	23	206	150
Ecole Normale Supérieure de Lyon	283	262	J.L. Darlix	219	158	2,452	185	33	130	150
École Normale Supérieure, Paris	141	296	M. Dreyfus	61	322	951	289	16	278	78
École Polytechnique	77	321	S. Blanquet	188	188	2,039	202	22	215	150

Ecole Polytechnique Fédérale de Lausanne	287	260	U. Von Stockar	150	232	1,182	270	20	239	150
Eindhoven University of Technology	36	331	EW. Meijer	493	31	13,390	29	71	9	150
Emory University	3,840	30	R. Ahmed	253	128	10,416	37	61	20	150
Erasmus University Rotterdam	3,311	42	A.D.M E. Osterhaus	741	7	23,768	13	59	22	150
ETH Zurich (Swiss Federal Institute of Technology)	2,103	90	K.Wuthrich	591	15	39,101	7	57	25	150
Florida International University	172	289	S.L. Smith	21	341	168	335	8	327	58
Florida State University	78	320	K.H. Roux	111	284	2,295	188	21	227	150
Freie Universität Berlin	1,703	116	H. Hahn	137	249	902	296	15	289	150
Friedrich Alexander Universität Erlangen Nürnberg	2,111	89	M. Rollinghoff	236	149	5,006	107	33	130	150
Fudan University	742	201	Y.M. Wen	156	221	1,317	250	15	289	150
Georg August Universität Göttingen	2,474	68	W. Bruck	248	136	6,369	76	44	64	150
George Mason University	37	329	Y. Wu	22	340	327	324	10	321	31
George Washington University	910	184	J.M. Orenstein	251	131	8,493	48	41	82	150
Georgetown University	1,489	136	C.K. Hurley	188	188	1,589	228	22	215	150
Georgia Institute of Technology	353	251	F.E. Loffler	78	309	956	287	24	195	150
Georgia State University	429	240	D.G. Ahearn	135	252	1,161	273	16	278	150
Goteborg University	1,438	141	L.A. Hanson	418	46	4,264	121	27	165	150
Harvard University	1,537	130	R. Losick	250	132	4,650	114	48	48	150
Hebrew University of Jerusalem	3,397	38	Y. Becker	245	142	1,202	266	10	321	150
Heidelberg Universität	2,633	60	G. Opelz	575	19	7,802	59	32	135	150
Hokkaido University	3,648	32	H. Kida	346	75	3,008	162	30	149	150
Hong Kong Polytechnic University	124	301	H.C. Chua	117	278	787	304	15	289	150
Hong Kong University of Science & Techno...	175	288	P.Y. Qian	167	209	1,285	258	25	187	150
Humboldt-Universität zu Berlin	1,017	170	U. Wahn	483	32	7,934	57	54	30	150
Imperial College London	6,240	10	M.Feldmann	462	38	14,332	27	53	37	150
Indian Institute of Technology Bombay (I...	112	304	P.P.Wangikar	37	334	412	320	11	316	59
Indian Institute of Technology Delhi (II...	309	256	M.N. Gupta	174	201	1,338	246	22	215	101
Indian Institute of Technology Kanpur (I...	57	325	L.R Iyengar	60	323	460	319	8	327	59
Indiana University Bloomington	1,228	152	A.L. Koch	179	198	1,294	253	13	302	70
Indiana University Indianapolis	1,496	135	K.D. Brandt	306	97	5,838	90	32	135	150
Iowa State University	577	216	S.J. Lamont	158	219	1,180	271	18	261	150
Johns Hopkins University	9,955	3	D.E. Griffin	303	98	5,864	89	37	111	150
Kansas State University	304	258	F. Blecha	140	245	1,918	209	19	248	150
Katholieke Universiteit Leuven	2,573	64	E. DeClercq	1,641	1	49,331	3	72	7	150
Keio University	1,037	166	T. Takeuchi	431	43	3,362	154	30	149	150

King Fahd University of Petroleum & Minerals	6	343	A. Aksoy	25	339	55	342	3	336	33
King Saud University	595	215	K.A.S. Al-Rasheid	74	313	192	334	9	326	95
Kobe University	1,059	165	H. Hotta	130	259	1,619	224	23	206	150
Korea Advanced Institute of Science & Technology	1,025	167	S.T. Lee	143	240	1,133	275	19	248	150
Korea University	1,127	160	S.W. Kim	171	204	1,411	240	21	227	150
Kyoto University	5,740	13	T. Honjo	473	34	12,545	33	68	11	150
Kyushu University	3,373	40	K. Nomoto	885	4	15,043	25	48	48	150
La Trobe University	497	227	R.J. Seviour	143	240	1,207	265	23	206	150
Lancaster University	14	339	N.J. Fullwood	77	310	1,095	277	21	227	150
Leiden University	5,200	17	F.C. Breedveld	583	17	24,598	11	64	17	150
Linkoping University	1,156	157	B. Bjorksten	340	79	6,948	74	40	90	150
London School of Economics and Political Science	104	307	E. Szyszczak	12	342	5	343	1	338	3
Loughborough University	91	314	R.J. Stretton	63	320	151	337	0	341	57
Louisiana State University	1,256	151	C. Bouchard	621	12	23,796	12	47	53	150
Ludwig-Maximilians-Universität München	3,388	39	A. Bock	202	177	2,583	178	31	141	150
Lund University	4,980	19	B. Mattiasson	593	14	8,060	55	31	141	150
Maastricht University	1,404	142	D. Van Der Heijde	329	83	7,410	68	55	28	150
Macquarie University	424	241	J.M. Whalley	74	313	349	323	14	298	128
Mahidol University	2,449	69	N.J. White	780	6	27,140	10	67	12	150
Masaryk University	467	233	M. Gelnar	66	319	374	322	15	289	129
Massachusetts Institute of Technology	2,724	54	G.C. Walker	317	87	4,136	126	30	149	150
McGill University	4,285	25	M.A. Wainerg	521	25	9,234	40	41	82	150
McMaster University	2,294	76	D.A. Clark	397	56	5,487	97	37	111	150
Michigan State University	3,028	48	J.M. Tiedje	369	69	12,332	34	54	30	150
Michigan Technological University	59	324	E.C. Carlson	10	343	83	341	0	341	13
Monash University	2,299	75	B. A. Adler	191	186	1,595	226	24	195	150
Montana State University	1,111	162	G.A. McPeters	113	281	2,014	206	16	278	105
Moscow State University	2,175	83	N.S. Egorov	365	70	146	338	4	334	150
Nagoya University	2,583	62	Y. Nishiyama	267	115	2,022	204	26	176	150
Nanjing University	230	272	L. Wang	153	226	1,055	281	19	248	150
Nanyang Technological University	242	269	J.H. Tay	246	140	2,050	201	31	141	150
National Taiwan University	1,862	103	P.R. Hsueh	417	47	4,252	123	36	117	150
National Tsing Hua University	309	256	S.C. Wu	40	333	309	326	11	316	62
National University of Ireland, Galway	388	247	A.P. Moran	176	199	3,667	139	38	104	150
National University of Singapore	1,642	120	J. Kwang	124	270	1,365	244	19	248	150
New Mexico State University	216	277	C.B. Jonsson	56	327	750	307	17	271	146

New York University	3,617	33	V. Nussenzweig	250	132	3,315	155	26	176	150
Newcastle University	1,640	121	M. Goodfellow	309	93	3,386	153	26	176	150
North Carolina State University	2,063	92	T.R. Klaenhammer	194	183	3,933	129	28	158	150
Northeastern University	273	264	J.J. Gozzo	95	297	211	330	3	336	44
Northwestern University	3,132	44	R. Patterson	439	41	2,778	170	13	302	150
Norwegian University of Science & Technology	550	220	T. Espevik	196	182	8,849	45	42	74	150
Ohio State University	4,320	24	L.J. Saif	262	120	1,578	229	25	187	150
Oklahoma State University	864	189	K.M. Kocan	223	156	1,280	259	30	149	150
Open University UK	97	312		0	346	0	346	0	341	0
Oregon State University	1,705	115	G.F. Rohrmann	125	265	1,201	267	24	195	114
Osaka University	5,278	16	S. Akira	659	10	68,805	1	124	1	150
Peking University	717	204	H. Zhuang	99	290	551	315	12	309	150
Pennsylvania State University	2,644	58	C.R. Bursey	280	105	407	321	12	309	121
Pohang University of Science And Technology	333	252	Y.C. Sung	85	303	1,821	216	26	176	150
Portland State University	119	302	A.L. Reyensbach	72	316	2,269	191	27	165	150
Princeton University	1,005	171	T. Shenk	225	154	7,581	65	43	68	150
Purdue University	2,208	81	M.G. Rossmann	357	72	6,080	85	42	74	150
Queen's University	922	182	A.J. Daugulis	152	228	103	340	22	215	140
Queen's University of Belfast	1,630	122	D.W. Alton	225	154	918	294	18	261	150
Queensland University of Technology	322	254	P.Timms	137	249	1,339	245	23	206	150
Radboud University, Nijmegen	2,997	49	P.C.L.M. Van Riel	310	92	6,345	77	43	68	150
Rensselaer Polytechnic Institute	287	260	J.S. Derdick	241	146	4,390	118	31	141	150
Rheinisch Westfalische Technische Hochschule Aach	543	222	G. Hasse	214	164	3,569	144	36	117	150
Rheinische Friedrich Wilhelms Universitat Bonn	1,843	104	T. Bieber	318	85	5,631	93	40	90	150
Rice University	481	229	G.N. Bennett	188	188	1,706	222	21	227	150
Rochester Institute of Technology	8	341	K. Hickman	10	343	4	344	0	341	5
Royal Institute of Technology, KTH	370	249	S.O. Enfons	127	262	1,289	255	17	271	150
Royal Melbourne Institute of Technology	161	292	P.J. Coloe	68	318	595	313	11	316	136
Rutgers	1,870	101	T.J. Montville	96	296	1,430	237	18	261	109
Saint-Petersburg State University	190	283	S.I. Fokin	51	328	206	331	11	316	51
San Diego State University	299	259	F.L. Rohwer	76	312	1,917	210	34	127	150
Sapienza University of Rome	0	347		0	346	0	346	0	341	0
Sciences Po Paris	0	347		0	346	0	346	0	341	0
Seoul National University	3,091	45	J.V. Chai	275	110	773	306	12	309	150
Shanghai Jiao Tong University	492	228	Z. Deng	94	299	5,762	92	13	302	150
Simon Fraser University	181	285	J.K. Scott	33	335	1,917	210	14	298	96

Stanford University	6,967	6	P. Parham	417	47	9,035	43	54	30	150
State University of New York Buffalo	4	344	J.M. Bernstein	126	264	1,382	243	17	271	150
Stockholm University	843	191	P.Perlmann	316	89	2,335	186	13	302	150
Stony Brook University	1,649	119	E. Wimmer	253	128	3,896	132	32	135	150
Syracuse University	331	253	A. Perl	134	254	1,703	223	27	165	150
Tartu University (University of Tartu)	362	250	M. Mikelsaar	69	317	1,338	246	19	248	144
Technical University of Denmark	2,244	79	J. Nielson	428	45	5,208	104	41	82	150
Technion	803	195	E. Toubi	95	297	1,420	238	24	195	150
Technische Universität Berlin	431	239	P. Kampter	239	147	3,006	163	27	165	150
Technische Universität Chemnitz	3	345	W. Zimmermann	139	247	3,642	140	21	227	150
Technische Universität Dresden	498	225	E.P. Rieber	140	245	1,883	212	23	206	150
Technische Universität München	2,169	85	K.H. Schleifer	370	68	12,651	31	40	90	150
Tel Aviv University	2,617	61	Y. Shoenfeld	123	272	20,283	17	55	28	150
Texas A&M University	2,491	67	S.C. Ricke	219	158	1,124	276	22	215	150
Texas Tech	272	265	D.C. Straus	125	265	779	305	11	316	135
Tohoku University	2,244	79	K. Sugamura	267	115	5,600	94	40	90	150
Tokyo Institute of Technology	793	196	M. Shoda	171	204	1,463	236	19	248	150
Trinity College Dublin	1,181	154	T.S. Foster	247	137	3,923	130	38	104	150
Tsinghua University	405	243	L.Du	85	303	249	328	8	327	150
Tufts University	2,638	59	R.N.Jones	1,022	3	22,801	15	69	10	150
Universidad Autonoma de Madrid	2,034	94	E. Domingo	277	107	3,524	147	41	82	150
Universidad de Chile	1,021	169	H. Schenone	227	152	526	316	8	327	150
Universidad de Granada	2,034	94	E. Domingo	277	107	3,524	147	41	82	150
Universidad del País Vasco	549	221	J.L. Ponton	183	195	1,476	235	21	227	150
Universidad Nacional Autónoma de México ...	752	198	E. Scrutto	97	292	675	309	19	248	150
Universidad Politecnica de Madrid	230	272	G. Salcedo	122	273	1,311	252	27	165	150
Universidade de São Paulo	1,834	105	F.Q. Cunha	261	122	4,126	127	34	127	150
Universidade Estadual de Campinas	390	246	E. Antunes	170	206	2,181	194	19	248	150
Università degli Studi di Firenze	1,597	127	S. Romagnani	378	66	15,708	23	53	37	150
Università degli Studi di Padova	1,655	118	G. Palu	259	125	3,701	137	28	158	150
Università Di Bologna	1,749	110	F. Chiodo	398	54	2,781	169	23	206	150
Università di Pisa	444	237	S. Bombardieri	285	103	6,601	75	28	158	150
Universitat Autonoma de Barcelona	1,815	107	J. Barbe	143	240	933	291	19	248	150
Universitat Bielefeld	413	242	A. Puhler	309	93	7,674	63	40	90	150
Universität Bremen	228	275	B. Reinhold-Hurek	59	326	881	299	21	227	97
Universitat d'Alacant	193	282	F. Rodriguez	120	276	2,706	173	33	130	150

Universitat de València	1,266	150	R. Sentandreu	158	219	1,227	264	15	289	150
Universität Frankfurt am Main	1,727	112	P. Kraczy	60	323	580	314	21	227	140
Universität Freiburg	1,960	98	G. Drews	198	180	628	311	7	332	150
Universität Hamburg	250	267	M. Schachner	590	16	22,281	16	58	23	150
Universität Karlsruhe	281	263	M.Zoller	226	153	3,016	161	25	187	150
Universität Leipzig	403	244	F. Emmrich	222	157	2,577	179	21	227	150
Universität Munster (Westfälische Wilhelms-Un	571	218	T.A. Luger	465	37	8,426	49	48	48	150
Universität Politecnica de Catalunya	8	341	J.J. Perez	137	249	1,027	283	16	278	150
Universität Regensburg	1,469	138	R.H.Strub	249	134	3,595	142	39	100	150
Universität Stuttgart	556	219	K. Pfizenmaier	181	197	4,252	123	28	158	150
Universität Trier	21	335	D.H. Hellhammer	160	216	4,945	109	42	74	150
Universität Tübingen	2,582	63	P.G. Kreamsner	245	142	3,422	151	34	127	150
Universität Wien (University of Vienna)	2,721	55	D. Kraft	342	76	5,367	100	50	41	150
Universität Zu Köln	1,881	100	W. Doerfler	267	115	2,117	198	20	239	150
Université Catholique de Louvain	1,587	128	G.R. Cornellis	199	179	3,854	133	40	90	150
Universite de Liege	927	181	P.P. Pastoret	252	130	1,721	221	22	215	150
Université de Montréal	1,988	96	R.P. Sekaly	206	172	5,599	95	31	141	150
Université de Nice Sophia Antipolis	403	244	R. Christen	110	286	2,488	182	25	187	150
Universite Laval	1,693	117	D. Grenier	152	228	1,502	234	20	239	148
Universite Libre de Bruxelles	1,611	125	M. Goldman	396	57	9,466	39	45	57	150
Université Paris Sorbonne	34	332	N.P. Buu-Hol	122	273	104	339	0	341	106
Universite Paris-Sud 11	1,564	129	J. Van Heijenoort	144	238	1,605	225	26	176	150
Université Pierre et Marie Curie	1,522	132	A.P. Moller	599	13	19,973	18	58	23	150
Universiti Malaya (University of Malaya)	669	208	S.D. Puthuchear	125	265	790	303	13	302	150
University College Cork	921	183	F. Shanahan	303	98	7,040	71	42	74	150
University College Dublin	997	172	S. Fanning	129	261	1,037	282	21	227	150
University College London	5,768	12	D.A. Isenberg	661	9	17,225	21	48	48	150
University do Porto	229	274	F. Carneiro	164	211	2,936	164	29	155	150
University of Aberdeen	1,706	114	C.J. Secombes	261	122	2,469	184	36	117	150
University of Adelaide	1,754	109	P.A.Manning	170	206	1,867	213	21	227	150
University of Alabama	5,433	15	J.R. McGhee	412	50	7,788	60	45	57	150
University of Alberta	3,486	36	P.F. Halloran	295	101	8,132	54	43	68	150
University of Amsterdam	4,370	23	P.P. Tak	283	104	5,296	101	50	41	150
University of Antwerp	883	186	W.J. Stevens	242	144	2,224	192	22	215	150
University of Arizona	2,133	88	F.D. Martinez	264	119	11,292	35	54	30	150
University of Athens	1,609	126	N.J. Legakis	190	187	1,853	214	24	195	150

University of Auckland	868	188	P.L. Bergquist	146	234	1,261	261	18	261	150
University of Barcelona	2,073	91	J.M. Tomas	155	223	1,286	257	23	206	150
University of Basel	2,163	86	M. Battegay	215	161	4,574	115	32	135	150
University of Bath	169	291	S.G. Ward	88	302	2,159	195	24	195	122
University of Bergen	747	199	R. Jonsson	215	161	3,635	141	33	130	150
University of Bern	2,559	65	W.J. Pichler	312	91	4,254	122	43	68	150
University of Birmingham	4,540	22	A.B. Rickinson	272	112	6,962	73	42	74	150
University of Bristol	2,822	51	C.J. Elson	167	209	1,524	232	17	271	150
University of British Columbia	1,626	123	R.E.W. Hancock	380	63	9,524	38	60	21	150
University of Calgary	715	205	P. Kubes	246	140	7,048	70	47	53	150
University of California, Berkley	973	173	D.H. Raulet	161	214	6,103	84	44	64	150
University of California, Davis	1,985	97	M.E. Gershwin	835	5	15,366	24	50	41	150
University of California, Irvine	886	185	S. Gupta	376	67	3,404	152	27	165	150
University of California, Los Angeles	7,756	4	B. Bonavida	356	73	3,828	136	38	104	150
University of California, Riverside	1,141	159	I.W. Sherman	164	211	953	288	10	321	110
University of California, San Diego	2,182	82	M. Karin	412	50	45,578	5	112	3	150
University of California, San Francisco	6,963	7	E.J. Goetzl	387	59	6,130	82	36	117	150
University of California, Santa Barbara	63	323	C.E. Samuel	172	203	3,524	147	24	195	150
University of California, Santa Cruz	31	333	A.L. Fink	207	171	6,307	78	51	39	150
University of Cambridge	1,821	106	J. Trowsdale	335	80	9,052	42	48	48	150
University of Canterbury	17	336	M.H.G. Munro	115	280	2,292	189	17	271	150
University of Cape Town	481	229	F. Bombacher	127	262	4,753	111	37	111	150
University of Central Florida	149	293	D. Chakrabarti	50	329	1,085	279	19	248	150
University of Chicago	2,172	84	J.A. Bluestone	413	49	14,969	26	66	14	150
University of Cincinnati	2,440	70	G.S. Deepe	110	286	903	295	22	215	150
University of Colorado at Boulder	131	298	R. Watkins	294	102	7,458	67	54	30	150
University of Connecticut	945	176	L. Lefrancois	134	254	4,401	117	37	111	150
University of Copenhagen	1,866	102	M.H. Claesson	205	174	1,328	248	20	239	150
University of Delaware	104	307	J. Burnside	60	323	1,274	260	18	261	150
University of Dundee	1,455	140	G.M. Gadd	200	178	3,100	159	27	165	150
University of Edinburgh	1,726	113	M. Noval	205	174	1,325	249	20	239	150
University of Florida	4,019	28	L.O. Ingram	211	166	2,147	197	25	187	150
University of Geneva	1,338	146	S. Izul	254	127	2,786	168	25	187	150
University of Georgia	938	177	J. Travis	238	148	4,984	108	32	135	150
University of Ghent	1,371	145	C. Bachert	315	90	3,253	157	38	104	150
University of Glasgow	4,118	26	G.H. Coombs	213	165	3,156	158	36	117	150

University of Gothenburg	315	255	A. Tarkowski	318	85	5,825	91	38	104	150
University of Groningen	3,356	41	C.G.M. Kallenberg	460	39	7,002	72	40	90	150
University of Helsinki	3,980	29	P. Hayry	445	40	6,272	80	24	195	150
University of Hong Kong	56	326	K.Y. Yuen	470	35	8,524	47	50	41	150
University of Houston	41	328	A.M. McDermott	43	332	503	317	12	309	57
University of Illinois	3,207	43	A.A. Salyers	161	214	1,738	219	22	215	150
University of Illinois, Chicago	2,054	93	S. Dray	197	181	194	333	0	341	132
University of Indonesia	142	295	T. Supali	29	337	206	331	10	321	124
University of Iowa	1,470	137	G.W. Hunninghake	309	93	8,849	45	44	64	150
University of Kansas	602	214	J.S. Hunt	142	243	3,083	160	27	165	150
University of Kentucky	949	174	A. Nath	211	166	3,563	145	45	57	150
University of Lausanne	1,302	147	J. Tschopp	334	82	18,405	19	85	5	150
University of Leeds	575	217	P. Emery	575	19	2,312	187	66	14	150
University of Leicester	1,210	153	P.W. Andrew	169	208	2,021	205	28	158	150
University of Liverpool	728	203	P.M. Johnson	162	213	1,514	233	17	271	150
University of Ljubljana	936	178	F. Strle	151	231	1,399	241	26	176	150
University of London (Kings College of London)	18,363	1	S.G.E. Marsh	580	18	6,277	79	33	130	150
University of Manchester	12,741	2	W.E.R. Ollier	379	65	5,419	99	39	100	150
University of Manitoba	2,292	77	F.A. Plummer	272	112	5,944	87	42	74	150
University of Maryland	3,607	34	M.M. Levine	146	234	2,480	183	36	117	150
University of Maryland Baltimore County	4,588	21	M/M. Levine	399	53	8,222	53	43	68	150
University of Massachusetts	213	278	C.L. Baldwin	92	300	799	302	16	278	138
University of Melbourne	3,607	34	R.B. Gasser	267	115	1,825	215	32	135	150
University of Miami	525	223	C. Ricordi	525	23	12,606	32	44	64	150
University of Michigan	4,038	27	S.L. Kunkel	204	176	8,276	51	62	18	150
University of Minnesota	2,251	78	B.R. Blazar	380	63	9,201	41	54	30	150
University of Missouri	734	202	H. Braley-Mullen	125	265	4,205	125	23	206	150
University of Nebraska	1,404	142	J.L. Van Etten	185	192	1,293	254	26	176	150
University of New Hampshire	238	270	F.G. Rodgers	77	310	991	286	16	278	150
University of New Mexico	638	210	V. Deretic	153	226	3,922	131	39	100	150
University of New South Wales	844	190	D.A. Cooper	523	24	23,716	14	57	25	150
University of North Carolina, Chapel Hill	3,474	37	J.P.Y. Ting	186	191	4,276	120	43	68	150
University of North Texas	110	306	P.A. Mathew	49	331	1,241	263	18	261	93
University of Notre Dame	94	313	F.J. Castellino	382	61	3,296	156	29	155	150
University of Nottingham	685	207	D. Wakelin	215	161	1,398	242	16	278	150
University of Oklahoma	928	180	J.B. Harley	209	169	3,936	128	31	141	150

University of Oregon	246	268	J.T. Rosenbaum	300	100	3,518	150	27	165	150
University of Oslo	1,943	99	P. Brandtzaeg	495	30	7,834	58	40	90	150
University of Otago	604	212	J. Crane	247	137	4,376	119	30	149	150
University of Ottawa	472	232	S.A. Satter	125	265	1,084	280	16	278	150
University of Oxford	2,948	50	S. Gordon	335	80	10,973	36	56	27	150
University of Pennsylvania	6,943	8	D.B. Weiner	349	74	6,118	83	45	57	150
University of Pittsburgh	2,496	66	T.L. Whiteside	507	28	12,806	30	50	41	150
University of Quebec	513	224	D. Grenier	156	221	1,419	239	19	248	150
University of Queensland	1,146	158	G.J. Seymour	276	109	2,643	175	25	187	150
University of Reading	932	179	M.D. Collins	141	244	2,629	176	28	158	150
University of Rochester	1,498	134	R.P. Phipps	192	184	3,839	135	37	111	150
University of Saskatchewan	1,524	131	L.A. Babiuk	206	172	2,104	199	31	141	150
University of Science and Technology of China	126	300	Z. Tian	184	193	1,260	262	18	261	150
University of Sheffield	1,397	144	J.R. Guest	232	150	2,895	166	28	158	150
University of South Carolina	603	213	A. L. Huges	280	105	6,211	81	37	111	150
University of South Florida	762	197	H. Friedman	435	42	2,527	180	22	215	150
University of Southampton	647	209	S.T. Holgate	1,060	2	39,705	6	72	7	150
University of Southern California	1,022	168	J. Slots	274	111	3,846	134	29	155	150
University of St Andrews	128	299	V.J. Smith	73	315	888	298	15	289	80
University of Surrey	79	318	I. Hindmarch	270	114	2,506	181	26	176	150
University of Sussex	90	315	P.A. Jeggo	131	257	4,705	113	45	57	150
University of Sydney	2,645	57	D.N. Love	184	193	1,025	284	17	271	150
University of Technology, Sydney	100	310	R.L. Raison	79	307	492	318	10	321	128
University of Tennessee Knoxville	447	236	B.T. Rouse	341	78	5,283	102	36	117	150
University of Texas at Austin	218	276	W.A. Kuziel	124	270	3,698	138	40	90	150
University of Tokyo	3,070	46	K. Matsushima	498	29	18,003	20	65	16	150
University of Toronto	6,081	11	T.W. Mak	635	11	47,418	4	99	4	150
University of Tsukuba	465	235	H. Nakauchi	247	137	7,788	60	41	82	150
University of Twente	118	303	J. J. H. Rasker	148	233	1,984	207	22	215	150
University of Utah	2,440	70	R.A. Dayes	173	202	3,595	142	20	239	150
University of Vermont	872	187	R.C. Budd	83	306	2,707	172	24	195	150
University of Victoria	104	307	B.F. Koop	132	256	4,477	116	25	187	150
University of Virginia	1,293	148	T.A.E. Platts-Mills	384	60	8,415	50	45	57	150
University of Warwick	253	266	N.J. Dimmock	154	224	933	291	15	289	106
University of Washington	7,505	5	L. Corey	511	27	27,474	9	79	6	150
University of Waterloo	85	316	L. Hoffman-Goetz	135	252	1,569	231	21	227	95

University of Western Australia	1,509	133	P.G. Holt	389	58	7,989	56	49	46	150
University of Western Ontario	1,737	111	M.A. Valvano	117	278	1,792	218	24	195	150
University of Wisconsin	2,373	73	W.W. Busse	429	44	5,488	96	54	30	150
University of Wollongong	70	322	M.J. Walker	317	87	5,190	105	38	104	150
University of York	198	280	R.A. Wilson	159	218	1,315	251	24	195	150
University of Zurich	1,176	155	R.M. Zinkernagel	573	21	31,914	8	67	12	150
Univesitas Gadjah Mada	79	318	W. Sosroseno	50	329	217	329	8	327	63
Uppsala University	1,625	124	P. Venge	482	33	8,957	44	39	100	150
Utah State	99	311	R.W. Sidwell	242	144	2,806	167	30	149	150
Utrecht University	5,086	18	J.W.J. Bijlsma	398	54	8,262	52	51	39	150
Vanderbilt University	1,119	161	L. Van Kaer	160	216	5,094	106	49	46	150
Victoria University of Wellington	37	329	A.C. La Flamme	30	336	631	310	14	298	69
Vienna University of Technology	11	340	R. Reihnsner	28	338	160	336	7	332	63
Virginia Polytechnic Institute	474	231	S.D. Holladay	111	284	892	297	14	298	150
Vrije Universiteit, Brussels	15	338	C. Demanet	91	301	1,190	268	18	261	150
VU University Amsterdam	3,046	47	B.A.C. Dijkmans	467	36	7,555	66	42	74	150
Wageningen University	466	234	H.K. Parmentier	120	276	950	290	16	278	150
Wake Forest University	606	211	D.S. Lyles	97	292	840	301	19	248	113
Waseda University	16	337	K. Suzuki	144	238	1,144	274	20	239	150
Washington State University	701	206	W.C. Davis	211	166	2,148	196	20	239	150
Washington University in St. Louis	5,722	14	T. Mohanakumar	322	84	2,692	174	27	165	150
Wayne State University	1,804	108	R.H. Swanborg	99	290	924	293	13	302	71
West Virginia University	179	286	V. Castranova	365	70	5,280	103	40	90	150
Yale University	2,670	56	R.A. Flavell	734	8	56,589	2	113	2	150
Yonsei University	434	238	C.S. Hong	97	292	992	285	12	309	150
York University	27	334	G.E. Wu	85	303	1,574	230	16	278	150
Zhejiang University	380	248	X. Cao	208	170	2,220	193	26	176	150

Earth and Planetary Sciences Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	935	173	M.T. Hallikainen	313	26	1,694	118	19	178	150
Aarhus University	1,741	123	A.S. Murray	206	71	2,371	75	38	33	150
Arizona State University	873	179	R. Greeley	272	42	2,788	65	36	41	150
Ateneo de Manila University	6	341	R.E.S. Otadoy	7	345	10	346	3	339	41
Auburn University	896	178	J.H. Dane	79	253	641	256	9	299	73
Australian National University	6,761	12	K.C. Freeman	243	56	5,271	18	49	11	150
Boston College	454	233	W.J. Burke	299	29	3,489	46	26	100	150
Boston University	2,323	86	M.Mendillo	122	173	856	219	19	178	150
Brandeis University	80	317	M. Rosbash	253	52	5,621	16	49	11	150
Brigham Young University	85	313	M.J. Dorais	38	325	265	308	8	311	103
Brown University	1,766	120	J.W. Head	383	17	3,697	41	44	21	150
California Institute of Technology (Calt...)	18,103	1	J.H. Seinfeld	600	2	19,946	2	62	8	150
Cardiff University	2,417	74	N. Wickramasingh	288	34	6,993	13	34	51	150
Carnegie Mellon University	968	169	R.C. Nichol	208	70	8,129	11	65	6	150
Case Western Reserve University	624	206	P. Harding	52	305	1,910	104	27	88	150
Chalmers University of Technology	1,250	148	M. Olberg	62	288	381	290	14	244	150
Charles University	530	223	D. Vokrouhlicky	108	196	788	239	25	109	150
Chinese University of Hong Kong	23	338	Q. Zhang	186	92	630	259	14	244	150
Chulalongkorn University	240	276	P. Charusiti	25	336	83	334	7	321	57
City University of Hong Kong	533	221	J.C.L. Chan	106	203	844	225	19	178	113
City University of New York	171	291	H.K. Brueckner	41	320	644	255	13	254	75
Colorado State University	305	253	H.J. Stein	69	279	837	226	20	161	150
Columbia University	3,085	46	J.P. Halpern	145	135	3,021	57	32	58	150
Cornell University	5,473	21	J.Veverka	260	48	2,976	60	38	33	150
Curtin University of Technology	1,591	133	S.A. Wilde	151	130	1,849	109	37	36	150
Dalhousie University	2,241	92	C. Beaumont	132	155	2,306	80	22	140	84
Dartmouth College	2,992	51	J.R. Thorstensen	101	215	1,365	155	23	124	150
Delft University of Technology	2,851	58	H.H.G. Savenije	137	147	552	268	13	254	133
Drexel University	587	209	R.M. Koerner	209	69	455	281	11	277	95
Duke University	1,919	107	O.H. Pilkey	102	213	484	277	8	311	93
Durham University	3,545	36	C.S. Frenk	196	83	10,130	8	66	4	150
Ecole Normale Supérieure de Lyon	575	211	F. Albarede	161	119	3,835	40	31	66	150
École Normale Supérieure, Paris	1,489	137	B. Groffe	111	188	1,494	140	28	80	150
École Polytechnique	816	184	B. Giebels	108	196	1,259	170	29	78	150

Ecole Polytechnique Fédérale de Lausanne	744	193	I. Beg	55	296	1,311	162	23	124	150
Eindhoven University of Technology	176	290	H. M. Kelder	94	230	772	241	18	200	150
Emory University	109	307	D.C. Wallace	287	35	12,692	3	54	10	150
Erasmus University Rotterdam	153	296	A.D.M.E. Osterhaus	741	1	23,768	1	59	9	150
ETH Zurich (Swiss Federal Institute of Technology)	6,507	14	A.O. Benz	136	148	1,505	139	23	124	150
Florida International University	712	195	R. Jaffe	76	264	963	200	20	161	112
Florida State University	352	248	W.C. Burnett	153	127	1,295	163	23	124	150
Freie Universität Berlin	1,791	118	G. Neukum	183	96	2,199	85	29	78	150
Friedrich Alexander Universität Erlangen Nürnberg	1,294	145	B. Seowbari	109	194	325	301	8	311	79
Fudan University	286	260	Y.Q. Jin	192	86	1,292	164	11	277	110
Georg August Universität Göttingen	2,638	69	J. Hoets	86	241	1,160	181	16	218	141
George Mason University	98	308	S.S. Harlan	30	335	377	292	9	299	54
George Washington University	445	234	R.H. Lang	83	247	383	289	6	324	75
Georgetown University	77	319	T. Beach	25	336	212	318	10	287	38
Georgia Institute of Technology	2,304	87	J.C. Powers	190	90	3,027	56	19	178	150
Georgia State University	664	203	D.R. Gies	110	191	1,152	184	19	178	150
Goteborg University	265	267	B. Schmitz	85	242	905	207	20	161	130
Harvard University	3,639	35	D.J. Jacob	263	46	6,455	15	63	7	150
Hebrew University of Jerusalem	2,400	79	T. Piran	191	87	4,141	32	41	29	150
Heidelberg Universität	1,966	104	U. Platt	273	41	2,800	64	37	36	150
Hokkaido University	3,885	29	S. Tsunogai	108	196	992	198	13	254	127
Hong Kong Polytechnic University	952	171	J.H. Yin	134	152	594	262	16	218	150
Hong Kong University of Science & Techno...	829	182	C.W.W. Ng	79	253	365	293	11	277	87
Humboldt-Universität zu Berlin	857	180	K. Bernlohr	141	140	2,122	88	42	27	150
Imperial College London	5,964	19	A. Balogh	406	12	2,874	61	31	66	150
Indian Institute of Technology Bombay (I...	665	202	K.V. Subboro	111	188	67	337	16	218	150
Indian Institute of Technology Delhi (II...	548	217	V.C. Mohaanty	104	209	265	308	7	321	120
Indian Institute of Technology Kanpur (I...	514	226	R.P. Singh	120	178	361	294	10	287	133
Indiana University Bloomington	1,937	106	E.M. Ripley	101	215	567	266	15	232	125
Indiana University Indianapolis	218	282	G.M. Filippelli	50	308	563	267	15	232	87
Iowa State University	114	305	D.A. Brazylinski	82	249	1,224	173	21	153	141
Johns Hopkins University	6,550	13	T.M. Heckman	292	31	8,628	10	66	4	150
Kansas State University	59	330	R.L. Cullers	42	318	716	248	8	311	57
Katholieke Universiteit Leuven	1,688	125	J. Poesen	297	30	2,357	76	32	58	150
Keio University	183	286	M. Kato	53	302	535	271	16	218	31

King Fahd University of Petroleum & Minerals	411	242	M. Sadiq	45	315	395	286	5	332	26
King Saud University	556	215	A.M. El-Sheikh	20	339	35	343	0	346	10
Kobe University	1,039	166	T. Mukai	102	213	595	261	14	244	150
Korea Advanced Institute of Science & Technology	290	258	K.W. Min	39	321	161	326	6	324	133
Korea University	268	266	S.T. Yun	62	288	285	307	11	277	111
Kyoto University	6,847	11	S. Fukao	316	25	1,490	142	23	124	150
Kyushu University	2,390	81	K. Yumoto	140	141	856	219	15	232	150
La Trobe University	916	175	P.L. Dyson	119	179	318	302	10	287	118
Lancaster University	1,482	138	L.Wilson	108	196	1,271	169	16	218	150
Leiden University	2,592	70	E.F. Van Dishoeck	280	39	3,642	42	47	16	150
Linkoping University	245	275	B. Allard	77	257	817	231	14	244	84
London School of Economics and Political Science	236	278	LA Smith	154	125	2,418	73	31	66	150
Loughborough University	568	213	N. Dixon	53	302	344	298	8	311	86
Louisiana State University	252	274	L.H. Chan	36	328	678	250	16	218	62
Ludwig-Maximilians-Universität München	2,389	82	J. Egger	143	138	899	210	11	277	122
Lund University	2,864	57	S. Bjorck	118	182	1,742	113	23	124	150
Maastricht University	123	302	J.W.M. Jagt	117	183	341	300	10	287	121
Macquarie University	1,855	113	S.Y. O'Reilly	218	63	3,039	54	38	33	150
Mahidol University	74	320	D. Ruffolo	35	329	295	305	12	265	49
Masaryk University	411	242	R. Brazdil	63	287	507	273	14	244	150
Massachusetts Institute of Technology	8,338	6	W.H.G. Lewin	166	116	2,020	96	32	58	150
McGill University	3,406	38	J.A. Finch	290	33	1,224	173	15	232	150
McMaster University	2,098	95	H.P. Schwarcz	256	50	3,130	50	24	116	150
Michigan State University	1,862	112	T.C. Beer	239	58	3,640	43	47	16	150
Michigan Technological University	989	167	W.I. Rose	128	162	1,386	150	19	178	150
Monash University	2,407	77	I. Cartwright	100	219	917	205	17	209	110
Montana State University	1,044	165	D.W. Longcope	83	247	924	203	24	116	66
Moscow State University	6,441	15	E.E. Antonova	82	249	101	332	6	324	65
Nagoya University	3,923	28	S. Kobayashi	154	125	1,256	171	25	109	150
Nanjing University	3,337	42	Z.G. Dai	115	185	1,117	186	27	88	98
Nanyang Technological University	663	204	H. Rahardjo	87	239	457	280	10	287	61
National Taiwan University	2,296	89	S.L. Chung	71	274	1,358	157	25	109	150
National Tsing Hua University	260	269	D.Y. Chou	39	321	182	323	9	299	83
National University of Ireland, Galway	778	190	S.G. Jennings	91	232	1,492	141	18	200	150
National University of Singapore	1,112	157	S.C. Liew	88	237	304	303	8	311	104
New Mexico State University	1,630	131	W.R. Webber	130	159	1,184	178	15	232	150

New York University	810	185	J. Brinkmann	304	28	10,279	7	86	1	150
Newcastle University	2,396	80	P.L. Younger	109	194	589	263	15	232	110
North Carolina State University	2,407	77	S. Ramen	144	136	696	249	12	265	142
Northeastern University	292	256	E.L. Miller	177	106	1,442	144	23	124	150
Northwestern University	2,335	84	E.A. Okal	153	127	1,224	173	18	200	134
Norwegian University of Science & Technology	1,406	140	B. Ursin	130	159	514	272	14	244	91
Ohio State University	4,856	24	A. Gould	277	40	2,660	70	36	41	150
Oklahoma State University	574	212	J.C. West	69	279	133	330	9	299	43
Open University UK	2,706	63	C.T. Pillinger	215	66	1,700	117	17	209	150
Oregon State University	498	230	B.R.T. Simoneit	350	20	4,856	24	43	23	150
Osaka University	1,113	156	H. Tsunemi	263	46	1,343	158	22	140	150
Peking University	3,397	39	Z.Y. Pu	74	269	389	288	12	265	150
Pennsylvania State University	7,152	9	D.P. Schneider	456	8	11,932	6	84	2	150
Pohang University of Science And Technology	127	301	K.Lee	48	312	1,050	190	20	161	103
Portland State University	441	235	A.G. Fountain	75	266	827	229	18	200	115
Princeton University	6,300	17	D.P. Schneder	456	8	11,938	5	84	2	150
Purdue University	3,145	44	M.E. Lipschutz	127	163	639	257	10	287	150
Queen's University	2,150	94	N.P. James	139	143	1,508	138	19	178	135
Queen's University of Belfast	1,876	110	F.P. Kean	424	11	1,737	115	24	116	150
Queensland University of Technology	436	236	R.L Frost	589	3	8,971	9	43	23	150
Radboud University, Nijmegen	533	221	G. Nelemans	89	236	863	216	20	161	150
Rensselaer Polytechnic Institute	1,065	163	E.B. Watson	136	148	4,168	31	26	100	100
Rheinisch Westfalische Technische Hochschule Aach	1,229	150	R. Littke	144	136	1,287	166	18	200	150
Rheinische Friedrich Wilhelms Universitat Bonn	2,983	52	H.J. Fahr	172	109	618	260	16	218	150
Rice University	1,919	107	J. B. Anderson	110	191	1,381	151	20	161	133
Rochester Institute of Technology	413	241	D. Merritt	150	132	3,961	37	43	23	150
Royal Institute of Technology, KTH	1,157	154	L.E. Sjoberg	104	209	265	308	10	287	46
Royal Melbourne Institute of Technology	254	272	A. Sellers-Henderson	194	84	2,520	72	24	116	150
Rutgers	2,869	56	J.P. Hughes	135	150	2,027	93	27	88	150
Saint-Petersburg State University	2,005	103	M.I. Pudovkin	103	212	379	291	9	299	141
San Diego State University	1,236	149	W.C. Oechel	131	158	4,987	22	34	51	150
Sapienza University of Rome	0	348		0	348	0	347	0	346	0
Sciences Po Paris	9	340	L. Bruno	1	347	0	347	0	346	0
Seoul National University	2,057	100	S.K. Chough	99	220	855	221	14	244	107
Shanghai Jiao Tong University	788	189	R. Wang	377	18	900	208	20	161	150
Simon Fraser University	963	170	J.J. Claque	178	104	1,520	137	20	161	150

Stanford University	6,949	10	J.G. Liou	198	79	2,760	67	36	41	150
State University of New York Buffalo	5	343	M. Brown	205	73	4,441	28	37	36	150
Stockholm University	3,016	50	J. Strom	88	237	1,169	179	23	124	150
Stony Brook University	2,679	66	D.J. Weidner	122	173	1,643	126	22	140	150
Syracuse University	181	287	S.D. Samson	56	294	1,155	182	16	218	85
Tartu University (University of Tartu)	676	200	V. Kalm	54	299	192	320	9	299	96
Technical University of Denmark	1,272	147	T.H. Christensen	182	98	2,785	66	28	80	150
Technion	1,308	143	N.Soker	167	113	1,044	191	21	153	57
Technische Universität Berlin	1,388	141	G. Franz	92	231	963	200	17	209	131
Technische Universität Chemnitz	41	332	D. Gerlich	121	177	956	202	15	232	150
Technische Universität Dresden	673	201	C.H. Bernhofer	85	242	2,806	63	27	88	150
Technische Universität München	1,329	142	H. Knicker	124	169	1,381	151	27	88	150
Tel Aviv University	2,196	93	H. Netzer	133	153	2,733	68	35	46	150
Texas A&M University	5,044	23	J.W. Morse	135	150	3,032	55	19	178	150
Texas Tech	63	328	Y. Ma	47	313	450	282	9	299	87
Tohoku University	3,697	32	Y. Taniguchi	218	63	2,323	79	32	58	150
Tokyo Institute of Technology	1,891	109	S. Maruyama	122	173	2,333	78	26	100	150
Trinity College Dublin	807	186	V.R. Troll	42	318	225	316	10	287	77
Tsinghua University	1,946	105	Y.Q. Lou	87	239	298	304	15	232	150
Tufts University	353	247	R.F. Willson	31	333	93	333	4	334	150
Universidad Autonoma de Madrid	909	176	C. Eiroa	71	274	507	273	13	254	150
Universidad de Chile	1,691	124	G. Garay	77	257	1,032	194	21	153	150
Universidad de Granada	909	176	C. Eiroa	71	274	507	273	13	254	150
Universidad del País Vasco	819	183	A. Sanchez	119	179	637	258	19	178	150
Universidad Nacional Autónoma de México ...	1,639	130	J. Urrutia-Fucugauchi	203	75	808	234	13	254	150
Universidad Politecnica de Madrid	556	215	R. Alonso-Sanz	33	332	58	338	9	299	26
Universidade de São Paulo	478	231	W. Teixeira	50	308	391	287	11	277	124
Universidade Estadual de Campinas	64	327	P.J. Iunes	69	279	131	331	8	311	104
Università degli Studi di Firenze	2,536	72	L. Bindi	98	222	2,152	86	36	41	12
Università degli Studi di Padova	3,438	37	D. Basitieri	186	92	1,598	132	31	66	150
Università Di Bologna	2,788	61	F.R. Ferraro	156	122	1,621	128	32	58	150
Università di Pisa	435	237	F. Innocenti	101	215	1,437	146	16	218	150
Universitat Autonoma de Barcelona	1,090	159	J. Cortina	111	188	1,485	143	32	58	150
Universitat Bielefeld	98	308	S.W. Breckle	50	308	198	319	5	332	58
Universität Bremen	3,067	48	J.P. Burrows	396	13	3,928	38	43	23	150
Universitat d'Alacant	506	229	I. Negueruela	104	209	1,054	189	25	109	150

Universitat de València	1,281	146	V. Caselles	211	67	4,244	30	26	100	150
Universität Frankfurt am Main	1,628	132	G.P. Gray	97	226	1,630	127	17	209	118
Universität Freiburg	857	180	C. Leibundgut	74	269	355	296	12	265	86
Universität Hamburg	2,925	53	R. Seifert	45	315	813	232	16	218	134
Universität Karlsruhe	2,035	101	D. Stuban	101	215	1,043	192	20	161	150
Universität Leipzig	151	298	C. Jacobi	240	57	2,579	71	31	66	150
Universität Munster (Westfälische Wilhelms-Un	559	214	K. Mezger	125	167	2,847	62	32	58	150
Universität Politecnica de Catalunya	114	305	J.A. Canas	78	256	580	265	12	265	97
Universität Regensburg	177	289	K. Heine	39	321	260	311	9	299	39
Universität Stuttgart	1,070	161	H.J. Massonne	68	282	1,089	188	15	232	101
Universität Trier	256	270	W. Symader	39	321	43	341	3	339	25
Universität Tübingen	2,300	88	W. Frisch	97	226	1,366	154	21	153	150
Universität Wien (University of Vienna)	2,412	75	C. Koeberl	245	55	1,658	125	23	124	150
Universität Zu Köln	2,031	102	A. Eckart	226	61	2,391	74	30	74	150
Université Catholique de Louvain	1,204	152	H. Grosse	95	229	1,155	182	23	124	150
Universite de Liege	2,242	91	G. Rauw	97	226	471	278	17	209	150
Université de Montréal	1,645	129	D.A. Yuen	385	14	2,290	82	26	100	150
Université de Nice Sophia Antipolis	1,213	151	G.T. Feraud	99	220	1,955	99	25	109	150
Universite Laval	2,064	99	F. Habashi	172	109	171	324	2	342	24
Universite Libre de Bruxelles	1,088	160	D. Weis	98	222	884	213	22	140	150
Université Paris Sorbonne	547	218	P. Claval	81	252	69	336	4	334	2
Universite Paris-Sud 11	2,639	68	P. Cox	107	201	2,054	91	37	36	150
Université Pierre et Marie Curie	6,372	16	L. Solivert	129	161	2,051	92	28	80	150
Universiti Malaya (University of Malaya)	283	261	F.H. Ali	24	338	24	344	1	344	21
University College Cork	509	228	A.J. Wheeler	15	342	157	327	7	321	35
University College Dublin	1,178	153	T.C. Weekes	138	145	1,675	123	27	88	150
University College London	6,264	18	G.D. Price	164	117	2,203	84	28	80	150
University do Porto	27	335	L. Bastos	16	341	151	328	6	324	44
University of Aberdeen	1,676	127	J. Parnell	171	112	583	264	13	254	150
University of Adelaide	2,524	73	R.A. Vincent	153	127	1,709	116	23	124	150
University of Alabama	1,511	136	J.W. Sulentic	90	235	825	230	21	153	116
University of Alberta	4,421	26	R.A. Creaser	113	187	1,523	136	22	140	150
University of Amsterdam	2,760	62	M. Van Der Klis	272	42	3,003	59	46	18	150
University of Antwerp	649	205	L. Vincze	74	269	919	204	19	178	150
University of Arizona	10,887	3	G.H. Rieke	333	22	5,351	17	49	11	150
University of Athens	1,769	119	H. Mavromichalaki	85	242	253	313	8	311	109

University of Auckland	1,687	126	J.E. Titheridge	75	266	350	297	6	324	19
University of Barcelona	2,410	76	J.M. Paredes	132	155	873	214	28	80	150
University of Basel	1,066	162	E.K. Grebel	185	94	4,825	25	44	21	150
University of Bath	72	323	N.J. Mitchell	68	282	421	285	16	218	150
University of Bergen	2,691	64	H. Haftidason	70	278	1,379	153	26	100	150
University of Bern	3,082	47	P. Wurz	198	79	1,167	180	20	161	150
University of Birmingham	2,826	60	R.M. Harrison	322	24	5,067	21	39	30	150
University of Bristol	3,732	31	R.S.P. Sparks	201	76	3,497	45	33	55	150
University of British Columbia	693	197	D. Weis	98	222	887	212	22	140	150
University of Calgary	373	246	P. Wu	50	308	661	254	16	218	28
University of California, Berkley	1,841	114	P.R. Renne	198	79	4,072	33	34	51	150
University of California, Davis	460	232	K.L. Verosub	123	171	1,526	134	22	140	150
University of California, Irvine	277	263	D.R. Blake	312	27	4,064	34	49	11	150
University of California, Los Angeles	7,507	8	C.T. Russell	558	4	7,511	12	34	51	150
University of California, Riverside	1,799	117	G.P. Zank	249	54	1,601	131	30	74	150
University of California, San Diego	1,800	116	L. Tauxe	123	171	1,659	124	19	178	150
University of California, San Francisco	5	343	J.M. Lowenstein	194	84	2,118	89	10	287	150
University of California, Santa Barbara	3,684	34	B.R. Hacker	84	245	2,063	90	31	66	150
University of California, Santa Cruz	987	168	T. Lay	179	101	1,800	111	22	140	150
University of Cambridge	1,591	133	H. Elderfield	158	121	3,393	47	27	88	150
University of Canterbury	194	285	U. Ring	72	273	799	236	19	178	82
University of Cape Town	2,076	98	C. Harris	60	291	552	268	12	265	99
University of Central Florida	542	219	W.L. Jones	91	232	167	325	4	334	132
University of Chicago	678	199	R.N. Clayton	181	100	4,490	27	25	109	150
University of Cincinnati	1,147	155	L.A. Owen	106	203	850	223	24	116	150
University of Colorado at Boulder	10,471	4	J.M. Forbes	179	101	1,111	187	23	124	150
University of Connecticut	89	311	T. Torgerson	60	291	664	253	12	265	85
University of Copenhagen	709	196	R. Frei	110	191	1,330	159	24	116	150
University of Delaware	265	267	G.W. Luther	179	101	3,329	48	33	55	150
University of Dundee	758	192	A.P. Cracknell	172	109	859	217	12	265	115
University of Edinburgh	919	174	A.H.F. Robertson	163	118	1,525	135	27	88	150
University of Florida	3,818	30	J.E.T. Channell	140	141	1,904	105	25	109	150
University of Geneva	334	249	M. Mayor	260	48	4,254	29	49	11	150
University of Georgia	239	277	R.D. Dallmeyer	156	122	1,936	101	20	161	150
University of Ghent	152	297	M. De Batist	82	249	806	235	20	161	150
University of Glasgow	2,085	97	J.C. Brown	167	113	1,202	176	19	178	150

University of Gothenburg	4	345	P.S. Eriksson	191	87	4,948	23	31	66	150
University of Groningen	62	329	H.A.J. Meijer	77	257	851	222	18	200	150
University of Helsinki	3,089	45	K. Kulmala	286	36	1,961	98	36	41	150
University of Hong Kong	427	240	M. Sun	174	108	1,818	110	35	46	150
University of Houston	235	280	P. Copeland	31	333	1,289	165	9	299	101
University of Illinois	5,175	22	Y.H. Chu	146	134	1,273	168	21	153	150
University of Illinois, Chicago	789	188	S.L. Forman	119	179	1,605	130	24	116	150
University of Indonesia	23	338	M.A. Tatang	4	346	151	328	4	334	7
University of Iowa	428	238	D.A. Gurnett	331	23	2,134	87	28	80	150
University of Kansas	277	263	T.E. Cravens	138	145	1,280	167	22	140	150
University of Kentucky	122	303	J.D. Phillips	167	113	1,442	144	19	178	146
University of Lausanne	411	242	T. Adatte	77	257	667	252	19	178	150
University of Leeds	85	313	D. Gubbins	106	203	1,043	192	15	232	90
University of Leicester	3,687	33	M. Lester	201	76	907	206	22	140	150
University of Liverpool	541	220	J.D.A. Piper	122	173	551	270	13	254	89
University of Ljubljana	590	208	T. Zwitter	56	294	831	228	19	178	150
University of London (Kings College of London)	11,496	2	P.D. Moore	206	71	469	279	6	324	19
University of Manchester	4,553	25	A.G Lyne	254	51	3,550	44	42	27	150
University of Manitoba	1,755	121	F.C. Hawthorne	385	14	4,013	35	27	88	150
University of Maryland	7,544	7	M.R. Kundu	205	73	970	199	17	209	150
University of Maryland Baltimore County	2,088	96	O. Reimer	219	62	3,963	36	46	18	150
University of Massachusetts	305	253	M.L. Williams	236	59	3,851	39	37	36	150
University of Melbourne	2,668	67	C.J.L.wilson	125	167	892	211	22	140	132
University of Miami	428	238	F.J. Millero	365	19	6,487	14	35	46	150
University of Michigan	1,464	139	A.N. Halliday	286	36	5,087	19	39	30	150
University of Minnesota	1,092	158	D.A. Yuen	384	16	2,300	81	26	100	150
University of Missouri	287	259	M. Liu	57	293	342	299	12	265	81
University of Nebraska	1,666	128	K.G. Hubbard	114	186	729	245	14	244	150
University of New Hampshire	2,683	65	C.J. Farrugia	159	120	1,141	185	20	161	150
University of New Mexico	765	191	C.K. Shearer	124	169	1,008	196	19	178	150
University of New South Wales	171	291	M.H. England	77	257	871	215	17	209	86
University of North Carolina, Chapel Hill	1,823	115	A.F. Glazner	66	284	778	240	12	265	59
University of North Texas	3	347	P.S. Braterman	108	196	810	233	11	277	132
University of Notre Dame	80	317	C.R. Neal	76	264	1,692	120	18	200	150
University of Nottingham	84	315	M.J. Leng	139	143	1,013	195	20	161	150
University of Oklahoma	3,017	49	R.D. Elmore	77	257	358	295	10	287	95

University of Oregon	320	252	G.J. Retallack	105	207	1,315	161	19	178	56
University of Oslo	724	194	J.I. Faleide	84	245	732	244	19	178	150
University of Otago	292	256	D. Crow	191	87	1,200	177	20	161	150
University of Ottawa	278	262	J. Veizer	143	138	3,008	58	30	74	150
University of Oxford	1,298	144	A.N. Halliday	286	36	5,087	19	39	30	150
University of Pennsylvania	134	300	B.P. Horton	79	253	505	276	20	161	150
University of Pittsburgh	197	284	M.B. Abbott	37	326	744	243	17	209	75
University of Quebec	122	303	R. Hebert	183	96	2,693	69	27	88	150
University of Queensland	332	250	B.S. Kamber	91	232	1,678	122	27	88	113
University of Reading	3,355	41	J.R.L. Allen	126	165	1,419	148	12	265	49
University of Rochester	201	283	J.A. Tarduno	66	284	727	246	16	218	69
University of Saskatchewan	2,353	83	A.H. Manson	199	78	1,234	172	23	124	150
University of Science and Technology of China	1,743	122	Y.F. Zheng	185	94	1,428	147	35	46	150
University of Sheffield	3,191	43	D.W. Hughes	189	91	848	224	14	244	3
University of South Carolina	1,866	111	I. Lerche	340	21	793	238	11	277	150
University of South Florida	231	281	T.M. Quinn	51	307	996	197	18	200	101
University of Southampton	514	226	A.P. Roberts	156	122	1,889	106	27	88	150
University of Southern California	576	210	T.L. Ku	127	163	1,742	113	15	232	150
University of St Andrews	254	272	J. Walden	37	326	217	317	8	311	60
University of Surrey	24	337	V. Lappas	53	302	48	340	4	334	74
University of Sussex	71	324	M.R. Frogley	18	340	257	312	9	299	51
University of Sydney	2,879	55	T.R. Bedding	116	184	900	208	22	140	150
University of Technology, Sydney	27	335	G. Caprarelli	12	343	78	335	6	324	16
University of Tennessee Knoxville	404	245	L.A. Taylor	197	82	1,679	121	23	124	150
University of Texas at Austin	936	172	J.N. Connelly	52	305	832	227	20	161	82
University of Tokyo	3,367	40	T. Yamagata	151	130	1,916	102	32	58	150
University of Toronto	5,749	20	W.R. Peltier	251	53	4,660	26	31	66	150
University of Tsukuba	274	265	T. Tsunogae	55	296	230	314	1	344	69
University of Twente	6	341	H. Rogalla	291	32	1,953	100	19	178	150
University of Utah	2,548	71	J.D. Miller	271	44	1,862	108	19	178	150
University of Vermont	523	224	J.M. Rankin	65	286	431	283	14	244	41
University of Victoria	2,335	84	H.W. Dosso	62	288	41	342	3	339	46
University of Virginia	162	293	R.E. Johnson	523	5	12,195	4	46	18	150
University of Warwick	40	333	R. Dupree	182	98	2,027	93	21	153	150
University of Washington	9,400	5	P.V. Hobbs	34	331	677	251	8	311	72
University of Waterloo	159	295	P.F. Bernath	462	6	3,076	51	28	80	150

University of Western Australia	2,850	59	D.I. Groves	217	65	2,335	77	24	116	150
University of Western Ontario	2,896	54	W.S.Fyfe	269	45	2,272	83	13	254	150
University of Wisconsin	807	186	J.W. Valley	228	60	3,278	49	33	55	150
University of Wollongong	162	293	C.V. Murray-Wallace	73	272	422	284	13	254	112
University of York	84	315	P.F. Bernath	462	6	3,076	51	28	80	150
University of Zurich	146	299	S. Ivy-Ochs	71	274	857	218	18	200	150
Univesitas Gadjah Mada	70	326	M.A. Marfai	9	344	11	345	2	342	17
Uppsala University	516	225	G. Possnert	178	104	1,984	97	23	124	150
Utah State	1,531	135	J.W. Shervals	35	329	799	236	9	299	42
Utrecht University	4,329	27	J. Oerlemans	150	132	1,749	112	23	124	150
Vanderbilt University	73	321	C.F. Miller	54	299	1,580	133	15	232	88
Victoria University of Wellington	329	251	M.K. Savage	55	296	750	242	16	218	82
Vienna University of Technology	53	331	G. Bloschl	98	222	1,365	155	22	140	91
Virginia Polytechnic Institute	236	278	R.J. Bodnar	105	207	1,886	107	12	265	150
Vrije Universiteit, Brussels	684	198	F. Dehairs	126	165	1,694	118	26	100	150
VU University Amsterdam	2,261	90	P. Nijkamp	436	10	1,911	103	19	178	150
Wageningen University	71	324	A Veldkamp	107	201	1,401	149	26	100	150
Wake Forest University	4	345	M.B. Bush	75	266	1,321	160	21	153	150
Waseda University	73	321	N. Hasebe	106	203	183	322	10	287	150
Washington State University	178	288	D. Schulze-Makuch	77	257	286	306	11	277	150
Washington University in St. Louis	1,063	164	R.E. Arvidson	210	68	2,021	95	35	46	150
Wayne State University	255	271	M. Goodman	177	106	3,040	53	30	74	150
West Virginia University	30	334	H. Gunell	46	314	188	321	11	277	150
Yale University	620	207	K.K. Turekian	132	155	1,608	129	13	254	150
Yonsei University	90	310	S.Y. Park	43	317	58	338	6	324	54
York University	296	255	G.G. Shepherd	133	153	717	247	17	209	150
Zhejiang University	86	312	H. Chen	54	299	230	314	10	287	137

Environmental Science Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	692	229	D. Varis	64	313	433	312	12	301	39
Aarhus University	1,931	83	V. Loeschcke	226	114	2,185	162	31	95	150
Arizona State University	1,166	157	H.J.S. Fernando	171	166	1,180	231	17	250	150
Ateneo de Manila University	15	347	R.P Lejano	24	342	106	335	6	326	31
Auburn University	1,689	107	B.G. Lockaby	84	293	637	292	14	283	108
Australian National University	3,299	33	D.B. Lindenmayer	276	73	3,516	91	36	61	150
Boston College	151	333	P. Davidovits	99	268	1,643	195	25	157	131
Boston University	1,325	142	I. Valiela	165	178	2,966	117	23	178	150
Brandeis University	107	338	M. Rosbash	253	88	5,621	36	49	21	150
Brigham Young University	293	318	D.J. Eatbough	215	122	1,760	192	22	193	150
Brown University	1,042	176	J.W. Head	383	31	3,697	80	44	28	150
California Institute of Technology (Calt...)	2,312	63	J.H. Seinfeld	600	9	19,946	7	62	7	150
Cardiff University	2,127	75	S.J. Ormerod	154	195	2,056	173	22	193	150
Carnegie Mellon University	1,410	129	S.N. Pandis	151	200	3,327	96	37	53	150
Case Western Reserve University	643	242	H.S. Rosenkranz	425	26	2,256	158	19	224	150
Chalmers University of Technology	1,048	174	C. Azar	46	332	630	293	15	273	42
Charles University	463	282	M. Stiborova	164	182	982	247	23	178	150
Chinese University of Hong Kong	254	324	J.C. Yu	179	154	4,353	61	42	34	150
Chulalongkorn University	518	270	P. Pavasant	54	324	439	311	15	273	61
City University of Hong Kong	998	184	P.K.S. Lam	224	115	3,236	100	32	89	150
City University of New York	300	316	G.M. Friedman	216	120	446	309	9	317	108
Colorado State University	5,191	10	J.N. Sofos	195	136	1,419	209	24	167	150
Columbia University	1,663	109	E.R. Kandal	448	19	17,020	8	77	2	150
Cornell University	5,918	7	T. Eisner	198	133	1,634	196	17	250	150
Curtin University of Technology	669	234	B.B. Lamont	165	178	2,331	148	23	178	150
Dalhousie University	1,792	95	W.F. Doolittle	228	110	5,968	32	41	36	150
Dartmouth College	1,908	87	T. Platt	141	216	2,998	114	20	212	150
Delft University of Technology	2,384	59	M.C.M. Van Loosdrech	341	39	5,176	42	50	16	150
Drexel University	611	248	C.N. Haas	157	190	1,507	201	18	235	150
Duke University	3,370	30	R.J. Lefkowitz	752	5	43,621	1	93	1	150
Durham University	1,303	145	B.A. Whitton	130	230	1,345	221	18	235	147
Ecole Normale Supérieure de Lyon	72	339	F. Albarede	161	184	3,835	73	31	95	150
École Normale Supérieure, Paris	648	240	M. Loreau	117	251	3,583	87	33	82	150
École Polytechnique	225	328	R. Vautard	98	271	1,314	222	20	212	150

Ecole Polytechnique Fédérale de Lausanne	938	195	O. Jolliet	78	299	721	289	14	283	150
Eindhoven University of Technology	419	284	H. Timmerman	245	96	965	251	15	273	122
Emory University	636	243	P.B Ryan	85	292	1,106	235	16	263	150
Erasmus University Rotterdam	576	259	A. Burdof	190	139	2,018	176	24	167	150
ETH Zurich (Swiss Federal Institute of Technology)	4,173	21	K. Hungerbuhler	168	171	946	256	21	202	150
Florida International University	1,126	163	J.W. Fourqrean	75	301	1,359	217	23	178	137
Florida State University	539	268	W.C. Burnett	153	197	1,295	224	23	178	150
Freie Universität Berlin	1,570	118	D. Neubert	233	106	1,201	230	8	322	150
Friedrich Alexander Universität Erlangen Nürnberg	1,183	153	J. Angerer	360	35	3,176	105	37	53	150
Fudan University	686	231	J. Chen	90	283	1,475	205	24	167	150
Georg August Universität Göttingen	2,820	42	T. Alenius	48	330	356	316	13	291	69
George Mason University	256	323	G.W. Musrush	166	173	304	321	6	326	103
George Washington University	477	278	R. Riffat	16	343	22	342	2	342	23
Georgetown University	348	306	R.J. Lazarus	31	340	10	345	2	342	0
Georgia Institute of Technology	2,233	69	A.G. Russell	166	173	1,400	212	21	202	150
Georgia State University	254	324	P.J. Ferraro	33	337	444	310	13	291	100
Goteborg University	1,338	139	L. Forlin	6	346	10	345	3	340	19
Harvard University	2,967	41	F.A. Bazzaz	220	117	7,010	26	30	109	150
Hebrew University of Jerusalem	2,116	76	Y. Hadar	141	216	2,005	177	22	193	150
Heidelberg Universität	1,482	125	H. Hollert	95	276	370	315	17	250	150
Hokkaido University	2,761	44	Y. Watanabe	119	245	1,360	216	21	202	150
Hong Kong Polytechnic University	1,363	138	W. Chu	156	191	1,446	206	24	167	150
Hong Kong University of Science & Techno...	1,180	154	W.X. Wang	160	187	1,902	184	22	193	150
Humboldt-Universität zu Berlin	62	340	C. Ionomidou	89	284	3,148	106	32	89	150
Imperial College London	4,944	12	J.N. Lester	288	62	3,740	76	24	167	143
Indian Institute of Technology Bombay (I...	665	235	R.S. Patil	69	310	332	318	9	317	71
Indian Institute of Technology Delhi (II...	1,029	180	V.K. Kofhari	166	173	223	324	5	334	90
Indian Institute of Technology Kanpur (I...	516	271	P.S. Vankar	94	279	192	327	6	326	59
Indiana University Bloomington	1,958	81	R. A. Hites	287	63	5,221	41	31	95	150
Indiana University Indianapolis	144	334	J.E. Klaunig	185	143	3,200	102	26	146	150
Iowa State University	1,030	179	R.S. Kanwar	182	149	1,172	232	16	263	150
Johns Hopkins University	2,361	60	S.H. Snyder	300	58	14,180	12	75	3	150
Kansas State University	654	238	T.G. Nagaraja	141	216	1,078	242	17	250	150
Katholieke Universiteit Leuven	1,926	84	M. Hermly	181	151	1,763	191	31	95	150
Keio University	342	308	K. Omae	105	263	597	296	13	291	150

King Fahd University of Petroleum & Minerals	563	263	S. Farooq	34	336	194	326	6	326	37
King Saud University	830	213	I.S. Al-Mutaz	50	328	125	334	5	334	38
Kobe University	609	249	A. Adachi	88	285	826	274	10	315	137
Korea Advanced Institute of Science & Technology	636	243	S. Park	86	290	776	281	15	273	127
Korea University	560	265	S.T. Yun	62	318	285	322	11	309	111
Kyoto University	4,538	16	M. Ikeda	451	18	2,763	124	25	157	150
Kyushu University	1,704	104	Y. Iwasa	191	138	3,183	104	28	127	137
La Trobe University	940	194	A.A. Hofman	241	101	2,933	119	34	74	150
Lancaster University	1,882	90	K.C. Jones	448	19	6,609	29	54	12	150
Leiden University	1,700	105	L.A. Peletier	130	230	1,237	229	14	283	122
Linköping University	848	212	A. Grimvall	77	300	817	275	14	283	84
London School of Economics and Political Science	675	232	E. Neumayer	101	267	921	259	19	224	17
Loughborough University	931	197	A.G. Fogg	231	108	846	270	12	301	150
Louisiana State University	1,564	119	K.T. Valsaraj	161	184	1,074	243	16	263	131
Ludwig-Maximilians-Universität München	1,945	82	J. Heinrich	330	43	5,493	37	47	24	150
Lund University	4,739	15	S. Skertving	228	110	3,623	85	29	118	150
Maastricht University	416	286	G.M.H. Swaen	131	227	1,273	227	17	250	150
Macquarie University	1,238	149	M. Westoby	175	163	4,915	48	37	53	150
Mahidol University	376	291	P. Pokethitiyook	49	329	508	305	13	291	92
Masaryk University	578	257	I. Holoubek	111	260	911	261	20	212	150
Massachusetts Institute of Technology	3,405	29	A. Rich	337	42	5,872	33	32	89	150
McGill University	3,121	37	T.R. Moore	120	243	2,126	165	27	138	150
McMaster University	1,891	89	C.M. Wood	436	22	3,016	113	37	53	150
Michigan State University	4,269	19	J.P. Giesy	436	22	7,534	22	55	11	150
Michigan Technological University	1,031	177	K.S. Pregitzer	165	178	4,949	47	46	26	150
Monash University	1,822	93	P.S. Lake	118	247	1,954	181	23	178	148
Montana State University	1,480	126	R.A. Garrott	104	264	853	266	15	273	113
Moscow State University	2,578	50	V.N. Mikhailov	33	337	13	343	2	342	32
Nagoya University	1,904	88	Y. Iwaska	132	224	837	272	19	224	150
Nanjing University	1,719	102	L. Wang	153	197	1,055	246	19	224	150
Nanyang Technological University	870	206	J.H. Tay	246	93	2,050	175	31	95	150
National Taiwan University	2,700	45	D.J. Lee	417	27	2,345	146	28	127	150
National Tsing Hua University	539	268	R.A. Doong	66	312	1,095	238	23	178	41
National University of Ireland, Galway	540	267	S.G. Jennings	91	282	1,492	203	18	235	150
National University of Singapore	2,132	74	S.L. Ong	118	247	814	276	16	263	150
New Mexico State University	1,381	134	W.G. Whitford	173	164	2,575	132	21	202	150

New York University	1,266	146	G. Stotsky	179	154	1,875	185	22	193	103
Newcastle University	2,633	49	S.P. Rushton	102	266	1,285	226	17	250	150
North Carolina State University	4,126	22	V. P. Aneja	145	209	956	253	18	235	150
Northeastern University	473	280	P. Vouros	176	162	2,295	152	27	138	150
Northwestern University	1,179	155	B.E. Rittmann	273	76	3,809	74	24	167	150
Norwegian University of Science & Technology	1,915	86	E. Steinnes	228	110	2,126	165	24	167	150
Ohio State University	3,926	24	W.J. Mitsch	140	220	1,408	211	20	212	150
Oklahoma State University	1,662	110	D.M. Engle	122	241	875	265	14	283	125
Open University UK	986	187	P.J. Smith	177	160	38	341	0	347	4
Oregon State University	5,952	6	B.R.T. Simoneit	350	38	4,856	49	43	30	150
Osaka University	1,025	182	K. Morimoto	271	77	2,247	160	23	178	150
Peking University	1,717	103	S. Tao	236	103	1,350	218	20	212	150
Pennsylvania State University	4,513	17	J.M. Bollag	164	182	2,458	143	23	178	149
Pohang University of Science And Technology	362	296	W. Choi	117	251	6,972	27	33	82	125
Portland State University	563	263	H. Chang	33	337	187	328	12	301	36
Princeton University	2,198	72	R.M. May	371	32	12,961	14	27	138	150
Purdue University	3,344	31	P.C. Wankat	199	132	612	294	12	301	112
Queen's University	1,755	98	J.P. Smol	300	58	27,445	4	30	109	150
Queen's University of Belfast	1,506	122	P. Christie	180	153	2,515	138	35	68	150
Queensland University of Technology	634	245	L. Morawka	129	233	1,085	239	22	193	128
Radboud University, Nijmegen	1,259	147	J.G.M. Roelofs	141	216	1,308	223	24	167	150
Rensselaer Polytechnic Institute	702	226	E.R. Altwicker	88	285	522	304	13	291	54
Rheinisch Westfälische Technische Hochschule Aach	1,396	133	T. Gries	227	113	130	333	5	334	150
Rheinische Friedrich Wilhelms Universität Bonn	1,755	98	W. Barthlott	116	253	2,723	125	26	146	150
Rice University	852	211	D.C. Queller	125	239	2,170	164	25	157	95
Rochester Institute of Technology	135	336	A.A. Batabyal	112	258	176	329	8	322	19
Royal Institute of Technology, KTH	1,158	159	I. Neretnieks	156	191	936	257	13	291	79
Royal Melbourne Institute of Technology	354	300	D.A. Holdway	73	305	576	298	13	291	73
Rutgers	3,745	26	J. Burger	260	81	2,101	169	29	118	150
Saint-Petersburg State University	468	281	A.D. Nozdrachev	247	92	157	330	6	326	150
San Diego State University	1,163	158	W.C. Oechel	131	227	4,987	46	34	74	150
Sapienza University of Rome	0	348		0	348	0	348	0	347	0
Sciences Po Paris	16	346	M. Stroper	46	332	2,183	163	11	309	18
Seoul National University	1,737	101	K.K. Lee	129	233	592	297	14	283	150
Shanghai Jiao Tong University	880	203	W. Wang	118	247	754	284	15	273	150
Simon Fraser University	1,680	108	J.H. Borden	242	99	1,348	220	21	202	150

Stanford University	3,891	25	P.R. Ehrlich	214	123	3,393	94	9	317	150
State University of New York Buffalo	36	345	S. Kumar	365	33	1,806	187	19	224	150
Stockholm University	3,141	36	C. Folke	122	241	5,131	43	35	68	150
Stony Brook University	1,556	121	N.S. Fisher	129	233	1,791	189	28	127	135
Syracuse University	991	186	C.T. Driscoll	284	67	4,518	57	37	53	150
Tartu University (University of Tartu)	891	202	U. Mander	113	257	612	294	16	263	150
Technical University of Denmark	2,529	52	T.H. Christensen	182	149	2,785	123	28	127	150
Technion	1,373	135	A. Ostfeld	73	305	209	325	8	322	72
Technische Universität Berlin	1,365	137	M. Jekel	149	207	1,807	186	26	146	150
Technische Universität Chemnitz	57	343	B. Platzer	38	335	53	339	4	337	39
Technische Universität Dresden	1,152	160	P. Offermann	195	136	139	332	6	326	150
Technische Universität München	2,224	70	R. Niessner	353	37	3,108	109	30	109	150
Tel Aviv University	1,337	141	G. Dagan	145	209	1,787	190	18	235	76
Texas A&M University	5,587	9	K.C. Donnelly	132	224	949	255	15	273	150
Texas Tech	607	250	P.K. Dasgupta	320	48	2,876	121	28	127	150
Tohoku University	1,693	106	T. Hirose	98	271	1,289	225	23	178	128
Tokyo Institute of Technology	921	199	I. Karube	489	14	4,685	52	33	82	150
Trinity College Dublin	674	233	M.B. Jones	74	303	652	291	16	263	150
Tsinghua University	2,638	48	Y. Qian	179	154	852	267	18	235	150
Tufts University	820	216	R.M. Vogel	123	240	1,062	244	15	273	115
Universidad Autonoma de Madrid	806	217	F. Suarez	57	322	549	301	11	309	55
Universidad de Chile	1,071	171	H.N. Niemeyer	202	131	1,248	228	17	250	150
Universidad de Granada	806	217	F. Suarez	57	322	549	301	11	309	55
Universidad del País Vasco	972	191	J. Bilbao	198	133	955	254	27	138	117
Universidad Nacional Autónoma de México ...	253	326	M. Ramos-Martinez	58	321	879	264	16	263	128
Universidad Politecnica de Madrid	632	246	L. Gil	110	261	852	267	19	224	137
Universidade de São Paulo	1,119	164	P. Artaxo	146	208	2,642	129	36	61	150
Universidade Estadual de Campinas	350	303	N. Duran	256	85	2,277	154	26	146	150
Università degli Studi di Firenze	1,338	139	F. Bussotti	75	301	569	300	17	250	143
Università degli Studi di Padova	1,613	115	A. Rinaldo	116	253	1,801	188	24	167	105
Università Di Bologna	1,589	116	P. Hrelia	130	230	973	250	18	235	150
Università di Pisa	397	289	L. Migliore	96	274	1,421	208	23	178	150
Universitat Autonoma de Barcelona	1,784	96	J. Penuelas	234	105	3,961	69	41	36	150
Universitat Bielefeld	376	291	A. Puhler	309	53	7,674	21	40	40	150
Universität Bremen	1,101	166	M. Diekmann	53	326	772	282	20	212	94
Universitat d'Alacant	594	254	J. Cortina	53	326	833	273	18	235	65

Universitat de València	1,315	144	M.D. Ferrando	95	276	785	280	16	263	53
Universität Frankfurt am Main	1,399	131	P. Egler	8	345	73	337	6	326	24
Universität Freiburg	1,098	167	C. Leibundgut	74	303	355	317	12	301	86
Universität Hamburg	485	275	R.S.J. Tol	154	195	975	248	20	212	103
Universität Karlsruhe	1,614	114	J. Baldyer	110	261	740	286	14	283	83
Universität Leipzig	157	331	O. Herbarth	136	221	839	271	20	212	150
Universität Munster (Westfälische Wilhelms-Un	238	327	A. Steinbuchel	301	57	2,998	114	39	45	150
Universität Politecnica de Catalunya	364	295	J.M. Baldasano	93	280	538	303	17	250	150
Universität Regensburg	475	279	J. Heinze	150	203	1,160	233	25	157	138
Universität Stuttgart	1,051	173	A. Bardossey	150	203	154	331	15	273	126
Universität Trier	290	319	W. Symader	39	334	43	340	3	340	25
Universität Tübingen	1,503	123	P.Grathwohl	112	258	1,112	234	17	250	150
Universität Wien (University of Vienna)	1,919	85	H. Horvath	118	247	813	277	11	309	150
Universität Zu Koln	1,097	168	W. Topp	63	315	327	319	13	291	47
Université Catholique de Louvain	1,498	124	J.P. Buchet	210	124	3,231	101	20	212	150
Universite de Liege	1,229	150	A. Dassargues	88	285	280	323	9	317	98
Université de Montréal	1,434	128	J. Ludden	97	273	1,490	204	18	235	129
Université de Nice Sophia Antipolis	487	274	M. Romeo	70	308	927	258	21	202	122
Universite Laval	2,290	64	L. Bernatchez	183	146	3,648	82	43	30	150
Universite Libre de Bruxelles	861	209	P. Servais	126	236	1,648	194	22	193	150
Université Paris Sorbonne	342	308	P. Claval	81	295	69	338	4	337	2
Universite Paris-Sud 11	1,173	156	P.H. Gouyon	71	307	1,605	198	17	250	135
Université Pierre et Marie Curie	3,105	38	A.P. Moller	599	10	19,973	6	58	9	150
Universiti Malaya (University of Malaya)	482	276	H.H. Masjuki	104	264	388	313	12	301	88
University College Cork	733	223	C. Hill	254	86	3,190	103	39	45	150
University College Dublin	855	210	E.P. Farrell	60	320	383	314	12	301	91
University College London	3,079	40	G. Bruni	63	315	326	320	8	322	71
University do Porto	353	301	R.A.R. Boaventura	64	313	728	288	17	250	73
University of Aberdeen	2,577	51	J.R. Speakman	274	75	3,058	111	32	89	150
University of Adelaide	1,824	92	H.P. Possingham	216	120	3,682	81	37	53	150
University of Alabama	1,114	165	J.B. McClintock	161	184	1,386	214	20	212	150
University of Alberta	4,074	23	P.M. Fedorak	151	200	1,428	207	18	235	118
University of Amsterdam	2,415	57	M.W. Sabelis	187	142	2,324	149	26	146	150
University of Antwerp	1,577	117	R. Blust	236	103	2,054	174	27	138	150
University of Arizona	5,630	8	C.P. Gerba	327	44	3,573	88	26	146	150
University of Athens	1,046	175	C. Varotsos	197	135	756	283	31	95	150

University of Auckland	1,562	120	L.R. Freguson	222	116	2,277	154	24	167	150
University of Barcelona	2,267	66	G. Rauret	150	203	2,122	167	26	146	150
University of Basel	1,071	171	C. Korner	183	146	4,228	63	43	30	150
University of Bath	141	335	F. Marken	260	81	2,553	133	34	74	150
University of Bergen	607	250	H.J.B. Birks	185	143	3,467	92	36	61	150
University of Bern	587	255	T.F. Stocker	150	203	3,718	79	39	45	150
University of Birmingham	2,447	55	R.M. Harrison	322	46	5,067	44	39	45	150
University of Bristol	2,249	68	G. Eglinton	313	51	3,723	78	25	157	150
University of British Columbia	2,406	58	W.R. Cullen	253	88	3,447	93	30	109	150
University of Calgary	747	220	B. Mayer	82	294	1,084	240	18	235	150
University of California, Berkley	614	247	D. Zilberman	2	347	1	347	1	346	4
University of California, Davis	8,058	3	B.D. Hammock	623	8	11,246	15	41	36	150
University of California, Irvine	824	215	D.R. Blake	312	52	4,064	66	49	21	150
University of California, Los Angeles	3,572	28	J.M. Diamond	184	145	2,956	118	22	193	88
University of California, Riverside	3,186	35	R. Atkinson	293	61	4,476	58	28	127	112
University of California, San Diego	874	204	B.O. Palsson	319	50	4,445	60	50	16	150
University of California, San Francisco	258	322	H.I. Maibach	1,156	2	15,464	10	35	68	150
University of California, Santa Barbara	1,368	136	O.A. Chadwick	126	236	2,700	126	31	95	150
University of California, Santa Cruz	863	208	M. Mangel	166	173	3,116	108	28	127	150
University of Cambridge	923	198	A.M. Donald	257	84	2,673	127	30	109	150
University of Canterbury	417	285	M.H. Turnbull	63	315	903	262	19	224	80
University of Cape Town	2,056	79	T.D. Noakes	398	30	4,475	59	38	51	150
University of Central Florida	583	256	N.B. Chang	54	324	75	336	4	337	65
University of Chicago	371	293	S.R. Sutton	246	93	3,859	71	31	95	150
University of Cincinnati	2,251	67	M.T. Suidan	251	90	2,506	139	26	146	150
University of Colorado at Boulder	1,634	111	A.R. Ravishankara	280	69	4,655	54	33	82	150
University of Connecticut	867	207	P. Setlow	322	46	2,482	140	34	74	150
University of Copenhagen	164	330	S. Loft	254	86	4,649	55	38	51	150
University of Delaware	916	200	D.L. Sparks	276	73	5,732	35	39	45	150
University of Dundee	910	201	J.A. Raven	263	80	3,914	70	32	89	150
University of Edinburgh	985	188	K. Donaldson	278	71	5,312	39	50	16	150
University of Florida	6,321	5	K.R. Reddy	217	119	3,284	98	28	127	150
University of Geneva	347	307	J. Buffle	178	157	2,201	161	29	118	150
University of Georgia	2,199	71	L.R. Beuchat	356	36	3,790	75	34	74	150
University of Ghent	3,580	27	W. Verstraete	323	45	4,670	53	40	40	150
University of Glasgow	1,854	91	R.W. Furness	229	109	2,910	120	31	95	150

University of Gothenburg	61	341	M. Hagberg	188	141	2,524	137	25	157	150
University of Groningen	752	219	H.J. Busscher	429	25	4,743	50	34	74	150
University of Helsinki	4,196	20	K. Kulmala	286	64	1,961	180	36	61	150
University of Hong Kong	718	225	H.H.P. Fang	204	128	2,308	151	29	118	150
University of Houston	285	321	S. Chellam	61	319	574	299	16	263	47
University of Illinois	5,071	11	M.R. Berenbaum	168	171	2,295	152	27	138	150
University of Illinois, Chicago	1,321	143	J.S. Brown	132	224	2,459	142	26	146	130
University of Indonesia	44	344	D.J. Melnick	68	311	957	252	21	202	98
University of Iowa	647	241	G.R. Carmicheal	259	83	3,606	86	41	36	150
University of Kansas	489	273	A.T. Peterson	155	193	2,830	122	35	68	150
University of Kentucky	825	214	L.W. Robertson	206	126	1,349	219	23	178	150
University of Lausanne	355	299	D. Haas	145	209	2,546	136	33	82	150
University of Leeds	977	190	M.J. Pilling	296	60	3,253	99	28	127	150
University of Leicester	1,076	170	P.B. Farmer	240	102	2,649	128	25	157	150
University of Liverpool	663	236	P.G. Appleby	155	193	2,552	134	26	146	150
University of Ljubljana	938	195	D. Lestan	48	330	459	308	14	283	45
University of London (Kings College of London)	8,127	2	P.D. Moore	206	126	469	306	6	326	19
University of Manchester	2,796	43	T.W. Choularto.	133	223	1,103	236	17	250	150
University of Manitoba	1,750	100	F. Erkes	80	297	1,990	178	22	193	114
University of Maryland	4,463	18	R.R. Colwell	488	15	8,320	20	35	68	150
University of Maryland Baltimore County	1,221	152	R.R. Colwell	477	17	9,220	17	37	53	150
University of Massachusetts	1,096	169	D.R. Lovley	285	66	6,590	30	63	5	150
University of Melbourne	2,495	53	M.A. Burgman	99	268	1,493	202	23	178	150
University of Miami	699	227	P.J. Walsh	283	68	3,989	67	39	45	150
University of Michigan	2,274	65	W.J. Weber	244	97	3,646	83	29	118	150
University of Minnesota	2,330	61	P.B. Reich	286	64	7,405	23	50	16	150
University of Missouri	1,226	151	G.E. Rottinghaus	189	140	1,419	209	20	212	150
University of Nebraska	1,966	80	P.J. Shea	92	281	1,060	245	21	202	138
University of New Hampshire	1,623	112	J.D. Aber	145	209	8,548	19	47	24	150
University of New Mexico	600	253	J.H. Brown	166	173	7,263	24	40	40	150
University of New South Wales	1,029	180	T.D. Waite	208	125	2,323	150	28	127	150
University of North Carolina, Chapel Hill	3,201	34	H.W. Paerl	204	128	4,284	62	33	82	150
University of North Texas	290	319	P.F. Hudak	160	187	794	278	10	315	91
University of Notre Dame	338	310	J.B. Fein	86	290	1,079	241	23	178	102
University of Nottingham	566	261	N.Hidal	126	236	974	249	18	235	128
University of Oklahoma	728	224	D.A. Sabatini	144	215	1,399	213	21	202	150

University of Oregon	323	313	P.J. Bartlein	96	274	3,124	107	25	157	150
University of Oslo	972	191	N.C. Stenseth	339	41	4,699	51	45	27	150
University of Otago	607	250	R Poulin	280	69	2,275	156	31	95	150
University of Ottawa	658	237	D. Krewski	309	53	5,015	45	31	95	150
University of Oxford	1,140	161	R.G. Compton	917	4	16,202	9	51	15	150
University of Pennsylvania	407	288	A.B. Fisher	277	72	2,995	116	31	95	150
University of Pittsburgh	482	276	V.E. Kagan	415	28	5,315	38	35	68	150
University of Quebec	874	204	C. Bouchard	705	6	28,823	3	63	5	150
University of Queensland	1,460	127	J.Keller	145	209	2,121	168	31	95	150
University of Reading	2,327	62	R.M. Sibly	119	245	2,252	159	18	235	150
University of Rochester	301	314	G. Oberdorster	165	178	3,859	71	33	82	150
University of Saskatchewan	2,150	73	J.P. Giesy	320	48	6,648	28	50	16	150
University of Science and Technology of China	449	283	H.Q. Yu	116	253	750	285	18	235	150
University of Sheffield	3,080	39	K.J. Gaston	442	21	7,091	25	54	12	150
University of South Carolina	1,776	97	I. Lerche	340	40	793	279	11	309	150
University of South Florida	649	239	J.B. Rose	178	157	4,202	64	36	61	150
University of Southampton	690	230	C.Cooper	484	16	13,232	13	61	8	150
University of Southern California	699	227	C. Sioutas	171	166	2,579	131	34	74	150
University of St Andrews	366	294	I.A. Johnston	246	93	1,977	179	25	157	150
University of Surrey	412	287	C. Loannides	244	97	1,928	182	18	235	150
University of Sussex	358	298	P.B. Hitchcock	1,045	3	11,086	16	36	61	150
University of Sydney	2,675	47	R. Shine	567	12	14,222	11	44	28	150
University of Technology, Sydney	384	290	S. Vigneswaran	131	227	730	287	16	263	150
University of Tennessee Knoxville	1,031	177	G.S. Sayler	248	91	3,325	97	30	109	150
University of Texas at Austin	985	188	P.Thomas	169	170	2,548	135	29	118	150
University of Tokyo	1,622	113	N. Miyazaki	134	222	1,099	237	19	224	150
University of Toronto	4,879	13	D. Mackay	242	99	4,634	56	34	74	150
University of Tsukuba	543	266	M. Yamamoto	575	11	21,360	5	70	4	150
University of Twente	155	332	K. Seshan	120	243	1,585	199	24	167	111
University of Utah	2,098	77	J.R. Ehleringer	271	77	5,870	34	43	30	150
University of Vermont	1,258	148	N.J. Gotelli	88	285	3,357	95	27	138	114
University of Victoria	508	272	B.W. Glickman	232	107	2,343	147	23	178	150
University of Virginia	959	193	S.A. Macko	220	117	3,728	77	29	118	150
University of Warwick	299	317	J.C. Murrell	116	253	2,350	145	27	138	150
University of Washington	6,354	4	D.P. Lettenmailer	305	56	4,072	65	49	21	150
University of Waterloo	1,408	130	J. Pawliszyn	399	29	5,999	31	52	14	150

University of Western Australia	2,068	78	H. Sivapalan	153	197	1,700	193	25	157	150
University of Western Ontario	11,605	1	W.S.Fyfe	269	79	2,272	157	13	291	150
University of Wisconsin	2,699	46	J.J. Schauer	145	209	2,351	144	32	89	150
University of Wollongong	361	297	N.A.S. Taylor	70	308	468	307	9	317	69
University of York	577	258	J.P.W. Young	99	268	2,064	172	26	146	150
University of Zurich	576	259	B. Schmid	178	157	3,988	68	36	61	150
Univesitas Gadjah Mada	59	342	M.A. Marfai	9	344	11	344	2	342	17
Uppsala University	1,129	162	L. Hakanson	173	164	1,515	200	15	273	114
Utah State	2,443	56	M.M. Caldwell	151	200	3,544	89	30	109	133
Utrecht University	3,324	32	J.L.M. Hermens	171	166	2,611	130	30	109	150
Vanderbilt University	329	311	F.P. Guengerich	663	7	32,945	2	58	9	150
Victoria University of Wellington	193	329	C.H. Daugherty	81	295	654	290	13	291	95
Vienna University of Technology	329	311	H. Puxbaum	170	169	2,093	170	29	118	150
Virginia Polytechnic Institute	1,399	131	S.T. Oyama	181	151	2,477	141	31	95	150
Vrije Universiteit, Brussels	739	221	D.L. Massart	515	13	9,064	18	40	40	150
VU University Amsterdam	2,470	54	P. Nijkamp	436	22	1,911	183	19	224	150
Wageningen University	4,818	14	G Lettinga	307	55	3,521	90	37	53	150
Wake Forest University	301	314	M.R. Silman	28	341	852	267	12	301	73
Waseda University	132	337	S.Tsuneda	159	189	1,365	215	20	212	150
Washington State University	996	185	D.R. Call	95	276	1,630	197	29	118	150
Washington University in St. Louis	349	305	P. Biswas	203	130	2,071	171	28	127	150
Wayne State University	734	222	M.Goodman	177	160	3,040	112	30	109	150
West Virginia University	564	262	V. Castranova	365	33	5,280	40	40	40	150
Yale University	1,003	183	M. Elimelech	183	146	3,628	84	42	34	130
Yonsei University	350	303	Y.R. Pyun	80	297	892	263	19	224	150
York University	353	301	N.D. Yan	88	285	912	260	21	202	143
Zhejiang University	1,793	94	K.F.Cen	1,175	1	3,060	110	19	224	150

Agricultural/Biological Science Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	398	240	P. Linko	110	220	848	240	14	263	150
Aarhus University	2,846	87	C. Bendixen	91	259	1,517	157	18	207	150
Arizona State University	269	259	N.B. Grimm	90	262	2,196	106	28	82	150
Ateneo de Manila University	17	344	F.M. Dayrit	17	341	193	324	5	333	30
Auburn University	4,716	49	C.E. Boyd	131	187	749	255	13	272	125
Australian National University	5,224	38	D.B. Lindenmayer	276	62	3,516	49	36	35	150
Boston College	112	306	E.R. Kantrowitz	152	154	853	238	16	242	150
Boston University	2,161	123	I. Valiela	165	136	2,966	72	23	134	150
Brandeis University	363	246	M. Rosbash	253	72	5,621	26	49	11	150
Brigham Young University	205	273	R.D. Pope	26	337	210	322	7	323	13
Brown University	1,338	168	J.W. Head	382	31	3,842	47	45	17	150
California Institute of Technology (Calt...	1,110	182	E.H. Davidson	314	43	5,324	28	47	14	150
Cardiff University	2,021	130	S.J. Ormerod	152	154	2,327	101	24	123	150
Carnegie Mellon University	386	242	M.G.Morgan	79	280	771	253	11	294	98
Case Western Reserve University	1,292	169	M. Jacobs-Lorena	116	210	1,187	188	24	123	150
Chalmers University of Technology	502	226	A.S. Sandberg	96	244	1,235	184	18	207	113
Charles University	157	287	P. Pysek	125	197	1,674	143	24	123	144
Chinese University of Hong Kong	190	279	T.B. Ng	409	23	2,912	76	38	28	150
Chulalongkorn University	1,009	187	N. Ruanfrungsi	87	265	995	222	12	283	150
City University of Hong Kong	505	225	R.S.S. Wu	134	184	1,774	134	25	109	150
City University of New York	93	316	R.E. Stark	68	299	789	250	16	242	150
Colorado State University	1,548	159	K. Paustian	126	194	3,332	54	35	44	150
Columbia University	2,783	88	S.B. Heymsfield	494	11	12,772	10	59	5	150
Cornell University	15,349	2	K.J. Niklas	163	139	1,684	141	23	134	110
Curtin University of Technology	664	212	B.B. Lamont	165	136	2,331	100	23	134	150
Dalhousie University	2,847	86	H. Whitehead	144	170	1,032	214	22	149	115
Dartmouth College	2,271	119	T. Platt	141	177	2,998	71	20	172	150
Delft University of Technology	581	217	H.Y. Steensma	94	250	1,771	135	19	193	150
Drexel University	701	205	J.R. Spotila	117	209	1,143	194	16	242	150
Duke University	5,047	41	R.J. Lefkowitz	752	2	43,621	1	93	1	150
Durham University	1,405	164	J.A. Gatehouse	150	157	1,929	124	31	60	150
Ecole Normale Supérieure de Lyon	226	269	C. Dumas	150	157	2,159	109	26	99	150
École Normale Supérieure, Paris	683	210	R.Lafont	129	189	798	245	16	242	150
École Polytechnique	122	301	B. Giebels	108	224	1,259	180	29	72	150

Ecole Polytechnique Fédérale de Lausanne	430	234	E.A.D. Mitchell	47	322	248	319	13	272	150
Eindhoven University of Technology	129	296	P.A. LeClercq	100	237	478	283	8	311	150
Emory University	1,878	140	F.B.M. De Wael	127	193	2,043	115	28	82	127
Erasmus University Rotterdam	681	211	J.H.J. Hoeijmakers	283	57	9,390	12	61	4	150
ETH Zurich (Swiss Federal Institute of Technology)	4,248	55	O.Sticher	318	40	2,607	85	20	172	150
Florida International University	1,097	185	J. Francisco	76	287	1,007	218	23	134	150
Florida State University	158	286	S.K. Sathe	82	277	1,149	193	16	242	82
Freie Universität Berlin	2,755	89	H.Kurschner	102	234	274	315	12	283	150
Friedrich Alexander Universität Erlangen Nürnberg	1,424	163	D.P. Hader	315	42	2,236	104	30	66	150
Fudan University	869	194	K.Tang	189	114	659	266	13	272	150
Georg August Universität Göttingen	5,009	42	T. Tscharncke	161	140	2,560	89	38	28	150
George Mason University	83	320	L.K. Matukumalli	27	335	363	303	11	294	150
George Washington University	788	200	B. Wood	106	228	1,125	200	18	207	84
Georgetown University	643	214	J. Mann	33	330	442	288	15	257	34
Georgia Institute of Technology	1,209	176	T.W. Snell	97	242	1,327	176	18	207	89
Georgia State University	469	230	C.D. Derby	107	227	609	273	20	172	109
Goteborg University	376	243	A.S. Sandberg	96	244	1,187	188	18	207	114
Harvard University	4,557	53	E.O. Wilson	148	161	1,930	123	12	283	106
Hebrew University of Jerusalem	5,727	29	D. Sklan	220	94	2,168	108	29	72	150
Heidelberg Universität	1,855	144	M. Wink	308	45	2,420	95	23	134	150
Hokkaido University	7,750	19	M. Osaki	146	166	872	235	18	207	150
Hong Kong Polytechnic University	397	241	C.K. Tse	300	48	1,445	165	23	134	150
Hong Kong University of Science & Techno...	691	207	P.Y. Qian	167	133	1,285	179	25	109	150
Humboldt-Universität zu Berlin	371	244	K. Herter	26	337	22	344	0	346	1
Imperial College London	4,783	47	H.C. Godfray	195	108	3,457	50	35	44	150
Indian Institute of Technology Bombay (I...	245	265	K.V. Venkatesh	69	296	369	302	13	272	62
Indian Institute of Technology Delhi (II...	449	233	P. Vasudevan	145	167	1,037	213	16	242	138
Indian Institute of Technology Kanpur (I...	261	260	P.S. Vankar	94	250	192	325	6	328	59
Indiana University Bloomington	2,616	102	J.D. Palmer	153	153	5,017	29	39	25	150
Indiana University Indianapolis	540	221	J.F. Fitzgerald	215	95	2,461	93	22	149	150
Iowa State University	2,931	82	R.S. Kanwar	182	119	1,172	191	16	242	150
Johns Hopkins University	3,296	73	S.H. Snyder	300	48	14,180	6	75	2	150
Kansas State University	2,132	125	K.J. Kramer	201	104	1,923	125	22	149	150
Katholieke Universiteit Leuven	4,140	56	E. Decuyere	402	24	1,976	118	23	134	150
Keio University	513	224	S. Yamamuri	325	38	1,628	145	20	172	150

King Fahd University of Petroleum & Minerals	107	309	M. Sadiq	45	324	395	297	5	333	26
King Saud University	1,158	178	F.S. El-Ferly	129	189	923	230	13	272	150
Kobe University	1,872	142	M. Takeda	126	194	683	263	15	257	150
Korea Advanced Institute of Science & Technology	322	251	S.T. Lee	143	173	1,133	198	19	193	150
Korea University	1,160	177	S.T. Lim	99	239	724	261	16	242	150
Kyoto University	10,755	7	M. Tanaka	376	32	2,358	98	29	72	150
Kyushu University	5,320	37	Y. Iwasa	191	110	3,183	59	28	82	137
La Trobe University	1,754	148	A.A. Hofman	241	80	2,933	74	34	51	150
Lancaster University	194	277	K.C. Jones	448	15	6,609	20	54	7	150
Leiden University	2,712	95	R. Verpoorte	490	12	3,198	58	30	66	150
Linköping University	486	228	P. Milberg	105	229	1,234	185	18	207	86
London School of Economics and Political Science	170	283	E. Neumayer	101	236	921	232	19	193	17
Loughborough University	476	229	G. Shama	56	312	362	304	11	294	78
Louisiana State University	2,602	105	R.L. Parish	97	242	109	338	5	333	30
Ludwig-Maximilians-Universität München	4,687	50	H. Wagner	313	44	2,903	77	16	242	150
Lund University	5,005	43	S. Bensch	144	170	2,550	90	31	60	150
Maastricht University	873	193	W.H.M. Saris	397	28	7,413	16	48	12	150
Macquarie University	1,339	167	M. Westoby	175	127	4,915	32	37	30	150
Mahidol University	1,239	174	V. Baimai	86	269	496	280	14	263	150
Masaryk University	929	190	M. Chytrý	72	291	530	277	19	193	118
Massachusetts Institute of Technology	96	314	V.R. Young	421	19	4,781	34	26	99	150
McGill University	5,387	34	H.H. Ramaswamy	235	86	1,473	162	20	172	150
McMaster University	1,897	139	C.M. Wood	436	17	3,016	69	37	30	150
Michigan State University	9,253	14	M.G. Nair	233	88	3,073	64	30	66	150
Michigan Technological University	882	192	K.S. Pregitzer	165	136	4,949	31	46	16	150
Monash University	2,241	120	J. Beardall	76	287	1,001	219	19	193	150
Montana State University	2,421	109	G.A. Strobel	7	345	12	346	2	344	33
Moscow State University	3,223	77	D.G. Zvyagintsev	213	97	272	316	6	328	150
Nagoya University	4,135	57	M. Kimura	646	4	13,889	7	28	82	150
Nanjing University	842	196	R.X. Tan	147	163	1,528	152	24	123	150
Nanyang Technological University	429	237	Y.K. Ip	122	201	426	292	20	172	150
National Taiwan University	3,462	71	W.N. Tzeng	87	265	543	275	16	242	96
National Tsing Hua University	255	262	A.S. Chiang	62	306	939	228	17	228	135
National University of Ireland, Galway	764	201	M.D. Guiry	83	273	432	291	11	294	97
National University of Singapore	2,646	98	P.K.L. Ng	255	71	996	221	14	263	150
New Mexico State University	1,803	146	D.M. Hailford	105	229	586	274	10	306	150

New York University	1,465	162	G. Stotsky	179	123	1,875	127	22	149	103
Newcastle University	2,953	81	S.A. Edwards	121	204	802	244	19	193	150
North Carolina State University	10,073	12	J.W. Wilcut	141	177	529	278	18	207	143
Northeastern University	555	220	D.L. Franko	91	259	1,557	150	24	123	133
Northwestern University	1,586	154	L.I. Gilbert	251	73	1,496	160	21	162	150
Norwegian University of Science & Technology	1,917	137	E. Roskaft	111	219	1,062	207	21	162	145
Ohio State University	8,876	15	R. Lal	293	52	3,119	62	31	60	150
Oklahoma State University	3,758	66	W.R. Raun	116	210	956	227	20	172	150
Open University UK	569	218	J. W. Silverton	98	240	3,125	61	26	99	114
Oregon State University	10,009	13	J.J. Morrell	156	149	417	294	11	294	133
Osaka University	1,955	133	R. Tanaka	231	90	1,733	139	23	134	150
Peking University	1,467	161	H. Gu	61	308	441	289	12	283	150
Pennsylvania State University	7,824	18	C.R. Bursey	280	59	407	295	12	283	121
Pohang University of Science And Technology	335	249	G. An	133	186	2,032	117	29	72	150
Portland State University	461	231	A.L. Reyensbach	72	291	2,269	103	27	90	150
Princeton University	1,873	141	R.M. May	371	33	12,961	9	27	90	150
Purdue University	7,925	17	W.P. McCafferty	211	99	374	301	14	263	65
Queen's University	2,281	118	J.P. Smol	300	48	27,445	3	30	66	150
Queen's University of Belfast	2,335	113	R.W. Elwood	141	177	1,075	204	20	172	95
Queensland University of Technology	567	219	P.B. Mather	79	280	611	271	12	283	102
Radboud University, Nijmegen	2,021	130	G. Van Der Velde	181	122	1,627	146	24	123	150
Rensselaer Polytechnic Institute	344	248	J.P. Ferris	161	140	1,119	201	17	228	150
Rheinisch Westfalische Technische Hochschule Aach	643	214	R. Fischer	240	81	3,361	52	36	35	150
Rheinische Friedrich Wilhelms Universitat Bonn	4,093	59	C. Sengonca	85	271	255	318	8	311	43
Rice University	650	213	D.C. Queller	125	197	2,170	107	25	109	95
Rochester Institute of Technology	85	319	A.A. Batabyal	112	218	176	327	8	311	19
Royal Institute of Technology, KTH	588	216	A.K. Borg-Karlson	83	273	845	241	21	162	127
Royal Melbourne Institute of Technology	430	234	A. J. Sinclair	211	99	2,048	114	22	149	150
Rutgers	5,565	33	C.T. Ho	402	24	5,841	25	37	30	150
Saint-Petersburg State University	804	199	A.D. Nozdrachev	247	75	157	330	6	328	150
San Diego State University	1,099	184	J.B. Zedler	113	216	1,818	130	27	90	100
Sapienza University of Rome	0	348		0	348	0	348	0	346	0
Sciences Po Paris	4	347	M.C. Smounts	3	347	1	347	1	345	1
Seoul National University	2,886	83	I.K. Han	237	85	1,013	217	17	228	150
Shanghai Jiao Tong University	914	191	K. Tang	189	114	673	264	13	272	150
Simon Fraser University	2,529	107	J.H. Borden	242	79	1,348	173	21	162	150

Stanford University	4,270	54	M.W. Feldman	279	61	5,448	27	35	44	150
State University of New York Buffalo	14	345	K.M. Frothingham	5	346	64	340	3	339	7
Stockholm University	2,717	94	C. Wiklund	122	201	1,794	131	21	162	98
Stony Brook University	2,612	104	W.L. Jungers	115	214	1,324	177	19	193	137
Syracuse University	175	280	C.T. Driscoll	284	56	4,518	36	37	30	150
Tartu University (University of Tartu)	1,107	183	M. Zobel	88	264	1,596	148	21	162	150
Technical University of Denmark	2,653	97	S.R. Jensen	171	128	1,222	186	20	172	150
Technion	1,288	170	M.R. Warburg	96	244	222	321	5	333	50
Technische Universität Berlin	2,214	121	F. Bohlmann	548	9	3,273	56	0	346	150
Technische Universität Chemnitz	11	346	K.H. Hoffmann	125	197	735	258	15	257	145
Technische Universität Dresden	1,251	173	J. Ludwig-Muller	80	279	798	245	22	149	150
Technische Universität München	4,055	61	M. Kirchgessner	475	14	1,074	205	12	283	150
Tel Aviv University	2,718	93	Y. Loya	143	173	1,626	147	23	134	150
Texas A&M University	10,339	9	S.B. Vinson	268	66	1,861	128	18	207	150
Texas Tech	2,298	116	H.T. Nguyen	147	163	2,054	113	31	60	150
Tohoku University	4,012	62	H. Ohashi	161	140	448	287	8	311	128
Tokyo Institute of Technology	764	201	N. Okada	177	125	2,665	83	36	35	150
Trinity College Dublin	1,228	175	M.J. Gibney	223	93	2,781	78	28	82	150
Tsinghua University	731	204	B. Liu	94	250	777	252	23	134	27
Tufts University	2,288	117	R.M. Russell	287	53	4,993	30	35	44	150
Universidad Autonoma de Madrid	1,662	150	F. Lara	119	206	279	312	10	306	150
Universidad de Chile	2,318	115	H.N. Niemeyer	202	103	1,248	181	17	228	150
Universidad de Granada	1,662	150	F. Lara	119	206	279	312	10	306	150
Universidad del País Vasco	1,129	181	J.I. Garcia	55	314	542	276	19	193	69
Universidad Nacional Autónoma de México ...	5,715	30	H. Brailovsky	105	229	40	343	3	339	18
Universidad Politecnica de Madrid	1,539	160	L. Gil	110	220	852	239	19	193	137
Universidade de São Paulo	10,684	8	F.M. Lajolo	139	180	798	245	14	263	145
Universidade Estadual de Campinas	248	264	N. Bragagnolo	37	329	138	336	8	311	42
Università degli Studi di Firenze	2,636	100	F. Gherardi	145	167	790	249	20	172	150
Università degli Studi di Padova	2,963	80	A. Minelli	110	220	1,137	195	16	242	92
Università Di Bologna	3,231	76	L. Alibardi	156	149	356	306	21	162	56
Università di Pisa	355	247	A. Saviozzi	60	309	496	280	12	283	36
Universitat Autonoma de Barcelona	2,851	85	J. Penuelas	234	87	3,961	44	41	22	150
Universitat Bielefeld	1,081	186	K.J. Dietz	143	173	2,406	96	32	55	150
Universität Bremen	1,146	179	V.B. Meyer	199	106	786	251	13	272	150
Universitat d'Alacant	696	206	P. Sanchez	57	310	473	284	15	257	95

Universitat de València	2,629	101	J.A. Raga	134	184	669	265	13	272	150
Universität Frankfurt am Main	2,023	129	A. Mosandi	191	110	875	234	14	263	150
Universität Freiburg	2,640	99	H. Renneberg	238	83	2,966	72	32	55	150
Universität Hamburg	276	256	H. Steinhart	271	64	2,353	99	26	99	150
Universität Karlsruhe	687	208	M. Metzler	168	132	1,490	161	21	162	150
Universität Leipzig	72	326	K. Arnold	167	133	1,745	138	26	99	150
Universität Munster (Westfälische Wilhelms-Un	191	278	T. Hofmann	363	34	6,164	22	42	21	150
Universität Politecnica de Catalunya	98	312	L. Candela	19	340	51	342	3	339	37
Universität Regensburg	1,137	180	J. Heinze	150	157	1,160	192	25	109	138
Universität Stuttgart	428	238	A. Bardossey	150	157	154	332	15	257	126
Universität Trier	250	263	T. Schmitt	79	280	509	279	17	228	150
Universität Tübingen	2,697	96	F. Oberwinkler	193	109	1,335	174	19	193	150
Universität Wien (University of Vienna)	4,108	58	G. Buchbauer	243	78	1,057	208	14	263	150
Universität Zu Köln	2,018	132	M. Melkonian	145	167	1,531	151	20	172	142
Université Catholique de Louvain	1,857	143	S. Lutts	68	299	931	229	17	228	98
Universite de Liege	2,329	114	C. Kevers	95	247	726	260	17	228	134
Université de Montréal	2,384	110	A. Barhard	95	247	857	237	17	228	75
Université de Nice Sophia Antipolis	685	209	A. Meinesz	62	306	714	262	19	193	150
Universite Laval	4,814	46	C. Bouchard	701	3	29,931	2	63	3	150
Universite Libre de Bruxelles	1,608	153	J.C. Gregoire	43	327	277	314	8	311	82
Université Paris Sorbonne	126	297	T. Pradeu	9	344	14	345	3	339	1
Universite Paris-Sud 11	2,383	111	A. Cave	239	82	1,135	197	16	242	150
Université Pierre et Marie Curie	3,777	64	A.P. Moller	599	6	19,973	4	58	6	150
Universiti Malaya (University of Malaya)	811	198	S.M. Phang	55	314	346	308	11	294	114
University College Cork	2,466	108	A.L. Kelly	196	107	2,684	82	24	123	150
University College Dublin	2,613	103	D.W. Sun	208	101	1,513	158	27	90	147
University College London	4,071	60	D.U. Pfeiffer	158	148	1,443	166	20	172	150
University do Porto	104	310	P.B. Andrade	152	154	1,070	206	25	109	150
University of Aberdeen	3,752	67	P.Smith	94	250	1,840	129	27	90	150
University of Adelaide	4,605	52	R.D. Graham	131	187	1,217	187	18	207	150
University of Alabama	1,924	136	J.B. MCClintonck	161	140	1,386	170	20	172	150
University of Alberta	6,996	20	L.M. Dosdall	77	285	228	320	11	294	99
University of Amsterdam	2,981	79	M.W. Sabelis	187	117	2,324	102	26	99	150
University of Antwerp	2,170	122	R. Ceulemans	212	98	3,995	42	35	44	150
University of Arizona	6,904	22	D.V. Lightner	160	145	1,238	183	29	72	150
University of Athens	1,262	171	B. Galatis	69	296	358	305	12	283	33

University of Auckland	2,590	106	X.D. Chen	414	22	1,935	122	25	109	150
University of Barcelona	3,589	68	J.L. Araus	100	237	1,032	214	22	149	150
University of Basel	1,566	158	T. Boller	287	53	8,226	15	48	12	150
University of Bath	33	339	W. Engstrom	86	269	387	300	8	311	117
University of Bergen	2,737	92	V. Torsvik	45	324	2,614	84	23	134	73
University of Bern	109	308	J.W. Blum	263	67	1,746	137	26	99	150
University of Birmingham	140	292	J.F. Kennedy	261	69	1,585	149	18	207	150
University of Bristol	5,326	36	A.I. Houston	182	119	3,301	55	26	99	114
University of British Columbia	8,788	16	D.D. Kitts	144	170	142	335	23	134	131
University of Calgary	231	267	W.A. Kerr	69	296	129	337	7	323	46
University of California, Berkley	1,346	166	J.E. Casida	586	7	6,715	19	29	72	150
University of California, Davis	18,452	1	B.D. Hammock	623	5	11,246	11	41	22	150
University of California, Irvine	130	295	M.L. Goulden	78	283	2,776	79	28	82	150
University of California, Los Angeles	4,727	48	P.S. Nobel	190	112	1,458	164	17	228	114
University of California, Riverside	5,863	28	M.S. Mulla	190	112	1,039	212	15	257	128
University of California, San Diego	149	289	R.T. Carson	56	312	2,584	86	20	172	124
University of California, San Francisco	41	337	E.A. Holly	166	135	3,356	53	36	35	150
University of California, Santa Barbara	113	305	D.A. Cleveland	26	337	156	331	8	311	36
University of California, Santa Cruz	1,812	145	W. Cheng	53	319	1,443	166	20	172	74
University of Cambridge	530	222	C.J.C. Phillips	137	182	1,054	209	18	207	150
University of Canterbury	196	276	J.A. Gerrard	75	289	493	282	18	207	114
University of Cape Town	3,471	70	L. London	87	265	390	298	11	294	150
University of Central Florida	457	232	H.W. Daniell	135	183	2,923	75	36	35	150
University of Chicago	36	338	C.S. Yuan	171	128	2,463	92	29	72	150
University of Cincinnati	1,583	155	G.W. Uetz	74	290	1,185	190	17	228	54
University of Colorado at Boulder	226	269	R.K. Monson	143	173	3,368	51	36	35	150
University of Connecticut	3,278	74	C. Faustman	67	302	611	271	16	242	104
University of Copenhagen	10,240	11	L.H. Skisted	350	36	3,047	65	32	55	150
University of Delaware	488	227	W.F. Ritter	109	223	403	296	3	339	45
University of Dundee	1,583	155	J.A. Raven	263	67	3,914	46	32	55	150
University of Edinburgh	316	252	S. Brotherstone	78	283	868	236	18	207	96
University of Florida	15,314	3	W.W. Thatcher	306	47	3,621	48	32	55	150
University of Geneva	120	303	A.M. Shelton	120	205	1,712	140	22	149	150
University of Georgia	3,239	75	G. Hoogenboom	161	140	1,043	211	17	228	150
University of Ghent	6,523	26	P. Sorgeloos	283	57	2,042	116	28	82	150
University of Glasgow	4,003	63	G.D. Ruxton	244	77	2,157	110	24	123	150

University of Gothenburg	94	315	L. Lissner	155	151	4,417	37	31	60	150
University of Groningen	289	253	J.P. Bakker	147	163	2,584	86	30	66	150
University of Helsinki	6,928	21	V. Piironen	103	233	1,351	172	24	123	150
University of Hong Kong	169	284	F. Chen	184	118	1,473	162	25	109	150
University of Houston	24	343	F.L. Castille	17	341	175	328	4	338	33
University of Illinois	10,252	10	D.H. Baker	401	26	3,008	70	22	149	150
University of Illinois, Chicago	2,151	124	G.A. Cordell	307	46	3,260	57	22	149	150
University of Indonesia	100	311	W. Schultink	52	321	729	259	16	242	93
University of Iowa	60	331	S. Ramaswamy	65	304	1,948	121	25	109	150
University of Kansas	153	288	K.P. Price	53	319	651	267	14	263	75
University of Kentucky	1,576	157	Y.L. Xiong	122	201	736	257	18	207	135
University of Lausanne	74	324	K. Hostettmann	417	20	4,018	41	29	72	150
University of Leeds	430	234	E. Dickinson	317	41	3,145	60	34	51	150
University of Leicester	1,370	165	G.C. Whitelam	108	224	1,951	120	27	90	150
University of Liverpool	200	274	R.H. Marrs	138	181	993	223	18	207	126
University of Ljubljana	1,936	135	F. Stampar	83	273	300	310	11	294	51
University of London (Kings College of London)	12,798	4	P.D. Moore	206	102	469	285	6	328	19
University of Manchester	2,750	90	S.G. Oliver	247	75	651	267	39	25	150
University of Manitoba	3,767	65	D.S. Jayas	231	90	1,102	203	18	207	137
University of Maryland	5,569	32	R.R. Colwell	488	13	8,320	13	35	44	150
University of Maryland Baltimore County	1,901	138	T.W. Cronin	98	240	1,394	169	23	134	112
University of Massachusetts	981	189	D.J. McClements	296	51	2,448	94	36	35	150
University of Melbourne	5,154	40	M.A. Elgar	148	161	1,777	133	23	134	150
University of Miami	121	302	D. Letson	27	335	159	329	7	323	59
University of Michigan	229	268	I. Perfecto	71	293	961	226	18	207	95
University of Minnesota	10,767	6	P.B. Reich	286	55	7,405	17	50	10	150
University of Missouri	6,551	25	G.E. Rottinghaus	189	114	1,419	168	20	172	150
University of Nebraska	5,610	31	M.A. Hanna	215	95	2,479	91	26	99	150
University of New Hampshire	1,941	134	T.D. Kocher	95	247	2,769	80	31	60	149
University of New Mexico	120	303	R.P. Berrens	65	304	334	309	12	283	63
University of New South Wales	149	289	B.E. Medlyn	29	334	809	243	18	207	88
University of North Carolina, Chapel Hill	3,497	69	K.H. Lee	417	20	4,846	33	39	25	150
University of North Texas	50	335	P.F. Hudak	160	145	794	248	10	306	91
University of Notre Dame	75	323	J.L. Tank	70	294	1,044	210	22	149	121
University of Nottingham	817	197	A.J. Taylor	119	206	1,128	199	20	172	150
University of Oklahoma	124	299	Y. Luo	89	263	1,757	136	27	90	150

University of Oregon	133	293	R.W. Smiley	33	330	268	317	10	306	41
University of Oslo	276	256	N.C. Stenseth	339	37	4,699	35	45	17	150
University of Otago	364	245	C.R. Townsend	116	210	3,106	63	25	109	99
University of Ottawa	199	275	J.T. Arnason	225	92	2,231	105	22	149	150
University of Oxford	327	250	D.W. MacDonald	383	30	4,322	38	35	44	150
University of Pennsylvania	69	328	L. McCauley	55	314	421	293	17	228	96
University of Pittsburgh	52	333	R. Bentley	126	194	1,246	182	11	294	78
University of Quebec	847	195	P. Savoie	84	272	185	326	8	311	85
University of Queensland	1,629	152	M.P. Zalucki	155	151	998	220	17	228	150
University of Reading	4,673	51	J.B. Harborne	275	63	3,046	66	16	242	150
University of Rochester	29	341	D.A. Cory-Slechta	123	200	2,093	111	25	109	150
University of Saskatchewan	4,958	44	A. Vandenberg	93	255	202	323	8	311	97
University of Science and Technology of China	271	258	Y. Zhang	321	39	1,676	142	19	193	150
University of Sheffield	3,178	78	K.J. Gaston	442	16	7,091	18	54	7	150
University of South Carolina	1,707	149	A. L. Hugues	280	59	6,211	21	37	30	150
University of South Florida	97	313	P. Stiling	93	255	1,329	175	21	162	61
University of Southampton	210	272	D. Goulson	129	189	1,295	178	24	123	146
University of Southern California	57	332	M.C. Yu	260	70	8,256	14	47	14	150
University of St Andrews	110	307	N.P. Botting	77	285	1,020	216	17	228	137
University of Surrey	167	285	M.N. Clifford	113	216	2,067	112	25	109	150
University of Sussex	174	281	I. Scoones	57	310	771	253	11	294	46
University of Sydney	6,466	27	R. Shine	567	8	14,222	5	44	19	150
University of Technology, Sydney	68	329	D. Eamus	114	215	1,521	154	25	109	136
University of Tennessee Knoxville	990	188	A.R. Womac	70	294	146	334	6	328	104
University of Texas at Austin	83	320	U.G. Mueller	81	278	1,519	155	22	149	114
University of Tokyo	2,859	84	A. Isogai	388	29	3,019	68	28	82	150
University of Toronto	6,896	23	N. Mrosovsky	182	119	1,972	119	27	90	150
University of Tsukuba	64	330	T. Maekawa	66	303	390	298	12	283	111
University of Twente	29	341	A.Y. Hoekstra	32	332	150	333	8	311	45
University of Utah	2,365	112	J.R. Ehleringer	271	64	5,870	24	43	20	150
University of Vermont	1,798	147	P.S. Kindstedt	46	323	437	290	13	272	46
University of Victoria	131	294	G.C. Van Kooten	94	250	627	270	14	263	88
University of Virginia	126	297	J.D. Fuentes	54	317	1,651	144	21	162	150
University of Warwick	144	291	G.D. Bending	44	326	922	231	20	172	60
University of Washington	416	239	D.P. Lettenmaier	233	88	4,039	40	40	24	150
University of Waterloo	221	271	J. Pawliszyn	399	27	5,999	23	52	9	150

University of Western Australia	5,155	39	K. Sivasthamparan	238	83	1,519	155	19	193	150
University of Western Ontario	2,104	126	N.P.A. Nuner	128	192	1,890	126	26	99	150
University of Wisconsin	2,747	91	H.F. Deluca	841	1	13,121	8	36	35	150
University of Wollongong	87	318	D.W.T. Griffith	108	224	842	242	18	207	150
University of York	279	255	I.A. Graham	91	259	1,509	159	29	72	150
University of Zurich	240	266	B. Schmid	178	124	3,988	43	36	35	150
Univesitas Gadjah Mada	171	282	T. Jacob	16	343	353	307	7	323	45
Uppsala University	522	223	L. Andersson	200	105	3,915	45	33	53	150
Utah State	3,301	72	C.M.U. Neale	87	265	453	286	11	294	146
Utrecht University	5,342	35	A.C. Beynen	434	18	2,759	81	19	193	150
Vanderbilt University	71	327	R.D. Tanner	93	255	280	311	7	323	147
Victoria University of Wellington	51	334	M. Zhang	68	299	73	339	5	333	48
Vienna University of Technology	73	325	C.P. Kubicek	250	74	2,402	97	29	72	150
Virginia Polytechnic Institute	6,698	24	S. Mostaghimi	116	210	916	233	13	272	150
Vrije Universiteit, Brussels	754	203	N. Koedam	102	234	1,119	201	25	109	148
VU University Amsterdam	2,072	127	H. Schat	83	273	1,788	132	27	90	27
Wageningen University	12,684	5	A.G.J. Voragen	361	35	4,240	39	33	53	150
Wake Forest University	50	335	T.A. Arcury	169	131	1,137	195	23	134	150
Waseda University	32	340	S.Tsuneda	159	147	1,365	171	20	172	150
Washington State University	2,071	128	J. Tang	171	128	962	225	25	109	150
Washington University in St. Louis	88	317	L.T. Angenent	38	328	643	269	13	272	70
Wayne State University	1,253	172	M.Goodman	177	125	3,040	67	30	66	150
West Virginia University	282	254	J. Jaczynski	32	332	62	341	8	311	30
Yale University	261	260	X. Lee	54	317	1,525	153	20	172	109
Yonsei University	124	299	J.K. Hwang	92	258	739	256	18	207	150
York University	76	322	J.R. Miller	105	229	990	224	20	172	150
Zhejiang University	4,948	45	Y. He	540	10	2,574	88	24	123	150

Mathematics Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	1,954	113	P.R.J. Ostergard	110	208	432	231	11	216	62
Aarhus University	654	274	O.E. Bandroff-Nielsen	75	280	904	147	15	152	54
Arizona State University	1,268	178	Y.C. Lai	268	70	3,396	37	32	26	150
Ateneo de Manila University	18	344	J.P.C. Vergara	5	346	19	343	3	334	3
Auburn University	1,473	160	C.A. Rodger	89	250	187	289	7	286	61
Australian National University	3,116	47	P. Hall	185	118	1,805	81	24	72	145
Boston College	365	321	G.J. Kalman	120	196	380	238	12	202	72
Boston University	2,425	78	H.E. Stanley	480	13	10,348	3	57	2	150
Brandeis University	860	242	C. Blocker	512	10	10,281	4	46	4	150
Brigham Young University	475	306	K.L. Kuttler	46	321	148	305	9	249	24
Brown University	2,716	66	P.V. Van Hentenryck	127	188	774	164	12	202	94
California Institute of Technology (Calt...)	3,986	28	R. Kass	552	5	6,497	12	32	26	150
Cardiff University	1,114	197	B.M. Brown	48	319	134	308	7	286	37
Carnegie Mellon University	4,267	23	A. Frieze	227	90	1,754	84	16	138	127
Case Western Reserve University	1,156	191	D. Calvetti	89	250	444	227	14	164	42
Chalmers University of Technology	1,651	147	O. Haggstrom	64	295	360	244	13	187	58
Charles University	2,511	72	M. Begalli	311	50	2,509	56	28	42	150
Chinese University of Hong Kong	1,387	169	J. Wei	191	109	689	178	23	77	69
Chulalongkorn University	253	329	P. Chongstitvatana	46	321	80	325	3	334	49
City University of Hong Kong	2,886	54	G.Chen	681	1	14,794	1	61	1	150
City University of New York	195	332	V.Y. Pan	149	161	474	222	10	232	63
Colorado State University	520	297	G.D. Taylor	42	327	35	336	1	344	29
Columbia University	3,294	42	H. Wozniakowski	115	201	574	196	14	164	37
Cornell University	4,760	19	J.P. Alexander	399	25	4,520	17	35	19	150
Curtin University of Technology	574	286	Y. Wu	98	228	110	320	5	321	129
Dalhousie University	1,223	186	J.M. Borwein	187	116	1,234	115	16	138	114
Dartmouth College	977	218	M. Arkowitz	25	342	29	341	3	334	8
Delft University of Technology	2,668	69	H.W.J. Blote	161	138	1,925	77	19	108	110
Drexel University	758	258	J. Wimp	42	327	132	309	4	327	50
Duke University	2,351	87	P.K. Agarwal	253	76	4,245	21	21	91	150
Durham University	1,345	171	W.J. Zakrewski	173	130	568	198	13	187	88
Ecole Normale Supérieure de Lyon	961	225	D. Serre	62	301	376	239	11	216	52
École Normale Supérieure, Paris	1,710	138	B. Berthame	109	210	1,225	118	22	80	101
École Polytechnique	2,744	65	A. Ramani	167	134	1,049	133	15	152	85

Ecole Polytechnique Fédérale de Lausanne	2,452	76	D. DeWerra	129	184	533	208	8	269	95
Eindhoven University of Technology	2,945	52	W.M.P. Van Der Aalst	193	107	2,506	59	31	30	149
Emory University	972	219	V. Rodl	212	100	650	187	14	164	116
Erasmus University Rotterdam	812	250	P.H. Franses	177	128	960	140	18	119	105
ETH Zurich (Swiss Federal Institute of Technology)	4,173	25	J. Frohich	200	104	2,315	62	19	108	150
Florida International University	788	255	C. Koulamas	93	238	677	181	12	202	35
Florida State University	685	270	I.M. Navon	129	184	922	145	16	138	150
Freie Universität Berlin	1,620	151	G.Rote	88	252	460	225	9	249	111
Friedrich Alexander Universität Erlangen Nürnberg	2,224	92	K. Strambach	68	287	78	326	3	334	25
Fudan University	2,682	68	Y. Wei	180	125	350	245	16	138	124
Georg August Universität Göttingen	1,637	149	R.Kress	95	233	512	212	14	164	55
George Mason University	351	325	R. Lohner	181	122	1,351	106	21	91	119
George Washington University	1,003	215	S. Kotz	235	84	540	206	10	232	54
Georgetown University	374	319	D.C. Chang	49	317	118	316	7	286	35
Georgia Institute of Technology	4,236	24	A. Shaprio	175	129	1,701	88	20	99	150
Georgia State University	652	275	Y. Pan	259	74	1,192	120	22	80	150
Goteborg University	972	219	O. Haggstrom	63	299	338	248	13	187	59
Harvard University	3,835	31	A. Hocker	377	33	3,470	31	29	35	150
Hebrew University of Jerusalem	3,681	34	S. Shelah	521	7	15	344	11	216	150
Heidelberg Universität	2,089	105	J.W. Gary	592	4	8,695	10	39	10	150
Hokkaido University	1,731	134	A. Arai	59	303	241	271	7	286	8
Hong Kong Polytechnic University	1,975	112	X.Q. Yang	163	136	721	174	16	138	94
Hong Kong University of Science & Techno...	1,856	122	C.C. Yang	76	274	159	300	6	301	43
Humboldt-Universität zu Berlin	2,425	78	W.B. Ebeling	218	96	1,154	121	19	108	150
Imperial College London	4,398	22	C. Camagnari	282	61	3,334	38	31	30	150
Indian Institute of Technology Bombay (I...	734	262	A.K. pani	35	336	72	328	6	301	25
Indian Institute of Technology Delhi (II...	773	257	M.M. Chawla	80	269	338	248	5	321	30
Indian Institute of Technology Kanpur (I...	1,150	193	D. Kundu	107	213	277	265	12	202	48
Indiana University Bloomington	2,837	58	B. E. Rhoades	108	211	370	240	10	232	56
Indiana University Indianapolis	76	338	X.H. Zhou	148	164	2,542	55	29	35	150
Iowa State University	1,239	185	J.W. Evans	338	45	2,596	53	27	55	150
Johns Hopkins University	3,734	32	A. Hocker	379	32	3,492	30	29	35	150
Kansas State University	630	279	A.G. Ramm	278	62	321	254	9	249	57
Katholieke Universiteit Leuven	3,365	40	A. Bultheel	123	189	406	236	10	232	50
Keio University	1,265	180	M. Maejima	45	323	158	301	7	286	27

King Fahd University of Petroleum & Minerals	1,093	201	S.A. Messaoudi	52	314	125	312	9	249	15
King Saud University	798	253	M.A. Noor	251	77	869	150	21	91	65
Kobe University	1,112	198	K. Ohtani	156	143	1,237	113	14	164	150
Korea Advanced Institute of Science & Technology	2,160	95	J.K. Koo	39	331	33	340	4	327	27
Korea University	1,642	148	H. Aihari	322	48	3,418	35	40	8	150
Kyoto University	5,321	13	T. Ibaraki	228	87	1,228	117	15	152	149
Kyushu University	2,170	94	M. Nakao	101	224	381	237	9	249	59
La Trobe University	805	252	B.A. Davey	50	316	110	320	6	301	40
Lancaster University	492	301	Y. Arnoud	277	63	2,704	49	29	35	150
Leiden University	1,720	136	L.A. Peletier	130	183	1,237	113	14	164	122
Linköping University	1,034	212	V. Maz'ya	90	248	265	267	10	232	48
London School of Economics and Political Scie	1,053	210	A.C. Atkinson	60	302	523	210	12	202	98
Loughborough University	1,152	192	D.J. Evans	82	263	9,579	7	39	10	150
Louisiana State University	969	222	J. Oxley	79	272	226	280	9	249	31
Ludwig-Maximilians-Universität München	2,050	107	H.P. Kriegel	171	133	2,404	61	20	99	111
Lund University	1,443	163	A. Lingas	88	252	241	271	8	269	60
Maastricht University	490	302	A. Grigoriev	29	340	46	334	4	327	23
Macquarie University	905	235	I.E. Sharlinski	240	82	457	226	14	164	150
Mahidol University	160	335	Y. Lenbury	54	311	137	307	6	301	91
Masaryk University	664	273	J. Rosicky	67	290	120	315	6	301	38
Massachusetts Institute of Technology	7,045	3	A. Hocker	371	36	3,288	42	28	42	150
McGill University	3,223	43	L. DeVoroye	153	150	732	171	9	249	72
McMaster University	2,100	103	N. Balakrishnan	367	38	813	157	16	138	150
Michigan State University	2,870	56	B.Y. Chen	122	190	336	251	12	202	32
Michigan Technological University	555	290	V.D. Tonchev	100	226	275	266	9	249	62
Monash University	1,480	159	D. Tanier	153	150	157	302	9	249	110
Montana State University	365	321	B. Zhu	64	295	184	291	8	269	80
Moscow State University	8,467	2	K.D. Ikramov	143	168	126	310	6	301	31
Nagoya University	2,372	82	H. Aihara	310	53	3,328	41	39	10	150
Nanjing University	2,151	98	Z.W. Sun	117	200	154	303	9	249	150
Nanyang Technological University	2,412	80	P.J.Y. Wong	99	227	531	209	15	152	22
National Taiwan University	2,352	86	T. Kawasaki	275	65	2,101	69	28	42	150
National Tsing Hua University	1,756	131	S.S. Cheng	111	205	428	232	11	216	75
National University of Ireland, Galway	913	234	D. O'Regan	410	21	1,602	95	22	80	143
National University of Singapore	4,830	18	R.P. Agarwal	596	3	3,877	24	26	63	150
New Mexico State University	929	231	F. Harary	154	147	928	141	7	286	139

New York University	3,671	35	M. Sharir	345	44	2,106	68	19	108	150
Newcastle University	937	230	K.D. Glazebrook	86	254	168	298	8	269	150
North Carolina State University	2,764	63	C.V. Pao	112	202	438	230	13	187	15
Northeastern University	1,609	153	G.A. Alves	385	30	4,024	22	38	13	150
Northwestern University	3,598	38	T. Belytschko	473	15	6,922	11	48	3	150
Norwegian University of Science & Technology	1,811	127	I. Brevik	167	134	873	148	17	129	96
Ohio State University	4,553	21	F. Salvatore	151	155	923	142	19	108	150
Oklahoma State University	924	233	G.G. Yen	150	160	740	169	12	202	55
Open University UK	1,144	194	M.C. Jones	110	208	1,231	116	15	152	84
Oregon State University	849	246	S.U. Randhawa	65	292	241	271	6	301	56
Osaka University	3,323	41	T. Kawasaki	274	67	2,075	71	28	42	150
Peking University	3,666	36	L.Wang	403	24	1,302	110	22	80	150
Pennsylvania State University	4,617	20	G.E. Andrews	105	214	605	192	8	269	54
Pohang University of Science And Technology	1,183	188	J.H. Kwak	104	218	320	255	10	232	125
Portland State University	387	317	M.A. Perkowski	151	155	500	214	13	187	144
Princeton University	6,789	5	F. Salvatore	151	155	923	142	19	108	150
Purdue University	4,921	17	W. Gautschi	86	254	582	194	10	232	28
Queen's University	1,395	167	P. Ribenboim	58	305	149	304	6	301	9
Queen's University of Belfast	686	269	A.W. Wickstead	40	330	161	299	5	321	25
Queensland University of Technology	779	256	V.V. Ahn	144	167	491	218	17	129	108
Radboud University, Nijmegen	1,284	177	O. Axelsson	64	295	417	234	11	216	32
Rensselaer Polytechnic Institute	1,391	168	J. Fish	104	218	731	172	16	138	72
Rheinisch Westfälische Technische Hochschule Aach	2,833	59	L. Volkmann	161	138	299	261	11	216	54
Rheinische Friedrich Wilhelms Universität Bonn	2,895	53	S. Albeverio	394	27	1,586	96	22	80	150
Rice University	1,660	145	M.Y. Vardi	235	84	2,171	65	16	138	150
Rochester Institute of Technology	372	320	A.A. Batabyal	112	202	176	296	8	269	19
Royal Institute of Technology, KTH	1,950	114	H. Shahgolian	42	327	105	322	8	269	29
Royal Melbourne Institute of Technology	567	288	W. Van Megan	103	223	1,896	79	13	187	150
Rutgers	5,492	11	S. Shelah	466	16	1,103	126	12	202	149
Saint-Petersburg State University	2,160	95	A.V. Tsiganov	80	269	175	297	8	269	16
San Diego State University	536	295	K.J. Lui	121	194	637	188	10	232	52
Sapienza University of Rome	0	348		0	348	0	347	0	346	0
Sciences Po Paris	4	347	Y. Algan	13	345	35	336	4	327	16
Seoul National University	2,878	55	S. Park	64	295	310	258	10	232	21
Shanghai Jiao Tong University	3,379	39	M. Li	266	71	216	282	8	269	150
Simon Fraser University	2,104	101	P. Hell	98	228	564	200	12	202	104

Stanford University	6,333	7	F. Salvatore	151	155	923	142	19	108	150
State University of New York Buffalo	42	342	V.E. Brimkov	47	320	69	329	6	301	19
Stockholm University	872	240	B Shapiro	34	338	77	327	6	301	26
Stony Brook University	2,399	81	R. Shrock	220	92	2,877	45	28	42	150
Syracuse University	601	283	T. Iwaniec	43	326	323	253	11	216	26
Tartu University (University of Tartu)	407	315	E. Oja	29	340	69	329	9	249	20
Technical University of Denmark	1,408	166	C. Thomassen	105	214	676	183	8	269	39
Technion	5,259	14	A.J. Zasluski	137	175	194	286	11	216	17
Technische Universität Berlin	2,645	70	H. Ehrig	108	211	231	278	10	232	80
Technische Universität Chemnitz	1,079	204	A. Bottcher	75	280	185	290	6	301	35
Technische Universität Dresden	1,900	117	J. Ocaritz	294	57	1,753	85	28	42	150
Technische Universität München	2,769	61	H. Spohn	179	126	2,693	51	20	99	118
Tel Aviv University	5,523	10	N. Alon	396	26	3,334	38	24	72	150
Texas A&M University	4,136	26	R.J. Carrol	248	79	3,981	23	36	17	150
Texas Tech	521	296	W.P. Dayawansa	92	245	846	154	8	269	72
Tohoku University	2,273	88	T. Nishizeki	140	173	565	199	8	269	86
Tokyo Institute of Technology	2,831	60	W. Takahashi	220	92	1,060	130	22	80	150
Trinity College Dublin	722	264	W.T. Coffey	181	122	619	190	15	152	121
Tsinghua University	5,422	12	X. Yang	192	108	1,148	122	22	80	150
Tufts University	735	261	A. Vilenkin	188	115	3,641	27	25	66	67
Universidad Autonoma de Madrid	1,819	125	J.L. Vazquez	134	177	1,376	102	15	152	118
Universidad de Chile	1,490	158	G. Navarro	143	168	1,131	123	17	129	150
Universidad de Granada	1,819	125	J.L. Vazquez	134	177	1,376	102	15	152	118
Universidad del País Vasco	1,343	172	M. De la Sen	405	22	561	202	16	138	71
Universidad Nacional Autónoma de México ...	1,223	186	F. Luca	182	119	182	292	6	301	7
Universidad Politecnica de Madrid	1,692	142	M.L. Menendez	63	299	124	313	6	301	59
Universidade de São Paulo	1,455	162	Y. Kohayakawa	55	310	199	285	10	232	61
Universidade Estadual de Campinas	870	241	J.M. Martinez	246	80	1,660	92	25	66	150
Università degli Studi di Firenze	2,503	73	A. Cianchi	56	308	228	279	11	216	27
Università degli Studi di Padova	3,180	44	A. Hocker	427	19	5,332	13	35	19	150
Università Di Bologna	2,765	62	G. Apollinari	513	9	11,180	2	46	4	150
Università di Pisa	999	216	L. Gemingnani	49	317	115	317	8	269	20
Universitat Autonoma de Barcelona	2,025	110	J. Llibre	220	92	737	170	14	164	121
Universitat Bielefeld	2,367	83	M. Rockner	156	143	555	205	18	119	61
Universität Bremen	1,297	175	R. Drechsler	240	82	589	193	13	187	125
Universitat d'Alacant	744	260	M.A. Lopez	65	292	190	287	13	187	51

Universitat de València	2,028	109	A. Hocker	427	19	5,324	14	35	19	150
Universität Frankfurt am Main	1,894	120	P.E. Kleder	149	161	666	185	13	187	89
Universität Freiburg	1,711	137	A. Blumen	201	103	2,030	74	23	77	125
Universität Hamburg	556	289	S. Ghazaryan	96	232	1,092	127	20	99	150
Universität Karlsruhe	3,083	49	W.D. Apel	458	17	3,464	33	31	30	150
Universität Leipzig	480	303	P.F. Stadler	304	55	3,528	29	35	19	150
Universität Munster (Westfälische Wilhelms-Un	496	299	X. Jiang	104	218	783	162	12	202	116
Universität Politecnica de Catalunya	3,171	45	R. Quintanilla	128	187	293	263	14	164	24
Universität Regensburg	1,054	209	R. Mennicken	35	336	114	318	9	249	29
Universität Stuttgart	2,262	90	W.L. Wendland	95	233	700	176	13	187	77
Universität Trier	464	308	H. Fernau	85	257	235	276	9	249	57
Universität Tübingen	2,141	99	P. Schmid	306	54	3,333	40	27	55	150
Universität Wien (University of Vienna)	2,462	75	P.F. Stadler	300	56	3,862	25	37	15	150
Universität Zu Köln	2,037	108	D. Stauffer	358	42	3,434	34	25	66	150
Université Catholique de Louvain	1,895	118	J. Mawhin	76	274	609	191	9	249	45
Universite de Liege	927	232	M. Ausloos	405	22	1,947	76	24	72	150
Université de Montréal	2,442	77	P. Winternitz	210	101	1,453	99	18	119	150
Université de Nice Sophia Antipolis	1,443	163	D. Sornette	290	58	3,397	36	37	15	150
Universite Laval	1,067	205	C. Genest	65	292	496	216	15	152	73
Universite Libre de Bruxelles	2,265	89	T. Erneux	186	117	1,238	112	18	119	150
Université Paris Sorbonne	575	285	M. Grabisch	81	267	671	184	14	164	44
Universite Paris-Sud 11	4,979	16	O. Favaron	83	260	2	345	10	232	69
Université Pierre et Marie Curie	6,509	6	M. Begalli	143	168	996	136	19	108	150
Universiti Malaya (University of Malaya)	293	328	M.H. Lim	22	343	56	332	4	327	6
University College Cork	629	280	M. Stynes	59	303	350	245	14	164	36
University College Dublin	1,097	200	T.J. Laffey	82	263	215	283	5	321	71
University College London	2,152	97	F.T. Smith	154	147	579	195	11	216	87
University do Porto	205	331	A.J.M. Ferreria	57	307	245	270	13	187	37
University of Aberdeen	706	266	G.S. Hall	94	237	1,840	80	27	55	150
University of Adelaide	1,253	181	D.B. Leinweber	182	119	1,305	108	28	42	129
University of Alabama	1,628	150	J.J. Buckley	199	105	1,245	111	14	164	39
University of Alberta	3,646	37	T.B. Moodie	105	214	188	288	7	286	29
University of Amsterdam	2,633	71	A. Schrijver	95	233	979	139	11	216	62
University of Antwerp	1,111	199	S. Almeded	289	60	2,793	47	27	55	150
University of Arizona	3,022	50	M. Shaked	79	272	495	217	14	164	47
University of Athens	1,676	143	D.J. Frantzeskakis	154	147	857	151	22	80	110

University of Auckland	1,726	135	J.C. Butcher	82	263	307	260	11	216	33
University of Barcelona	2,090	104	D. Nualart	120	196	682	180	14	164	72
University of Basel	550	291	E. Baldinger	53	312	1	346	0	346	40
University of Bath	606	282	D.A.S. Rees	112	202	561	202	14	164	59
University of Bergen	732	263	A. Andrazza	330	46	3,261	43	31	30	150
University of Bern	574	286	H. Bunke	275	65	1,723	87	20	99	150
University of Birmingham	1,871	121	R. Frey	266	71	1,316	107	24	72	150
University of Bristol	2,248	91	C.M. Hawkes	671	2	10,000	6	38	13	150
University of British Columbia	1,843	124	M.J. Ward	69	283	361	243	13	187	108
University of Calgary	1,266	179	R.S. Dhaliwal	190	111	843	155	7	286	150
University of California, Berkley	3,710	33	Y. Peres	118	198	754	166	19	108	90
University of California, Davis	1,248	182	A. Hastings	158	142	4,303	20	32	26	150
University of California, Irvine	1,056	208	E.S. Titi	104	218	984	137	20	99	93
University of California, Los Angeles	5,560	8	A. Hocker	377	33	3,470	31	29	35	150
University of California, Riverside	1,786	129	D. Strom	393	28	2,037	73	27	55	150
University of California, San Diego	1,749	132	J.B. Remmel	122	190	297	262	7	286	63
University of California, San Francisco	50	341	K.A. Dill	228	87	8,986	9	36	17	150
University of California, Santa Barbara	1,285	176	A.R. Teel	270	69	2,699	50	25	66	96
University of California, Santa Cruz	577	284	H. Widom	66	291	779	163	11	216	11
University of Cambridge	2,114	100	B. Bollobas	226	91	1,396	101	15	152	118
University of Canterbury	477	305	M. Steel	122	190	2,040	72	21	91	92
University of Cape Town	337	327	G.F.R. Ellis	153	150	1,550	97	19	108	95
University of Central Florida	1,658	146	K. Vajravelu	135	176	726	173	14	164	87
University of Chicago	548	293	L. Yu	162	137	2,713	48	27	55	150
University of Cincinnati	1,502	157	I. Narsky	329	47	1,995	75	28	42	150
University of Colorado at Boulder	1,245	184	M.J. Ablowitz	190	111	2,640	52	21	91	108
University of Connecticut	968	224	M. Neumann	118	198	425	233	9	249	78
University of Copenhagen	806	251	S. Hahn	53	312	795	161	11	216	150
University of Delaware	675	272	D. Colton	93	238	572	197	16	138	29
University of Dundee	549	292	T.N.T. Goodman	68	287	316	257	6	301	41
University of Edinburgh	951	229	T.G. Mackay	129	184	706	175	17	129	70
University of Florida	3,868	30	P.M. Pardalos	274	67	1,639	93	18	119	150
University of Geneva	460	310	E. Hairer	69	283	746	167	12	202	134
University of Georgia	996	217	G. Adomian	172	131	797	160	8	269	23
University of Ghent	140	336	B. De Baets	214	99	1,006	135	18	119	150
University of Glasgow	1,940	116	C. Blocker	512	10	10,281	4	46	4	150

University of Gothenburg	5	346	P.S. Eriksson	191	109	4,948	15	31	30	150
University of Groningen	637	277	R.F. Curtain	131	182	461	224	10	232	43
University of Helsinki	1,709	139	H. Saarikko	179	126	1,195	119	20	99	150
University of Hong Kong	972	219	M.K. Ng	204	102	1,070	129	18	119	150
University of Houston	1,459	161	C.W. Chu	364	40	4,904	16	32	26	150
University of Illinois	6,980	4	C. Bromberg	489	12	4,344	19	46	4	150
University of Illinois, Chicago	2,363	85	C. Knessl	121	194	283	264	7	286	35
University of Indonesia	36	343	M. Adriani	14	344	20	342	2	342	19
University of Iowa	1,538	156	N.L. Johnson	152	154	309	259	7	286	38
University of Kansas	681	271	A.T. Peterson	155	146	2,830	46	35	19	150
University of Kentucky	1,115	196	C.S. Man	68	287	250	269	10	232	61
University of Lausanne	132	337	H.U. Gerber	44	324	369	241	9	249	25
University of Leeds	1,315	174	D.B. Ingham	393	28	1,538	98	18	119	150
University of Leicester	895	236	J. Levesley	39	331	87	324	6	301	31
University of Liverpool	68	340	M. Begalli	311	50	2,508	58	28	42	150
University of Ljubljana	1,980	111	D. Repovs	145	166	181	293	8	269	73
University of London (Kings College of London)	8,610	1	A. Hocker	385	30	3,581	28	29	35	150
University of Manchester	3,876	29	A. Hocker	366	39	3,122	44	28	42	150
University of Manitoba	2,101	102	G. Gratzler	81	267	111	319	6	301	24
University of Maryland	5,533	9	D. Strom	377	33	1,759	83	26	63	150
University of Maryland Baltimore County	1,180	189	T.I. Seidman	93	238	439	229	7	286	48
University of Massachusetts	969	222	P.G. Kevrekidis	276	64	1,374	105	29	35	150
University of Melbourne	2,366	84	A.J. Guttmann	148	164	755	165	16	138	85
University of Miami	461	309	S. Ruan	69	283	984	137	21	91	73
University of Michigan	3,124	46	A.M. Bloch	140	173	917	146	14	164	68
University of Minnesota	2,714	67	P.J. Olver	93	238	1,666	91	16	138	52
University of Missouri	1,743	133	F. Gesztesy	82	263	561	202	16	138	45
University of Nebraska	1,387	169	S. Nadarajah	441	18	363	242	9	249	54
University of New Hampshire	361	324	D. Hadwin	44	324	126	310	5	321	48
University of New Mexico	691	268	W. Kucharz	56	308	63	331	5	321	10
University of New South Wales	1,572	154	I.H. Sloan	134	177	661	186	17	129	68
University of North Carolina, Chapel Hill	2,497	74	P.K. Sen	141	172	534	207	9	249	112
University of North Texas	850	245	M. Urbanski	92	245	335	252	13	187	31
University of Notre Dame	958	227	A.J. Sommese	76	274	408	235	7	286	42
University of Nottingham	854	244	J.R. King	156	143	1,033	134	17	129	122
University of Oklahoma	635	278	M. Breen	76	274	53	333	3	334	2

University of Oregon	818	249	Y. Xu	85	257	210	284	9	249	59
University of Oslo	823	248	L. Bugge	264	73	2,466	60	27	55	150
University of Otago	221	330	V.A. Squire	76	274	233	277	10	232	37
University of Ottawa	746	259	D. Sankoff	132	180	2,150	66	19	108	147
University of Oxford	1,786	129	P.K. Maini	197	106	1,692	89	26	63	150
University of Pennsylvania	1,061	207	H.S. Wilf	76	274	499	215	8	269	48
University of Pittsburgh	1,084	202	G.B. Ermentrout	91	247	2,101	69	21	91	74
University of Quebec	345	326	P.A. Van Rolleghem	320	49	2,229	64	28	42	150
University of Queensland	1,038	211	M.D. Gould	122	190	512	212	11	216	46
University of Reading	876	238	P. Glaister	105	214	265	267	3	334	8
University of Rochester	467	307	C. Mueller	33	339	179	294	6	301	19
University of Saskatchewan	874	239	B.S. Lalli	52	314	240	274	2	342	25
University of Science and Technology of China	3,116	47	H.Y. Fan	364	40	827	156	22	80	137
University of Sheffield	1,612	152	D.W. Hughes	189	113	848	153	14	164	150
University of South Carolina	1,676	143	D.H. Wright	251	77	1,439	100	22	80	150
University of South Florida	705	267	E.B. Saff	111	205	634	189	9	249	77
University of Southampton	857	243	N. Andersson	83	260	871	149	22	80	46
University of Southern California	1,338	173	R.M. Guralnick	101	224	483	220	10	232	85
University of St Andrews	417	312	E.R. Priest	218	96	1,762	82	23	77	150
University of Surrey	414	313	T.J. Bridges	75	280	562	201	15	152	36
University of Sussex	389	316	D.E. Edmunds	69	283	337	250	10	232	46
University of Sydney	2,212	93	E. N. Dancer	104	218	687	179	14	164	33
University of Technology, Sydney	167	334	G. Zhang	97	230	138	306	8	269	67
University of Tennessee Knoxville	959	226	D.E. Dodds	90	248	178	295	6	301	46
University of Texas at Austin	2,053	106	I. Babuska	220	92	4,389	18	28	42	150
University of Tokyo	1,895	118	K. Aihara	353	43	1,920	78	25	66	150
University of Toronto	5,060	15	S.G. Whittington	160	140	799	159	16	138	150
University of Tsukuba	956	228	H. Nishimura	38	333	35	336	4	327	2
University of Twente	843	247	G.J. Woeginger	255	75	1,303	109	17	129	150
University of Utah	1,800	128	L. Horvath	151	155	742	168	12	202	50
University of Vermont	608	281	A.C.H. Ling	86	254	344	247	13	187	62
University of Victoria	1,142	195	H.M. Srivastava	371	36	851	152	17	129	150
University of Virginia	1,004	214	I. Lasiecka	172	131	677	181	14	164	53
University of Warwick	1,545	155	I. Stewart	93	238	487	219	3	334	22
University of Washington	4,090	27	G. Uhlmann	83	260	523	210	14	164	57
University of Waterloo	2,869	57	J. Paldus	182	119	1,058	131	25	66	108

University of Western Australia	1,427	165	C.E. Praeger	153	150	475	221	12	202	101
University of Western Ontario	1,945	115	P. Yu	189	113	1,111	124	21	91	150
University of Wisconsin	2,979	51	R.A. Brualdi	132	180	464	223	3	334	86
University of Wollongong	459	311	J.M. Hill	149	161	441	228	12	202	58
University of York	546	294	A.M. Arthurs	93	238	34	339	1	344	31
University of Zurich	504	298	S. Ghazaryan	95	233	1,090	128	20	99	150
Univesitas Gadjah Mada	12	345	D. Rosadi	4	347	0	347	0	346	1
Uppsala University	791	254	M. Begalli	311	50	2,509	56	28	42	150
Utah State	410	314	Z.Q. Wang	475	14	3,807	26	34	24	150
Utrecht University	2,754	64	M.H. Ernst	159	141	1,624	94	18	119	79
Vanderbilt University	889	237	M.D. Plummer	58	305	219	281	4	327	39
Victoria University of Wellington	363	323	R.G. Downey	111	205	38	335	11	216	78
Vienna University of Technology	1,084	202	T. Eiter	143	168	1,050	132	17	129	109
Virginia Polytechnic Institute	1,247	183	L.T. Watson	290	58	1,667	90	20	99	150
Vrije Universiteit, Brussels	1,062	206	D.L. Massart	515	8	9,064	8	40	8	150
VU University Amsterdam	1,705	140	M.A. Kaashoek	97	230	318	256	7	286	41
Wageningen University	75	339	J. Grasman	37	335	237	275	6	301	45
Wake Forest University	182	333	R.J. Plemmons	93	238	694	177	13	187	109
Waseda University	647	276	Y. Muroya	38	333	105	322	7	286	20
Washington State University	493	300	A. Saberi	234	86	1,109	125	14	164	81
Washington University in St. Louis	722	264	T.J. Tarn	218	96	1,375	104	15	152	150
Wayne State University	1,847	123	K.M. Ecklund	228	87	1,732	86	27	55	150
West Virginia University	478	304	H.J. Lai	80	269	122	314	6	301	84
Yale University	1,178	190	R.R. Coifman	84	259	2,304	63	14	164	85
Yonsei University	387	317	H. Aihara	241	81	2,122	67	34	24	150
York University	1,017	213	J. Wu	181	122	801	158	18	119	150
Zhejiang University	1,697	141	Y. He	540	6	2,574	54	24	72	150

Computer Science Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	3,893	40	M.T. Hallikainen	313	83	1,694	126	19	140	150
Aarhus University	1,233	187	O. Danvy	91	288	305	280	9	269	57
Arizona State University	625	281	S. Panchanathan	236	149	813	205	14	201	150
Ateneo de Manila University	23	345	J.P.C. Vergara	5	345	19	343	3	340	3
Auburn University	1,363	171	J.K. Tugnait	244	142	1,143	170	16	174	38
Australian National University	1,968	114	R.A. Kennedy	172	194	735	217	13	211	85
Boston College	273	333	P. Clote	47	332	207	302	8	286	38
Boston University	2,165	99	S. Grossberg	299	95	6,313	23	32	50	125
Brandeis University	327	326	J.A. Storer	62	322	390	260	8	286	28
Brigham Young University	535	296	D. Henderson	368	50	3,013	74	29	72	150
Brown University	2,038	106	R. Tamassia	136	244	992	184	13	211	150
California Institute of Technology (Calt...	4,845	24	P.P. Vaidyanathan	335	73	2,299	103	20	130	74
Cardiff University	1,418	164	P.L. Rosin	124	255	1,144	169	18	150	83
Carnegie Mellon University	9,525	4	T. Kanade	370	49	9,377	16	37	29	150
Case Western Reserve University	1,135	199	G. Ozsoyoglu	82	294	396	258	7	305	75
Chalmers University of Technology	1,958	117	P.S. Kildal	311	86	936	187	20	130	150
Charles University	738	261	B Asman	373	46	3,193	71	28	77	150
Chinese University of Hong Kong	2,238	92	M.R. Lyu	236	149	858	198	15	192	150
Chulalongkorn University	683	269	C. Lursinap	102	275	111	329	5	326	117
City University of Hong Kong	5,014	23	G.Chen	681	6	14,794	6	61	5	150
City University of New York	903	231	T. Raphan	135	246	1,224	161	21	123	105
Colorado State University	694	268	J.J. Rocca	356	57	1,580	134	27	88	150
Columbia University	3,853	42	X. Wang	800	4	29,940	1	57	6	150
Cornell University	4,292	30	L.Tong	286	104	2,610	84	25	100	122
Curtin University of Technology	1,159	195	E. Chang	315	82	295	283	8	286	132
Dalhousie University	1,037	215	C. Watters	70	309	146	320	7	305	150
Dartmouth College	1,310	176	D. Kotz	83	292	833	202	17	158	91
Delft University of Technology	4,484	27	S. Vassiliadis	233	153	641	227	12	222	150
Drexel University	1,771	134	A.P. Petropulu	151	225	572	239	15	192	104
Duke University	2,656	72	P.K. Agarwal	253	137	4,245	40	21	123	150
Durham University	751	259	M.Munro	79	296	282	286	8	286	80
Ecole Normale Supérieure de Lyon	643	274	Y Robert	140	239	524	245	11	242	110
École Normale Supérieure, Paris	782	249	D. Pointcheual	26	340	62	335	5	326	20
École Polytechnique	1,051	213	C. Palamidessi	69	312	208	300	9	269	63

Ecole Polytechnique Fédérale de Lausanne	3,859	41	R. Gueerraoui	176	193	1,270	155	17	158	145
Eindhoven University of Technology	3,651	46	W.M.P. Van Der Aalst	193	178	2,506	89	31	62	149
Emory University	505	301	V. Rodl	212	163	650	226	14	201	116
Erasmus University Rotterdam	703	267	V. Kaymak	72	307	480	250	11	242	77
ETH Zurich (Swiss Federal Institute of Technology)	4,219	33	L. Van Gool	17	342	172	312	6	318	51
Florida International University	1,194	188	T. Li	1,201	1	769	212	38	26	150
Florida State University	869	237	E. Barberis	259	124	2,379	99	32	50	150
Freie Universität Berlin	715	263	C. Krauer	54	326	59	338	4	335	84
Friedrich Alexander Universität Erlangen Nürnberg	2,758	68	H. Niemannn	147	231	918	189	14	201	150
Fudan University	2,520	78	A. Zhou	170	197	396	258	9	269	150
Georg August Universität Göttingen	439	313	P. Polozov	99	279	216	298	8	286	150
George Mason University	1,188	191	S. Jajodia	266	117	2,252	104	26	93	150
George Washington University	1,391	167	D.A. Grier	77	301	17	344	3	340	2
Georgetown University	446	309	S.K.Mun	193	178	800	208	11	242	150
Georgia Institute of Technology	7,735	8	I.F. Akyildiz	242	145	9,875	13	36	33	139
Georgia State University	1,175	193	Y. Pan	259	124	1,192	164	22	114	150
Goteborg University	924	229	V.P. Zhdanov	291	100	1,912	116	23	110	82
Harvard University	2,206	96	W.M. Davis	237	148	3,363	65	33	47	150
Hebrew University of Jerusalem	1,798	131	D. Dolev	156	215	1,295	153	10	254	146
Heidelberg Universität	704	266	F. Stephan	113	266	256	290	9	269	82
Hokkaido University	1,689	139	Y. Kakazu	184	186	156	318	7	305	106
Hong Kong Polytechnic University	4,220	32	D. Zhang	307	88	2,993	76	30	68	150
Hong Kong University of Science & Techno...	1,933	120	Q. Yang	351	63	1,493	139	16	174	150
Humboldt-Universität zu Berlin	1,177	192	A. Coja-Oghlan	50	331	59	338	5	326	31
Imperial College London	4,082	36	W. Luk	254	136	819	204	15	192	150
Indian Institute of Technology Bombay (I...	1,142	197	S. Chaudhuri	123	258	756	213	12	222	109
Indian Institute of Technology Delhi (II...	1,527	156	S. Chaudury	94	286	316	276	9	269	130
Indian Institute of Technology Kanpur (I...	1,084	208	K. Deb	137	241	3,739	58	21	123	150
Indiana University Bloomington	2,092	104	G. Fox	264	121	1,437	142	12	222	150
Indiana University Indianapolis	103	341	A.K. Dunker	152	222	2,449	92	41	17	150
Iowa State University	1,277	180	D. Strom	355	58	1,616	131	25	100	150
Johns Hopkins University	3,107	56	S.H. Snyder	300	92	14,180	7	75	1	150
Kansas State University	402	318	E. Barberis	259	124	2,381	95	32	50	150
Katholieke Universiteit Leuven	3,829	43	M. Moonen	271	114	1,467	141	20	130	131
Keio University	2,417	83	I. Sasase	350	64	370	266	8	286	150

King Fahd University of Petroleum & Minerals	1,244	182	H.M. Badawi	133	247	233	296	10	254	66
King Saud University	709	264	S.A. Alshebeili	55	325	62	335	4	335	36
Kobe University	1,082	209	S. Abe	114	265	727	218	11	242	98
Korea Advanced Institute of Science & Technology	5,052	22	D.K. Sung	209	164	562	241	13	211	15
Korea University	2,805	66	S.W. Lee	146	233	835	200	16	174	139
Kyoto University	5,680	17	M. Tanaka	376	44	2,358	102	29	72	150
Kyushu University	2,030	108	K. Sakuri	154	219	205	304	8	286	150
La Trobe University	762	255	D. Tanier	152	222	157	316	9	269	107
Lancaster University	641	275	M. Abolins	259	124	2,192	106	31	62	150
Leiden University	1,240	186	K. De Groot	294	98	5,468	30	40	20	150
Linköping University	1,816	130	F. Gustafsson	127	251	1,236	159	16	174	94
London School of Economics and Political Science	460	307	Whitley, E.A.	23	341	120	325	6	318	19
Loughborough University	1,604	146	D.J. Evans	82	294	9,579	15	39	24	150
Louisiana State University	874	236	M. Basile	479	15	4,941	34	43	15	150
Ludwig-Maximilians-Universität München	1,386	168	H.P. Kriegel	171	195	2,404	94	20	130	111
Lund University	1,831	129	A. Lingas	88	289	241	294	8	286	60
Maastricht University	499	302	W.R.M. Dassen	125	254	894	191	12	222	150
Macquarie University	956	225	V. Varadharajan	150	227	305	280	8	286	89
Mahidol University	207	337	C. Pornpanomchai	15	343	5	345	2	342	28
Masaryk University	492	303	P. Zezula	52	329	183	309	7	305	32
Massachusetts Institute of Technology	9,010	5	A.S. Willsky	363	54	3,972	49	28	77	150
McGill University	3,206	54	T. Le-Ngoc	325	78	586	235	12	222	150
McMaster University	2,036	107	K.M. Wong	161	210	1,189	165	16	174	111
Michigan State University	2,482	81	J.B. Hook	295	97	742	214	2	342	150
Michigan Technological University	777	252	Z. Tain	96	281	1,105	179	18	150	98
Monash University	2,401	84	D. Tanier	153	220	157	316	9	269	110
Montana State University	308	327	B. Zhu	64	318	184	307	8	286	80
Moscow State University	1,370	170	N. Vereshchagin	44	335	92	331	7	305	41
Nagoya University	3,060	57	T. Fukuda	1,122	2	5,847	26	28	77	150
Nanjing University	2,401	84	Z.H. Zhou	213	162	1,624	130	24	109	150
Nanyang Technological University	7,586	9	E.P. Lim	141	238	370	266	10	254	150
National Taiwan University	5,198	20	S.C. Pei	303	91	1,571	135	18	150	108
National Tsing Hua University	3,252	53	B.S. Chen	257	134	2,512	88	23	110	150
National University of Ireland, Galway	640	276	M. Hauswirth	73	305	366	268	10	254	100
National University of Singapore	7,427	11	K.L. Tan	184	186	864	195	17	158	150
New Mexico State University	1,025	217	H.T. Nguyen	218	157	834	201	12	222	150

New York University	2,350	87	M. Sharir	345	67	2,106	111	19	140	150
Newcastle University	1,437	163	A. Romanovsky	110	267	118	326	9	269	150
North Carolina State University	2,785	67	G.N. Rouskas	109	268	1,421	146	20	130	65
Northeastern University	1,966	116	F. Lombardi	244	142	494	249	12	222	143
Northwestern University	2,956	61	A.K. Katsaggelos	418	36	2,936	78	25	100	150
Norwegian University of Science & Technology	2,226	93	A. Abraham	313	83	784	210	16	174	150
Ohio State University	4,344	29	D.K. Panda	199	170	574	238	12	222	150
Oklahoma State University	899	233	G.G. Yen	150	227	740	216	12	222	55
Open University UK	1,292	178	E. Motta	115	263	579	237	12	222	90
Oregon State University	1,241	185	B. Bose	101	276	346	271	8	286	48
Osaka University	5,323	18	M. Murata	471	24	2,518	86	21	123	150
Peking University	3,721	45	H. Mei	188	181	337	272	11	242	150
Pennsylvania State University	4,812	25	M.J. Irwin	332	74	1,347	150	19	140	150
Pohang University of Science And Technology	1,724	136	D. Kim	108	269	613	231	12	222	96
Portland State University	899	233	X. Song	167	204	459	252	12	222	150
Princeton University	4,118	35	N.K. Jha	282	106	1,538	137	22	114	136
Purdue University	6,472	14	E. Bertino	380	42	1,940	115	25	100	150
Queen's University	2,121	102	S.A. Akl	167	204	440	253	8	286	76
Queen's University of Belfast	1,313	175	A. Buridane	104	272	226	297	8	286	70
Queensland University of Technology	1,535	155	S. Sridharan	152	222	378	261	10	254	122
Radboud University, Nijmegen	1,126	200	B. Jacobs	69	312	298	282	11	242	58
Rensselaer Polytechnic Institute	2,614	73	M.S. Shepard	208	167	1,165	167	17	158	150
Rheinisch Westfälische Technische Hochschule Aach	3,254	52	H. Ney	198	172	1,515	138	20	130	150
Rheinische Friedrich Wilhelms Universität Bonn	1,296	177	M. Karinski	96	281	568	240	10	254	80
Rice University	2,045	105	M.Y. Vardi	235	151	2,171	107	16	174	150
Rochester Institute of Technology	1,094	207	M.D. Fairchild	170	197	1,138	171	19	140	125
Royal Institute of Technology, KTH	2,730	69	B. Ottersten	184	186	1,859	122	21	123	103
Royal Melbourne Institute of Technology	1,118	202	J. Zobel	95	284	919	188	17	158	60
Rutgers	4,060	37	M. Parashar	148	230	617	230	14	201	150
Saint-Petersburg State University	440	311	I. E. Bocharova	35	339	46	340	5	326	23
San Diego State University	551	293	F. Harris	65	316	206	303	8	286	30
Sapienza University of Rome	0	347		0	347	0	346	0	346	0
Sciences Po Paris	0	347		0	347	0	346	0	346	0
Seoul National University	4,285	31	S.U. Lee	218	157	1,333	151	14	201	150
Shanghai Jiao Tong University	6,580	13	M. Li	266	117	216	298	8	286	150
Simon Fraser University	2,381	86	J. Pei	245	141	2,845	80	33	47	150

Stanford University	9,959	2	H. Garcia-Molina	250	139	3,771	57	30	68	150
State University of New York Buffalo	32	344	V.E. Brimkov	47	332	69	333	6	318	19
Stockholm University	455	308	M. Kajko-mattsson	64	318	63	334	5	326	90
Stony Brook University	2,209	94	P.M. Djuric	171	195	1,130	175	17	158	101
Syracuse University	708	265	T.K. Sarkar	501	14	3,935	53	20	130	150
Tartu University (University of Tartu)	297	331	M. Karelson	137	241	2,514	87	28	77	150
Technical University of Denmark	1,976	113	L.K. Hasen	169	201	2,072	112	21	123	150
Technion	5,285	19	S.Sharmi	282	106	3,260	70	26	93	122
Technische Universität Berlin	2,564	75	H. Boche	322	79	859	197	16	174	62
Technische Universität Chemnitz	591	286	T. Gressner	288	102	693	222	13	211	150
Technische Universität Dresden	2,350	87	G.P. Fettweis	243	144	1,877	118	16	174	150
Technische Universität München	3,974	38	M. Buss	216	159	471	251	9	269	150
Tel Aviv University	4,364	28	M. Sharir	345	67	2,111	110	19	140	150
Texas A&M University	4,150	34	E.R. Dougherty	376	44	3,926	54	32	50	150
Texas Tech	333	325	C. Bromberg	470	25	4,216	41	46	12	150
Tohoku University	2,888	63	F. Adachi	365	53	1,980	113	23	110	150
Tokyo Institute of Technology	4,569	26	K. Hirota	215	160	741	215	13	211	150
Trinity College Dublin	1,059	212	V. Cahill	76	302	292	284	8	286	95
Tsinghua University	11,261	1	C. Lin	51	330	166	313	7	305	106
Tufts University	548	294	K.A. Panetta	66	315	95	330	4	335	28
Universidad Autonoma de Madrid	1,113	203	J. Aracil	126	252	376	262	9	269	150
Universidad de Chile	1,016	219	G. Navarro	143	236	1,131	174	17	158	150
Universidad de Granada	1,113	203	J. Aracil	126	252	376	262	9	269	150
Universidad del País Vasco	1,373	169	M. De la Sen	405	38	561	242	16	174	71
Universidad Nacional Autónoma de México ...	415	315	S. Rajsbaum	72	307	184	307	9	269	49
Universidad Politecnica de Madrid	2,871	64	G. Puebla	60	323	113	328	7	305	61
Universidade de São Paulo	1,242	184	C. Traina	78	300	144	321	7	305	60
Universidade Estadual de Campinas	769	254	F.J. Von Zuben	144	235	900	190	12	222	145
Università degli Studi di Firenze	2,009	109	A. Del Bimbo	231	154	1,236	159	15	192	136
Università degli Studi di Padova	2,181	98	M. Zorzi	281	109	2,457	91	21	123	150
Università Di Bologna	3,329	50	L. Benini	292	99	2,965	77	29	72	150
Università di Pisa	1,478	159	A. Hocker	355	58	2,896	79	28	77	150
Universitat Autonoma de Barcelona	1,244	182	E. Luque	156	215	139	322	6	318	110
Universitat Bielefeld	930	228	H. Ritter	124	255	971	186	16	174	135
Universität Bremen	1,563	152	R. Drechsler	240	146	589	234	13	211	125
Universitat d'Alacant	972	224	J.D. Trujillo	104	272	255	291	11	242	58

Universitat de València	1,049	214	G. Campos-Valls	79	296	620	229	16	174	86
Universität Frankfurt am Main	781	250	R. Mester	38	338	192	305	4	335	30
Universität Freiburg	1,417	165	W. Burgard	161	210	3,004	75	28	77	150
Universität Hamburg	470	305	A. De Roeck	434	32	5,073	32	40	20	150
Universität Karlsruhe	3,377	49	R. Dillmann	229	156	582	236	12	222	150
Universität Leipzig	546	295	P.F. Stadler	304	90	3,528	60	35	39	150
Universität Munster (Westfälische Wilhelms-Un	386	322	X. Jiang	104	272	783	211	12	222	116
Universität Politecnica de Catalunya	2,115	103	C. Aleman	268	116	1,431	143	22	114	150
Universität Regensburg	406	316	E.W. Lang	156	215	1,264	156	17	158	150
Universität Stuttgart	1,979	112	T. Ertl	115	263	830	203	17	158	150
Universität Trier	304	329	H. Fernau	85	291	235	295	9	269	57
Universität Tübingen	955	226	W.Rosenstiel	156	215	279	287	7	305	150
Universität Wien (University of Vienna)	1,153	196	P.F. Stadler	300	92	3,862	55	37	29	150
Universität Zu Köln	571	290	D. Stauffer	358	56	3,434	61	25	100	150
Université Catholique de Louvain	1,700	137	L. Vandendorpe	235	151	851	199	13	211	150
Universite de Liege	660	270	G. Leduc	56	324	126	324	6	318	54
Université de Montréal	1,692	138	J.W. Gary	476	19	4,131	43	36	33	150
Université de Nice Sophia Antipolis	1,107	205	M. Barlaud	146	233	2,646	82	13	211	97
Universite Laval	1,271	181	B. Moulin	96	281	176	310	7	305	77
Universite Libre de Bruxelles	1,072	210	R. Kiss	469	26	3,559	59	32	50	150
Université Paris Sorbonne	400	319	C. Rolland	79	296	415	255	10	254	80
Universite Paris-Sud 11	2,207	95	N. Spyrtos	70	309	163	314	5	326	58
Université Pierre et Marie Curie	2,604	74	M. Besancon	336	71	3,433	62	30	68	150
Universiti Malaya (University of Malaya)	630	277	P. Raveendran	46	334	208	300	7	305	31
University College Cork	891	235	B. O'Sullivan	136	244	376	262	12	222	150
University College Dublin	1,322	174	B. Smyth	149	229	706	221	15	192	92
University College London	2,970	60	A.A. Carter	479	15	3,979	48	34	43	150
University do Porto	615	283	A.E. Rodrigues	327	77	2,143	108	27	88	150
University of Aberdeen	747	260	B.C. Jones	92	287	1,153	168	22	114	150
University of Adelaide	984	223	D. Abbott	368	50	1,862	120	27	88	150
University of Alabama	1,625	145	J.J. Buckley	199	170	1,245	158	14	201	39
University of Alberta	3,755	44	W. Pedrycz	509	13	4,118	46	27	88	150
University of Amsterdam	2,272	90	A.W.M. Smeulders	160	212	3,342	66	19	140	135
University of Antwerp	952	227	M. Besancon	336	71	3,433	62	30	68	150
University of Arizona	3,586	47	H. Chen	282	106	1,873	119	26	93	150
University of Athens	1,563	152	I. Stavrakakis	133	247	315	277	9	269	98

University of Auckland	1,867	124	R. Klette	121	259	310	279	10	254	96
University of Barcelona	591	286	P. Radeva	138	240	376	262	11	242	128
University of Basel	289	332	W.J. Gehring	209	164	6,605	22	32	50	150
University of Bath	1,003	220	D.M. Monro	70	309	415	255	6	318	63
University of Bergen	627	279	T. Abye	343	69	3,388	64	29	72	150
University of Bern	479	304	H. Bunke	275	111	1,723	124	20	130	150
University of Birmingham	1,665	143	J.W. Gary	476	19	4,165	42	36	33	150
University of Bristol	1,856	127	D.R. Bull	258	133	1,222	162	16	174	150
University of British Columbia	1,946	118	J.W. Gary	476	19	4,131	43	36	33	150
University of Calgary	1,498	157	R. Alhajj	181	189	271	288	10	254	110
University of California, Berkley	8,211	7	C. Hu	622	9	10,294	11	41	17	150
University of California, Davis	1,470	161	B. Mukherjee	367	52	4,935	35	40	20	150
University of California, Irvine	2,245	91	D. Eppstein	166	206	1,426	145	15	192	99
University of California, Los Angeles	5,927	16	M. Gerla	464	27	4,583	37	31	62	150
University of California, Riverside	1,564	151	B. Bhanu	204	168	1,298	152	18	150	127
University of California, San Diego	2,551	77	J.A. McCammon	451	29	9,880	12	47	11	150
University of California, San Francisco	584	288	J.M. Bishop	425	35	11,011	10	36	33	150
University of California, Santa Barbara	1,593	148	D. Agrawal	185	184	879	193	14	201	125
University of California, Santa Cruz	630	277	D. Haussler	169	201	18,333	5	50	7	150
University of Cambridge	1,786	133	A.A. Carter	477	17	3,969	50	34	43	150
University of Canterbury	444	310	J.G. Chase	131	250	321	275	13	211	150
University of Cape Town	251	336	G. Marsden	40	337	61	337	4	335	67
University of Central Florida	2,505	80	M.A. Shah	198	172	4,033	47	28	77	126
University of Chicago	785	248	A.A. Carter	477	17	3,969	50	34	43	150
University of Cincinnati	1,412	166	D.P. Agrawal	330	76	1,788	123	19	140	150
University of Colorado at Boulder	1,330	173	A. Ehrenfeucht	124	255	1,385	148	5	326	64
University of Connecticut	836	244	B. Javidi	429	34	2,124	109	43	15	150
University of Copenhagen	843	243	M. Nielsen	54	326	150	319	5	326	57
University of Delaware	809	247	D.W. Prather	273	113	1,277	154	22	114	150
University of Dundee	440	311	S.J. McKenna	43	336	655	225	10	254	53
University of Edinburgh	165	339	A. Hocker	264	121	2,632	83	27	88	150
University of Florida	1,628	144	P.M. Pardalos	274	112	1,639	129	18	150	150
University of Geneva	532	297	G. Carlino	255	135	2,381	95	29	72	150
University of Georgia	625	281	S.M. Bhandarkar	98	280	356	269	9	269	81
University of Ghent	1,160	194	B. De Baets	214	161	1,006	183	18	150	150
University of Glasgow	1,967	115	M. Ould-Khaoua	201	169	315	277	11	242	150

University of Gothenburg	17	346	P.S. Eriksson	191	180	4,948	33	31	62	150
University of Groningen	563	291	H.J.C. Berendsen	165	207	13,694	8	38	26	150
University of Helsinki	1,591	149	E. Ukkonen	95	284	1,430	144	12	222	150
University of Hong Kong	3,028	58	F.C.M. Lau	231	154	795	209	16	174	150
University of Houston	901	232	L.S. Shieh	280	110	594	233	14	201	150
University of Illinois	9,582	3	T.S. Huang	660	8	9,148	17	39	24	150
University of Illinois, Chicago	2,696	70	D. Liu	177	191	863	196	16	174	150
University of Indonesia	82	342	M. Adriani	14	344	20	342	2	342	19
University of Iowa	849	242	G. Wang	353	62	1,893	117	28	77	150
University of Kansas	517	299	E. Barberis	259	124	2,381	95	32	50	150
University of Kentucky	754	258	M. Truszczynski	79	296	332	273	8	286	43
University of Lausanne	176	338	A. Bay	348	66	3,833	56	35	39	150
University of Leeds	851	241	A.V. Holden	196	174	1,036	182	16	174	150
University of Leicester	835	245	S. Yang	54	326	174	311	10	254	49
University of Liverpool	1,017	218	B Asman	373	46	3,133	72	28	77	150
University of Ljubljana	1,878	123	A. Leonardis	74	303	711	219	15	192	56
University of London (Kings College of London)	8,779	6	E. Izquierdo	151	225	263	289	8	286	129
University of Manchester	3,909	39	S. Nadarajah	441	30	348	270	8	286	54
University of Manitoba	1,885	122	W. Kisner	209	164	290	285	9	269	150
University of Maryland	7,060	12	A. Rosenfeld	406	37	4,429	38	15	192	150
University of Maryland Baltimore County	1,910	121	T. Adail	165	207	1,117	176	22	114	122
University of Massachusetts	1,569	150	D. Towsley	392	39	5,802	27	37	29	150
University of Melbourne	2,680	71	R. Buyya	153	220	1,397	147	18	150	150
University of Miami	390	321	M.L. Shyu	101	276	254	292	7	305	150
University of Michigan	2,992	59	P. Bhattacharya	672	7	6,166	24	35	39	150
University of Minnesota	2,276	89	D.G. Truhlar	888	3	27,089	3	64	3	150
University of Missouri	1,675	142	G.K. Venayagamoorthy	239	147	522	246	14	201	130
University of Nebraska	1,602	147	J.S. Deogun	157	214	514	247	13	211	115
University of New Hampshire	305	328	J.M. Ryan	74	303	188	306	6	318	150
University of New Mexico	659	271	S.B. Kim	288	102	5,698	28	33	47	150
University of New South Wales	1,685	141	A.B. Yu	252	138	1,592	133	25	100	150
University of North Carolina, Chapel Hill	2,152	100	D. Manocha	196	174	1,976	114	22	114	150
University of North Texas	470	305	W.E. Acree	439	31	1,475	140	26	93	150
University of Notre Dame	605	284	D. Strom	355	58	161	315	25	100	150
University of Nottingham	911	230	E.K. Burke	106	271	663	224	17	158	126
University of Oklahoma	555	292	M. Abolins	259	124	2,196	105	31	62	150

University of Oregon	366	323	H.R. Band	286	104	2,415	93	25	100	150
University of Oslo	626	280	B.Asman	373	46	3,133	72	28	77	150
University of Otago	303	330	M. Purvis	73	305	117	327	7	305	49
University of Ottawa	1,193	189	I Stojmenovic	195	177	1,604	132	19	140	150
University of Oxford	1,946	118	M.S.P. Sansom	319	80	4,589	36	50	7	150
University of Pennsylvania	1,843	128	M.L. Klein	540	12	24,170	4	49	10	150
University of Pittsburgh	1,490	158	T. Kanade	266	117	1,132	173	17	158	150
University of Quebec	532	297	C. Bouchard	705	5	28,823	2	63	4	150
University of Queensland	1,107	205	G.J. Milburn	270	115	5,538	29	34	43	150
University of Reading	1,001	222	A.M. Andrew	65	316	44	341	2	342	0
University of Rochester	756	256	E. Barberis	259	124	2,378	100	32	50	150
University of Saskatchewan	1,287	179	C. Gutwin	100	278	808	207	14	201	109
University of Science and Technology of China	3,545	48	D.S. Huang	165	207	809	206	18	150	113
University of Sheffield	2,555	76	P. Willett	558	11	8,862	18	41	17	150
University of South Carolina	1,060	211	M.N. Huhns	116	261	878	194	12	222	125
University of South Florida	854	240	A. Kandel	246	140	1,248	157	16	174	150
University of Southampton	1,750	135	L. Hanzo	610	10	3,339	67	25	100	150
University of Southern California	2,857	65	A. Warshel	264	121	7,769	19	50	7	150
University of St Andrews	262	335	D.I. Perrett	331	75	7,439	20	44	14	150
University of Surrey	659	271	J. Kittler	296	96	5,453	31	23	110	150
University of Sussex	508	300	M.Hennessy	64	318	708	220	10	254	34
University of Sydney	2,516	79	H. Yan	382	41	1,860	121	22	114	150
University of Technology, Sydney	831	246	T.S. Dillion	362	55	609	232	11	242	150
University of Tennessee Knoxville	856	239	J. Dongarra	306	89	2,549	85	22	114	150
University of Texas at Austin	2,907	62	P.Stone	432	33	9,636	14	40	20	150
University of Tokyo	3,285	51	A.A. Carter	474	23	3,950	52	35	39	150
University of Toronto	6,233	15	J. Mylopoulos	196	174	1,560	136	17	158	150
University of Tsukuba	1,191	190	R. Tanaka	187	182	984	185	19	140	150
University of Twente	2,452	82	J.A.M. Kuipers	177	191	1,722	125	26	93	133
University of Utah	2,129	101	E. Cohen	88	289	630	228	10	254	67
University of Vermont	592	285	X. Wu	119	260	1,172	166	19	140	118
University of Victoria	1,993	111	J.W. Gary	476	19	4,127	45	36	33	150
University of Virginia	1,003	220	E. Barberis	259	124	2,378	100	32	50	150
University of Warwick	780	251	V.B. Golubev	309	87	1,647	128	26	93	150
University of Washington	5,118	21	J.N. Hwang	185	184	1,201	163	15	192	150
University of Waterloo	3,185	55	R. Boutaba	170	197	513	248	13	211	130

University of Western Australia	1,033	216	A. Datta	180	190	541	244	11	242	146
University of Western Ontario	1,994	110	X. Wu	338	70	3,276	69	32	50	150
University of Wisconsin	1,863	126	A. Hocker	355	58	2,844	81	28	77	150
University of Wollongong	755	257	W. Susilo	137	241	331	274	10	254	97
University of York	1,448	162	E.R. Hancock	385	40	1,111	177	20	130	150
University of Zurich	392	320	E. Barrelet	187	182	2,464	90	32	50	150
Univesitas Gadjah Mada	37	343	S. Hartati	3	346	0	346	0	346	8
Uppsala University	771	253	O. Botner	380	42	3,337	68	31	62	150
Utah State	406	316	H.D. Cheng	116	261	1,100	180	17	158	119
Utrecht University	2,197	97	M.A. Viergever	313	83	6,626	21	38	26	150
Vanderbilt University	724	262	R.D. Schrimpf	350	64	1,377	149	26	93	150
Victoria University of Wellington	350	324	M. Zhang	68	314	73	332	5	326	48
Vienna University of Technology	1,795	132	T. Eiter	143	236	1,050	181	17	158	109
Virginia Polytechnic Institute	1,688	140	L.T. Watson	290	101	1,667	127	20	130	150
Vrije Universiteit, Brussels	1,342	172	J. Cornelis	170	197	680	223	12	222	150
VU University Amsterdam	1,865	125	J. Treur	168	203	419	254	11	242	81
Wageningen University	265	334	G.B.M. Heuvelinl	63	321	885	192	16	174	120
Wake Forest University	123	340	L.E. Wagenknecht	133	247	4,352	39	37	29	150
Waseda University	1,119	201	M.J. Kim	266	117	1,133	172	17	158	150
Washington State University	584	288	J.G. Delgado-Frias	108	269	129	323	6	318	88
Washington University in St. Louis	863	238	D.C. Rao	453	28	6,037	25	46	12	150
Wayne State University	1,542	154	C.K. Xu	159	213	405	257	10	254	150
West Virginia University	432	314	B. Cukic	83	292	246	293	9	269	103
Yale University	1,142	197	M. Gerstein	316	81	13,338	9	66	2	150
Yonsei University	1,477	160	S.B. Cho	147	231	1,107	178	17	158	150
York University	653	273	E. Barberis	259	124	2,381	95	32	50	150
Zhejiang University	7,440	10	Z. Wu	300	92	550	243	12	222	150

Chemical Engineering Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	1,557	76	K. Kotturi	178	205	1,850	163	25	142	150
Aarhus University	446	245	F. Besenbacher	356	71	6,583	25	48	16	150
Arizona State University	348	268	J. Wang	640	11	21,818	3	71	5	150
Ateneo de Manila University	0	346		0	344	0	343	0	341	0
Auburn University	1,125	116	B.J. Tatarchuk	205	176	500	302	9	310	126
Australian National University	874	148	B.W. Ninham	325	85	5,779	34	29	90	150
Boston College	133	319	A.H. Hoveyda	177	209	5,874	32	55	9	150
Boston University	594	202	H.E Stanley	480	33	10,348	17	57	7	150
Brandeis University	112	326	G.A. Petsko	302	101	6,292	28	32	66	150
Brigham Young University	347	269	R.M. Izatt	422	44	5,873	33	22	171	150
Brown University	807	159	T.J. Webster	261	131	2,323	130	36	49	150
California Institute of Technology (Calt...)	2,271	43	F.C. Anson	330	82	3,880	75	25	142	150
Cardiff University	867	150	G.R. Hutchings	371	66	4,574	53	42	30	150
Carnegie Mellon University	1,974	55	I.E. Grossmann	309	95	3,183	89	36	49	150
Case Western Reserve University	146	317	D. M. Durand	385	62	2,665	113	27	111	150
Chalmers University of Technology	1,842	61	M. Skoglundh	107	298	1,301	214	24	152	119
Charles University	82	333	V. Matolin	162	241	541	295	14	268	134
Chinese University of Hong Kong	519	228	J.C. Yu	177	209	5,076	42	46	21	150
Chulalongkorn University	919	144	P. Prasertdam	211	172	852	259	16	251	150
City University of Hong Kong	456	242	P. K. Chu	887	5	0	343	29	90	150
City University of New York	191	304	F.H. Pollak	345	77	3,444	83	20	195	150
Colorado State University	748	172	S.R. Wickramasinghe	69	324	501	301	11	294	89
Columbia University	1,508	81	P. Somasundaran	385	62	3,117	92	23	156	150
Cornell University	2,259	44	T. Eisner	198	186	1,634	181	17	236	150
Curtin University of Technology	451	244	M.O. Tade	131	273	385	314	11	294	123
Dalhousie University	427	249	M.R. Islam	365	69	947	248	13	278	150
Dartmouth College	517	229	L.R. Lynd	122	282	1,583	187	21	185	150
Delft University of Technology	3,607	14	J.A. Moulijn	632	13	1,068	238	51	12	150
Drexel University	1,197	110	B. Farouk	180	203	938	249	13	278	113
Duke University	995	130	A. Bejan	411	48	3,021	96	27	111	150
Durham University	384	262	M.C. Petty	299	107	2,277	132	21	185	150
Ecole Normale Supérieure de Lyon	182	307	C. Pichot	212	170	2,351	126	29	90	150
École Normale Supérieure, Paris	344	271	C. Amatore	325	85	4,326	65	30	81	150
École Polytechnique	540	216	J.N. Chazalviel	203	178	1,475	195	21	185	150

Ecole Polytechnique Fédérale de Lausanne	1,384	95	A. Renker	197	189	1,501	194	23	156	150
Eindhoven University of Technology	2,223	47	R.A. Van Santen	556	23	13,845	8	48	16	150
Emory University	406	258	F.M. Menger	270	127	4,089	70	25	142	150
Erasmus University Rotterdam	150	315	S.H. Orkin	222	166	10,429	16	73	4	150
ETH Zurich (Swiss Federal Institute of Technology)	3,214	22	A. Baiker	636	12	16,123	6	48	16	150
Florida International University	454	243	M.A. Ebadian	200	184	426	308	13	278	107
Florida State University	209	301	B.R. Locke	119	289	1,188	223	24	152	109
Freie Universität Berlin	619	197	J.H. Furhop	148	257	2,014	153	18	221	150
Friedrich Alexander Universität Erlangen Nürnberg	2,154	50	F. Durst	298	109	3,348	85	27	111	150
Fudan University	1,438	86	Z. Gao	172	219	1,657	175	27	111	150
Georg August Universität Göttingen	693	183	M. Burback	157	246	1,457	199	32	66	150
George Mason University	186	306	G.W. Mustrush	164	239	332	320	7	322	105
George Washington University	205	302	D.E. Ramaker	155	248	1,320	212	22	171	150
Georgetown University	257	287	R. De Levie	124	280	629	282	7	322	56
Georgia Institute of Technology	3,168	24	E.C. Ashby	248	143	1,088	235	2	337	128
Georgia State University	119	323	Y. Pan	259	135	1,192	222	22	171	150
Goteborg University	956	139	B. Kasemo	374	65	6,704	23	47	19	150
Harvard University	997	129	G.M. Whitesides	918	3	75,622	1	105	1	150
Hebrew University of Jerusalem	1,707	67	N. Garti	225	164	1,545	192	28	102	150
Heidelberg Universität	792	164	M.L. Zeigler	96	304	723	273	1	340	150
Hokkaido University	3,026	28	H. Hattori	174	216	2,071	152	20	195	150
Hong Kong Polytechnic University	1,389	93	W.K. Chow	369	67	870	257	14	268	150
Hong Kong University of Science & Techno...	1,309	98	G. Chen	325	85	3,655	80	32	66	150
Humboldt-Universität zu Berlin	707	179	E. Kemnitz	302	101	1,393	208	25	142	150
Imperial College London	3,859	9	E.N. Pistikopoulos	180	203	1,621	184	25	142	114
Indian Institute of Technology Bombay (I...	1,093	121	P. Selvam	121	286	888	256	20	195	133
Indian Institute of Technology Delhi (II...	1,420	91	V.K. Kothari	166	233	223	331	5	331	90
Indian Institute of Technology Kanpur (I...	1,064	125	R.P. Chhabra	204	177	708	276	16	251	150
Indiana University Bloomington	524	226	D.G. Peters	149	255	793	264	15	260	133
Indiana University Indianapolis	270	285	P.L. Dublin	170	225	1,994	155	27	111	150
Iowa State University	760	171	V.V. Tsukruk	277	124	2,911	100	37	45	150
Johns Hopkins University	1,616	70	S.H. Snyder	300	106	14,180	7	75	3	150
Kansas State University	493	237	L.T. Fan	411	48	1,650	176	12	288	150
Katholieke Universiteit Leuven	1,523	79	P.A. Jacobs	398	55	6,002	30	43	23	150
Keio University	1,147	114	X. H. Mori	219	167	694	279	14	268	150

King Fahd University of Petroleum & Minerals	905	145	B.S. Yilbas	391	59	1,093	232	19	205	150
King Saud University	525	225	A.E. Abasaheed	45	333	230	330	10	303	29
Kobe University	1,292	102	M. Okubo	279	123	1,669	174	23	156	150
Korea Advanced Institute of Science & Technology	2,849	30	H. Lee	168	229	1,184	225	20	195	150
Korea University	1,470	82	S.H. Kim	33	338	42	339	3	334	125
Kyoto University	7,860	2	T. Kokubo	433	40	6,230	29	47	19	150
Kyushu University	3,371	20	I. Mochida	629	14	5,397	39	30	81	150
La Trobe University	213	300	B.B. Johnson	56	330	902	253	19	205	35
Lancaster University	108	328	P.V.E. McClintock	321	90	1,630	182	22	171	150
Leiden University	882	147	V. Ponec	165	235	1,851	162	17	236	150
Linkoping University	532	220	B. Liedberg	151	254	3,704	79	26	128	150
London School of Economics and Political Science	22	342	LA Smith	154	251	2,418	121	31	77	150
Loughborough University	1,250	105	N.A. Hampton	240	147	544	294	0	341	150
Louisiana State University	593	204	K.T. Valsaraj	161	243	1,074	237	16	251	131
Ludwig-Maximilians-Universität München	988	133	H. Knozinger	307	97	3,831	77	29	90	150
Lund University	2,659	34	B. Lindman	415	46	5,552	38	34	60	150
Maastricht University	128	320	L.H. Koole	131	273	737	271	17	236	150
Macquarie University	254	288	N.W. Cant	155	248	1,809	166	19	205	111
Mahidol University	201	303	P. Tangboriboonrat	39	335	119	336	9	310	45
Masaryk University	167	313	L. Trnkova	89	311	509	300	22	171	125
Massachusetts Institute of Technology	5,169	5	D. Seyferth	577	20	4,515	57	9	310	150
McGill University	2,455	38	J.H. Vera	65	327	1,445	202	19	205	79
McMaster University	1,120	117	R. Pelton	235	152	2,326	128	26	128	150
Michigan State University	1,403	92	L.T. Drzl	296	111	2,388	124	22	171	150
Michigan Technological University	539	217	D.R. Shonnard	81	318	417	311	13	278	109
Monash University	1,432	87	M. Forsyth	237	150	3,187	88	35	54	150
Montana State University	288	282	F.P. McCandless	51	332	117	337	2	337	37
Moscow State University	3,197	23	V.V. Lunin	261	131	149	335	21	185	150
Nagoya University	3,776	11	T. Kobayshi	796	7	39	340	33	63	150
Nanjing University	1,446	85	J. Shen	227	161	1,571	189	23	156	150
Nanyang Technological University	1,796	64	K.A. Khor	303	99	2,876	101	31	77	150
National Taiwan University	3,153	25	G.H. Lee	621	15	7,846	22	36	49	150
National Tsing Hua University	1,659	68	M.L. Wang	202	179	347	319	10	303	75
National University of Ireland, Galway	254	288	P. McArdle	156	247	600	289	10	303	150
National University of Singapore	3,397	18	T.S. Chung	354	72	2,539	116	32	66	150
New Mexico State University	365	266	J. Y. Wang	613	17	789	266	76	2	150

New York University	937	142	R.Z. LeGeros	188	196	2,768	106	17	236	150
Newcastle University	1,161	113	J.A. Harrison	132	272	860	258	9	310	102
North Carolina State University	2,505	36	A.V. Kuznetsov	343	78	2,422	120	28	102	150
Northeastern University	706	180	R.J. Willey	87	312	1,122	229	13	278	127
Northwestern University	2,745	31	W.H.M. Sachtler	330	82	4,817	46	36	49	150
Norwegian University of Science & Technology	1,829	62	A. Holmen	168	229	1,950	157	27	111	150
Ohio State University	22,667	1	L.S. Fan	289	114	2,118	145	25	142	150
Oklahoma State University	609	200	A.J. Ghajar	101	303	233	328	8	316	67
Open University UK	105	329		0	344	0	343	0	341	111
Oregon State University	748	172	O. Levenspiel	93	309	810	263	6	326	56
Osaka University	3,923	8	I. Komasaawa	172	219	1,627	183	27	111	100
Peking University	1,467	83	Y. Xie	173	218	1,011	244	19	205	150
Pennsylvania State University	3,981	7	M.A. Vannice	227	161	4,095	69	30	81	131
Pohang University of Science And Technology	1,239	108	I.B. Lee	453	37	3,066	94	32	66	150
Portland State University	178	309	J. McNames	106	300	624	284	14	268	106
Princeton University	2,679	32	C.A. Floudas	232	157	2,111	147	29	90	149
Purdue University	4,282	6	R. Viskanta	400	52	2,964	99	18	221	150
Queen's University	980	136	P.H. Oosthuizen	241	145	357	316	11	294	92
Queen's University of Belfast	889	146	C. Hardacre	196	191	2,401	123	30	81	150
Queensland University of Technology	421	253	R.L. Frost	587	19	8,990	21	43	23	150
Radboud University, Nijmegen	520	227	J.A. Jansen	390	60	4,052	71	42	30	150
Rensselaer Polytechnic Institute	1,612	71	G. Belfort	191	192	2,525	117	25	142	150
Rheinisch Westfalische Technische Hochschule Aach	2,399	40	W. Marquardt	235	152	1,252	217	21	185	150
Rheinische Friedrich Wilhelms Universitat Bonn	613	199	W. Vielstich	110	294	1,648	177	14	268	99
Rice University	1,236	109	R. Kobayashi	142	263	726	272	3	334	114
Rochester Institute of Technology	295	280	S.G. Kandlikar	186	200	1,336	211	23	156	101
Royal Institute of Technology, KTH	2,012	53	P.M. Cleasson	212	170	2,810	103	27	111	150
Royal Melbourne Institute of Technology	436	248	S.K. Bhargava	140	265	948	247	17	236	150
Rutgers	1,903	58	F.J. Muzzio	158	245	1,606	185	28	102	147
Saint-Petersburg State University	953	140	F.M. Kuni	168	229	185	333	8	316	58
San Diego State University	162	314	M.A. Ring	67	326	293	323	2	337	69
Sapienza University of Rome	0	346		0	344	0	343	0	341	0
Sciences Po Paris	0	346		0	344	0	343	0	341	0
Seoul National University	3,545	16	I.K. Song	178	205	612	287	17	236	136
Shanghai Jiao Tong University	2,673	33	R. Wang	377	64	900	254	20	195	150
Simon Fraser University	282	283	I.D. Gay	55	331	464	304	6	326	42

Stanford University	3,106	27	C.W. Frank	288	115	4,114	68	35	54	150
State University of New York Buffalo	5	344	S. Inamdar	22	340	256	326	12	288	36
Stockholm University	339	274	O. Teraski	242	144	5,674	36	42	30	150
Stony Brook University	803	161	B. Chu	392	57	5,768	35	41	36	150
Syracuse University	407	257	C.T. Driscoll	284	119	4,518	56	37	45	150
Tartu University (University of Tartu)	231	294	E. Lust	137	266	385	314	17	236	80
Technical University of Denmark	2,225	46	R. Gani	189	194	1,028	243	16	251	150
Technion	2,318	42	M. Sheintuch	201	181	1,570	190	18	221	99
Technische Universität Berlin	1,846	60	G. Wozny	187	198	423	309	13	278	150
Technische Universität Chemnitz	344	271	R. Holze	187	198	1,473	198	22	171	150
Technische Universität Dresden	1,361	96	H.D. Dorfler	131	273	235	327	6	326	81
Technische Universität München	2,607	35	J.A. Lerchen	302	101	3,616	81	32	66	150
Tel Aviv University	1,861	59	N. Brauner	130	277	615	286	10	303	150
Texas A&M University	3,535	17	J.H. Lunsford	293	113	4,470	59	26	128	150
Texas Tech	238	291	G.B. McKenna	236	151	2,801	104	23	156	150
Tohoku University	3,600	15	K. Arai	250	141	2,160	142	29	90	150
Tokyo Institute of Technology	7,415	3	K.Otsuka	201	181	1,640	178	26	128	126
Trinity College Dublin	351	267	D. Weaire	155	248	12,226	11	17	236	139
Tsinghua University	6,102	4	Y. Jin	454	36	1,536	193	18	221	150
Tufts University	424	251	D.L. Kaplan	556	23	10,307	18	51	12	150
Universidad Autonoma de Madrid	676	186	A.J. Arvia	546	25	5,034	43	18	221	150
Universidad de Chile	531	221	J.A. Squella	176	212	790	265	18	221	150
Universidad de Granada	676	186	A.J. Arvia	546	25	5,034	43	18	221	150
Universidad del País Vasco	1,025	128	J. Bilbao	198	186	955	246	27	111	117
Universidad Nacional Autónoma de México ...	515	231	V.M. Castano	347	76	1,291	216	16	251	150
Universidad Politecnica de Madrid	443	246	A. Linan	110	294	910	252	11	294	94
Universidade de São Paulo	968	137	M. Zaiat	109	296	353	317	14	268	111
Universidade Estadual de Campinas	1,079	124	C. Airoidi	340	80	1,678	173	29	90	150
Università degli Studi di Firenze	1,038	127	R. Guidelli	148	257	898	255	18	221	76
Università degli Studi di Padova	1,540	78	A. Bertucco	96	304	933	250	19	205	128
Università Di Bologna	2,012	53	F. Trifiro	197	189	4,433	62	22	171	150
Università di Pisa	339	274	E. Chiellini	226	163	1,583	187	20	195	150
Universitat Autonoma de Barcelona	785	166	X. Domenech	96	304	1,785	167	22	171	97
Universitat Bielefeld	332	276	P. Jutzi	234	155	2,373	125	26	128	150
Universität Bremen	657	191	G. Schulz	161	243	2,273	134	25	142	150
Universitat d'Alacant	1,042	126	J.M. Feliu	249	142	2,218	139	32	66	150

Universitat de València	805	160	J.B. Monton	76	321	718	274	11	294	56
Universität Frankfurt am Main	517	229	M. Bolte	617	16	4,536	54	29	90	150
Universität Freiburg	747	174	J. Heinze	117	291	2,187	141	19	205	150
Universität Hamburg	101	331	W. Kaminsky	183	201	2,589	115	27	111	150
Universität Karlsruhe	2,172	49	E.V. Schunder	137	266	696	278	9	310	107
Universität Leipzig	290	281	J. Karger	350	75	2,311	131	29	90	150
Universität Munster (Westfälische Wilhelms-Un	115	325	A. Steinbuchel	301	105	2,998	98	39	41	150
Universität Politecnica de Catalunya	526	223	L. Puigjaner	200	184	1,153	227	18	221	150
Universität Regensburg	771	168	H. Brunner	342	79	2,698	108	22	171	150
Universität Stuttgart	1,827	63	H.Hasse	125	279	670	280	17	236	139
Universität Trier	13	343	K. Fischer	225	164	1,457	199	22	171	150
Universität Tübingen	526	223	E. Lidner	181	202	1,424	205	18	221	150
Universität Wien (University of Vienna)	560	210	W. Pauli	37	336	2	342	0	341	26
Universität Zu Köln	475	240	D. Woermann	135	268	490	303	10	303	131
Université Catholique de Louvain	1,305	100	B. Delmon	297	110	4,441	61	21	185	150
Universite de Liege	615	198	J.P. Pirad	171	222	1,049	239	19	205	150
Université de Montréal	699	181	J.D. Wuest	119	289	1,764	169	21	185	104
Université de Nice Sophia Antipolis	218	299	E. Dunach	122	282	849	260	17	236	125
Universite Laval	1,264	104	S. Kaliaguine	323	88	4,526	55	35	54	150
Universite Libre de Bruxelles	657	191	A. DeWit	57	329	534	296	14	268	61
Université Paris Sorbonne	32	338	N.P. Buu-Hol	122	282	104	338	0	341	106
Universite Paris-Sud 11	1,093	121	D. Langevin	198	186	1,780	168	30	81	150
Université Pierre et Marie Curie	2,429	39	M. Che	286	117	3,127	91	28	102	150
Universiti Malaya (University of Malaya)	560	210	M.A. Hashim	64	328	444	306	11	294	58
University College Cork	380	263	M.A. Morris	105	301	1,081	236	21	185	150
University College Dublin	588	208	A.R. Manning	176	212	439	307	11	294	150
University College London	2,027	52	I.W. Boyd	315	92	2,250	136	23	156	150
University do Porto	867	150	A.E. Rodrigues	327	84	2,143	143	27	111	150
University of Aberdeen	544	213	J.N. Low	429	41	977	245	17	236	150
University of Adelaide	664	189	M.I. Bruce	407	50	2,501	118	26	128	150
University of Alabama	985	134	J.L. Atwood	571	21	589	290	43	23	150
University of Alberta	2,463	37	J.H. Masliyah	399	54	2,085	151	25	142	150
University of Amsterdam	1,106	119	R. Krishna	270	127	3,205	87	41	36	150
University of Antwerp	377	265	E.F. Vansant	284	119	2,674	112	27	111	150
University of Arizona	1,168	112	J.E. Pemberton	131	273	1,704	172	20	195	139
University of Athens	310	278	N. Hadjichrisidis	392	57	4,588	52	43	23	150

University of Auckland	968	137	D.A. Nield	134	270	778	267	16	251	24
University of Barcelona	1,289	103	F. Cunill	74	322	450	305	13	278	80
University of Basel	425	250	W.J. Gehring	209	174	6,605	24	32	66	150
University of Bath	437	247	J.B. Chaudhuri	95	307	751	270	16	251	150
University of Bergen	147	316	J. Sjoblom	251	140	1,475	195	19	205	150
University of Bern	2	345	J. Hulliger	162	241	1,197	221	21	185	150
University of Birmingham	1,565	74	A.W. Nieow	280	122	2,276	133	27	111	150
University of Bristol	1,425	89	J. Eastoe	165	235	2,115	146	30	81	150
University of British Columbia	994	131	J.R. Grace	366	68	2,619	114	26	128	150
University of Calgary	683	185	W.Y. Syrcek	149	255	566	293	9	310	143
University of California, Berkley	1,708	66	J.M. Prausnitz	532	27	12,154	12	30	81	150
University of California, Davis	837	154	Z.A. Munir	353	73	2,783	105	27	111	150
University of California, Irvine	2,195	48	E.J. Lavernia	493	31	3,891	74	32	66	150
University of California, Los Angeles	2,371	41	P.D. Christofides	239	148	1,213	220	33	63	64
University of California, Riverside	793	163	F. Zaera	229	159	2,350	127	34	60	150
University of California, San Diego	3,379	19	B.O. Palsson	319	91	4,445	60	50	15	150
University of California, San Francisco	406	258		0	344	0	343	0	341	0
University of California, Santa Barbara	830	157	U.K. Mishra	671	10	12,606	10	57	7	150
University of California, Santa Cruz	554	212	J.Z. Zhang	143	262	2,262	135	26	128	150
University of Cambridge	3,147	26	B.F.G. Johnson	869	6	5,891	31	30	81	150
University of Canterbury	191	304	K.N. Marsh	121	286	1,093	232	14	268	150
University of Cape Town	268	286	C.T. O'Conner	105	301	770	268	15	260	92
University of Central Florida	515	231	Z.Qu	213	169	1,182	226	15	260	120
University of Chicago	543	214	B. Roizman	191	192	3,341	86	43	23	150
University of Cincinnati	1,519	80	P.G. Smiriotis	133	271	1,759	170	28	102	108
University of Colorado at Boulder	769	169	C.N. Bowman	252	139	2,740	107	38	42	150
University of Connecticut	567	209	S.L. Suib	390	60	4,126	67	36	49	150
University of Copenhagen	1,309	98	T. Bjornholm	123	281	1,820	165	26	128	150
University of Delaware	1,604	72	S.I. Sandler	261	131	2,692	110	23	156	150
University of Dundee	315	277	C.H. Rochester	257	138	1,636	180	12	288	150
University of Edinburgh	405	260	N.A. Seaton	8	342	1,229	218	20	195	79
University of Florida	2,077	51	W. Shyy	337	81	2,697	109	26	128	150
University of Geneva	75	334	J. Buffle	178	205	2,201	140	29	90	150
University of Georgia	231	294	J.L. Stickney	178	205	760	269	18	221	127
University of Ghent	536	218	G.B. Marin	258	136	1,829	164	26	128	150
University of Glasgow	773	167	J.H. Dymond	84	317	622	285	10	303	73

University of Gothenburg	26	341	P. Thomsen	130	277	2,324	129	19	205	150
University of Groningen	481	238	H.J. Busscher	429	41	4,743	48	34	60	150
University of Helsinki	670	188	M. Leskela	404	51	4,377	64	40	39	150
University of Hong Kong	690	184	S.F. Chen	211	172	1,937	159	28	102	150
University of Houston	713	177	D. Luss	235	152	1,096	231	15	260	150
University of Illinois	3,687	12	T.J. Hanratty	214	168	1,945	158	23	156	132
University of Illinois, Chicago	1,296	101	D. Poulikakos	262	130	2,458	119	28	102	150
University of Indonesia	31	340	T.A. Ivandini	22	340	259	325	12	288	50
University of Iowa	989	132	R. Datta	145	260	1,371	210	22	171	69
University of Kansas	234	292	B. Subramaniam	95	307	927	251	18	221	103
University of Kentucky	499	235	B.H. Davis	428	43	2,409	122	29	90	150
University of Lausanne	109	327	R. Roulet	81	318	329	321	8	316	109
University of Leeds	862	152	M. Ghadiri	121	286	571	291	18	221	130
University of Leicester	380	263	R.D.W. Kemmitt	142	263	389	313	11	294	124
University of Liverpool	233	293	P.R. Chalker	171	222	1,309	213	19	205	150
University of Ljubljana	733	175	J. Levec	81	318	1,449	201	20	195	70
University of London (Kings College of London)	3,831	10	W. Bonfield	307	97	3,875	76	38	42	150
University of Manchester	3,225	21	G.E. Thompson	460	34	2,692	110	29	90	150
University of Manitoba	645	194	D.S. Jayas	231	158	1,102	230	18	221	137
University of Maryland	2,250	45	R. Radermacher	148	257	571	291	8	316	148
University of Maryland Baltimore County	530	222	R.C. Gallo	163	240	6,517	26	37	45	150
University of Massachusetts	859	153	F.E. Karasz	484	32	4,988	45	26	128	150
University of Melbourne	1,561	75	G.W. Stevens	169	228	1,042	240	19	205	150
University of Miami	103	330	F.J. Millero	365	69	6,487	27	35	54	150
University of Michigan	1,448	84	R.T. Yang	351	74	4,817	46	43	23	150
University of Minnesota	1,574	73	J.H. Weaver	395	56	3,750	78	16	251	150
University of Missouri	710	178	A.I. Liapis	107	298	716	275	19	205	73
University of Nebraska	598	201	Y. Yang	86	314	518	299	16	251	63
University of New Hampshire	248	290	P.T. Vasudevan	35	337	208	332	7	322	21
University of New Mexico	342	273	M.S. El-Genk	269	129	610	288	12	288	120
University of New South Wales	1,117	118	T.P. Davis	499	30	5,580	37	53	10	150
University of North Carolina, Chapel Hill	870	149	R.P. Buck	229	159	1,974	156	17	236	150
University of North Texas	182	307	W.E. Acree	439	39	1,475	195	26	128	150
University of Notre Dame	722	176	A Varma	27	339	1,430	204	17	236	134
University of Nottingham	592	205	A.J. Blake	606	18	10,509	15	43	23	150
University of Oklahoma	661	190	J.F. Scamehorn	170	225	1,299	215	15	260	150

University of Oregon	168	312	B.W. Matthews	302	101	9,260	20	37	45	150
University of Oslo	121	322	B. Nystrom	122	282	1,125	228	22	171	125
University of Otago	51	336	T. Rades	174	216	1,091	234	23	156	150
University of Ottawa	655	193	T. Matsuura	443	38	2,120	144	25	142	150
University of Oxford	499	235	R.G. Compton	917	4	16,202	5	51	12	150
University of Pennsylvania	787	165	R.J. Gorte	274	125	4,479	58	42	30	150
University of Pittsburgh	809	158	A.C. Balazs	241	145	2,816	102	33	63	150
University of Quebec	645	194	S. Kaliaguine	323	88	4,280	66	35	54	150
University of Queensland	1,136	115	D.D. Do	310	94	2,101	148	23	156	109
University of Reading	645	194	R. Burch	68	325	1,639	179	4	332	107
University of Rochester	278	284	S.A. Jenekhe	260	134	5,167	41	45	22	150
University of Saskatchewan	1,083	123	A.K. Dalai	166	233	1,399	206	22	171	150
University of Science and Technology of China	1,427	88	T. Xu.	135	268	531	297	18	221	123
University of Sheffield	1,244	107	D.W. Hughes	189	194	848	261	14	268	150
University of South Carolina	696	182	J.A. Ritter	152	253	1,585	186	23	156	97
University of South Florida	172	310	V.R. Bhethanabotla	108	297	352	318	10	303	80
University of Southampton	1,245	106	D. Pletcher	299	107	3,097	93	19	205	150
University of Southern California	541	215	M. Sahimi	258	136	2,220	138	23	156	150
University of St Andrews	417	256	C. Glidewell	683	9	3,577	82	23	156	150
University of Surrey	424	251	J.F. Watts	234	155	1,995	154	21	185	150
University of Sussex	833	155	C. Eaborn	457	35	1,567	191	17	236	150
University of Sydney	1,655	69	T.A.G. Langrish	153	252	523	298	14	268	107
University of Technology, Sydney	138	318	S. Vigneswaran	168	229	842	262	15	260	150
University of Tennessee Knoxville	388	261	G. Guichon	685	8	10,957	14	42	30	150
University of Texas at Austin	1,421	90	D.R. Paul	508	28	16,217	4	41	36	150
University of Tokyo	1,791	65	A. Fujishima	415	46	11,336	13	52	11	150
University of Toronto	2,976	29	A.W. Neumann	308	96	3,174	90	27	111	150
University of Tsukuba	297	279	S.F. Chichibu	206	175	3,019	97	32	66	150
University of Twente	1,105	120	J.A.M. Kuipers	177	209	1,722	171	26	128	133
University of Utah	1,914	57	J.D. Miller	271	126	1,865	161	19	205	150
University of Vermont	223	297	A.Campo	202	179	658	281	13	278	123
University of Victoria	72	335	D. Sinton	86	314	699	277	17	236	53
University of Virginia	479	239	M. Neurock	175	215	2,086	150	30	81	150
University of Warwick	535	219	P.R. Unwin	201	181	3,975	72	31	77	150
University of Washington	1,966	56	J.C. Berg	144	261	1,397	207	13	278	95
University of Waterloo	1,181	111	G.L. Rempel	239	148	1,380	209	15	260	131

University of Western Australia	592	205	A. H. White	1,245	1	13,086	9	38	42	150
University of Western Ontario	1,389	93	C.L. Briens	171	222	625	283	12	288	147
University of Wisconsin	1,316	97	J.A. Dumesic	315	92	4,590	51	35	54	150
University of Wollongong	171	311	G.G. Wallace	508	28	9,671	19	40	39	150
University of York	84	332	K. Wilson	112	292	1,217	219	20	195	150
University of Zurich	419	254	R. M. Zinkernagel	571	21	32,690	2	70	6	150
Univesitas Gadjah Mada	37	337	I. Perdana	6	343	19	341	3	334	13
Uppsala University	982	135	M. Almgren	165	235	3,944	73	28	102	150
Utah State	221	298	R.E. Spall	70	323	233	328	8	316	38
Utrecht University	1,553	77	J.H. Sluyters	170	225	1,185	224	6	326	83
Vanderbilt University	763	170	R.D. Tanner	93	309	303	322	7	322	147
Victoria University of Wellington	32	338	H.J. Trodahl	176	212	1,033	241	15	260	150
Vienna University of Technology	230	296	H. Hofbauer	87	312	423	309	13	278	104
Virginia Polytechnic Institute	591	207	G.L. Wilkes	417	45	4,413	63	24	152	150
Vrije Universiteit, Brussels	473	241	G.V. Baron	172	219	1,445	202	28	102	150
VU University Amsterdam	419	254	F. Bickelhaupt	400	52	4,712	49	31	77	150
Wageningen University	509	233	J. Tramper	303	99	3,386	84	27	111	150
Wake Forest University	122	321	A. Atala	295	112	5,169	40	42	30	150
Waseda University	946	141	E. KiKuchi	188	196	2,099	149	24	152	150
Washington State University	937	142	D.S. Matteson	165	235	1,030	242	11	294	120
Washington University in St. Louis	594	202	M.P. Dudukovic	287	116	1,896	160	27	111	150
Wayne State University	831	156	K.Y.S. Ng	86	314	167	334	6	326	82
West Virginia University	345	270	D.B. Dadyburjor	112	292	413	312	8	316	84
Yale University	502	234	C. Horvath	285	118	4,708	50	32	66	150
Yonsei University	801	162	H.H. Park	284	119	2,231	137	23	156	150
York University	118	324	James G. Laframboise	42	334	279	324	4	332	43
Zhejiang University	3,654	13	K.F. Cen	1,175	2	3,060	95	19	205	150

Multidisciplinary Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	81	290	R.Hari	301	54	7,650	52	48	45	150
Aarhus University	401	111	H.C. Fogedby	80	231	794	215	10	262	53
Arizona State University	287	159	A. Chattopadhyay	198	117	674	226	18	179	100
Ateneo de Manila University	0	346		0	344	0	343	0	324	0
Auburn University	97	272	C.L. Cocke	251	85	1,931	152	27	122	150
Australian National University	1,277	26	S.R. Taylor	160	154	5,061	76	10	262	150
Boston College	83	285	E.R. Kantrowitz	152	163	853	209	16	203	150
Boston University	1,246	28	H.E Stanley	480	22	10,348	40	57	32	150
Brandeis University	625	67	M. Roshman	253	82	5,621	70	49	42	150
Brigham Young University	90	279	L.L. Howell	134	176	549	243	16	203	108
Brown University	941	46	C. Barus	88	222	4	339	0	324	1
California Institute of Technology (Calt...)	4,183	8	A.H. Zewail	441	28	7,471	53	48	45	150
Cardiff University	441	98	M.G. Edmunds	54	275	758	217	16	203	116
Carnegie Mellon University	440	99	M.G.Morgan	79	235	771	216	11	252	98
Case Western Reserve University	1,094	38	P. Gambetti	284	67	6,166	66	47	50	150
Chalmers University of Technology	121	247	O. Orwar	112	201	1,668	166	27	122	150
Charles University	99	270	Z. Smahel	94	213	299	272	7	292	66
Chinese University of Hong Kong	203	199	M.Y. Wang	123	189	553	240	17	188	80
Chulalongkorn University	92	278	P. Charusiri	25	323	83	317	7	292	57
City University of Hong Kong	213	194	G.Chen	681	7	0	343	61	26	150
City University of New York	127	244	D.B. Weinberg	9	339	32	328	4	312	15
Colorado State University	106	259	E. Wohl	102	210	942	203	21	158	123
Columbia University	4,060	9	E.R. Kandal	448	27	17,020	20	77	10	150
Cornell University	4,318	5	T. Eisner	198	117	1,634	169	17	188	150
Curtin University of Technology	57	314		0	344	0	343	0	324	0
Dalhousie University	429	104	W.F. Doolittle	228	97	5,968	68	41	62	150
Dartmouth College	664	64	J.C. Dunlap	118	195	3,389	112	35	84	150
Delft University of Technology	222	190	C.Dekker	164	146	11,878	35	50	40	150
Drexel University	271	167	D.J. Prockop	200	113	8,907	44	51	38	150
Duke University	2,394	14	R.J. Lefkowitz	752	5	43,621	3	93	2	150
Durham University	661	65	A.W. Wolfendale	291	63	689	224	14	222	15
Ecole Normale Supérieure de Lyon	93	276	F. Albarede	161	153	3,835	95	31	104	150
École Normale Supérieure, Paris	259	173	M. Loreau	117	196	3,583	106	33	93	150
École Polytechnique	118	248	B. Giebels	108	206	1,259	187	29	115	150

Ecole Polytechnique Fédérale de Lausanne	198	205	M. Gratzel	663	8	41,017	4	79	7	150
Eindhoven University of Technology	78	291	E.W. Meijen	493	21	11,926	34	67	16	150
Emory University	745	55	R.Ahmed	253	82	10,416	39	61	26	150
Erasmus University Rotterdam	224	189	A.D.M.E. Osterhaus	741	6	23,768	12	59	30	150
ETH Zurich (Swiss Federal Institute of Technology)	890	50	K.Wuthrich	591	15	39,101	6	57	32	150
Florida International University	74	295	B.M. Clement	46	285	832	213	6	304	83
Florida State University	87	280	G.H. Doran	8	340	79	318	2	317	12
Freie Universität Berlin	330	140	W. Saenger	239	90	6,262	65	35	84	150
Friedrich Alexander Universität Erlangen Nürnberg	152	229	H.U. Zeilhofer	49	281	1,123	193	21	158	150
Fudan University	412	105	S. Zhao	136	173	697	223	14	222	150
Georg August Universität Göttingen	322	144	M. Pfingsten	65	253	618	231	16	203	104
George Mason University	75	293	R. Lohner	181	136	1,351	184	21	158	119
George Washington University	350	134	C.M. Fraser	227	98	24,291	11	64	18	150
Georgetown University	377	124	E. Costa	659	9	12,855	29	35	84	150
Georgia Institute of Technology	378	121	M. Landman	281	71	8,015	48	46	52	150
Georgia State University	65	308	P.J. Wiita	87	224	572	237	15	213	84
Goteborg University	285	164	I. Ekman	67	251	617	232	14	222	116
Harvard University	5,197	3	W.M. Davis	237	92	3,363	113	33	93	150
Hebrew University of Jerusalem	1,219	32	A. Levitzki	302	53	7,958	49	37	73	150
Heidelberg Universität	507	86	P.H. Seeburg	313	49	16,754	21	40	63	150
Hokkaido University	435	102	M. Watanabe	615	14	13,807	25	53	35	150
Hong Kong Polytechnic University	113	251	C.K. Tse	300	55	1,445	181	23	140	150
Hong Kong University of Science & Techno...	97	272	N.Y. Ip	177	139	6,485	63	22	150	76
Humboldt-Universität zu Berlin	212	195	W. Ebeling	221	101	1,095	196	18	179	150
Imperial College London	3,000	12	A.G. Gaydon	83	227	55	323	0	324	105
Indian Institute of Technology Bombay (I...	107	257	P.D. Sunavala	35	309	11	336	0	324	16
Indian Institute of Technology Delhi (II...	166	217	N.K. Gupta	189	127	524	247	12	245	150
Indian Institute of Technology Kanpur (I...	154	226	R. Balasubramanian	200	113	861	208	17	188	150
Indiana University Bloomington	911	49	F.W. Putnam	280	73	3,936	91	18	179	150
Indiana University Indianapolis	210	196	M.C. Dinauer	144	168	3,880	94	42	59	150
Iowa State University	156	224	K.M. Bryden	79	235	186	297	8	282	61
Johns Hopkins University	4,201	7	S.H. Snyder	300	55	14,180	24	75	11	150
Kansas State University	51	320	K.Y. Zhu	70	246	491	249	14	222	125
Katholieke Universiteit Leuven	317	148	P. Cameliet	381	33	20,026	15	78	9	150
Keio University	202	200	H. Okano	360	39	9,185	42	58	31	150

King Fahd University of Petroleum & Minerals	210	196	A. Aksoy	25	323	55	323	3	313	33
King Saud University	133	242	K.A.S. Al-Rasheid	74	239	192	295	9	273	95
Kobe University	185	211	Y. Nishizuka	187	132	9,115	43	11	252	150
Korea Advanced Institute of Science & Technology	74	295	J.O. Lee	33	313	2,041	146	17	188	146
Korea University	40	328	K.J. Lee	162	150	1,584	172	17	188	150
Kyoto University	1,294	25	T. Honjo	473	23	12,545	32	68	15	150
Kyushu University	398	114	T. Miyata	398	31	7,421	56	34	91	150
La Trobe University	110	255	J.A. Marshall-Graves	126	185	1,964	150	19	170	150
Lancaster University	70	300	S. Condor	19	332	140	305	7	292	13
Leiden University	593	70	J.J. VanRood	422	29	3,648	102	22	150	150
Linkoping University	86	281	P. Westermark	89	220	1,579	173	17	188	150
London School of Economics and Political Science	70	300	C. Badcock	8	340	79	318	3	313	3
Loughborough University	96	275	N.A. Halliwell	114	199	348	264	8	282	79
Louisiana State University	236	182	M.S. Sothern	41	292	471	251	14	222	107
Ludwig-Maximilians-Universität München	583	72	W. Neupert	355	40	5,422	71	55	34	150
Lund University	601	68	A. Bjorklund	472	24	8,610	46	51	38	150
Maastricht University	70	300	P. Goebel	134	176	2,819	127	37	73	150
Macquarie University	185	211	S.Y. O'Reilly	218	103	3,039	122	38	68	150
Mahidol University	142	235	W. Gritsanapan	40	295	125	306	7	292	48
Masaryk University	30	335	J. Friml	73	243	1,995	148	37	73	150
Massachusetts Institute of Technology	5,107	4	A. Rich	337	44	5,872	69	32	98	150
McGill University	1,344	23	J.H. Quastel	116	197	24	332	0	324	80
McMaster University	402	110	H.P. Schwarcz	254	80	3,259	116	26	130	150
Michigan State University	948	45	R.E. Lenski	160	154	3,733	99	38	68	150
Michigan Technological University	54	319	W.I. Rose	128	182	1,386	183	19	170	150
Monash University	36	331	J.Rossjohn	162	150	2,345	136	36	79	150
Montana State University	202	200	J.R. Horner	48	283	611	233	19	170	78
Moscow State University	569	79	V.E. Tarasov	86	226	209	290	16	203	3
Nagoya University	573	76	K. Matsumoto	137	172	7,099	58	2	317	150
Nanjing University	576	75	L. Wang	153	162	1,055	198	19	170	150
Nanyang Technological University	83	285	G.W. Ma	65	253	290	275	10	262	106
National Taiwan University	146	230	C.H. Wong	555	17	20,723	14	65	17	150
National Tsing Hua University	68	306	W.W. Lin	158	156	1,477	180	18	179	150
National University of Ireland, Galway	64	309	T. Dillion	8	340	31	329	0	324	6
National University of Singapore	245	179	N.S. Sodhi	93	215	830	214	17	188	15
New Mexico State University	97	272	B.A. Smith	102	210	1,689	164	13	236	150

New York University	2,035	17	R. Llinas	294	60	9,464	41	30	109	150
Newcastle University	572	77	S.K. Runcorn	81	230	163	299	3	313	82
North Carolina State University	450	97	C.S. Levings	53	277	550	242	2	317	60
Northeastern University	138	239	A.L. Barbasi	171	144	18,045	18	62	22	150
Northwestern University	1,582	21	C.A. Mirkin	352	42	15,071	23	73	12	150
Norwegian University of Science & Technology	82	289	E.I. Moser	65	253	2,514	133	30	109	58
Ohio State University	1,332	24	R.M. Stulz	57	270	1,841	154	23	140	54
Oklahoma State University	123	246	C.A. Yu	174	142	1,573	174	23	140	150
Open University UK	369	126	C.T. Pillinger	215	104	1,700	163	17	188	150
Oregon State University	821	52	L. Pauling	251	85	4,521	85	0	324	120
Osaka University	995	44	T. Kishimoto	626	13	44,277	2	79	7	150
Peking University	1,240	29	H. Gu	61	262	441	255	12	245	150
Pennsylvania State University	1,693	20	R.Roy	407	30	3,422	111	23	140	150
Pohang University of Science And Technology	66	307	K.S. Kim	790	4	16,187	22	60	28	150
Portland State University	61	312	A.L. Reyensbach	72	245	2,269	139	27	122	150
Princeton University	2,609	13	R.M. May	371	36	12,961	28	27	122	150
Purdue University	1,085	39		0	344	0	343	0	324	0
Queen's University	454	94	J.P. Smol	300	55	2,745	129	30	109	150
Queen's University of Belfast	323	143	M.J. Benton	196	120	2,191	140	24	136	150
Queensland University of Technology	23	337	M. Pantaleon	15	335	321	268	9	273	34
Radboud University, Nijmegen	302	153	W.W. DeJong	194	121	3,761	96	35	84	150
Rensselaer Polytechnic Institute	222	190	P.M. Ajayan	364	38	13,052	27	62	22	150
Rheinisch Westfalische Technische Hochschule Aach	83	285	H. Roskos	199	116	1,773	158	24	136	150
Rheinische Friedrich Wilhelms Universitat Bonn	263	170	K. Wilecke	288	66	5,294	73	53	35	150
Rice University	496	89	R.E. Smaller	338	43	27,011	9	82	4	150
Rochester Institute of Technology	35	332	K. Hickman	10	337	4	339	0	324	5
Royal Institute of Technology, KTH	167	215	H. Alfvén	83	227	288	276	0	324	34
Royal Melbourne Institute of Technology	25	336	A.J. Sinclair	211	108	2,048	145	22	150	150
Rutgers	1,190	33	R.H. Ebright	123	189	3,273	115	35	84	150
Saint-Petersburg State University	84	283	L.N. Moskvín	194	121	187	296	7	292	150
San Diego State University	156	224	J.D. Archibald	34	312	327	267	10	262	49
Sapienza University of Rome	0	346		0	344	0	343	0	324	0
Sciences Po Paris	0	346		0	344	0	343	0	324	0
Seoul National University	160	220	B.K. Kaang	65	253	1,157	191	17	188	150
Shanghai Jiao Tong University	1,002	43	Z. Huang	373	35	925	204	18	179	150
Simon Fraser University	144	233	D.E. Nelson	74	239	1,549	176	6	304	106

Stanford University	6,005	2	I.L. Weissman	590	16	40,038	5	31	104	150
State University of New York Buffalo	11	342	D.L. Wiesenthal	26	322	152	302	8	282	17
Stockholm University	453	96	G. Von Heijne	251	85	19,681	16	53	35	150
Stony Brook University	1,113	36	E. Wimmer	253	82	3,896	93	32	98	150
Syracuse University	112	252	A.L. A. Katzenstein	80	231	2,603	131	11	252	100
Tartu University (University of Tartu)	43	326	J. Allik	93	215	1,429	182	21	158	150
Technical University of Denmark	153	227	E. Mosekilde	169	145	1,197	190	20	165	150
Technion	235	183	A. Hershko	90	219	4,262	88	23	140	101
Technische Universität Berlin	85	282	A. Zouni	40	295	1,744	160	14	222	81
Technische Universität Chemnitz	8	344	R. Plasil	35	309	123	307	11	252	72
Technische Universität Dresden	75	293	P. Schwille	111	202	3,703	101	45	55	150
Technische Universität München	390	116	A. Bacher	382	32	3,509	109	38	68	150
Tel Aviv University	493	91	J. Klafter	305	51	4,700	80	37	73	150
Texas A&M University	822	51	E.R. Dougherty	376	34	3,926	92	32	98	150
Texas Tech	140	236	C.A. Bond	58	268	704	222	18	179	40
Tohoku University	527	83	E. Htani	182	135	1,285	186	22	150	150
Tokyo Institute of Technology	292	157	M. Yoshida	283	69	3,635	104	39	65	150
Trinity College Dublin	477	93	J.B. Gatenby	38	302	1	342	0	324	13
Tsinghua University	1,268	27	N. Zhao	138	171	839	211	15	213	150
Tufts University	748	53	J.M. Coffin	179	138	4,350	87	27	122	150
Universidad Autonoma de Madrid	234	184	A. Garcia-Bellido	80	231	1,521	178	17	188	54
Universidad de Chile	194	208	J.E. Allende	132	179	952	202	14	222	150
Universidad de Granada	234	184	A. Garcia-Bellido	80	231	1,521	178	17	188	54
Universidad del País Vasco	55	318	A. Sanchez	119	194	637	228	19	170	150
Universidad Nacional Autónoma de México ...	100	269	A. Pardo	93	215	2,124	143	28	120	150
Universidad Politecnica de Madrid	62	311	R. Alonso-Sanz	33	313	58	322	9	273	26
Universidade de São Paulo	412	105	E.R. Parra	52	279	98	313	7	292	150
Universidade Estadual de Campinas	139	238	A. Garcia	116	197	447	254	18	179	74
Università degli Studi di Firenze	232	187	I. Bertini	466	25	4,681	81	48	45	150
Università degli Studi di Padova	336	138	J.R. Banavar	258	79	4,533	84	32	98	150
Università Di Bologna	225	188	G. Campadelli-Fiume	109	205	1,229	188	24	136	143
Università di Pisa	143	234	G. Petroni	23	325	204	292	9	273	48
Universitat Autònoma de Barcelona	145	232	J. Llibre	220	102	737	220	14	222	121
Universitat Bielefeld	99	270	M. Drescher	67	251	2,030	147	20	165	150
Universität Bremen	133	242	H.O. Peitgen	38	302	14	335	2	317	150
Universitat d'Alacant	22	338	A. Contreras	22	328	218	289	9	273	38

Universitat de València	103	265	A. Moya	184	133	3,615	105	31	104	150
Universität Frankfurt am Main	280	165	A. Czasch	54	275	391	259	15	213	150
Universität Freiburg	374	125	P. Jonas	74	239	4,013	89	29	115	101
Universität Hamburg	69	304	T.M. Kaiser	27	321	95	315	8	282	28
Universität Karlsruhe	105	261	G. Keller	127	183	1,107	195	22	150	134
Universität Leipzig	73	297	W. Kiess	354	41	5,026	77	35	84	150
Universität Munster (Westfälische Wilhelms-Un	140	236	H. Jurgens	295	58	3,739	98	30	109	150
Universität Politecnica de Catalunya	51	320	J. Periaux	83	227	668	227	10	262	80
Universität Regensburg	199	204	K.O. Stetter	223	100	5,256	74	36	79	150
Universität Stuttgart	104	264	M. Schanz	32	316	198	293	8	282	35
Universität Trier	5	345	E.K. Adam	22	328	338	266	10	262	34
Universität Tübingen	321	145	F. Lang	643	11	17,517	19	60	28	150
Universität Wien (University of Vienna)	412	105	A. Zeilinger	292	61	7,470	54	49	42	150
Universität Zu Koln	362	129	K. Rajewsky	202	111	12,011	33	72	13	150
Université Catholique de Louvain	267	169	A. Goffeau	232	94	8,644	45	38	68	150
Universite de Liege	319	146	Z.M. Bacq	158	156	59	321	0	324	112
Université de Montréal	353	132	E.L. Schiffrin	456	26	8,561	47	62	22	150
Université de Nice Sophia Antipolis	146	230	J.M. Pouyssegur	323	47	13,496	26	63	21	150
Universite Laval	195	207	M. Steriade	243	89	6,712	60	46	52	113
Universite Libre de Bruxelles	378	121	J.J. Body	248	88	3,543	108	34	91	150
Université Paris Sorbonne	56	317	N.P. Buu-Hol	122	191	104	312	0	324	106
Universite Paris-Sud 11	436	101	Y. Langevin	141	170	1,319	185	24	136	150
Université Pierre et Marie Curie	577	74	C.J. Allegre	304	52	6,367	64	36	79	150
Universiti Malaya (University of Malaya)	260	172	H.H. Masjuki	104	209	388	260	12	245	88
University College Cork	103	265	V.A.I. Huvennue	23	325	145	304	10	262	109
University College Dublin	286	161	E.J. Conway	39	300	11	336	0	324	25
University College London	3,672	10	G. Burnstock	1,019	1	32,401	8	62	22	150
University do Porto	70	300	C.A. Conceicao-Anton	15	335	96	314	7	292	15
University of Aberdeen	491	92	B.H.Smith	63	260	1,017	200	17	188	119
University of Adelaide	532	82	R.K. Morton	22	328	50	325	0	324	24
University of Alabama	677	61	M.D. Cooper	136	173	3,641	103	40	63	150
University of Alberta	714	57	R.T. Tsuyuki	181	136	2,816	128	27	122	150
University of Amsterdam	572	77	J. Van Paradijs	229	96	5,024	78	49	42	150
University of Antwerp	73	297	G. Hans	23	325	241	286	8	282	53
University of Arizona	1,810	19	D.M. Hunten	163	148	1,813	156	16	203	150
University of Athens	105	261	P.A. Varotsos	158	156	573	236	15	213	59

University of Auckland	337	137	M. Horrocks	69	249	272	278	13	236	98
University of Barcelona	221	192	E. Salo	58	268	620	230	16	203	82
University of Basel	583	72	W.J. Gehring	209	109	6,605	61	32	98	150
University of Bath	102	268	C. Eccleston	110	203	1,803	157	29	115	150
University of Bergen	219	193	J.S. Skoven	28	320	310	271	9	273	44
University of Bern	201	202	S.Szidat	31	318	246	285	11	252	91
University of Birmingham	352	133	S. Hariharan	39	300	90	316	6	304	65
University of Bristol	1,529	22	G. Eglinton	313	49	3,723	100	25	131	150
University of British Columbia	601	68	J. Rootman	174	142	1,828	155	13	236	150
University of Calgary	346	135	C.B. Frank	201	112	2,288	138	23	140	150
University of California, Berkley	287	159	A.M. Agogino	124	187	527	246	9	273	132
University of California, Davis	335	139	S. Harrison	64	258	2,488	134	23	140	86
University of California, Irvine	192	209	S. Haldeman	127	183	1,137	192	20	165	134
University of California, Los Angeles	4,247	6	J.M. Diamond	184	133	2,956	125	22	150	88
University of California, Riverside	674	62	J.K. Zhu	200	113	6,821	59	64	18	150
University of California, San Diego	405	108	I. Grant	369	37	7,467	55	42	59	150
University of California, San Francisco	645	66	T.E. King	136	173	4,581	83	39	65	150
University of California, Santa Barbara	159	221	L. Cosmides	40	295	1,641	168	16	203	43
University of California, Santa Cruz	76	292	S.N. Ward	40	295	916	205	15	213	36
University of Cambridge	404	109	W.N. Dawes	89	220	463	252	10	262	72
University of Canterbury	35	332	J.G. Chase	131	181	321	268	13	236	150
University of Cape Town	116	249	T.J. Egan	60	264	735	221	21	158	101
University of Central Florida	60	313	D.N. Christodoulides	275	75	3,250	117	43	58	150
University of Chicago	378	121	H. Ahsan	125	186	2,710	130	30	109	150
University of Cincinnati	586	71	J.B. Lingrel	227	98	3,222	118	29	115	150
University of Colorado at Boulder	251	176	K. Maute	60	264	294	273	11	252	46
University of Connecticut	196	206	M.T. Turvey	231	95	2,543	132	25	131	146
University of Copenhagen	312	150	P. Sjoren	133	178	1,738	162	22	150	150
University of Delaware	64	309	J.Q. Sun	124	187	592	234	13	236	70
University of Dundee	365	128	D.M.J. Lilley	239	90	3,757	97	37	73	150
University of Edinburgh	269	168	M.R. Evans	122	191	1,991	149	27	122	150
University of Florida	1,068	40	D.L. Dilcher	106	208	1,528	177	17	188	150
University of Geneva	362	129	D. Pittet	282	70	7,737	51	47	50	150
University of Georgia	187	210	R. Forehand	284	67	3,046	120	25	131	150
University of Ghent	327	141	P. Van Cauwenberge	327	46	551	241	36	79	150
University of Glasgow	1,135	34	R.W. Pickford	50	280	19	334	0	324	13

University of Gothenburg	14	340	P.S. Eriksson	191	123	4,948	79	31	104	150
University of Groningen	454	94	D.J. Van Veldhuisen	502	20	10,436	38	48	45	150
University of Helsinki	524	84	K. Alitalo	292	61	11,660	37	89	3	150
University of Hong Kong	161	219	C.Y. Jim	94	213	359	261	13	236	23
University of Houston	106	259	R. Bannerot	74	239	47	326	1	322	58
University of Illinois	2,390	15	G.A. Miller	73	243	2	341	0	324	0
University of Illinois, Chicago	748	53	E. Costa	658	10	11,773	36	36	79	150
University of Indonesia	19	339	L.I.L. Eng	4	343	5	338	0	324	1
University of Iowa	438	100	K.K. Choi	177	139	1,065	197	19	170	150
University of Kansas	234	184	S.A. David	38	302	225	287	14	222	76
University of Kentucky	289	158	D.K. Moser	189	127	2,851	126	25	131	150
University of Lausanne	167	215	P. Romero	281	71	7,310	57	48	45	150
University of Leeds	401	111	O.M. Querin	46	285	258	281	13	236	33
University of Leicester	556	80	M.C.R. Symons	857	3	3,320	114	12	245	150
University of Liverpool	299	154	H.K.F. Van Saene	214	105	1,569	175	22	150	150
University of Ljubljana	51	320	J. Mozina	107	207	195	294	8	282	77
University of London (Kings College of London)	8,485	1	J.B.S. Haldane	64	258	116	309	1	322	18
University of Manchester	1,860	18	A.G. Lyne	254	80	3,550	107	42	59	150
University of Manitoba	262	171	V. Smil	57	270	679	225	14	222	25
University of Maryland	1,223	31	V. Trimble	87	224	251	282	6	304	33
University of Maryland Baltimore County	707	59	R.C. Gallo	163	148	6,517	62	37	73	150
University of Massachusetts	108	256	S. Krishnamurty	45	287	123	307	5	310	42
University of Melbourne	915	48	D.A. Denton	295	58	2,085	144	19	170	150
University of Miami	382	120	D.A. Fishbain	213	106	2,186	141	18	179	150
University of Michigan	1,130	35	P.Y. Papalambros	198	117	868	206	20	165	150
University of Minnesota	496	89	E.C. Alexander	41	292	837	212	8	282	73
University of Missouri	324	142	X. Du	122	191	2,141	142	25	131	150
University of Nebraska	295	156	V.N. Gladshev	150	165	2,352	135	39	65	150
University of New Hampshire	209	198	P.A. Mayewski	190	125	4,583	82	33	93	150
University of New Mexico	158	222	C. Klein	22	328	413	256	5	310	27
University of New South Wales	319	146	T. Ray	63	260	348	264	10	262	48
University of North Carolina, Chapel Hill	1,226	30	O. Smithies	273	77	18,441	17	46	52	150
University of North Texas	45	325	D.J. CIPHER	32	316	116	309	7	292	68
University of Notre Dame	162	218	J.E. Renaud	114	199	562	238	17	188	78
University of Nottingham	242	180	S. Petrovic	42	291	270	279	12	245	32
University of Oklahoma	138	239	A.G. Striz	60	264	535	244	6	304	53

University of Oregon	153	227	J.M. Erlandson	65	253	1,596	170	12	245	119
University of Oslo	286	161	T.A. Alvegard	70	246	1,208	189	19	170	150
University of Otago	504	87	P.A. Silva	233	93	7,933	50	33	93	150
University of Ottawa	256	174	G.A. Wells	542	19	21,911	13	70	14	150
University of Oxford	391	115	S.J. Ferguson	278	74	2,325	137	29	115	150
University of Pennsylvania	711	58	G.K. Ananthasuresh	98	212	754	219	15	213	70
University of Pittsburgh	728	56	D.K. Weiner	61	262	1,743	161	18	179	135
University of Quebec	169	214	P. Voyer	40	295	108	311	7	292	69
University of Queensland	368	127	S. Stewart	191	123	3,038	123	28	120	150
University of Reading	670	63	O.V.S. Heath	37	305	30	330	0	324	11
University of Rochester	242	180	K.L. Bren	48	283	581	235	15	213	112
University of Saskatchewan	247	177	J.W.T. Spinks	41	292	20	333	0	324	63
University of Science and Technology of China	499	88	Y. Zhang	321	48	1,676	165	19	170	150
University of Sheffield	1,019	41	D.W. Hughes	189	127	848	210	14	222	150
University of South Carolina	201	202	J.A. Ritter	152	163	1,585	171	23	140	97
University of South Florida	317	148	C.E. Cox	189	127	6,138	67	35	84	150
University of Southampton	273	166	A.J. Keane	144	168	866	207	16	203	108
University of Southern California	390	116	F.A. Corsetti	36	306	313	270	13	236	54
University of St Andrews	57	314	H.T.O. Davies	328	45	5,329	72	44	56	150
University of Surrey	69	304	H. Gage	36	306	513	248	12	245	100
University of Sussex	42	327	L. Fallowfield	190	125	5,249	75	38	68	150
University of Sydney	917	47	V.A. Bailey	30	319	45	327	0	324	8
University of Technology, Sydney	51	320	R. Iedema	56	272	247	283	10	262	86
University of Tennessee Knoxville	125	245	S.P. Horn	44	290	219	288	9	273	41
University of Texas at Austin	246	178	C.C. Seepersad	33	313	151	303	6	304	51
University of Tokyo	342	136	Y. Tokura	901	2	38,181	7	82	4	150
University of Toronto	2,146	16	T.W. Mak	630	12	47,418	1	99	1	150
University of Tsukuba	1,007	42	S.F. Chichibu	206	110	3,019	124	32	98	150
University of Twente	83	285	J.J. Rasker	154	161	1,876	153	21	158	150
University of Utah	1,108	37	T.E. Cerling	132	179	3,503	110	31	104	150
University of Vermont	286	161	D.M. Warsaw	110	203	1,964	150	27	122	150
University of Victoria	111	253	A. Suleman	88	222	247	283	8	282	63
University of Virginia	310	151	S.M. Burns	55	273	398	258	10	262	109
University of Warwick	111	253	J. Dale	69	249	755	218	13	236	107
University of Washington	3,668	11	R.D. Palmiter	291	63	12,644	30	50	40	150
University of Waterloo	176	213	J. McPhee	70	246	275	277	11	252	53

University of Western Australia	387	118	K. Judd	53	277	478	250	14	222	29
University of Western Ontario	433	103	P. Yu	189	127	1,111	194	21	158	150
University of Wisconsin	547	81	T.E. Moffitt	212	107	12,608	31	64	18	150
University of Wollongong	40	328	S.J. Johnson	59	267	634	229	16	203	57
University of York	136	241	M. Lavidor	45	287	263	280	14	222	43
University of Zurich	115	250	M.E. Endress	18	333	154	301	9	273	41
Univesitas Gadjah Mada	11	342	T. Jacob	16	334	353	263	7	292	45
Uppsala University	296	155	K. Ueda	259	78	977	201	23	140	150
Utah State	50	324	T. Hauser	49	281	181	298	2	317	51
Utrecht University	700	60	J. Oerlemans	150	165	1,749	159	23	140	150
Vanderbilt University	255	175	S. Mahadevan	157	159	462	253	15	213	89
Victoria University of Wellington	31	334	F Stasolla	10	337	26	331	3	313	24
Vienna University of Technology	39	330	H.A. Mang	157	159	534	245	11	252	104
Virginia Polytechnic Institute	358	131	L.T. Watson	290	65	1,667	167	20	165	150
Vrije Universiteit, Brussels	12	341	M. Meysman	78	237	559	239	14	222	150
VU University Amsterdam	307	152	A. Stolk	75	238	68	320	0	324	28
Wageningen University	107	257	R. Leesmans	55	273	3,218	119	15	213	150
Wake Forest University	157	223	D.W. Kitzman	164	146	4,411	86	33	93	150
Waseda University	57	314	Y. Noda	145	167	1,022	199	17	188	150
Washington State University	84	283	D.L. Young	35	309	208	291	8	282	94
Washington University in St. Louis	400	113	D.H. Gutmann	274	76	3,991	90	44	56	150
Wayne State University	383	119	M. Goodman	177	139	3,040	121	30	109	150
West Virginia University	105	261	D.J. Jones	45	287	292	274	11	252	50
Yale University	515	85	H.M. Krumholz	547	18	24,827	10	81	6	150
Yonsei University	93	276	J. Lee	36	306	357	262	7	292	67
York University	72	299	W.C. Mahaney	162	150	400	257	11	252	128
Zhejiang University	103	265	Y. Zheng	93	215	161	300	7	292	150

Pharmacology/Toxicology/Pharmaceuticals Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	159	301	A.M.P. Kosinen	111	288	1,187	248	18	224	121
Aarhus University	1,668	101	M.J. Mulvany	275	144	4,494	76	26	145	150
Arizona State University	145	307	G.R. Pettit	570	29	13,412	17	35	83	150
Ateneo de Manila University	7	345	F.M. Dayrit	17	341	193	326	5	321	30
Auburn University	822	190	B.G. Felkey	82	312	160	331	6	317	26
Australian National University	1,003	171	L.N. Mander	168	235	1,195	247	15	252	150
Boston College	155	303	T.R. Kelly	84	309	1,653	213	12	273	149
Boston University	1,774	99	C. Kornetsky	152	248	1,273	242	12	273	150
Brandeis University	251	278	B.B. Snider	250	160	3,079	128	27	138	150
Brigham Young University	41	335	M.J. Robins	247	166	2,643	142	21	189	150
Brown University	1,306	136	E. Mathiowitz	134	270	1,915	192	21	189	150
California Institute of Technology (Calt...)	405	240	A.H. Zewail	441	48	7,471	37	48	20	150
Cardiff University	2,499	59	K.J. Broadley	186	220	719	282	16	243	117
Carnegie Mellon University	265	273	C.P Carpenter	36	334	132	332	0	340	21
Case Western Reserve University	1,667	102	B.L. Roth	262	151	5,710	57	45	30	150
Chalmers University of Technology	178	295	O. Wennerstrom	80	313	1,856	193	9	297	104
Charles University	423	234	M. Stiborova	164	239	982	261	23	170	150
Chinese University of Hong Kong	1,032	167	T.B. Ng	409	61	2,912	134	38	67	150
Chulalongkorn University	746	196	N. Ruangrungsi	87	304	995	260	12	273	150
City University of Hong Kong	242	280	P.K. Lam	222	184	3,360	114	34	88	150
City University of New York	451	230	R.J. Bodnar	249	163	2,406	159	25	153	150
Colorado State University	269	270	M.E. Andersen	291	126	2,524	154	24	160	150
Columbia University	3,064	37	R. Breslow	374	74	7,428	39	32	99	150
Cornell University	2,287	68	J. Clardy	648	19	12,046	21	35	83	150
Curtin University of Technology	248	279	V.B. Sunderland	53	327	211	323	7	311	74
Dalhousie University	1,364	129	J. Sawynok	131	275	1,940	189	22	172	57
Dartmouth College	848	186	G.W. Gribble	253	156	3,021	130	33	93	150
Delft University of Technology	197	290	R.A. Sheldon	283	136	7,536	36	47	24	150
Drexel University	1,154	155	B. Weiss	244	167	1,715	205	17	235	150
Duke University	38,888	1	T.A. Slotkin	504	40	6,960	44	43	34	150
Durham University	405	240	D. Boulter	174	230	1,340	238	3	327	150
Ecole Normale Supérieure de Lyon	45	334	F.L. Cosset	173	231	3,437	110	48	20	150
École Normale Supérieure, Paris	330	260	P. Sinay	242	171	2,587	147	27	138	150
École Polytechnique	332	259	S.Z. Zard	236	175	2,176	172	28	126	150

Ecole Polytechnique Fédérale de Lausanne	171	297	P. Vogel	328	98	1,814	199	28	126	150
Eindhoven University of Technology	117	313	E.W. Meijen	493	41	11,926	22	67	6	150
Emory University	2,448	62	S.G. Holtzman	235	177	2,022	184	18	224	89
Erasmus University Rotterdam	2,064	79	P.R. Saxena	379	73	5,908	55	31	104	150
ETH Zurich (Swiss Federal Institute of Technology)	1,497	116	O. Sticher	318	103	2,607	145	20	201	150
Florida International University	197	290	G.M. Rand	44	332	123	334	8	306	33
Florida State University	66	322	T.A. Houpt	64	321	737	279	17	235	93
Freie Universität Berlin	3,939	20	R.H. Muller	407	62	3,523	105	38	67	150
Friedrich Alexander Universität Erlangen Nürnberg	2,022	84	P.C. Konturek	26	336	203	324	8	306	79
Fudan University	1,630	104	M.K. Zhong	104	292	478	293	10	290	150
Georg August Universität Göttingen	1,955	86	M. Oellerich	288	132	3,153	124	38	67	150
George Mason University	41	335	R.F. Smith	21	340	129	333	7	311	49
George Washington University	971	175	H.G. Mandel	90	302	263	320	6	317	100
Georgetown University	1,806	95	E. Costa	659	18	12,855	18	35	83	150
Georgia Institute of Technology	393	244	M.R. Prausnitz	140	258	1,698	207	30	109	150
Georgia State University	311	264	D.W. Boykin	250	160	1,851	194	35	83	150
Goteborg University	1,165	152	A. Carlsson	386	66	5,425	59	22	172	150
Harvard University	1,113	159	E.J. Corey	938	8	31,203	7	48	20	150
Hebrew University of Jerusalem	2,575	56	M. Bialer	193	210	1,622	217	22	172	150
Heidelberg Universität	3,032	39	W.E. Haeteli	219	187	3,220	120	27	138	150
Hokkaido University	4,049	19	J. Kobayashi	713	15	2,088	178	34	88	150
Hong Kong Polytechnic University	335	258	A.S.C. Chan	252	157	4,268	84	39	59	150
Hong Kong University of Science & Techno...	421	237	W.M. Dai	134	270	2,045	181	19	210	150
Humboldt-Universität zu Berlin	273	268	I. Roots	309	107	7,274	41	46	26	150
Imperial College London	2,976	40	J. Caldwell	227	180	1,619	218	17	235	150
Indian Institute of Technology Bombay (I...	234	282	S. Kotha	118	283	1,542	222	24	160	79
Indian Institute of Technology Delhi (II...	139	309	H.M. Chawla	79	314	193	326	10	290	69
Indian Institute of Technology Kanpur (I...	369	252	J. Iqbal	287	133	2,289	166	33	93	150
Indiana University Bloomington	1,057	166	R.P. Maickel	191	212	427	300	1	335	150
Indiana University Indianapolis	1,794	97	W.J. McBride	313	105	3,730	102	38	67	150
Iowa State University	204	288	W.H. Hsu	342	93	1,835	197	16	243	150
Johns Hopkins University	4,909	9	R.R. Griffiths	290	129	2,915	133	25	153	146
Kansas State University	141	308	T.I. Musch	154	246	1,517	225	22	172	150
Katholieke Universiteit Leuven	2,565	57	E. DeClercq	1,641	1	49,335	1	72	4	150
Keio University	2,059	80	S. Yamamura	325	99	1,628	214	20	201	150

King Fahd University of Petroleum & Minerals	87	316	M.I.M. Wazeer	91	298	411	305	9	297	91
King Saud University	1,525	113	J.S. Mossa	113	287	721	281	10	290	147
Kobe University	1,836	92	T. Sakaeda	138	261	1,678	211	26	145	150
Korea Advanced Institute of Science & Technology	387	245	T.G. Park	86	305	776	276	15	252	127
Korea University	577	218	B.Y. Chun	51	328	357	312	11	281	145
Kyoto University	10,139	3	M. Hashida	439	50	4,136	90	39	59	150
Kyushu University	4,343	13	I. Nishioka	206	200	1,928	190	7	311	150
La Trobe University	380	249	G. Singer	101	295	427	300	0	340	71
Lancaster University	60	326	H. Huddart	74	316	164	329	6	317	50
Leiden University	3,277	32	D.D. Breimer	443	47	4,116	92	22	172	150
Linkoping University	896	183	R.G.G. Andersson	214	192	1,187	248	11	281	150
London School of Economics and Political Science	147	305	E. Szyszczak	12	342	5	340	1	335	3
Loughborough University	366	253	H. Heaney	123	278	713	283	11	281	107
Louisiana State University	1,180	148	M.B. Grisham	287	133	9,414	28	43	34	150
Ludwig-Maximilians-Universität München	4,167	16	H. Wagner	313	105	2,903	135	16	243	150
Lund University	2,763	49	O. Sterner	291	126	2,190	171	10	290	150
Maastricht University	1,388	127	H.H.W. Thijssen	111	288	723	280	14	258	125
Macquarie University	163	299	J.R. Bassett	51	328	270	319	1	335	33
Mahidol University	1,163	153	V. Reutrakul	122	279	1,197	246	16	243	150
Masaryk University	268	271	I. Holoubek	111	288	911	266	20	201	150
Massachusetts Institute of Technology	1,359	131	R. Langer	920	9	48,832	2	93	2	150
McGill University	3,439	26	P.Blier	301	115	5,879	56	42	41	150
McMaster University	1,837	91	E.E. Daniel	536	34	4,761	72	19	210	150
Michigan State University	2,750	50	J.B. Hook	295	118	7,442	38	2	331	150
Michigan Technological University	69	320	D.R. Karnosky	25	337	109	335	4	324	100
Monash University	2,594	55	L. Roller	154	246	37	338	3	327	24
Montana State University	214	286	G.A. Strobel	7	343	12	339	2	331	33
Moscow State University	912	181	I.P. Beletskaya	183	222	4,393	79	28	126	150
Nagoya University	3,136	34	T. Nabeshima	603	25	10,120	26	40	53	150
Nanjing University	760	194	R.X. Tan	147	252	1,528	224	24	160	150
Nanyang Technological University	211	287	T.P. Loh	182	224	2,330	164	36	79	147
National Taiwan University	1,513	115	Y.H. Kuo	295	118	2,339	163	24	160	150
National Tsing Hua University	383	246	J.R. Hwu	140	258	1,079	255	14	258	150
National University of Ireland, Galway	358	256	B.E. Leonard	381	72	3,487	108	33	93	150
National University of Singapore	2,059	80	P.W.S. Heng	116	286	1,077	256	14	258	150
New Mexico State University	153	304	B.A. Smith	102	294	1,689	209	13	268	150

New York University	2,632	54	S. Gershon	362	82	2,238	168	14	258	150
Newcastle University	1,344	132	M.D. Rawlins	307	108	3,332	115	15	252	150
North Carolina State University	1,266	142	J.E. Riviere	281	139	1,848	195	20	201	150
Northeastern University	1,001	172	V. Torchilin	176	228	4,681	74	37	75	150
Northwestern University	1,671	100	T. Narahashi	360	83	3,375	112	24	160	150
Norwegian University of Science & Technology	581	217	O.G. Nilsen	126	277	756	278	10	290	150
Ohio State University	4,132	18	M.C. Nahata	456	46	2,572	149	21	189	150
Oklahoma State University	639	208	C.L. Ownby	100	296	927	265	16	243	143
Open University UK	182	293	J. N. Lley	91	298	417	304	14	258	137
Oregon State University	1,573	109	W.H. Gerwick	200	205	2,463	158	30	109	150
Osaka University	5,923	6	I. Kitagawa	295	118	2,718	141	18	224	150
Peking University	2,355	66	Q Zhang	265	149	1,380	234	22	172	150
Pennsylvania State University	1,776	98	E.S. Vesell	281	139	1,465	229	11	281	150
Pohang University of Science And Technology	268	271	D.H. Kim	1,623	2	12,503	19	40	53	150
Portland State University	82	317	L.I. Crawshaw	43	333	283	317	8	306	83
Princeton University	572	220	R.M. May	369	76	13,853	16	28	126	150
Purdue University	3,394	27	J.L. McLaughlin	289	130	2,638	143	21	189	150
Queen's University	1,337	134	J.F. Brien	243	168	1,682	210	19	210	150
Queen's University of Belfast	1,796	96	P.F. D'Arcy	384	69	385	308	1	335	40
Queensland University of Technology	147	305	S.F. Zhou	162	240	1,529	223	22	172	150
Radboud University, Nijmegen	2,410	64	T.B. Vree	435	51	2,010	186	12	273	150
Rensselaer Polytechnic Institute	272	269	L.D. Reid	100	296	826	271	8	306	138
Rheinisch Westfalische Technische Hochschule Aach	632	210	D. Enders	367	77	5,675	58	41	48	150
Rheinische Friedrich Wilhelms Universitat Bonn	3,073	36	M. Gothert	255	155	3,190	123	26	145	150
Rice University	325	261	A.G. Mikos	345	91	9,364	29	65	7	150
Rochester Institute of Technology	29	339	T.C. Morrill	25	337	60	336	3	327	38
Royal Institute of Technology, KTH	416	238	J. Bergman	205	201	1,820	198	19	210	150
Royal Melbourne Institute of Technology	299	265	C.G. Li	1,417	4	11,281	24	39	59	150
Rutgers	2,712	51	Y.W. Chien	215	191	1,745	201	16	243	150
Saint-Petersburg State University	105	315	M.S. Novikov	77	315	178	328	11	281	81
San Diego State University	362	255	E.P. Riley	189	216	2,030	183	31	104	150
Sapienza University of Rome	0	347		0	347	0	343	0	340	0
Sciences Po Paris	0	347		0	347	0	343	0	340	0
Seoul National University	3,726	22	M.G. Lee	216	189	870	269	17	235	150
Shanghai Jiao Tong University	732	199	W.D. Zhang	1,555	3	7,802	34	39	59	150
Simon Fraser University	320	263	A.C. Oehlschlager	157	244	1,145	251	11	281	150

Stanford University	3,332	30	C. Djerassi	880	10	4,364	81	2	331	150
State University of New York Buffalo	5	346	S. Kumar	365	80	1,806	200	19	210	150
Stockholm University	1,005	170	J.W. DePierre	183	222	2,117	175	14	258	150
Stony Brook University	1,084	163	I. Ojima	261	153	4,009	95	29	116	150
Syracuse University	373	251	J. Jalife	219	187	3,901	99	39	59	150
Tartu University (University of Tartu)	424	233	J. Harro	132	274	1,365	235	21	189	150
Technical University of Denmark	588	216	S.R. Jensen	171	233	1,222	244	20	201	150
Technion	902	182	M.B.H. Youdim	520	36	13,996	15	52	17	150
Technische Universität Berlin	1,363	130	F. Bohlmann	780	13	4,938	70	0	340	150
Technische Universität Chemnitz	14	344	K. Barnert	57	323	323	313	9	297	84
Technische Universität Dresden	598	213	W. Kirch	340	94	1,837	196	20	201	150
Technische Universität München	1,593	107	A. Bacher	382	70	3,509	106	38	67	150
Tel Aviv University	2,099	75	Y. Kashman	270	147	4,374	80	17	235	150
Texas A&M University	2,135	71	D.H.R. Barton	857	11	7,372	40	17	235	150
Texas Tech	676	206	J.B. Lombardini	137	266	552	290	9	297	59
Tohoku University	6,025	4	N. Taira	289	130	1,116	252	4	324	138
Tokyo Institute of Technology	1,555	110	F. Sato	270	147	2,213	170	27	138	150
Trinity College Dublin	1,006	169	O.I. Corrgan	138	261	1,106	254	19	210	120
Tsinghua University	403	242	D.J. Du	83	311	321	314	11	281	150
Tufts University	1,606	105	D.J. Greenblatt	1,103	5	17,297	11	51	18	150
Universidad Autonoma de Madrid	1,285	138	J.L. Garcia-Ruano	205	201	1,563	219	22	172	150
Universidad de Chile	1,170	151	B.K. Cassels	162	240	1,053	257	16	243	150
Universidad de Granada	1,285	138	J.L. Garcia-Ruano	205	201	1,563	219	22	172	150
Universidad del País Vasco	724	202	J.L. Pedraz	138	261	1,484	227	24	160	150
Universidad Nacional Autónoma de México ...	1,014	168	L.D. Possani	249	163	1,927	191	28	126	150
Universidad Politecnica de Madrid	21	342	R. Alonso-Sanz	33	335	58	337	9	297	26
Universidade de São Paulo	226	283	F.Q. Cunha	261	153	4,126	91	34	88	150
Universidade Estadual de Campinas	677	205	G. De Nucci	295	118	3,962	97	24	160	150
Università degli Studi di Firenze	2,813	46	C.T. Supuran	644	21	585	288	59	11	150
Università degli Studi di Padova	2,241	70	P. Dorigo	91	298	199	325	6	317	124
Università Di Bologna	2,516	58	A. Tosti	441	48	4,248	86	26	145	150
Università di Pisa	1,062	165	M. Del Tacca	353	88	2,519	155	26	145	150
Universitat Autonoma de Barcelona	2,083	78	M. Moreno-Manas	192	211	1,958	188	25	153	150
Universitat Bielefeld	156	302	E.V. Dehmlow	86	305	371	311	7	311	80
Universität Bremen	289	266	G.V. Roschenthaler	150	251	558	289	13	268	150
Universitat d'Alacant	423	234	M.Yus	432	54	5,013	67	44	33	150

Universitat de València	2,085	77	J.L. Rios	141	256	2,294	165	23	170	150
Universität Frankfurt am Main	3,714	23	E. Mutschler	488	43	3,238	119	19	210	150
Universität Freiburg	1,867	88	H. Prinzbach	151	249	788	275	13	268	150
Universität Hamburg	256	276	M. Schachner	590	26	22,218	9	58	12	150
Universität Karlsruhe	377	250	M. Metzler	168	235	1,490	226	21	189	150
Universität Leipzig	459	229	P. Illes	240	173	2,527	153	31	104	150
Universität Munster (Westfälische Wilhelms-Un	517	225	E.J. Speckmann	263	150	1,428	231	19	210	150
Universität Politecnica de Catalunya	29	339	J.J. Perez	137	266	1,027	258	16	243	150
Universität Regensburg	1,392	125	G. Franz	172	232	1,321	239	14	258	150
Universität Stuttgart	281	267	F. Effenberger	178	226	2,992	131	28	126	150
Universität Trier	53	330	B. Blomeke	54	326	688	284	12	273	150
Universität Tübingen	2,861	43	P.C. Schmidt	224	182	1,384	233	18	224	150
Universität Wien (University of Vienna)	3,152	33	A. Bernkop-Schnurch	211	194	1,437	230	37	75	150
Universität Zu Köln	1,434	123	U. Fricke	121	281	254	321	3	327	63
Université Catholique de Louvain	2,001	85	T. Godfraind	262	151	1,699	206	12	273	140
Universite de Liege	1,372	128	L. Angenot	166	238	794	273	14	258	150
Université de Montréal	2,818	44	S. Nattel	429	55	7,588	35	57	14	150
Université de Nice Sophia Antipolis	440	231	E. Dunach	122	279	849	270	17	235	125
Universite Laval	1,172	150	P.M. Belanger	85	308	480	292	5	321	72
Universite Libre de Bruxelles	1,269	141	P. Robberecht	318	103	2,862	136	28	126	150
Université Paris Sorbonne	37	338	R. Daudel	4	346	0	343	0	340	5
Universite Paris-Sud 11	2,783	48	P. Couvreur	350	89	5,211	62	43	34	150
Université Pierre et Marie Curie	1,305	137	M. Hamon	190	213	4,351	83	41	48	150
Universiti Malaya (University of Malaya)	502	228	T.S. Kam	117	284	372	310	19	210	81
University College Cork	325	261	F. Shanahan	303	114	7,040	43	42	41	150
University College Dublin	594	215	D.M.X. Donnelly	88	303	509	291	7	311	114
University College London	3,878	21	G. Burnstock	1,019	6	32,401	6	62	8	150
University do Porto	574	219	I. Azevedo	156	245	622	286	12	273	150
University of Aberdeen	1,451	120	R. G. Pertwee	170	234	5,135	65	42	41	150
University of Adelaide	1,197	146	A.A. Somogyi	210	195	2,289	166	22	172	150
University of Alabama	2,112	73	C.T. Curiel	547	30	789	274	70	5	150
University of Alberta	3,343	29	A.B.R. Thompson	465	45	3,944	98	28	126	150
University of Amsterdam	2,654	53	P.A. Van Zwieten	520	36	2,744	140	17	235	150
University of Antwerp	1,249	144	A.G. Herman	329	97	4,400	78	30	109	150
University of Arizona	4,152	17	V.J. Hruby	788	12	16,959	12	42	41	150
University of Athens	1,826	94	H. Glamarellou	319	102	2,605	146	26	145	150

University of Auckland	1,284	140	W.A. Denny	490	42	4,960	69	38	67	150
University of Barcelona	2,445	63	F. Albericio	356	85	3,447	109	29	116	150
University of Basel	1,853	89	H. Leuenberger	145	253	1,025	259	18	224	150
University of Bath	838	189	B.V.L. Potter	355	87	3,191	122	36	79	150
University of Bergen	363	254	P.M. Ueland	333	95	9,797	27	50	19	150
University of Bern	3,516	25	W. Thomann	216	189	2,482	156	31	104	150
University of Birmingham	1,596	106	G.Y.H. Lip	1,015	7	14,863	14	55	15	150
University of Bristol	2,115	72	D.J. Nutt	625	22	0	343	45	30	150
University of British Columbia	2,253	69	J.H. McNeill	470	44	3,492	107	29	116	150
University of Calgary	1,079	164	M.D. Hollenberg	401	63	5,205	64	43	34	150
University of California, Berkley	505	227	J.E. Casida	586	27	6,715	47	29	116	150
University of California, Davis	1,481	117	B.D. Hammock	623	23	11,246	25	41	48	150
University of California, Irvine	1,106	160	S.P. Duckles	186	220	1,673	212	25	153	127
University of California, Los Angeles	4,212	15	A.K. Cho	179	225	2,107	177	18	224	150
University of California, Riverside	680	204	F.A. Gunther	168	235	164	329	0	340	105
University of California, San Diego	1,530	112	M.Karin	412	60	45,578	3	112	1	150
University of California, San Francisco	5,301	7	L.Z. Benet	427	56	6,658	48	40	53	150
University of California, Santa Barbara	517	225	T.C. Bruice	547	30	7,848	33	30	109	150
University of California, Santa Cruz	54	329	P. Crews	190	213	2,586	148	19	210	150
University of Cambridge	1,440	122	T.W. Robbins	580	28	39,863	4	91	3	150
University of Canterbury	47	333	R.N. Huges	71	319	245	322	9	297	30
University of Cape Town	253	277	L.H. Opie	536	34	7,160	42	30	109	150
University of Central Florida	135	310	D.H. Howard	59	322	385	308	8	306	107
University of Chicago	1,536	111	M.J. Ratain	333	95	6,241	53	45	30	150
University of Cincinnati	2,705	52	W.A. Ritschel	285	135	1,358	236	7	311	150
University of Colorado at Boulder	408	239	A.C. Collins	250	160	4,353	82	38	67	150
University of Connecticut	1,148	157	D.K. Das	395	64	6,747	46	47	24	150
University of Copenhagen	1,666	103	A. Schousboe	415	59	6,594	50	35	83	150
University of Delaware	62	324	C.R. Plata-Salaman	138	261	3,718	104	32	99	150
University of Dundee	1,183	147	B. J. Lipworth	433	53	5,365	60	46	26	150
University of Edinburgh	1,342	133	D.J. Webb	190	213	4,894	71	41	48	150
University of Florida	4,337	14	H. Derendorf	305	112	3,202	121	33	93	150
University of Geneva	731	200	P. Dayer	283	136	3,099	127	27	138	150
University of Georgia	800	191	C.K. Chu	292	124	3,148	125	29	116	150
University of Ghent	946	178	J.P. Remon	344	92	2,236	169	21	189	150
University of Glasgow	2,481	61	J.D. Connolly	224	182	1,200	245	15	252	150

University of Gothenburg	160	300	M. Ashton	56	324	450	296	15	252	121
University of Groningen	1,518	114	W.H. Van Gilst	366	79	6,296	51	42	41	150
University of Helsinki	2,889	42	P.J. Neuvonen	200	205	3,364	113	42	41	150
University of Hong Kong	799	192	B.C.Y. Wong	307	108	5,071	66	43	34	150
University of Houston	422	236	M.F. Lokhandwala	243	168	964	263	18	224	141
University of Illinois	220	284	G.A. Miller	73	317	2	341	0	340	0
University of Illinois, Chicago	4,415	12	G.A. Cordell	307	108	3,260	117	22	172	150
University of Indonesia	74	319	Y. Harahap	5	344	2	341	1	335	9
University of Iowa	1,392	125	G.F. Gebhart	356	85	6,610	49	40	53	150
University of Kansas	3,642	24	C.D. Klaassen	543	32	11,309	23	41	48	150
University of Kentucky	1,576	108	D.A. Butterfield	385	67	8,095	31	61	9	150
University of Lausanne	348	257	B. Testa	358	84	4,222	87	34	88	150
University of Leeds	382	247	C. Peers	198	207	2,017	185	28	126	150
University of Leicester	1,106	160	R.A.J. Challiss	197	208	3,245	118	26	145	150
University of Liverpool	1,311	135	B.K. Park	5	344	0	343	0	340	16
University of Ljubljana	1,449	121	A. Mrhar	159	243	406	306	10	290	150
University of London (Kings College of London)	15,915	2	C.D. Marsden	690	16	28,554	8	40	53	150
University of Manchester	3,374	28	J.B. Houston	188	217	2,060	180	33	93	150
University of Manitoba	1,832	93	W.W. Lutt	187	219	1,349	237	19	210	90
University of Maryland	741	198	B.B. Jarvis	151	249	1,178	250	20	201	150
University of Maryland Baltimore County	2,914	41	E.X. Albuquerque	320	101	4,426	77	36	79	150
University of Massachusetts	200	289	E.J. Calabrese	385	67	2,160	174	32	99	150
University of Melbourne	3,039	38	M.J. Rand	251	158	1,627	215	11	281	145
University of Miami	744	197	D.C. Mash	162	240	3,726	103	32	99	150
University of Michigan	2,814	45	J.H. Woods	435	51	3,878	100	29	116	150
University of Minnesota	2,482	60	H.H. Loh	541	33	7,877	32	34	88	150
University of Missouri	966	176	A.K. Mitra	227	180	1,693	208	22	172	150
University of Nebraska	431	232	R.A. Bevins	86	305	809	272	18	224	66
University of New Hampshire	133	311	R.E. Lyle	133	272	2,031	182	25	153	150
University of New Mexico	562	221	L.A. Sklar	242	171	4,020	94	30	109	150
University of New South Wales	623	211	E.R. Lumbers	144	254	902	267	14	258	109
University of North Carolina, Chapel Hill	4,512	11	K.H. Lee	417	58	4,752	73	38	67	150
University of North Texas	217	285	J.W. Simpkins	283	136	3,838	101	37	75	150
University of Notre Dame	55	328	F.J. Castellino	382	70	3,296	116	29	116	150
University of Nottingham	1,266	142	C.A. Marsden	291	126	3,387	111	27	138	150
University of Oklahoma	774	193	M.C. Koss	142	255	464	295	9	297	40

University of Oregon	521	224	J.C. Crabbe	387	65	4,209	88	37	75	150
University of Oslo	952	177	J.B. Osnes	133	272	446	297	9	297	147
University of Otago	725	201	P.F. Smith	208	198	1,466	228	21	189	114
University of Ottawa	839	188	R.L. Singhal	214	192	588	287	2	331	71
University of Oxford	1,160	154	A.F. Brading	210	195	2,079	179	24	160	150
University of Pennsylvania	1,920	87	T.M. Penning	208	198	3,032	129	42	41	150
University of Pittsburgh	2,112	73	W.C. De Groat	427	56	4,996	68	43	34	150
University of Quebec	549	222	T. Di Paolo	178	226	2,571	150	28	126	150
University of Queensland	1,455	119	M.S. Roberts	325	99	2,948	132	29	116	150
University of Reading	932	179	M.D. Collins	141	256	2,629	144	28	126	150
University of Rochester	1,179	149	M.W. Anders	292	124	2,399	160	22	172	150
University of Saskatchewan	1,840	90	K.K. Midha	294	122	3,120	126	18	224	150
University of Science and Technology of China	262	275	D.Y. Ruan	84	309	284	316	9	297	150
University of Sheffield	1,215	145	G.T. Tucker	276	142	4,163	89	29	116	150
University of South Carolina	930	180	J.B. Appel	109	291	468	294	5	321	97
University of South Florida	536	223	P.R. Sanberg	371	75	5,209	63	39	59	150
University of Southampton	596	214	A.G. Renwick	228	179	1,966	187	22	172	150
University of Southern California	1,116	158	R.A. Kloner	621	24	17,993	10	46	26	150
University of St Andrews	118	312	G.A. Cottrell	176	228	419	303	10	290	150
University of Surrey	639	208	D.F.V. Lewis	243	168	2,554	151	32	99	150
University of Sussex	194	292	T. Duka	104	292	952	264	20	201	135
University of Sydney	2,807	47	D.M. Jackson	138	261	1,276	241	14	258	131
University of Technology, Sydney	53	330	G.M. Nicholson	47	331	439	299	19	210	102
University of Tennessee Knoxville	175	296	H.M. Schuller	117	284	970	262	19	210	149
University of Texas at Austin	861	185	J.P. Kehrer	137	266	2,785	138	21	189	150
University of Tokyo	2,315	67	Y. Sugiyama	645	20	15,943	13	61	9	150
University of Toronto	5,929	5	G. Koren	754	14	12,085	20	48	20	150
University of Tsukuba	622	212	K. Goto	280	141	9,088	30	33	93	150
University of Twente	179	294	J.H.M. Feijen	349	90	6,011	54	39	59	150
University of Utah	3,098	35	W.I. Higuchi	367	77	2,362	161	18	224	150
University of Vermont	1,090	162	S.T. Higgins	197	208	2,824	137	30	109	150
University of Victoria	51	332	E.P. Zehr	56	324	657	285	20	201	42
University of Virginia	758	195	J. Linden	251	158	4,101	93	43	34	150
University of Warwick	81	318	N .Dale	139	260	1,737	202	21	189	147
University of Washington	4,761	10	M.R. Juchau	220	186	1,114	253	11	281	131
University of Waterloo	242	280	H.J. Green	205	201	2,748	139	22	172	150

University of Western Australia	1,152	156	K.F. Ilett	276	142	2,541	152	28	126	150
University of Western Ontario	1,428	124	M.G. Cherian	236	175	1,717	204	22	172	150
University of Wisconsin	1,462	118	R.E. Peterson	233	178	4,268	84	36	79	150
University of Wollongong	63	323	C. Deng	130	276	389	307	13	268	150
University of York	109	314	G.D. Phillips	51	328	876	268	13	268	45
University of Zurich	403	242	J.M. Fritschy	222	184	6,293	52	46	26	150
Univesitas Gadjah Mada	59	327	B. Santoso	23	339	293	315	4	324	142
Uppsala University	2,052	82	F. Nyberg	272	145	2,170	173	24	160	150
Utah State	168	298	R.P. Sharma	272	145	1,553	221	22	172	150
Utrecht University	5,033	8	J.H. Beijnen	505	39	0	343	54	16	150
Vanderbilt University	2,037	83	F.P. Guengerich	663	17	32,945	5	58	12	150
Victoria University of Wellington	39	337	S. Schenk	72	318	1,287	240	16	243	80
Vienna University of Technology	16	343	W. Linert	248	165	1,625	216	19	210	150
Virginia Polytechnic Institute	382	247	D.M. Denbow	188	217	1,255	243	21	189	150
Vrije Universiteit, Brussels	23	341	Y. Vandenplas	293	123	2,470	157	21	189	150
VU University Amsterdam	2,365	65	N.P.E. Vermeulen	297	117	4,587	75	29	116	150
Wageningen University	263	274	I.M.C.M. Rietjens	210	195	2,111	176	27	138	150
Wake Forest University	1,001	172	J.C. Elsenach	305	112	3,976	96	39	59	150
Waseda University	69	320	S. Shibata	306	111	275	318	26	145	150
Washington State University	655	207	D.E. Baker	301	115	443	298	12	273	86
Washington University in St. Louis	878	184	D.F. Covey	240	173	2,349	162	31	104	150
Wayne State University	3,291	31	L.H. Lash	136	269	1,726	203	25	153	150
West Virginia University	719	203	V. Castranova	365	80	5,280	61	40	53	150
Yale University	2,098	76	A. C. Sartorelli	512	38	6,818	45	24	160	150
Yonsei University	845	187	J.K. Hwang	91	298	766	277	18	224	150
York University	61	325	G. Sweeney	65	320	1,403	232	25	153	150
Zhejiang University	989	174	E.Q. Wei	119	282	420	302	15	252	150

Neuroscience Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	798	190	R. Hari	301	94	7,650	54	48	44	150
Aarhus University	2,191	85	A. Gjedde	337	73	5,144	99	33	132	150
Arizona State University	462	232	G.E. Stelmach	177	192	2,028	205	23	216	150
Ateneo de Manila University	0	346		0	342	0	341	0	340	0
Auburn University	311	260	M.C. Newland	50	326	559	309	12	308	59
Australian National University	1,792	105	I.A. Hendry	143	233	1,241	260	13	302	130
Boston College	298	261	T.N. Seyfried	129	254	1,194	266	18	262	150
Boston University	4,167	25	S. Grossberg	299	96	6,313	79	32	140	125
Brandeis University	905	175	E. Marder	168	204	2,449	186	36	108	135
Brigham Young University	156	298	R.O. Hopkins	114	267	1,699	229	25	196	150
Brown University	2,346	79	M.F. Bear	125	258	6,668	70	46	53	150
California Institute of Technology (Calt...)	1,768	107	C. Koch	231	145	8,574	41	44	62	150
Cardiff University	2,435	71	J.P. Aggeton	345	69	4,652	111	43	66	150
Carnegie Mellon University	824	185	M. Behrmann	105	283	2,195	199	27	176	113
Case Western Reserve University	3,087	47	G. Perry	507	25	964	282	65	9	150
Chalmers University of Technology	69	322	S. Nilsson	110	276	1,611	235	27	176	150
Charles University	487	227	E. Sykova	182	188	2,245	196	31	148	150
Chinese University of Hong Kong	447	235	D.T. Yew	252	127	1,311	253	19	253	150
Chulalongkorn University	170	292	S. Shuangshoti	144	232	595	306	6	331	107
City University of Hong Kong	118	308	G.R. Chen	679	6	14,752	14	62	14	150
City University of New York	870	178	A. Sclafani	311	87	2,184	200	27	176	150
Colorado State University	402	245	F.E. Dudek	186	183	3,708	137	30	153	150
Columbia University	8,548	7	Y. Stern	383	54	12,582	20	58	21	150
Cornell University	5,554	15	D.J. Reis	498	28	8,287	45	29	159	150
Curtin University of Technology	122	306		0	342	0	341	0	340	0
Dalhousie University	2,282	81	H.A. Robertson	167	207	3,881	130	25	196	150
Dartmouth College	1,588	120	M.S. Gazzaniga	230	147	3,564	142	29	159	150
Delft University of Technology	116	309	A.C. Schuten	23	340	95	336	9	319	28
Drexel University	2,041	89	M. Murray	107	280	1,645	232	24	202	150
Duke University	5,924	14	T.A. Slotkin	504	27	6,960	64	43	66	150
Durham University	534	216	J.M. Findlay	79	306	1,851	219	17	271	81
Ecole Normale Supérieure de Lyon	51	329	E. Gilson	106	282	2,381	192	27	176	150
École Normale Supérieure, Paris	470	229	A. Triller	125	258	3,013	162	28	167	150
École Polytechnique	44	332		0	342	0	341	0	340	0

Ecole Polytechnique Fédérale de Lausanne	390	247	M. Bierlarie	344	70	1,622	234	22	223	150
Eindhoven University of Technology	67	324	W.H. Backes	86	298	975	280	19	253	150
Emory University	4,499	22	A.I. Levy	243	132	13,025	19	57	24	150
Erasmus University Rotterdam	2,950	56	M.M.B. Bretelar	341	71	13,580	18	71	6	150
ETH Zurich (Swiss Federal Institute of Technology)	1,266	143	J.Feldon	353	63	4,566	114	45	59	150
Florida International University	170	292	P.K. Stoddard	41	331	634	304	14	296	56
Florida State University	512	222	K.J. Berkley	100	288	1,915	213	20	244	149
Freie Universität Berlin	1,941	95	R. Menzel	152	225	2,597	178	35	115	150
Friedrich Alexander Universität Erlangen Nürnberg	1,877	98	B. Neundorfer	454	40	3,960	126	34	123	150
Fudan University	913	173	G.C. Wu	107	280	800	298	16	282	128
Georg August Universität Göttingen	2,798	59	W. Paulus	290	102	3,813	133	39	89	150
George Mason University	205	282	G.A. Ascoli	88	297	494	315	16	282	150
George Washington University	860	179	J.M. Rosenstein	73	312	1,131	272	14	296	64
Georgetown University	1,907	96	K. Gale	138	239	1,858	218	14	296	128
Georgia Institute of Technology	361	248	A.D. Fisk	143	233	903	287	13	302	124
Georgia State University	628	206	H.E. Albers	119	263	1,359	251	17	271	121
Goteborg University	1,398	135	K. Blennow	395	51	6,896	65	55	27	150
Harvard University	2,321	80	D.L. Schacter	281	109	9,351	33	59	19	150
Hebrew University of Jerusalem	2,457	70	M. Devor	174	195	3,576	141	26	186	150
Heidelberg Universität	3,313	42	W. Hacke	477	34	9,669	30	64	11	150
Hokkaido University	2,404	74	M. Watanabe	636	11	40,786	2	51	36	150
Hong Kong Polytechnic University	421	241	P. Cho	101	286	572	308	15	291	101
Hong Kong University of Science & Techno...	252	269	N.Y. Ip	177	192	6,485	75	24	202	150
Humboldt-Universität zu Berlin	670	205	U.Dirnagl	229	148	7,515	56	46	53	150
Imperial College London	2,614	63	H.F. Bradford	188	180	1,714	227	16	282	144
Indian Institute of Technology Bombay (I...	12	341	R. Manchanda	27	337	56	338	5	333	21
Indian Institute of Technology Delhi (II...	21	339	G.S. Sekhon	149	227	1,151	270	11	313	150
Indian Institute of Technology Kanpur (I...	33	334	R.K. Gupta	348	67	1,974	210	26	186	150
Indiana University Bloomington	2,156	86	G.V. Rebec	157	217	1,479	244	20	244	147
Indiana University Indianapolis	1,997	91	B. Ghetti	281	109	6,068	84	40	82	150
Iowa State University	217	276	D.S. Sakaguchi	56	322	897	288	17	271	82
Johns Hopkins University	10,849	3	S.H. Snyder	300	95	14,180	15	75	5	150
Kansas State University	105	313	M.L. Weiss	77	307	1,154	269	20	244	150
Katholieke Universiteit Leuven	1,624	115	G.A. Orbin	286	105	4,273	119	38	96	150
Keio University	1,585	121	Y. Fukuuchi	231	145	2,331	194	25	196	150

King Fahd University of Petroleum & Minerals	8	344	A. Aksoy	25	338	55	339	3	337	33
King Saud University	185	287	A.M. Abu El-Asrar	108	278	879	291	18	262	136
Kobe University	1,099	161	N. Saito	172	199	2,923	165	29	159	150
Korea Advanced Institute of Science & Technology	154	299	E. Kim	154	222	5,022	103	38	96	150
Korea University	357	250	Y.K. Kim	236	142	1,567	239	24	202	150
Kyoto University	6,022	13	H.Shibasaki	584	16	10,897	24	40	82	150
Kyushu University	2,880	58	M. Fukui	517	24	6,414	77	28	167	150
La Trobe University	675	204	K.T. Ng	111	274	1,217	264	16	282	94
Lancaster University	87	318	D. Allsop	83	302	1,914	214	21	233	150
Leiden University	2,546	66	R.A.C. Roos	333	75	3,581	140	26	186	150
Linkoping University	851	181	A. Blomqvist	114	267	2,427	189	20	244	120
London School of Economics and Political Scie	186	286	M.R.J. Knapp	240	138	3,887	129	38	96	150
Loughborough University	124	305	J.A. Horne	111	274	2,631	173	20	244	79
Louisiana State University	1,209	149	N.G. Bazan	398	50	4,960	105	40	82	150
Ludwig-Maximilians-Universität München	4,557	21	H.J. Moller	792	2	14,781	13	53	29	150
Lund University	3,780	31	A. Bjorklund	472	35	8,610	39	51	36	150
Maastricht University	2,207	83	H.W.M. Steinbusch	267	121	3,915	128	29	159	150
Macquarie University	625	207	M. Coltheart	158	216	3,544	143	28	167	147
Mahidol University	213	279	P. Govitrapong	101	286	827	295	15	291	146
Masaryk University	420	242	I. Rektor	181	189	1,125	274	21	233	150
Massachusetts Institute of Technology	3,019	54	R.J. Wurtman	715	3	11,570	22	26	186	150
McGill University	8,829	6	F. Andermann	164	208	4,584	113	31	148	150
McMaster University	2,152	87	H. Szechtman	138	239	1,706	228	22	223	150
Michigan State University	1,699	109	K.E. Moore	275	115	1,487	243	8	322	115
Michigan Technological University	32	336	W.S. Helton	25	338	94	337	8	322	23
Monash University	2,350	78	J.I. Bradshaw	296	98	3,514	144	30	153	150
Montana State University	160	296	C.M. Paden	41	331	400	318	8	322	74
Moscow State University	909	174	E.N. Sokolov	162	212	401	317	7	328	119
Nagoya University	2,521	68	G. Sobue	520	22	8,771	36	44	62	150
Nanjing University	110	311	J.J. Wang	414	46	9,592	31	19	253	150
Nanyang Technological University	159	297	C. Quck	151	226	742	300	23	216	150
National Taiwan University	921	171	H.G. Hwu	113	270	3,295	154	22	223	150
National Tsing Hua University	93	315	Y.C. Chang	31	336	180	333	6	331	92
National University of Ireland, Galway	351	252	B.E. Leonard	381	57	3,487	145	33	132	150
National University of Singapore	1,325	139	E.A.Lang	286	105	2,475	182	22	223	150
New Mexico State University	89	317		0	342	0	341	0	340	0

New York University	5,491	16	O. Devinsky	317	85	6,794	66	34	123	150
Newcastle University	1,670	112	D.M. Turnbull	353	63	5,836	87	50	41	150
North Carolina State University	350	253	T.E. LeVere	40	333	132	334	0	340	24
Northeastern University	514	221	J.R. Stellar	52	325	546	311	12	308	79
Northwestern University	3,878	30	A. Routtenberg	179	191	2,579	179	17	271	150
Norwegian University of Science & Technology	710	199	U. Sonnewald	155	220	2,125	201	29	159	150
Ohio State University	3,319	40	J.R. Mendell	265	122	5,406	95	32	140	150
Oklahoma State University	120	307	C.W. Stevens	162	212	2,619	176	28	167	150
Open University UK	525	219	S.P.R. Rose	292	100	132	334	4	335	12
Oregon State University	360	249	F.L. Moore	93	294	1,132	271	19	253	58
Osaka University	4,079	26	M. Tohyama	498	28	9,683	29	41	76	150
Peking University	1,103	160	J.S. Han	238	140	1,736	226	18	262	150
Pennsylvania State University	2,354	77	M.L. Latash	252	127	2,009	209	32	140	141
Pohang University of Science And Technology	116	309	K.T. Kim	121	260	1,506	242	21	233	150
Portland State University	66	327	L.I. Crawshaw	43	330	283	325	8	322	83
Princeton University	1,266	143	B.L. Jacobs	187	182	3,844	131	21	233	94
Purdue University	1,538	125	S.A. Bayer	94	293	3,293	155	5	333	45
Queen's University	1,807	100	R.J. Beninger	153	224	2,023	206	15	291	125
Queen's University of Belfast	680	202	D.J. King	92	295	918	285	13	302	101
Queensland University of Technology	343	254	D.A. Atchison	139	237	1,071	276	18	262	101
Radboud University, Nijmegen	3,896	28	A.R.Cool	364	60	3,118	157	31	148	150
Rensselaer Polytechnic Institute	219	275	L.D. Reid	100	288	826	296	8	322	138
Rheinisch Westfälische Technische Hochschule Aach	1,208	150	K. Willmes	168	204	2,473	183	24	202	150
Rheinische Friedrich Wilhelms Universität Bonn	2,574	64	C.E. Elger	657	8	15,860	11	62	14	150
Rice University	315	258	R.M. Glantz	67	316	190	330	7	328	25
Rochester Institute of Technology	67	324	R.D. Frisina	617	14	919	284	18	262	96
Royal Institute of Technology, KTH	168	295	A. Lanser	75	308	1,109	275	17	271	92
Royal Melbourne Institute of Technology	68	323	M.J. Rand	251	129	1,626	233	11	313	145
Rutgers	2,718	61	G. Buzsaki	241	137	8,577	40	52	32	150
Saint-Petersburg State University	335	256	A.S. Batuev	198	169	184	331	4	335	118
San Diego State University	525	219	C.L. Murphy	121	260	1,660	231	24	202	150
Sapienza University of Rome	0	346		0	342	0	341	0	340	0
Sciences Po Paris	0	346		0	342	0	341	0	340	0
Seoul National University	1,679	111	K. Chu	91	296	1,221	263	24	202	150
Shanghai Jiao Tong University	470	229	L. He	650	9	8,548	42	39	89	150
Simon Fraser University	601	209	R.E. Misatlberger	86	298	1,235	262	22	223	89

Stanford University	6,700	12	R.M. Sapolsky	320	82	1,202	265	46	53	150
State University of New York Buffalo	8	344	M.B. Kristal	53	324	227	328	7	328	56
Stockholm University	716	198	T. Bartitai	327	81	5,260	97	40	82	150
Stony Brook University	2,434	72	S.M. Sherman	163	210	2,202	198	25	196	83
Syracuse University	719	197	S.V. Faraone	701	4	31,524	6	80	4	150
Tartu University (University of Tartu)	436	237	J. Harro	132	247	1,365	248	21	233	150
Technical University of Denmark	146	301	L.K. hanson	169	203	2,072	203	21	233	150
Technion	1,091	164	M.B.H. Youdiam	520	22	13,996	17	52	32	150
Technische Universität Berlin	179	290	K. Obermayer	112	272	891	289	18	262	136
Technische Universität Chemnitz	29	337	S. Gauggel	32	335	362	320	12	308	65
Technische Universität Dresden	855	180	T.C. Hummel	332	78	3,353	148	42	71	150
Technische Universität München	1,486	127	B Conrad	249	130	4,256	121	35	115	150
Tel Aviv University	3,048	52	A.D. Korczyn	622	13	8,096	48	36	108	150
Texas A&M University	1,134	156	W.R. Wihelm	65	318	287	324	10	317	52
Texas Tech	259	267	D.D. Allen	74	311	1,269	257	20	244	138
Tohoku University	3,077	49	Y. Itoyama	412	48	5,875	86	34	123	150
Tokyo Institute of Technology	287	265	A.Sato	318	84	2,347	193	18	262	150
Trinity College Dublin	1,143	154	R. Anwyl	135	245	4,236	122	32	140	150
Tsinghua University	190	284	N.M. Zhao	136	242	966	281	17	271	150
Tufts University	1,595	118	R.B. Kanarek	95	292	1,562	240	15	291	84
Universidad Autonoma de Madrid	1,449	129	J. Avila	205	164	4,438	115	41	76	150
Universidad de Chile	737	195	A. Hernandez	80	305	333	322	11	313	96
Universidad de Granada	1,449	129	J. Avila	205	164	4,438	115	41	76	150
Universidad del País Vasco	509	224	C. Matute	108	278	2,016	208	27	176	150
Universidad Nacional Autónoma de México ...	1,099	161	R. Colin Druker	163	210	1,237	261	17	271	150
Universidad Politecnica de Madrid	39	333	M.M. Desco	130	252	953	283	19	253	150
Universidade de São Paulo	1,717	108	M.L. Brandao	164	208	1,155	268	25	196	150
Universidade Estadual de Campinas	246	270	F. Cendes	258	125	3,374	147	31	148	150
Università degli Studi di Firenze	1,899	97	S. Sorbi	223	151	6,110	82	33	132	150
Università degli Studi di Padova	2,237	82	C. Angelini	333	75	5,135	100	33	132	150
Università Di Bologna	2,039	90	P. Cortelli	271	117	4,257	120	29	159	150
Università di Pisa	879	177	L. Murri	298	97	2,385	191	25	196	150
Universitat Autonoma de Barcelona	1,383	137	A. Armario	173	196	2,088	202	24	202	115
Universitat Bielefeld	694	200	H.J. Markowitsch	243	132	3,728	135	31	148	150
Universität Bremen	594	211	G. Roth	104	284	1,260	258	20	244	107
Universitat d'Alacant	215	277	N. Cuenca	49	327	497	314	15	291	91

Universitat de València	832	182	J.M. Garcia-Verdugo	115	266	7,275	61	40	82	150
Universität Frankfurt am Main	2,400	75	H. Braak	294	99	8,784	35	44	62	150
Universität Freiburg	2,143	88	M. Frotscher	271	117	6,733	68	43	66	150
Universität Hamburg	553	215	M. Schachner	590	15	22,218	9	58	21	150
Universität Karlsruhe	46	331	R. Stietelhager	81	304	277	326	10	317	86
Universität Leipzig	1,040	166	A. Reichenbach	307	89	2,573	180	28	167	150
Universität Munster (Westfälische Wilhelms-Un	888	176	E.J. Speckmann	263	124	1,428	246	19	253	150
Universität Politecnica de Catalunya	29	337	M. Slater	103	285	831	294	20	244	142
Universität Regensburg	1,136	155	G. Hajak	277	112	2,759	170	30	153	150
Universität Stuttgart	128	303	W. Hauber	62	319	741	301	17	271	35
Universität Trier	231	272	D.H. Hellhammer	160	215	4,945	106	42	71	150
Universität Tübingen	3,444	35	N. Birbaumer	383	54	7,964	51	47	49	150
Universität Wien (University of Vienna)	1,806	101	H. Budka	333	75	6,107	83	37	102	150
Universität Zu Köln	1,660	113	J. Klosterkotter	168	204	1,570	237	24	202	150
Université Catholique de Louvain	1,188	151	B. Rossion	97	290	1,365	248	28	167	137
Universite de Liege	1,260	145	J. Balthazart	319	83	2,412	190	38	96	150
Université de Montréal	3,384	36	R.F. Butterworth	328	80	2,832	168	30	153	150
Université de Nice Sophia Antipolis	352	251	C.L. Gottesmann	109	277	660	302	14	296	81
Universite Laval	1,943	94	M.Steriade	243	132	6,712	69	46	53	113
Universite Libre de Bruxelles	1,309	141	S.N. Schiffmann	126	256	3,338	150	26	186	150
Université Paris Sorbonne	82	321	M. Cottrell	33	334	348	321	8	322	46
Universite Paris-Sud 11	820	187	S. Laroche	72	313	2,052	204	22	223	121
Université Pierre et Marie Curie	1,300	142	J. Mariani	186	183	1,959	211	27	176	150
Universiti Malaya (University of Malaya)	135	302	C.T. Tan	58	320	580	307	13	302	138
University College Cork	225	273	T.G. Cotter	183	187	6,386	78	36	108	150
University College Dublin	509	224	C.M. Regan	133	246	1,594	236	22	223	150
University College London	9,547	4	G. Burnstock	1,019	1	32,401	5	62	14	150
University do Porto	297	262	M.M. Paula-Barbosa	146	231	1,349	252	17	271	95
University of Aberdeen	1,113	158	R.G. Pertwee	170	200	5,135	100	42	71	150
University of Adelaide	917	172	T.S. Miles	126	256	1,131	272	17	271	96
University of Alabama	3,025	53	E. Faught	148	229	4,428	117	37	102	150
University of Alberta	2,892	57	R.B. Stein	225	149	3,588	139	24	202	150
University of Amsterdam	3,087	47	M. Joels	156	219	3,729	134	33	132	150
University of Antwerp	1,513	126	C. Van Broeckhoven	413	47	9,517	32	52	32	150
University of Arizona	2,792	60	F. Porreca	432	42	6,975	63	53	29	150
University of Athens	1,106	159	M. Marklanos	132	247	628	305	12	308	120

University of Auckland	1,601	117	M. Dragunon	195	175	7,403	60	32	140	150
University of Barcelona	1,680	110	I. Ferrez	435	41	6,607	71	39	89	150
University of Basel	1,799	103	A. Probst	211	160	4,703	110	26	186	150
University of Bath	206	281	S. Wonnacott	142	235	3,328	151	35	115	150
University of Bergen	528	218	K. Hugdahl	281	109	2,934	164	30	153	150
University of Bern	776	192	J.C. Reubi	359	61	5,633	93	45	59	150
University of Birmingham	1,259	146	J.H. Fremlin	154	222	183	332	0	340	110
University of Bristol	3,017	55	D.J. Nutt	625	12	0	341	45	59	150
University of British Columbia	2,432	73	P.L. McGeer	496	30	11,609	21	48	44	150
University of Calgary	1,797	104	M.D. Hill	243	132	2,964	163	35	115	150
University of California, Berkley	1,611	116	M. D'Esposito	206	163	8,137	46	63	12	150
University of California, Davis	1,956	93	E. Carstens	185	185	1,525	241	24	202	150
University of California, Irvine	4,614	20	C.W. Cotman	193	176	8,771	36	51	36	150
University of California, Los Angeles	11,800	2	A.W. Toga	471	36	7,544	55	57	24	150
University of California, Riverside	607	208	G.I. Hatton	157	217	1,761	223	22	223	87
University of California, San Diego	5,211	18	E. Masliah	464	38	15,534	12	69	7	150
University of California, San Francisco	7,565	9	J.D. Levine	358	62	9,687	27	47	49	150
University of California, Santa Barbara	420	242	S.K. Fisher	132	247	1,877	217	23	216	146
University of California, Santa Cruz	126	304	A.L. Fink	207	162	6,307	80	51	36	150
University of Cambridge	3,247	44	T.W. Robbins	580	18	39,863	3	91	2	150
University of Canterbury	100	314	J.C. Dalrymple-Alford	57	321	503	313	11	313	71
University of Cape Town	147	300	D.J. Stein	568	19	9,685	28	42	71	150
University of Central Florida	205	282	E. Salas	173	196	3,027	161	34	123	150
University of Chicago	5,200	19	J.H. Kordower	234	144	5,942	85	43	66	150
University of Cincinnati	2,565	65	S.M. Strakowski	216	156	5,705	89	53	29	150
University of Colorado at Boulder	823	186	S.F. Maier	308	88	7,066	62	54	28	150
University of Connecticut	1,187	152	J. D. Salamone	142	235	2,602	177	34	123	150
University of Copenhagen	1,434	133	A. Schousboe	415	44	6,594	72	35	115	150
University of Delaware	291	263	C.R. Plata-Salaman	138	239	3,718	136	32	140	150
University of Dundee	787	191	D.G. Nicholls	225	149	5,751	88	32	140	150
University of Edinburgh	1,476	128	J.M. Wardlaw	282	108	4,298	118	39	89	150
University of Florida	4,497	23	K.M. Heilman	488	31	6,457	76	29	159	150
University of Geneva	1,353	138	D. Bertrand	583	17	6,521	73	49	42	150
University of Georgia	336	255	A.V. Terry	116	265	1,287	254	23	216	150
University of Ghent	400	246	H. Roeyers	117	264	881	290	19	253	150
University of Glasgow	2,399	76	D.I. Graham	312	86	7,440	57	38	96	150

University of Gothenburg	317	257	H. Haberg	222	152	4,919	107	43	66	150
University of Groningen	1,439	131	J. Korf	350	66	3,113	158	26	186	150
University of Helsinki	3,130	45	P. Naatanen	337	73	5,695	90	52	32	150
University of Hong Kong	531	217	K.F. So	173	196	1,699	229	23	216	150
University of Houston	460	234	K.A. Alkadhi	97	290	373	319	14	296	74
University of Illinois	2,715	62	W.T. Greenough	180	190	5,020	104	37	102	150
University of Illinois, Chicago	3,317	41	H.N. Bhargava	204	166	978	279	3	337	93
University of Indonesia	20	340		0	342	0	341	0	340	0
University of Iowa	1,848	99	N.C. Andreasen	431	43	14,180	15	58	21	150
University of Kansas	812	188	R. Pahwa	155	220	3,926	127	41	76	150
University of Kentucky	1,803	102	M.P. Mattson	678	7	43,932	1	100	1	150
University of Lausanne	579	213	B.M. Riederer	131	251	1,907	215	23	216	150
University of Leeds	509	224	C. Peers	198	169	2,017	207	28	167	150
University of Leicester	828	184	R.A.J. Challiss	197	171	3,245	156	26	186	150
University of Liverpool	599	210	R.D. Burgoyne	302	93	4,825	108	38	96	150
University of Ljubljana	462	232	S. Podnar	55	323	217	329	13	302	26
University of London (Kings College of London)	25,837	1	C.D. Marsden	690	5	28,554	7	40	82	150
University of Manchester	3,062	51	N.J. Rothwell	367	59	7,748	53	47	49	150
University of Manitoba	1,386	136	J.I. Nagy	197	171	2,642	172	28	167	150
University of Maryland	1,223	147	W. Hodos	85	301	1,047	278	9	319	150
University of Maryland Baltimore County	3,626	33	R. Aschwarch	244	131	3,104	159	28	167	150
University of Massachusetts	467	231	J.D. Blaustein	149	227	1,957	212	16	282	138
University of Melbourne	4,387	24	S.F. Berkovic	386	53	8,485	43	56	26	150
University of Miami	1,315	140	M.D. Ginsberg	288	104	6,744	67	36	108	150
University of Michigan	3,096	46	H.Akil	404	49	10,261	25	48	44	150
University of Minnesota	2,539	67	H.H. Loh	541	21	7,877	52	34	123	150
University of Missouri	730	196	G.Y. Sun	113	270	1,361	250	22	223	150
University of Nebraska	315	258	R.A.Bevins	86	298	809	297	18	262	66
University of New Hampshire	180	289	R.G. Mair	66	317	653	303	13	302	60
University of New Mexico	685	201	C.F.Valenzuela	75	308	1,271	256	24	202	150
University of New South Wales	1,121	157	S.C. Gandevia	352	65	5,567	94	40	82	150
University of North Carolina, Chapel Hill	3,269	43	J.A. Lieberman	505	26	26,638	8	65	9	150
University of North Texas	257	268	J.W. Simpkins	283	107	3,838	132	37	102	150
University of Notre Dame	106	312	F.J. Castellino	382	56	3,296	153	29	159	150
University of Nottingham	831	183	C.A. Marsden	291	101	3,387	146	27	176	150
University of Oklahoma	584	212	R.D. Foreman	214	158	1,901	216	20	244	150

University of Oregon	1,978	92	J.C. Crabbe	387	52	4,209	123	37	102	150
University of Oslo	949	169	O.P. Ottersen	303	92	7,411	59	42	71	150
University of Otago	775	193	P.F. Smith	208	161	1,466	245	21	233	114
University of Ottawa	962	167	Z. Merali	170	200	2,884	166	36	108	150
University of Oxford	3,540	34	C. Spence	235	143	1,801	221	36	108	150
University of Pennsylvania	3,982	27	J.Q. Trojanowski	650	9	39,385	4	89	3	150
University of Pittsburgh	3,689	32	D.A. Lewis	458	39	8,064	49	49	42	150
University of Quebec	958	168	M. Steriade	243	132	6,504	74	46	53	91
University of Queensland	1,217	148	R.J. Lewis	214	158	2,444	187	33	132	150
University of Reading	437	236	E.A. Gaffen	44	329	752	299	12	308	38
University of Rochester	1,627	114	H.J. Federoff	204	166	4,716	109	37	102	150
University of Saskatchewan	1,078	165	L. Hertz	268	120	3,055	160	23	216	150
University of Science and Technology of China	225	273	D.Y. Ruan	83	302	310	323	9	319	150
University of Sheffield	1,571	122	P. Redgrave	127	255	1,568	238	21	233	146
University of South Carolina	760	194	A.J. Mcdonald	75	308	1,778	222	21	233	47
University of South Florida	676	203	P.R. Sanberg	371	58	5,209	98	39	89	150
University of Southampton	561	214	V.H. Perry	277	112	8,113	47	41	76	150
University of Southern California	1,770	106	M. Baudry	274	116	5,640	91	35	115	150
University of St Andrews	429	240	D.I. Perrett	331	79	7,439	58	44	62	150
University of Surrey	187	285	J. Arendt	215	157	3,309	152	32	140	150
University of Sussex	510	223	P.R. Benjamin	114	267	858	293	18	262	96
University of Sydney	3,361	38	E.Gorden	239	139	2,622	175	36	108	150
University of Technology, Sydney	33	334	G.M. Nicholson	47	328	439	316	19	253	102
University of Tennessee Knoxville	92	316	R. Wetzel	112	272	2,814	169	34	123	150
University of Texas at Austin	929	170	T. Schallert	175	194	3,346	149	35	115	150
University of Tokyo	2,472	69	K. Mikoshiba	484	32	11,458	23	62	14	150
University of Toronto	9,143	5	A.E. Lang	555	20	22,018	10	67	8	150
University of Tsukuba	801	189	T. Sakurai	415	44	8,334	44	47	49	150
University of Twente	85	319	E. Marani	192	177	1,052	277	14	296	150
University of Utah	3,077	49	R.P. Kesner	222	152	2,884	166	34	123	150
University of Vermont	1,097	163	R.L. Parsons	136	242	913	286	17	271	150
University of Victoria	212	280	N.M. Sherwood	130	252	1,743	224	24	202	150
University of Virginia	1,437	132	O. Steward	219	155	552	310	35	115	150
University of Warwick	170	292	N .Dale	139	237	1,737	225	21	233	147
University of Washington	7,451	10	W.A. Catterall	197	171	8,050	50	63	12	150
University of Waterloo	430	239	A.E. Patla	148	229	2,523	181	27	176	131

University of Western Australia	1,549	124	L.D. Beazley	136	242	869	292	16	282	144
University of Western Ontario	3,320	39	M. Kavaliens	270	119	2,317	195	24	202	150
University of Wisconsin	2,203	84	R.J. Davidson	256	126	8,621	38	51	36	150
University of Wollongong	179	290	R.J. Barry	196	174	1,418	247	27	176	135
University of York	265	266	A.W. Young	170	200	4,609	112	33	132	150
University of Zurich	1,559	123	J.M. Fritschy	222	152	6,293	81	46	53	150
Univesitas Gadjah Mada	9	343	G. Partadiredja	6	341	15	340	2	339	7
Uppsala University	1,408	134	H.B. Schioth	185	185	2,624	174	39	89	150
Utah State	83	320	J.C.S. Breitner	191	178	5,635	92	41	76	150
Utrecht University	5,415	17	W.H. Gispen	469	37	5,132	102	30	153	150
Vanderbilt University	1,591	119	J.H. Kaas	346	68	5,381	96	34	123	150
Victoria University of Wellington	55	328	S. Schenk	72	313	1,287	254	16	282	80
Vienna University of Technology	50	330	G. Pfurtscheller	340	72	4,159	124	48	44	150
Virginia Polytechnic Institute	181	288	D.M. Denbow	188	180	1,255	259	21	233	150
Vrije Universiteit, Brussels	11	342	Y. Michotte	190	179	2,225	197	24	202	150
VU University Amsterdam	3,884	29	F. Barkhof	478	33	9,733	26	62	14	150
Wageningen University	67	324	V.M. Wiegant	199	168	2,435	188	27	176	150
Wake Forest University	1,147	153	J.C. Eisenach	305	91	3,976	125	39	89	150
Waseda University	237	271	S. Shibata	306	90	275	327	26	186	150
Washington State University	484	228	J.M. Krueger	265	122	2,718	171	33	132	150
Washington University in St. Louis	7,038	11	D.M. Holtzman	277	112	9,008	34	59	19	150
Wayne State University	3,364	37	J.W. Phillips	289	103	2,460	185	19	253	117
West Virginia University	288	264	R.L. Goodman	162	212	2,473	183	16	282	150
Yale University	7,980	8	S.G. Waxman	237	141	3,705	138	48	44	150
Yonsei University	436	237	K.C. Chung	69	315	1,173	267	22	223	150
York University	416	244	J.D. Crawford	132	247	1,851	219	26	186	150
Zhejiang University	215	277	Z Chen	120	262	545	312	16	282	150

Social Sciences Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	552	251	R.P. Hamalainen	98	214	693	205	15	186	61
Aarhus University	1,249	148	J. Olsen	479	13	7,953	31	42	38	150
Arizona State University	2,341	69	N. Eisenberg	181	119	2,995	86	32	66	150
Ateneo de Manila University	65	344	C.J. Montiel	10	345	32	329	3	322	8
Auburn University	1,504	116	W. Buskist	35	312	113	306	8	274	42
Australian National University	3,583	33	J.C. Caldwell	92	221	1,445	139	13	212	35
Boston College	1,475	121	T. O'Hara	49	286	566	225	12	223	52
Boston University	3,014	44	H.E. Stanley	480	12	10,348	21	57	13	150
Brandeis University	937	188	W.R. Leonard	154	145	2,052	109	19	151	150
Brigham Young University	784	215	M.J. Lambert	134	169	1,774	122	25	103	150
Brown University	2,324	70	V.N. Mor	313	42	7,454	36	47	28	150
California Institute of Technology (Calt...)	527	254	A.H. Zewail	441	17	7,475	35	48	25	150
Cardiff University	2,443	64	J.P. Aggleton	171	128	4,652	59	43	33	150
Carnegie Mellon University	1,891	94	H.A. Simon	137	166	4,415	63	13	212	92
Case Western Reserve University	1,800	100	J.W. Mcelharey	74	244	39	326	0	336	3
Chalmers University of Technology	425	281	P.S. Kildal	311	46	936	185	20	140	150
Charles University	231	322	J. Raboch	191	108	252	271	7	283	150
Chinese University of Hong Kong	952	186	D.T.L. Shek	226	85	984	177	20	140	103
Chulalongkorn University	245	319	J. Knodel	97	216	789	201	15	186	76
City University of Hong Kong	1,493	118	G.R. Chen	679	2	14,752	10	62	10	150
City University of New York	250	317	J.T. Parsons	121	186	961	181	20	140	150
Colorado State University	698	235	M.D. Slater	118	190	1,295	148	20	140	150
Columbia University	6,308	7	E.R. Kandal	448	16	17,020	8	77	5	150
Cornell University	4,281	23	T. Eisner	198	104	1,634	131	17	170	150
Curtin University of Technology	1,174	159	D.F. Treagust	85	233	604	219	16	175	86
Dalhousie University	1,250	147	W.F. Doolittle	228	82	5,968	46	41	41	150
Dartmouth College	1,456	123	R.E. Drake	435	20	6,146	44	46	31	150
Delft University of Technology	1,441	125	H. Priemus	111	199	351	249	11	237	52
Drexel University	1,045	177	H.D. White	124	180	1,722	127	19	151	127
Duke University	3,114	39	M.G. Caron	213	93	10,944	19	73	7	150
Durham University	2,001	89	R.Hudson	65	261	497	232	12	223	31
Ecole Normale Supérieure de Lyon	92	337	P. Jenson	53	278	1,232	155	15	186	61
École Normale Supérieure, Paris	260	312	A. Badiou	23	329	22	335	3	322	5
École Polytechnique	209	325	B. Giebels	108	203	1,259	152	29	81	150

Ecole Polytechnique Fédérale de Lausanne	334	300	M. Bierlarie	40	304	201	283	9	260	62
Eindhoven University of Technology	710	232	H. Timmermanns	245	75	965	180	15	186	122
Emory University	2,131	80	R. Hanzlick	144	159	645	213	11	237	150
Erasmus University Rotterdam	1,832	96	P.H. Franses	177	124	960	182	18	162	105
ETH Zurich (Swiss Federal Institute of Technology)	960	184	K.W. Axhausen	69	253	539	229	11	237	105
Florida International University	1,367	133	C.P. Koulamas	93	220	678	208	12	223	35
Florida State University	3,026	42	T.E. Joiner	312	45	3,695	71	34	61	150
Freie Universität Berlin	1,099	170	W. Saenger	403	24	7,926	32	35	57	150
Friedrich Alexander Universität Erlangen Nürnberg	661	238	P. Betz	150	152	1,241	154	15	186	150
Fudan University	349	298	Y.F. Zhong	160	139	1,150	163	16	175	150
Georg August Universität Göttingen	747	222	A. Rothenberger	238	79	1,738	124	25	103	150
George Mason University	884	203	T.B. Kashdan	75	242	610	217	15	186	106
George Washington University	2,595	60	A. Etzioni	123	181	302	261	9	260	28
Georgetown University	2,694	53	L.O. Gostin	266	65	2,078	105	23	119	150
Georgia Institute of Technology	1,512	115	A.D. Fisk	143	160	903	190	13	212	124
Georgia State University	2,102	84	M.S. Vaugh	40	304	94	311	7	283	27
Goteborg University	807	213	C. Gillberg	362	33	6,790	41	42	38	150
Harvard University	5,644	10	W.M. Davis	237	80	3,363	78	33	65	150
Hebrew University of Jerusalem	3,067	41	P. Tamir	43	296	80	318	3	322	34
Heidelberg Universität	828	209	P.H. Seeburg	313	42	16,754	9	40	43	150
Hokkaido University	399	287	P. Stapleton	17	338	41	325	5	306	4
Hong Kong Polytechnic University	1,687	108	T.C.E. Cheng	367	32	2,060	108	23	119	150
Hong Kong University of Science & Techno...	625	244	H. Yang	128	178	948	184	20	140	92
Humboldt-Universität zu Berlin	190	328	O. Prokop	181	119	89	312	0	336	139
Imperial College London	1,336	137	R.B. Noland	81	236	383	245	11	237	58
Indian Institute of Technology Bombay (I...	173	332	P.D. Sunavala	35	312	11	344	0	336	16
Indian Institute of Technology Delhi (II...	242	320	M.S. Sodha	438	18	683	207	9	260	150
Indian Institute of Technology Kanpur (I...	147	334	R.P. Singh	117	191	471	233	13	212	129
Indiana University Bloomington	5,553	12	B. Cronin	110	200	586	222	12	223	39
Indiana University Indianapolis	519	256	W.J. McBride	313	42	3,730	69	38	46	150
Iowa State University	926	193	F.X. Gibbons	128	178	1,923	115	27	87	149
Johns Hopkins University	4,903	15	S.H. Snyder	300	50	14,180	11	75	6	150
Kansas State University	447	274	W.R. Schumm	114	195	349	251	9	260	131
Katholieke Universiteit Leuven	2,247	75	J. Poesen	297	52	2,357	98	32	66	150
Keio University	482	262	S. Ueda	163	134	1,062	172	19	151	150

King Fahd University of Petroleum & Minerals	295	307	Z. Khurshid	21	331	32	329	2	330	4
King Saud University	306	303	M.A. Eben Saleh	19	335	21	336	3	322	0
Kobe University	302	306	Y. Nishizuka	187	113	9,115	25	11	237	150
Korea Advanced Institute of Science & Technology	356	296	S.H. Kim	58	271	668	209	14	203	69
Korea University	431	277	C.M. Park	18	336	65	323	4	312	45
Kyoto University	979	181	R. Kitamura	107	204	1,016	173	17	170	81
Kyushu University	322	302	Y. Tochiara	72	250	144	297	6	292	132
La Trobe University	1,435	126	J.P. Arnason	36	310	17	339	3	322	7
Lancaster University	1,148	163	E.B. Emerson	123	181	1,212	159	23	119	150
Leiden University	1,818	98	H.F. Moed	69	253	840	197	16	175	42
Linkoping University	932	191	A.W. Jones	222	89	1,090	170	17	170	150
London School of Economics and Political Scie	3,722	28	E. Neumayer	101	208	921	188	19	151	17
Loughborough University	2,268	73	C. Oppenheim	145	158	551	226	12	223	113
Louisiana State University	973	183	J.L. Matson	286	56	1,346	144	27	87	150
Ludwig-Maximilians-Universität München	1,319	141	W. Eisenmenger	261	66	1,819	119	21	136	150
Lund University	1,756	104	S. Skertving	228	82	3,633	73	29	81	150
Maastricht University	1,607	113	C.P.M. Van Der Vleute	286	56	2,430	95	30	76	150
Macquarie University	1,406	129	J. Forrest	50	283	244	276	12	223	17
Mahidol University	249	318	B. Panijpan	58	271	83	317	3	322	85
Masaryk University	195	326	T.Sirovatka	13	343	32	329	5	306	4
Massachusetts Institute of Technology	2,687	54	A. Rich	337	40	5,872	47	32	66	150
McGill University	2,888	47	Y. Steinert	66	259	599	220	13	212	83
McMaster University	2,387	66	G.R. Noramn	284	59	5,532	51	34	61	150
Michigan State University	4,505	19	R.E. Lemski	161	137	3,733	68	38	46	150
Michigan Technological University	326	301	M. Hindelang	12	344	13	342	2	330	4
Monash University	2,861	48	R. Smyth	121	186	324	256	12	223	56
Montana State University	641	240	G.R. Notess	88	226	76	319	4	312	0
Moscow State University	426	280	V.E. Tarasov	86	231	209	282	16	175	3
Nagoya University	448	273	Y. Katsumata	196	105	890	194	11	237	150
Nanjing University	497	260	C. Zhu	57	273	85	313	5	306	134
Nanyang Technological University	1,470	122	S .Foo	75	242	286	263	9	260	58
National Taiwan University	885	202	J.D. Wang	183	118	1,385	140	19	151	150
National Tsing Hua University	405	285	S.L. Hwang	83	234	176	288	6	292	108
National University of Ireland, Galway	468	267	S. Grimes	30	321	111	307	6	292	15
National University of Singapore	2,980	45	B.S.A. Yeoh	179	121	597	221	18	162	40
New Mexico State University	890	201	W.G. Stephan	56	275	999	175	16	175	16

New York University	4,402	21	S.J. Brams	70	251	310	260	9	260	34
Newcastle University	2,315	71	P. Healey	73	245	935	186	14	203	33
North Carolina State University	1,924	93	M.S. Wogalter	158	141	456	235	10	249	148
Northeastern University	1,219	151	W.F. Lider	45	293	14	341	0	336	32
Northwestern University	3,772	27	W.R. Leonard	153	148	2,063	107	19	151	150
Norwegian University of Science & Technology	1,143	165	T. Rundmo	42	300	354	248	12	223	28
Ohio State University	6,154	8	W.S. Maeras	247	73	2,073	106	26	96	136
Oklahoma State University	1,056	176	E.J. Eisenbraun	123	181	327	255	2	330	150
Open University UK	2,613	58	A. Hammersley	59	270	407	241	13	212	4
Oregon State University	1,345	135	L. Pauling	251	70	4,521	61	0	336	120
Osaka University	482	262	T. Kishimoto	626	4	44,277	2	79	4	150
Peking University	847	206	Z. Cui	47	289	172	290	9	260	87
Pennsylvania State University	6,824	4	R. Roy	407	23	3,422	77	23	119	150
Pohang University of Science And Technology	169	333	M.K. Chung	135	168	1,297	147	22	129	150
Portland State University	1,040	178	P. Backler	32	317	154	296	8	274	5
Princeton University	2,813	49	H.N. Alyea	107	204	19	337	0	336	6
Purdue University	3,784	26	G. Salvendy	208	98	879	195	15	186	150
Queen's University	1,633	112	A. Skaburskis	35	312	135	301	6	292	12
Queen's University of Belfast	1,488	120	J. Wainer	35	312	115	305	6	292	12
Queensland University of Technology	1,330	139	C.J. McRobbie	42	300	282	264	9	260	27
Radboud University, Nijmegen	2,027	87	L. Verhoeven	69	253	142	300	6	292	80
Rensselaer Polytechnic Institute	600	248	H.S. Van Klooster	43	296	30	332	0	336	8
Rheinisch Westfalische Technische Hochschule Aach	521	255	H. Luczak	64	262	192	284	6	292	78
Rheinische Friedrich Wilhelms Universitat Bonn	903	200	B. Madea	398	26	1,549	135	23	119	150
Rice University	784	215	R.E. Smaller	338	39	27,011	5	82	2	150
Rochester Institute of Technology	431	277	A.A. Batabyal	112	197	176	288	8	274	19
Royal Institute of Technology, KTH	598	249	S.O. Hansson	119	188	390	242	10	249	48
Royal Melbourne Institute of Technology	730	227	W. Cartwright	29	323	60	324	3	322	32
Rutgers	4,979	13	G. Buzsaki	241	78	8,577	28	52	19	150
Saint-Petersburg State University	122	335	L.N. Moskvina	194	106	187	285	7	283	150
San Diego State University	2,014	88	D.A. Fisher	51	282	390	242	8	274	46
Sapienza University of Rome	0	348		0	347	0	347	0	336	0
Sciences Po Paris	362	295	P.A. Messerlin	20	334	85	313	3	322	8
Seoul National University	734	226	Y. Park	78	241	216	281	10	249	83
Shanghai Jiao Tong University	425	281	Z. Haung	373	31	925	187	18	162	150
Simon Fraser University	1,973	90	R. Hayter	52	280	320	257	10	249	19

Stanford University	5,594	11	I.L. Weissman	590	5	40,038	3	31	70	150
State University of New York Buffalo	183	330	W.F. Wieczorek	44	295	662	210	15	186	57
Stockholm University	1,533	114	G. Von Heijne	251	70	19,681	7	53	18	150
Stony Brook University	1,407	127	W.L. Jungers	115	194	1,324	145	19	151	137
Syracuse University	1,163	160	S.V. Faraone	701	1	31,524	4	80	3	150
Tartu University (University of Tartu)	482	262	R. Taagepera	40	304	181	287	9	260	15
Technical University of Denmark	370	293	E. Mosekilde	175	127	1,124	166	20	140	150
Technion	879	204	Y.J. Dori	37	309	247	274	12	223	40
Technische Universität Berlin	580	250	D.C. O'Connell	62	263	134	302	6	292	46
Technische Universität Chemnitz	177	331	B. Nauck	26	328	100	308	7	283	17
Technische Universität Dresden	614	246	A. Dannehl	38	308	18	338	2	330	5
Technische Universität München	498	259	A. Bacher	382	29	3,509	75	38	46	150
Tel Aviv University	2,696	52	E. Kobylansky	170	130	710	204	15	186	91
Texas A&M University	3,668	30	K.J. Meier	90	224	693	205	18	162	44
Texas Tech	632	242	J.J. McGlone	110	200	1,128	165	16	175	148
Tohoku University	337	299	Y. Dodo	30	321	133	303	8	274	74
Tokyo Institute of Technology	354	297	S. Furui	171	128	986	176	9	260	134
Trinity College Dublin	955	185	M. Marsh	33	316	157	295	6	292	17
Tsinghua University	934	189	N. Zhao	138	165	839	198	15	186	150
Tufts University	1,282	144	J.M. Coffin	179	121	4,350	65	27	87	150
Universidad Autonoma de Madrid	744	223	S. Okazaki	31	318	143	298	8	274	17
Universidad de Chile	631	243	S.R. Jara-Diaz	53	278	262	268	9	260	35
Universidad de Granada	744	223	S. Okazaki	31	318	143	298	8	274	17
Universidad del País Vasco	765	220	J. Guisola	23	329	84	315	6	292	37
Universidad Nacional Autónoma de México ...	268	310	R. Castro	29	323	270	267	10	249	64
Universidad Politecnica de Madrid	495	261		0	347	0	347	0	336	0
Universidade de São Paulo	504	257	R. Zucchi	80	240	258	269	13	212	74
Universidade Estadual de Campinas	257	314	P. Dalgarronodo	62	263	257	270	7	283	88
Università degli Studi di Firenze	709	233	I. Bertini	466	14	4,681	58	48	25	150
Università degli Studi di Padova	912	199	L. Mason	27	327	233	280	12	223	10
Università Di Bologna	924	194	S. Martello	81	236	792	200	13	212	41
Università di Pisa	90	338	G.B. Cassano	427	21	4,758	57	39	44	150
Universitat Autonoma de Barcelona	1,204	154	V. Reyes-Garcia	61	268	236	279	14	203	90
Universitat Bielefeld	715	231	A. Angleitner	57	273	1,381	141	20	140	150
Universität Bremen	763	221	I. Eilks	16	341	35	328	4	312	19
Universitat d'Alacant	468	267	J.L. Nicolau	21	331	75	320	5	306	4

Universitat de València	931	192	C. Botella	104	206	448	236	16	175	150
Universität Frankfurt am Main	770	218	J. Glucker	14	342	170	291	7	283	4
Universität Freiburg	624	245	A. Renkl	62	263	635	214	15	186	40
Universität Hamburg	261	311	R.S.J. Toi	154	145	975	179	20	140	103
Universität Karlsruhe	398	288	J. L. Gomez-Barroso	21	331	25	334	4	312	16
Universität Leipzig	210	324	M.C. Angermeyer	402	25	4,426	62	37	50	150
Universität Munster (Westfälische Wilhelms-Un	193	327	K. Berger	156	143	3,113	81	30	76	150
Universität Politecnica de Catalunya	50	346	F. Carreras	136	167	569	224	11	237	150
Universität Regensburg	280	309	K.O. Stetter	223	88	5,256	54	36	54	150
Universität Stuttgart	364	294	D. Frisch	42	300	98	309	4	312	48
Universität Trier	286	308	L. Montada	28	325	273	266	7	283	29
Universität Tübingen	694	236	N.J. Concard	42	300	355	247	11	237	93
Universität Wien (University of Vienna)	1,138	167	S. Kirchengast	88	226	607	218	14	203	52
Universität Zu Köln	918	197	K. Rajewsky	202	102	12,011	16	72	8	150
Université Catholique de Louvain	1,190	155	I. Thomas	52	280	377	246	12	223	150
Universite de Liege	478	265	P. Pestieau	119	188	635	214	14	203	63
Université de Montréal	2,267	74	R.E. Tremblay	274	63	3,939	66	37	50	150
Université de Nice Sophia Antipolis	305	304	G. Quatrehomme	50	283	246	275	10	249	85
Universite Laval	1,211	152	G. Godin	153	148	2,618	90	17	170	150
Universite Libre de Bruxelles	725	228	J.L. Deneubourg	153	148	1,564	134	26	96	147
Université Paris Sorbonne	1,824	97	P. Claval	81	236	69	322	4	312	2
Universite Paris-Sud 11	255	315	Y. Langevin	141	163	1,319	146	24	108	150
Université Pierre et Marie Curie	303	305	C.J. Allegre	304	48	6,367	43	36	54	150
Universiti Malaya (University of Malaya)	378	291	A.N. Zainab	17	338	12	343	2	330	12
University College Cork	442	276	I.J. Perry	130	177	5,273	53	24	108	150
University College Dublin	1,080	173	E.J. Conway	39	307	11	344	0	336	25
University College London	4,473	20	A. Furnham	575	6	7,520	34	30	76	150
University do Porto	110	336	H. Barros	273	64	1,770	123	22	129	150
University of Aberdeen	1,970	91	L.J. Whalley	186	114	2,440	93	26	96	150
University of Adelaide	1,281	145	R.W. Byard	189	109	1,202	160	14	203	150
University of Alabama	3,075	40	M.A. Morrissey	116	192	1,075	171	16	175	74
University of Alberta	3,118	38	K.S. Courneya	224	87	2,395	97	37	50	150
University of Amsterdam	3,609	32	M.H.W. Frings-Dresen	148	157	1,260	151	22	129	150
University of Antwerp	816	212	P. Van Damme	247	73	3,054	83	28	85	150
University of Arizona	4,298	22	H.Chen	282	61	1,873	117	27	87	150
University of Athens	740	225	S. Vosniadou	28	325	656	212	10	249	19

University of Auckland	2,171	79	R.A. Kearns	99	210	891	192	18	162	106
University of Barcelona	978	182	A. Costa	62	263	537	230	17	170	140
University of Basel	473	266	H. Reisen	43	296	73	321	4	312	13
University of Bath	674	237	C. Eccleston	110	200	1,803	121	29	81	150
University of Bergen	532	253	B.R. Hanestad	96	217	742	202	16	175	108
University of Bern	260	312	M. Egger	359	34	13,308	13	55	15	150
University of Birmingham	3,544	34	J.H. Fremlin	154	145	183	286	0	336	110
University of Bristol	2,702	51	R. Johnston	349	35	1,215	158	18	162	97
University of British Columbia	2,541	61	E. Wood	236	81	1,958	113	34	61	150
University of Calgary	1,153	161	S.B. Patten	209	96	2,042	111	27	87	150
University of California, Berkley	3,437	35	S.P. Hinshaw	142	161	3,657	72	38	46	150
University of California, Davis	1,503	117	P.R. Shaver	94	219	3,122	80	23	119	129
University of California, Irvine	1,647	111	B. Grofman	131	174	549	227	11	237	64
University of California, Los Angeles	8,606	2	J.M. Diamond	184	116	2,956	87	22	129	88
University of California, Riverside	1,352	134	S. Bowler	48	288	281	265	9	260	33
University of California, San Diego	1,188	156	M.B. Stein	347	36	6,661	42	47	28	150
University of California, San Francisco	1,375	131	C. Harrington	149	155	1,103	169	23	119	141
University of California, Santa Barbara	1,375	131	D.M. Mackie	60	269	1,191	162	10	249	58
University of California, Santa Cruz	466	269	B. Sinervo	73	245	1,603	133	26	96	67
University of Cambridge	1,840	95	S. Baron-Cohen	226	85	5,534	50	49	24	150
University of Canterbury	464	270	J. Pearce	49	286	238	277	10	249	47
University of Cape Town	769	219	A.J. Flisher	159	140	1,373	142	22	129	150
University of Central Florida	1,773	102	M.A. Abdel-Aty	142	161	657	211	15	186	90
University of Chicago	4,717	17	C.R. Sunstein	150	152	1,220	157	19	151	48
University of Cincinnati	2,361	67	R.E. Oesper	162	136	38	327	0	336	41
University of Colorado at Boulder	1,392	130	S.F. Maier	308	47	7,066	40	54	16	150
University of Connecticut	1,454	124	H. Tennen	178	123	3,917	67	31	70	150
University of Copenhagen	781	217	K. Avlund	102	207	918	189	21	136	137
University of Delaware	723	229	J.A. Inciardi	163	134	1,816	120	22	129	150
University of Dundee	1,179	158	R.M. Harden	189	109	1,951	114	27	87	150
University of Edinburgh	1,492	119	I.J. Deary	506	9	11,172	18	47	28	150
University of Florida	4,023	24	K.R. Williams	73	245	238	277	7	283	71
University of Geneva	397	289	T.V. Perneger	243	76	7,443	37	41	41	150
University of Georgia	2,096	85	R. Forehand	284	59	3,046	84	25	103	150
University of Ghent	639	241	G. Crombez	170	130	2,299	99	34	61	150
University of Glasgow	2,634	57	C. Hough	47	289	15	340	2	330	0

University of Gothenburg	66	343	H. Haberg	222	89	4,919	56	43	33	150
University of Groningen	923	195	J. Ormel	296	53	7,711	33	43	33	150
University of Helsinki	2,104	83	H. Summala	73	245	958	183	20	140	67
University of Hong Kong	995	179	T.H. Lam	344	37	3,699	70	31	70	150
University of Houston	849	205	P.J. Norton	55	277	611	216	15	186	84
University of Illinois	7,585	3	G.A. Miller	73	245	2	346	0	336	0
University of Illinois, Chicago	3,681	29	H.J. Walberg	86	231	440	237	6	292	93
University of Indonesia	90	338	C. Podhisita	18	336	252	271	4	312	36
University of Iowa	1,340	136	D. Tranel	211	95	8,137	29	43	33	150
University of Kansas	1,334	138	C.R. Snyder	122	184	1,506	136	20	140	149
University of Kentucky	1,310	142	C. Leukefeld	209	96	1,451	138	21	136	150
University of Lausanne	240	321	L. Keller	186	114	2,917	88	36	54	150
University of Leeds	1,702	106	M.Conner	131	174	2,046	110	31	70	150
University of Leicester	1,696	107	C.C. Williams	113	196	330	253	11	237	15
University of Liverpool	933	190	P. Salmon	151	151	1,720	128	25	103	150
University of Ljubljana	986	180	K. Erjavec	17	338	30	332	4	312	6
University of London (Kings College of London)	19,732	1	A. Furnham	502	10	6,058	45	32	66	150
University of Manchester	4,944	14	A.G. Lyne	254	69	3,550	74	42	38	150
University of Manitoba	1,801	99	N.P. Roos	122	184	1,684	130	13	212	124
University of Maryland	4,795	16	V. Trimble	87	229	251	273	6	292	33
University of Maryland Baltimore County	1,794	101	M.D. Weist	87	229	802	199	15	186	145
University of Massachusetts	1,117	168	G.J. De Vries	92	221	2,098	104	24	108	124
University of Melbourne	3,320	36	I. Williamson	134	169	330	253	10	249	92
University of Miami	918	197	C.S. Carver	157	142	8,589	27	31	70	150
University of Michigan	4,576	18	N. Krause	168	133	2,519	92	22	129	96
University of Minnesota	2,891	46	W.G. Lacono	300	50	4,628	60	39	44	150
University of Missouri	2,304	72	K.J. Sher	149	155	3,099	82	29	81	150
University of Nebraska	2,247	75	D.W. Brooks	67	258	121	304	5	306	101
University of New Hampshire	820	211	D. Finkelhor	140	164	5,112	55	26	96	50
University of New Mexico	2,037	86	W.R. Miller	481	11	9,250	24	48	25	150
University of New South Wales	1,320	140	G. Parker	417	22	5,784	48	30	76	150
University of North Carolina, Chapel Hill	5,906	9	G.H. Elder	99	210	2,421	96	24	108	91
University of North Texas	1,236	149	B. Hayslip	99	210	436	238	10	249	124
University of Notre Dame	603	247	E.M. Cummings	112	197	1,738	124	18	162	97
University of Nottingham	1,407	127	M. Wright	199	103	1,841	118	28	85	150
University of Oklahoma	831	207	M.D. Mumford	116	192	977	178	20	140	121

University of Oregon	2,105	82	B.W. Matthews	302	49	9,262	23	37	50	150
University of Oslo	1,076	174	A.A. Dahl	188	112	2,915	89	27	87	150
University of Otago	791	214	D.M. Fergusson	341	38	7,992	30	51	21	150
University of Ottawa	823	210	P. Firestone	62	263	891	192	12	223	100
University of Oxford	2,776	50	D.W. MacDonald	383	28	4,366	64	35	57	150
University of Pennsylvania	2,680	55	E.B. Foa	260	67	7,431	39	43	33	150
University of Pittsburgh	1,751	105	E. Frank	393	27	10,100	22	54	16	150
University of Quebec	504	257	J.P. Despres	524	7	22,828	6	60	11	150
University of Queensland	1,655	109	J.M. Najman	184	116	2,194	101	24	108	150
University of Reading	1,651	110	A. Swinbank	31	318	96	310	6	292	18
University of Rochester	723	229	R.M. Ryan	131	174	5,644	49	35	57	127
University of Saskatchewan	1,112	169	C.K. Leong	46	291	158	294	6	292	22
University of Science and Technology of China	254	316	W. Fan	250	72	1,628	132	26	96	150
University of Sheffield	3,827	25	D.W. Hughes	189	109	848	196	14	203	150
University of South Carolina	2,612	59	R.F. Valois	98	214	1,469	137	18	162	150
University of South Florida	2,505	62	J.K. Thompson	133	172	2,033	112	26	96	150
University of Southampton	1,144	164	D.J.P. Barker	457	15	13,718	12	65	9	150
University of Southern California	1,763	103	S. Sussman	203	100	2,147	103	24	108	150
University of St Andrews	373	292	D.I. Perrett	331	41	7,439	38	44	32	150
University of Surrey	646	239	S. Arber	69	253	1,124	166	16	175	68
University of Sussex	2,395	65	C. Abraham	70	251	1,288	149	19	151	88
University of Sydney	3,128	37	D.A. Hensher	203	100	1,243	153	19	151	128
University of Technology, Sydney	405	285	S.R. Clegg	68	257	408	240	15	186	54
University of Tennessee Knoxville	1,061	175	J.W. Lounsbury	50	283	317	258	9	260	69
University of Texas at Austin	2,678	56	C.G. Ellison	90	224	1,711	129	23	119	119
University of Tokyo	452	272	M. Ishizuka	213	93	459	234	12	223	150
University of Toronto	6,812	5	T.W. Mak	635	3	47,418	1	99	1	150
University of Tsukuba	184	329	H. Iso	192	107	2,440	93	24	108	150
University of Twente	383	290	A. Nijholt	95	218	169	293	7	283	102
University of Utah	2,127	81	T.E. Cerling	132	173	3,503	76	31	70	150
University of Vermont	1,229	150	M.F. Giangreco	36	310	339	252	9	260	21
University of Victoria	831	207	W.M. Roth	228	82	1,109	168	24	108	109
University of Virginia	1,095	171	R.C. Pianta	150	152	1,356	143	25	103	135
University of Warwick	1,210	153	S. Joseph	155	144	2,188	102	21	136	139
University of Washington	6,659	6	R.D. Palmiter	291	54	12,644	14	50	23	150
University of Waterloo	1,187	157	G.T. Fong	83	234	1,725	126	24	108	147

University of Western Australia	1,143	165	P.W. Miller	81	236	385	244	11	237	24
University of Western Ontario	2,181	77	L. Vaughan	43	296	350	250	13	212	25
University of Wisconsin	3,652	31	R.J. Davidson	256	68	8,621	26	51	21	150
University of Wollongong	411	283	P.C.L. Heaven	100	209	546	228	12	223	77
University of York	1,090	172	P. Sloper	88	226	1,011	174	15	186	84
University of Zurich	447	274	H.C. Steinhausen	290	55	2,543	91	24	108	150
Univesitas Gadjah Mada	72	342	E. Indriati	7	346	170	291	5	306	25
Uppsala University	702	234	G. Andersson	176	126	1,276	150	27	87	150
Utah State	406	284	E.M. Gese	56	275	574	223	14	203	50
Utrecht University	3,019	43	T. Schwanen	46	291	301	262	13	212	19
Vanderbilt University	1,149	162	J. Garber	286	56	10,812	20	57	13	150
Victoria University of Wellington	1,265	146	T.J. Ward	161	137	1,192	161	27	87	126
Vienna University of Technology	48	347	G. Feichtinger	134	169	417	239	8	274	65
Virginia Polytechnic Institute	948	187	T.H. Ollendick	208	98	3,187	79	24	108	150
Vrije Universiteit, Brussels	545	252	J.P. Clarys	66	259	529	231	8	274	92
VU University Amsterdam	2,466	63	P. Nijkamp	436	19	1,911	116	19	151	150
Wageningen University	461	271	W.A. Van Staveren	276	62	5,521	52	35	57	150
Wake Forest University	427	279	T.A. Arcury	169	132	1,137	164	23	119	150
Waseda University	82	340	A. Takanishi	243	76	903	190	15	186	150
Washington State University	923	195	A.T. Church	45	293	730	203	14	203	49
Washington University in St. Louis	2,180	78	J.I. Gordon	378	30	12,508	15	59	12	150
Wayne State University	2,356	68	M. Goodman	177	124	3,040	85	30	76	150
West Virginia University	59	345	B. Stanton	222	89	2,202	100	23	119	150
Yale University	1,959	92	R.A. Rosenheck	520	8	11,834	17	52	19	150
Yonsei University	229	323	S.Y. Sohn	99	210	311	259	11	237	67
York University	1,293	143	R.J. Burke	216	92	1,225	156	16	175	150
Zhejiang University	76	341	J. Gao	91	223	84	315	4	312	83

Psychology Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	147	295	R.Hari	301	56	7,650	27	48	23	150
Aarhus University	902	149	R. Zachariae	74	272	874	242	18	215	145
Arizona State University	2,206	51	N. Eisenberg	181	135	2,995	113	32	85	150
Ateneo de Manila University	10	344	C.J. Montiel	10	340	32	334	3	333	8
Auburn University	1,084	118	G.S. Pettit	89	250	3,559	89	35	66	99
Australian National University	839	162	A.F. Jorm	377	31	9,730	13	47	27	150
Boston College	920	148	J.R. Mahalik	49	305	661	262	14	258	55
Boston University	2,946	29	D.H. Barlow	172	144	4,625	64	35	66	150
Brandeis University	598	209	A. Wingfield	106	223	1,108	219	16	236	113
Brigham Young University	796	173	E.D. Bigler	224	103	2,421	144	26	139	150
Brown University	2,619	37	M.B. Keller	448	16	15,203	7	63	10	150
California Institute of Technology (Calt...	214	281	H.A. Lester	287	65	7,664	25	44	35	150
Cardiff University	1,923	63	D.M. Jones	88	255	844	244	23	172	53
Carnegie Mellon University	1,579	88	J.R. Anderson	164	156	4,220	70	25	146	120
Case Western Reserve University	1,710	81	D. Drotar	249	83	2,597	134	27	126	150
Chalmers University of Technology	63	317	D. Vastjall	14	337	20	340	4	328	23
Charles University	121	302	P. Bob	53	301	98	328	7	310	59
Chinese University of Hong Kong	1,015	127	D.T.L. Shek	226	101	984	230	20	193	103
Chulalongkorn University	51	324	S. Shuangshoti	144	181	595	273	6	318	107
City University of Hong Kong	369	254	S.T. Cheng	48	306	302	307	11	284	15
City University of New York	2,166	52	A. Sclafani	311	54	2,184	153	27	126	150
Colorado State University	706	188	J.L. Deffenbacher	81	267	841	245	20	193	91
Columbia University	5,163	6	E.R. Kandal	448	16	17,020	6	77	2	150
Cornell University	3,222	20	S.J. Ceci	116	205	2,977	115	18	215	112
Curtin University of Technology	332	258	J.P. Pick	51	302	496	283	13	268	57
Dalhousie University	1,218	110	S.H. Stewart	162	158	1,936	167	32	85	150
Dartmouth College	1,122	116	K.T. Muesar	260	80	6,110	42	50	21	150
Delft University of Technology	205	283	J.W. De Leeuw	342	42	4,603	65	30	101	150
Drexel University	1,198	113	B. Yang	91	246	194	319	7	310	27
Duke University	3,608	15	K. Dodge	211	114	8,925	16	54	14	150
Durham University	642	199	J.M. Findlay	79	269	1,851	171	17	228	81
Ecole Normale Supérieure de Lyon	33	335		0	345	0	344	0	343	0
École Normale Supérieure, Paris	72	314	A.C. Bachoud-Levi	64	286	895	237	19	205	150
École Polytechnique	48	325		0	345	0	344	0	343	0

Ecole Polytechnique Fédérale de Lausanne	79	313	O. Blanke	91	246	888	239	19	205	116
Eindhoven University of Technology	218	280	F.G. Kaiser	39	318	370	298	13	268	76
Emory University	2,413	45	C.B. Nemeroff	702	3	18,480	5	69	5	150
Erasmus University Rotterdam	1,642	84	F.C. Verhulst	361	34	4,132	74	35	66	150
ETH Zurich (Swiss Federal Institute of Technology)	264	274	J. Feldon	344	41	5,132	56	48	23	150
Florida International University	951	140	W.K. Silverman	109	217	2,073	159	26	139	125
Florida State University	1,728	78	T.E. Joiner	312	53	3,695	85	34	74	150
Freie Universität Berlin	921	146	R. Schwarzer	99	233	994	228	21	183	95
Friedrich Alexander Universität Erlangen Nürnberg	592	211	P. Wuhr	37	319	217	314	11	284	19
Fudan University	63	317	L.Y. Lin	236	94	665	258	14	258	150
Georg August Universität Göttingen	927	145	A. Rothenberger	238	92	1,738	176	25	146	150
George Mason University	660	196	T.B. Kashdan	75	271	610	269	15	246	106
George Washington University	972	135	D. Riess	98	235	1,441	191	20	193	126
Georgetown University	672	192	N.J. Finkel	35	320	173	322	6	318	30
Georgia Institute of Technology	837	163	T.A. Salthouse	156	166	3,573	88	27	126	80
Georgia State University	1,446	99	D.A. Washburn	89	250	565	275	13	268	76
Goteborg University	672	192	C. Gillberg	362	33	6,790	36	42	41	150
Harvard University	2,936	30	D.L. Schacter	281	72	9,351	14	59	11	150
Hebrew University of Jerusalem	1,640	85	I. Gati	63	288	483	285	10	289	41
Heidelberg Universität	176	289	J. Schroeter	169	150	2,243	150	25	146	150
Hokkaido University	351	256	T. Yamagish	106	223	1,600	183	14	258	150
Hong Kong Polytechnic University	307	265	H.W.H. Tsang	61	293	365	299	12	278	76
Hong Kong University of Science & Techno...	180	286	R.S. Wyer	125	197	1,832	172	14	258	135
Humboldt-Universität zu Berlin	262	275	H. Flot	214	108	5,673	48	41	44	150
Imperial College London	670	194	S.A. Montgomery	286	66	7,179	34	31	95	150
Indian Institute of Technology Bombay (I...	13	342	P. Rao	20	332	87	331	3	333	19
Indian Institute of Technology Delhi (II...	15	341	G.S. Sekhon	149	174	1,152	216	11	284	150
Indian Institute of Technology Kanpur (I...	25	338	B. Bhushan	9	341	23	339	3	333	13
Indiana University Bloomington	3,016	25	L.B. Smith	106	223	1,201	208	20	193	59
Indiana University Indianapolis	634	202	P.H. Lysaker	155	168	1,715	180	29	112	150
Iowa State University	1,067	121	F.X. Gibbons	128	195	1,923	168	27	126	149
Johns Hopkins University	4,402	8	S.H. Snyder	300	57	14,180	9	75	3	150
Kansas State University	466	239	W.R. Schumm	114	207	349	300	9	302	131
Katholieke Universiteit Leuven	1,561	90	P. Eelen	101	231	1,306	200	27	126	76
Keio University	331	259	G. Yagi	105	226	1,252	204	15	246	150

King Fahd University of Petroleum & Minerals	29	337	M. Achoui	8	342	28	336	4	328	12
King Saud University	37	331	S.A. Al-Shammari	47	309	285	308	6	318	64
Kobe University	132	297	K. Maeda	240	89	2,765	125	24	158	150
Korea Advanced Institute of Science & Technology	63	317	C.K. Un	210	115	597	272	3	333	150
Korea University	135	296	Y.K. Kim	236	94	1,567	185	24	158	150
Kyoto University	726	183	M. Tomonaga	72	275	383	297	13	268	72
Kyushu University	443	246	N. Tashiro	109	217	1,176	213	20	193	150
La Trobe University	780	174	P. Maruff	178	137	2,776	123	35	66	150
Lancaster University	611	205	C. Hatton	133	188	1,866	170	24	158	150
Leiden University	2,083	53	P. Spinhoven	213	111	3,462	95	32	85	150
Linkoping University	570	214	G. Andersson	176	140	1,326	199	27	126	150
London School of Economics and Political Scie	472	237	M.R.J. Knapp	240	89	3,887	78	38	53	150
Loughborough University	607	206	D. Cramer	54	300	168	323	7	310	15
Louisiana State University	1,300	109	J.L. Matson	286	66	1,346	197	27	126	150
Ludwig-Maximilians-Universität München	1,762	73	H.J. Moller	792	1	14,781	8	53	17	150
Lund University	942	142	L. Gustafon	178	137	2,762	126	19	205	150
Maastricht University	2,241	49	H. Merckelelbach	346	38	2,780	122	33	82	150
Macquarie University	1,082	119	R.M. Rapee	148	177	3,290	101	28	121	150
Mahidol University	53	322	N.J. White	772	2	28,485	2	68	6	150
Masaryk University	71	316	D. Smahel	11	339	32	334	3	333	8
Massachusetts Institute of Technology	1,089	117	A. Rich	337	46	5,872	44	32	85	150
McGill University	3,354	18	R.O. Pihl	226	101	3,514	90	27	126	150
McMaster University	1,831	71	D. Elloitt	143	182	833	247	19	205	107
Michigan State University	2,869	32	N. Schmitt	113	210	1,812	173	21	183	144
Michigan Technological University	38	330	W.S. Helton	25	330	94	330	8	306	23
Monash University	1,348	105	J.L. Bradshaw	296	60	3,514	90	30	101	150
Montana State University	207	282	R.A. Block	30	328	504	281	9	302	27
Moscow State University	517	224	E.N. Sokolov	162	158	401	295	7	310	119
Nagoya University	599	208	T. Hatta	149	174	409	294	7	310	150
Nanjing University	11	343	L. Wang	153	170	1,055	223	19	205	150
Nanyang Technological University	291	268	R.P. Ang	51	302	115	326	5	323	57
National Taiwan University	386	251	H. Hwu	113	210	3,295	100	22	177	150
National Tsing Hua University	89	309	H.C. Wang	85	258	276	311	8	306	70
National University of Ireland, Galway	275	273	B.E. Leonard	381	29	3,487	93	33	82	150
National University of Singapore	636	201	R. Singh	96	236	447	291	15	246	101
New Mexico State University	522	222	D. Trafimow	89	250	1,046	224	17	228	80

New York University	3,681	13	B. Reisberg	170	147	5,868	45	27	126	150
Newcastle University	744	180	A.H. Young	214	108	3,234	102	32	85	150
North Carolina State University	564	215	T.M. Hess	47	309	319	306	10	289	36
Northeastern University	752	179	J.A. Hall	114	207	4,489	66	21	183	134
Northwestern University	2,553	41	R. Radcliff	125	197	3,187	103	24	158	63
Norwegian University of Science & Technology	537	220	K.G. Gotestam	161	160	891	238	13	268	116
Ohio State University	3,079	23	G.G. Berntson	147	179	3,813	82	24	158	150
Oklahoma State University	755	178	C.I. Abramson	69	280	196	318	8	306	118
Open University UK	546	219	J.R. Crawford	141	184	3,339	99	30	101	150
Oregon State University	477	234	F.L. Moore	93	240	1,159	214	20	193	58
Osaka University	421	247	M. Takeda	385	27	4,081	75	32	85	150
Peking University	331	259	S. Han	238	92	1,736	178	18	215	150
Pennsylvania State University	4,160	10	R. Plomin	452	15	7,213	32	48	23	150
Pohang University of Science And Technology	22	339	M.K. Chung	87	257	534	276	10	289	150
Portland State University	489	231	T.N. Bauer	34	321	905	235	14	258	150
Princeton University	1,129	115	P.N. Johnson-Laird	103	229	1,039	225	15	246	63
Purdue University	2,702	35	R.W. Proctor	160	163	917	234	18	215	109
Queen's University	1,331	107	W.L. Marshall	132	190	1,179	212	17	228	136
Queen's University of Belfast	463	240	D.J. King	92	243	918	233	13	268	101
Queensland University of Technology	517	224	W. Patton	45	312	206	316	9	302	20
Radboud University, Nijmegen	2,330	47	R.C.M.E. Engels	205	120	1,187	211	21	183	150
Rensselaer Polytechnic Institute	181	285	D.B. Boles	47	309	284	309	7	310	27
Rheinisch Westfälische Technische Hochschule Aach	481	232	K. Willmes	168	151	2,473	141	24	158	150
Rheinische Friedrich Wilhelms Universität Bonn	861	155	W. Maier	320	50	5,234	54	43	37	150
Rice University	473	236	R.C. Martin	44	313	815	249	13	268	55
Rochester Institute of Technology	164	291	V.J. Samar	40	317	336	303	5	323	33
Royal Institute of Technology, KTH	122	301		0	345	0	344	0	343	0
Royal Melbourne Institute of Technology	160	292	A. Hudson	26	329	99	327	5	323	29
Rutgers	3,281	19	C. Rovee-Collier	124	199	664	259	17	228	105
Saint-Petersburg State University	129	298	A.S. Batuev	198	126	184	321	4	328	118
San Diego State University	1,618	87	J.F. Sallis	319	51	14,092	10	64	9	150
Sapienza University of Rome	0	348		0	345	0	344	0	343	0
Sciences Po Paris	4	347	B. Bastard	15	334	14	342	1	341	13
Seoul National University	321	262	I.K. Lyoo	81	267	1,200	209	21	183	150
Shanghai Jiao Tong University	80	312	L.L. He	399	24	7,181	33	39	47	150
Simon Fraser University	1,026	125	J. Martin	67	282	488	284	10	289	41

Stanford University	4,704	7	R.H. Moos	424	20	6,277	40	35	66	150
State University of New York Buffalo	72	314	W.F. Wiecezorek	44	313	662	261	15	246	57
Stockholm University	982	131	L.G. Nilsson	265	79	4,137	73	30	101	150
Stony Brook University	1,846	70	D.N. Klein	190	131	4,191	71	31	95	150
Syracuse University	1,054	122	M.P. Carey	210	115	3,471	94	33	82	150
Tartu University (University of Tartu)	288	269	J. Allik	93	240	1,429	192	21	183	150
Technical University of Denmark	36	333	R.M.J. Cotterill	59	296	750	253	7	310	150
Technion	477	234	Y. Rim	34	321	96	329	0	343	1
Technische Universität Berlin	177	288	D.C. O'Connell	62	290	134	325	6	318	46
Technische Universität Chemnitz	124	300	A. Schutz	31	326	252	312	10	289	150
Technische Universität Dresden	628	203	H.U. Wittchen	381	29	19,949	4	72	4	150
Technische Universität München	391	248	A. Kurz	292	62	4,143	72	31	95	150
Tel Aviv University	2,218	50	A. Weizman	510	10	6,114	41	38	53	150
Texas A&M University	1,912	64	C.R. Reynolds	129	194	2,017	161	13	268	114
Texas Tech	823	169	R. Cogan	50	304	283	310	6	318	85
Tohoku University	382	252	A. Yamadori	218	106	1,998	163	20	193	150
Tokyo Institute of Technology	116	305	M. Yoshida	283	69	3,635	86	39	47	150
Trinity College Dublin	731	181	M. Gill	179	136	3,113	106	34	74	150
Tsinghua University	85	310	G. Salvendy	212	112	794	251	15	246	150
Tufts University	1,015	127	P.J. Holcomb	112	212	2,134	156	25	146	117
Universidad Autonoma de Madrid	845	160	R. Colom	82	263	451	289	18	215	110
Universidad de Chile	277	272	F. Lolas	103	229	160	324	3	333	65
Universidad de Granada	845	160	R. Colom	82	263	451	289	18	215	110
Universidad del País Vasco	451	243	E. Echeburura	71	277	418	293	13	268	76
Universidad Nacional Autónoma de México ...	319	263	F. Ostrosky-Solis	71	277	471	287	10	289	150
Universidad Politecnica de Madrid	41	328	A. Lrenzo	15	334	24	337	4	328	22
Universidade de São Paulo	369	254	M.L. Brandao	164	156	1,155	215	25	146	150
Universidade Estadual de Campinas	52	323	N.J. Botega	68	281	345	301	10	289	139
Università degli Studi di Firenze	481	232	C. Faravelli	114	207	2,535	139	18	215	150
Università degli Studi di Padova	1,528	92	C. Umilta	167	152	2,942	117	27	126	150
Università Di Bologna	714	186	G.A. Fava	340	45	3,092	108	34	74	150
Università di Pisa	159	293	G. B. Cassano	427	19	4,758	61	39	47	150
Universitat Autonoma de Barcelona	550	218	R. Torrubia	48	306	512	280	12	278	99
Universitat Bielefeld	682	191	H.J. Markowitsch	243	85	3,728	84	31	95	150
Universität Bremen	519	223	F. Petermann	358	35	1,595	184	27	126	150
Universitat d'Alacant	103	307	J.M. Garcia	20	332	49	332	5	323	32

Universitat de València	901	150	M.V. Perea	89	250	653	264	23	172	58
Universität Frankfurt am Main	821	170	F. Poustka	142	183	2,257	149	26	139	150
Universität Freiburg	853	158	A. Renkl	62	290	635	265	15	246	40
Universität Hamburg	279	270	B. Dahme	112	212	499	282	15	246	150
Universität Karlsruhe	60	320	D. Fensel	94	238	1,344	198	16	236	150
Universität Leipzig	509	226	M.C. Angermeyer	402	22	4,426	67	37	61	150
Universität Munster (Westfälische Wilhelms-Un	449	245	V. Arolt	191	129	2,176	155	28	121	150
Universität Politecnica de Catalunya	35	334	J. Llabres	15	334	41	333	5	323	23
Universität Regensburg	374	253	K. Bauml	64	286	445	292	16	236	40
Universität Stuttgart	40	329	M. Schanz	32	325	198	317	8	306	35
Universität Trier	503	227	D.H. Hellhammer	160	163	4,945	59	42	41	150
Universität Tübingen	1,018	126	N.Birbaumer	383	28	7,964	22	47	27	150
Universität Wien (University of Vienna)	863	154	M. Voracek	152	171	622	266	19	205	150
Universität Zu Köln	595	210	M. Dopfner	120	203	711	256	18	215	150
Université Catholique de Louvain	828	165	X. Seron	107	222	1,056	222	17	228	150
Universite de Liege	490	230	M. Van Der Linden	241	87	2,991	114	30	101	150
Université de Montréal	1,910	65	R.E. Tremblay	274	74	3,939	77	37	61	150
Université de Nice Sophia Antipolis	186	284	C.L. Gottesmann	109	217	660	263	14	258	81
Universite Laval	964	136	R. Ladouceur	203	121	2,094	158	30	101	150
Universite Libre de Bruxelles	470	238	J. Morais	126	196	1,268	203	18	215	150
Université Paris Sorbonne	104	306	J.Y. Jaffray	56	298	321	305	4	328	74
Universite Paris-Sud 11	279	270	M. Denis	31	326	583	274	10	289	47
Université Pierre et Marie Curie	250	277	E.G. Hantouche	95	237	1,220	207	21	183	128
Universiti Malaya (University of Malaya)	48	325	H.H. Masjuki	104	228	388	296	12	278	88
University College Cork	126	299	D. Barnes	24	331	187	320	12	278	14
University College Dublin	388	250	M.F. O'Reilly	198	126	801	250	16	236	150
University College London	4,329	9	A. Furnham	575	7	7,520	28	30	101	150
University do Porto	118	303	F. Neto	61	293	328	304	10	289	150
University of Aberdeen	976	134	J.R. Crawford	131	192	2,359	147	24	158	150
University of Adelaide	776	175	T. Nettelbeck	101	231	473	286	10	289	82
University of Alabama	2,613	38	T.R. Elliot	166	155	2,388	146	25	146	150
University of Alberta	2,026	57	K.S. Courneya	224	103	2,395	145	37	61	150
University of Amsterdam	2,668	36	P.M.G. Emmelkamp	177	139	2,566	136	25	146	150
University of Antwerp	492	229	M. Maes	372	32	5,727	46	46	32	150
University of Arizona	2,529	42	J. Greenberg	120	203	1,951	166	30	101	103
University of Athens	496	228	C. Stefanis	33	323	599	271	14	258	84

University of Auckland	1,075	120	M.C. Corallis	2	344	1	343	1	341	4
University of Barcelona	885	152	E. Vieta	273	75	3,019	111	43	37	150
University of Basel	561	217	J. Margraf	90	248	1,028	226	16	236	100
University of Bath	309	264	C. Eccleston	110	215	1,803	174	29	112	150
University of Bergen	642	199	K. Hugdahl	281	72	2,934	118	30	101	150
University of Bern	462	241	R. Von Kanel	122	200	888	239	21	183	139
University of Birmingham	1,970	61	G.W. Humphreys	408	21	5,362	53	38	53	150
University of Bristol	1,339	106	D.J. Nutt	625	4	0	344	45	33	150
University of British Columbia	2,863	33	A.G. Phillips	231	96	4,628	62	32	85	150
University of Calgary	996	129	J.J. Eggermont	210	115	2,568	135	32	85	87
University of California, Berkley	2,528	43	I. Zucker	396	25	3,509	92	30	101	150
University of California, Davis	1,750	75	D.K. Simonton	89	250	612	268	12	278	10
University of California, Irvine	1,520	94	J.L. McGaugh	345	40	7,879	23	55	13	150
University of California, Los Angeles	7,772	2	P.M. Bentler	239	91	10,714	12	20	193	137
University of California, Riverside	947	141	D.C. Funder	63	288	1,759	175	17	228	37
University of California, San Diego	2,912	31	M.B. Stein	347	37	6,661	37	47	27	150
University of California, San Francisco	1,360	104	S.M. Hall	161	160	2,740	127	26	139	150
University of California, Santa Barbara	1,329	108	R.E. Mayer	60	295	1,191	210	10	289	58
University of California, Santa Cruz	451	243	B. Bridgeman	93	240	1,108	219	11	284	91
University of Cambridge	1,717	79	T.W. Robbins	580	6	39,863	1	91	1	150
University of Canterbury	600	207	S. Kemp	84	261	345	301	10	289	95
University of Cape Town	298	266	A.J. Flisher	159	165	1,373	195	22	177	150
University of Central Florida	825	166	E. Salas	173	143	3,027	110	34	74	150
University of Chicago	1,806	72	R.S. Wilson	283	69	5,404	51	45	33	150
University of Cincinnati	1,755	74	S.L. McElroy	314	52	8,805	17	65	8	150
University of Colorado at Boulder	1,396	102	S.F. Maier	308	55	7,066	35	54	14	150
University of Connecticut	1,982	60	M.T. Turvey	231	96	2,543	137	25	146	146
University of Copenhagen	331	259	E.L. Mortensen	134	187	2,218	151	20	193	150
University of Delaware	929	144	B.P. Ackerman	85	258	609	270	13	268	38
University of Dundee	713	187	N.J. Wade	167	152	530	277	11	284	54
University of Edinburgh	990	130	I.J. Deary	506	11	11,172	11	47	27	150
University of Florida	3,474	17	K.M. Heilman	488	13	6,457	38	29	112	150
University of Geneva	722	185	M. Van Der Linden	244	84	2,735	128	28	121	150
University of Georgia	1,898	66	R. Forehand	284	68	3,046	109	25	146	150
University of Ghent	1,201	112	G. Crombez	170	147	2,299	148	34	74	150
University of Glasgow	1,040	124	A.M. Burton	82	263	1,229	205	19	205	87

University of Gothenburg	83	311	K. Blennow	391	26	7,494	29	59	11	150
University of Groningen	1,657	83	J. Ormel	296	60	7,711	24	43	37	150
University of Helsinki	1,409	101	P. Naatanen	337	46	5,695	47	52	18	150
University of Hong Kong	814	171	T.M.C. Lee	83	262	882	241	19	205	150
University of Houston	979	133	J.M. Fletcher	250	82	6,317	39	38	53	150
University of Illinois	5,272	5	A.F. Kramer	209	118	3,985	76	38	53	150
University of Illinois, Chicago	2,570	39	S.E. Ullman	66	284	727	255	25	146	28
University of Indonesia	18	340	A. Ariyanto	6	343	15	341	3	333	7
University of Iowa	2,347	46	A.K. Johnson	299	59	2,690	130	28	121	150
University of Kansas	1,848	69	C.R. Snyder	122	200	1,506	190	20	193	149
University of Kentucky	1,453	98	T.R. Zentall	167	152	979	231	18	215	119
University of Lausanne	228	279	J. Rossier	33	323	207	315	9	302	150
University of Leeds	772	176	J.E. Blundell	283	69	4,298	69	38	53	150
University of Leicester	835	164	J. Maltby	109	217	521	279	16	236	65
University of Liverpool	724	184	P. Salmon	151	172	1,720	179	25	146	150
University of Ljubljana	158	294	M. Zupancic	14	337	24	337	3	333	11
University of London (Kings College of London)	14,662	1	A. Furnham	502	12	6,058	43	32	85	150
University of Manchester	2,323	48	N. Tarrier	203	121	3,853	80	35	66	150
University of Manitoba	1,193	114	B.J. Cox	200	125	3,581	87	36	64	150
University of Maryland	3,012	26	N.A. Fox	182	134	3,418	96	29	112	150
University of Maryland Baltimore County	1,666	82	M. M. Black	122	200	2,661	132	29	112	150
University of Massachusetts	1,382	103	K. Rayner	212	112	2,964	116	29	112	149
University of Melbourne	2,017	58	G.D. Barrows	402	22	2,770	124	20	193	150
University of Miami	1,471	97	N. Schneiderman	266	78	4,316	68	32	85	150
University of Michigan	4,053	11	J.H. Woods	435	18	3,878	79	29	112	150
University of Minnesota	3,657	14	W.G. Lacono	300	57	4,628	62	39	47	150
University of Missouri	2,997	27	K.J. Sher	149	174	3,099	107	29	112	150
University of Nebraska	1,504	96	G. Carlo	67	282	823	248	15	246	90
University of New Hampshire	564	215	D. Finkelhor	140	185	5,112	57	26	139	50
University of New Mexico	854	157	W.R. Miller	481	14	9,250	15	48	23	150
University of New South Wales	1,560	91	R.A. Bryant	230	98	3,009	112	38	53	150
University of North Carolina, Chapel Hill	3,761	12	C.M. Bulik	271	77	3,771	83	42	41	150
University of North Texas	660	196	R. Rogers	273	75	3,343	98	34	74	150
University of Notre Dame	729	182	E.M. Cummings	112	212	1,738	176	18	215	97
University of Nottingham	892	151	G. Underwood	90	248	621	267	16	236	80
University of Oklahoma	932	143	M.D. Mumford	116	205	977	232	20	193	121

University of Oregon	956	139	T.J. Dishion	85	258	2,466	142	26	139	84
University of Oslo	865	153	S. Friis	148	177	1,405	194	22	177	145
University of Otago	964	136	D.M. Fergusson	341	44	7,992	21	51	19	150
University of Ottawa	959	138	Z. Merali	170	147	2,884	119	36	64	150
University of Oxford	2,078	54	E.T. Rolls	342	42	8,615	19	54	14	150
University of Pennsylvania	2,986	28	R.E. Gur	291	63	8,528	20	47	27	150
University of Pittsburgh	3,600	16	M.E. Thase	513	9	20,575	3	68	6	150
University of Quebec	656	198	R. Ladouceur	201	124	1,964	165	30	101	150
University of Queensland	1,950	62	T.P.S. Oei	223	105	1,510	189	18	215	150
University of Reading	118	303	E.A. Gaffen	44	313	752	252	12	278	38
University of Rochester	1,427	100	R.M. Ryan	131	192	5,644	49	35	66	127
University of Saskatchewan	661	195	J.I.D. Campbell	48	306	526	278	14	258	34
University of Science and Technology of China	32	336	Y. Zhang	321	49	1,676	181	19	205	150
University of Sheffield	1,505	95	C. Eiser	187	132	2,177	154	23	172	150
University of South Carolina	1,564	89	R.J. Prinz	62	290	1,563	186	14	258	68
University of South Florida	1,713	80	J.K. Thompson	133	188	2,033	160	26	139	150
University of Southampton	847	159	E.J.S. Sonuga-Barke	156	166	2,459	143	31	95	150
University of Southern California	2,028	56	M. Gatz	171	145	2,519	140	29	112	150
University of St Andrews	459	242	D.I. Perrett	331	48	7,439	30	44	35	150
University of Surrey	592	211	S.E. Hampton	99	233	1,965	164	23	172	114
University of Sussex	982	131	M.R. Yeomans	74	272	696	257	18	215	70
University of Sydney	1,862	67	R.G. Menzies	73	274	732	254	15	246	73
University of Technology, Sydney	96	308	A. Craig	82	263	849	243	17	228	88
University of Tennessee Knoxville	921	146	G.M. Burghardt	94	238	663	260	10	289	99
University of Texas at Austin	2,528	43	T. Schallert	175	142	3,346	97	35	66	150
University of Tokyo	531	221	K. Kasai	110	215	1,551	187	24	158	150
University of Toronto	5,484	3	M. Moscovitch	161	160	5,039	58	39	47	150
University of Tsukuba	292	267	T. Iwaski	65	285	240	313	7	310	59
University of Twente	238	278	E. Taal	70	279	835	246	17	228	117
University of Utah	1,854	68	T.W. Smith	147	179	2,629	133	22	177	150
University of Vermont	1,213	111	M.J. Zvolensky	187	132	1,624	182	34	74	150
University of Victoria	691	189	W.M. Roth	228	100	1,109	218	24	158	109
University of Virginia	1,745	77	R.C. Pianta	150	173	1,356	196	25	146	135
University of Warwick	622	204	S. Joseph	155	168	2,188	152	21	183	139
University of Washington	5,419	4	E.F. Loftus	171	145	2,679	131	21	183	150
University of Waterloo	1,527	93	D. Besner	105	226	1,007	227	16	236	68

University of Western Australia	1,054	122	S. Lewandowsky	59	296	459	288	15	246	38
University of Western Ontario	2,569	40	J.P. Rushton	132	190	1,100	221	14	258	82
University of Wisconsin	3,123	22	R.J. Davidson	256	81	8,621	18	51	19	150
University of Wollongong	343	257	R.J. Barry	196	128	1,418	193	27	126	135
University of York	861	155	A.W. Ellis	139	186	2,114	157	22	177	121
University of Zurich	683	190	H.C. Steinhausen	290	64	2,543	137	24	158	150
Univesitas Gadjah Mada	10	344	A. Winkvist	56	298	1,121	217	19	205	118
Uppsala University	825	166	G. Andersson	176	140	1,276	202	27	126	150
Utah State	389	249	J.C.S. Breitner	191	129	5,635	50	41	44	150
Utrecht University	3,079	23	H. Van Engeland	241	87	3,850	81	39	47	150
Vanderbilt University	1,995	59	J.H. Kaas	346	38	5,381	52	34	74	150
Victoria University of Wellington	37	331	S. Schenk	72	275	1,287	201	16	236	80
Vienna University of Technology	47	327	K. Hornik	88	255	7,652	26	22	177	150
Virginia Polytechnic Institute	825	166	T.H. Ollendick	208	119	3,187	103	24	158	150
Vrije Universiteit, Brussels	6	346	M. Bonduelle	92	243	2,013	162	28	121	150
VU University Amsterdam	2,809	34	D.I. Boomsma	358	35	4,854	60	43	37	150
Wageningen University	180	286	J.E.R. Frijters	44	313	1,903	169	0	343	29
Wake Forest University	571	213	W.J. Rejeski	108	221	2,873	120	31	95	150
Waseda University	175	290	A. Takanishi	243	85	903	236	15	246	150
Washington State University	803	172	J.W. Wright	203	121	2,783	121	24	158	150
Washington University in St. Louis	1,636	86	K.K. Bucholz	214	108	5,171	55	49	22	150
Wayne State University	2,029	55	M.A. Lumley	92	243	1,521	188	23	172	150
West Virginia University	769	177	G.H. Eifert	78	270	988	229	24	158	106
Yale University	3,201	21	C.M. Grilo	229	99	3,121	105	38	53	150
Yonsei University	262	275	J.J. Kim	588	5	7,322	31	40	46	150
York University	1,749	76	R.J. Burke	216	107	1,225	206	16	236	150
Zhejiang University	55	321	W.W. Wang	525	8	2,709	129	24	158	150

Health Professions Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	148	201	R.Hari	301	44	7,650	20	48	14	150
Aarhus University	588	91	J.P. Blonde	177	115	2,074	111	28	76	150
Arizona State University	17	298	D.R. Hodge	94	200	1,103	164	19	135	112
Ateneo de Manila University	2	341	E. Bagarinao	19	318	92	302	6	281	31
Auburn University	336	140	B.G. Felkey	82	220	160	288	6	281	26
Australian National University	95	229	S.R. Taylor	155	133	5,005	37	10	242	150
Boston College	129	209	S.M. Bruce	14	323	12	330	2	319	15
Boston University	1,846	14	H.E Stanley	480	19	10,348	15	57	10	150
Brandeis University	210	171	M. Rosbash	253	64	5,621	29	49	13	150
Brigham Young University	376	130	D.O. Draper	53	266	288	261	11	226	72
Brown University	636	83	V. Mor	313	42	7,460	21	47	15	150
California Institute of Technology (Calt...	70	240		0	340	0	337	0	329	0
Cardiff University	670	73	S. Hanton	47	278	346	250	17	153	32
Carnegie Mellon University	162	191	A.P. Koretsky	176	117	3,798	58	31	61	150
Case Western Reserve University	1,185	39	J.L. Duerk	176	117	1,982	117	30	70	150
Chalmers University of Technology	66	245	L. Sandsjo	34	295	364	248	10	242	65
Charles University	2	341	V. Bencko	209	95	932	176	14	185	150
Chinese University of Hong Kong	6	327	D.R. Thompson	294	45	3,973	52	32	57	150
Chulalongkorn University	102	225	V. Wiwanitkit	645	10	733	194	9	254	120
City University of Hong Kong	107	221	P. K.N. Yu	87	211	485	229	16	167	51
City University of New York	16	300	K.M. Nokes	63	252	510	224	11	226	111
Colorado State University	280	156	R.F. Reiser	41	288	99	300	5	290	41
Columbia University	2,195	10	E.R. Kandal	448	22	17,020	7	77	1	150
Cornell University	1,500	22	C.I. Henschke	245	67	3,982	51	34	49	150
Curtin University of Technology	337	139	P.B. O'sullivan	64	250	769	190	17	153	110
Dalhousie University	460	115	W.D. Stanish	91	207	1,048	168	14	185	150
Dartmouth College	1,002	51	R.E. Drake	435	23	6,146	27	46	16	150
Delft University of Technology	322	144	A.J.J. Bos	112	175	654	205	10	242	150
Drexel University	694	70	J.D. Swartz	109	178	475	232	6	281	128
Duke University	3,619	5	J.M. Provenzale	243	70	5,197	33	45	18	150
Durham University	83	234		0	340	0	337	0	329	0
Ecole Normale Supérieure de Lyon	2	341	T. Nakamura	88	210	752	192	17	153	150
École Normale Supérieure, Paris	13	309	V. Croquette	81	222	2,220	100	27	81	128
École Polytechnique	17	298		0	340	0	337	0	329	0

Ecole Polytechnique Fédérale de Lausanne	101	228	M. Unser	347	33	4,859	38	31	61	150
Eindhoven University of Technology	113	217	K.Nicolay	241	72	4,278	45	35	47	150
Emory University	1,639	18	M.E. Berardino	180	113	1,982	117	2	319	150
Erasmus University Rotterdam	1,484	26	E.P. Krenning	410	26	6,769	23	50	12	150
ETH Zurich (Swiss Federal Institute of Technology)	339	138	P. Boesiger	28	303	5,124	34	42	23	150
Florida International University	128	210	M.A. Cleary	11	326	32	322	3	311	14
Florida State University	11	315	C.R. Figley	60	255	350	249	11	226	49
Freie Universität Berlin	466	112	R.Felix	1,036	3	10,489	13	41	28	150
Friedrich Alexander Universität Erlangen Nürnberg	754	67	R. Sauer	559	14	689	201	39	35	150
Fudan University	134	205	W.Q. Huang	1,100	1	12,280	12	52	11	150
Georg August Universität Göttingen	546	102	F. Leinsenring	94	200	563	216	11	226	142
George Mason University	10	316	P.R. Canelosi	22	314	47	316	4	302	14
George Washington University	739	68	B. Fernhall	142	151	915	179	17	153	150
Georgetown University	970	52	R.K. Zeman	146	146	1,994	116	10	242	150
Georgia Institute of Technology	216	168	N.E. Hertel	117	173	258	270	8	263	150
Georgia State University	293	151	R.A. Sevcik	53	266	503	225	10	242	73
Goteborg University	6	327	L. Barregard	97	196	910	181	14	185	150
Harvard University	464	113	W.M. Davis	237	75	3,363	71	33	52	150
Hebrew University of Jerusalem	328	142	N. Katz	62	253	535	220	14	185	105
Heidelberg Universität	1,024	48	K. Sartor	258	59	3,969	53	33	52	150
Hokkaido University	494	109	N. Tamaki	481	18	3,934	54	31	61	150
Hong Kong Polytechnic University	665	74	P. Cho	101	189	572	214	15	174	101
Hong Kong University of Science & Techno...	43	266	K.M. Ko	91	207	669	204	17	153	119
Humboldt-Universität zu Berlin	561	99	R. Felix	1,036	3	10,446	14	41	28	150
Imperial College London	624	86	G.Z. Yang	374	30	2,063	113	25	97	150
Indian Institute of Technology Bombay (I...	18	296	R. Manchanda	27	305	56	309	5	290	21
Indian Institute of Technology Delhi (II...	38	270	P. Vasdudevan	145	149	1,027	169	16	167	138
Indian Institute of Technology Kanpur (I...	21	289	R.K. Gupta	349	32	1,975	119	26	88	150
Indiana University Bloomington	1,146	44	J.S. Skinner	204	100	4,334	42	40	30	150
Indiana University Indianapolis	1,216	36	R.B. Gunderman	207	97	496	228	11	226	150
Iowa State University	211	170	G.J. Welk	58	257	1,456	141	20	122	149
Johns Hopkins University	4,932	1	E.K. Fishman	398	28	6,147	26	44	19	150
Kansas State University	243	161	D.C. Poole	211	91	3,065	78	29	72	150
Katholieke Universiteit Leuven	674	72	P. Hespel	108	180	1,492	138	20	122	150
Keio University	308	148	A. Kubo	522	17	4,771	39	30	70	150

King Fahd University of Petroleum & Minerals	16	300	A. Aksoy	25	306	55	310	3	311	33
King Saud University	95	229	S.A. Al-Shammari	47	278	287	262	6	281	64
Kobe University	301	149	K. Sugimura	235	78	1,390	146	21	116	150
Korea Advanced Institute of Science & Technology	73	238	Z.H. Cho	207	97	1,334	151	9	254	150
Korea University	107	221	J.A. Choi	65	247	618	208	12	211	150
Kyoto University	1,300	34	J. Konishi	887	7	13,102	10	43	21	150
Kyushu University	653	77	H. Honda	557	15	4,628	40	28	76	150
La Trobe University	508	106	V.J. Robertson	65	247	596	210	13	201	68
Lancaster University	142	203	E.B. Emerson	120	171	1,370	148	24	100	138
Leiden University	1,137	45	A. De Roos	372	31	5,029	36	42	23	150
Linköping University	809	63	J. Gillquist	182	109	3,484	66	11	226	113
London School of Economics and Political Scie	105	223	E.A. Mossialos	84	217	578	213	14	185	63
Loughborough University	564	98	C. Williams	125	164	1,159	162	18	146	150
Louisiana State University	32	275	P. Synder	43	285	437	235	12	211	115
Ludwig-Maximilians-Universität München	1,207	37	M. Reiser	1,062	2	19,695	4	61	7	150
Lund University	1,380	30	S. Holtas	166	124	2,101	109	19	135	150
Maastricht University	1,100	47	H. Kuipers	136	157	2,221	99	18	146	150
Macquarie University	169	187	H. Polland	54	265	164	286	8	263	54
Mahidol University	160	193	S. Pongpech	23	311	78	304	4	302	49
Masaryk University	34	273	M. Haki	17	321	9	332	1	324	38
Massachusetts Institute of Technology	543	103	A. Rich	337	35	5,872	28	32	57	150
McGill University	1,877	12	J.H. Bates	205	99	2,168	104	27	81	150
McMaster University	1,488	24	O. Bar-Or	166	124	2,246	98	20	122	150
Michigan State University	716	69	R.E. Lenski	160	127	3,733	60	38	38	150
Michigan Technological University	23	285	W.H. Cooke	59	256	868	184	17	153	117
Monash University	508	106	L. Roller	154	134	37	318	3	311	24
Montana State University	68	242	T.J. Douglas	118	172	2,861	83	31	61	150
Moscow State University	42	267	V.E. Tarasov	86	214	209	273	16	167	3
Nagoya University	458	117	T. Ishigak	234	80	1,950	120	23	104	150
Nanjing University	30	276	L. Wang	153	139	1,055	167	19	135	150
Nanyang Technological University	210	171	E.Y.K. Ng	146	146	319	256	12	211	145
National Taiwan University	620	88	F.J. Hsieh	231	82	2,070	112	25	97	150
National Tsing Hua University	326	143	K.S. Chuang	64	250	291	259	7	275	117
National University of Ireland, Galway	48	262	T. Dillion	8	332	31	324	0	329	6
National University of Singapore	272	157	J. Thumboo	109	178	895	182	18	146	150
New Mexico State University	74	237		0	340	0	337	0	329	0

New York University	1,945	11	A.J. Megibow	154	134	4,315	43	19	135	150
Newcastle University	295	150	B.J. Dodd	77	229	695	200	13	201	70
North Carolina State University	160	193	D.E. Thrall	172	120	1,476	140	20	122	150
Northeastern University	283	154	R.W. Schlosser	40	290	291	259	12	211	41
Northwestern University	1,802	15	D. Li.	123	168	1,572	133	22	110	150
Norwegian University of Science & Technology	333	141	J. Helgerud	52	269	721	195	16	167	84
Ohio State University	1,799	16	D.W. Chakeres	105	183	1,389	147	17	153	150
Oklahoma State University	169	187	S.W.S. McKeever	160	127	1,229	154	21	116	150
Open University UK	81	235		0	340	0	337	0	329	0
Oregon State University	256	158	B.J. Cardinal	83	218	502	226	14	185	89
Osaka University	768	66	H. Nakamura	420	24	4,223	46	34	49	150
Peking University	147	202	S.L. Bao	58	257	105	296	5	290	135
Pennsylvania State University	1,580	20	K.D. Hopper	156	131	2,584	88	19	135	150
Pohang University of Science And Technology	18	296	S. Kim	129	162	879	183	14	185	150
Portland State University	161	192	P. Backler	32	297	154	289	8	263	5
Princeton University	110	219	U.E. Reinhardt	182	109	985	172	17	153	150
Purdue University	694	70	L.B. Leonard	156	131	973	173	16	167	106
Queen's University	542	104	M.E Tschkosky	49	275	804	187	19	135	69
Queen's University of Belfast	181	184	C.A. Mahoney	12	325	54	311	0	329	16
Queensland University of Technology	438	123	D.A. Atchison	144	150	964	175	17	153	103
Radboud University, Nijmegen	1,135	46	W.J.G. Oyen	381	29	4,145	48	37	41	150
Rensselaer Polytechnic Institute	132	207	X.G. Xu	48	276	104	297	5	290	66
Rheinisch Westfalische Technische Hochschule Aach	632	85	R.W. Gunther	399	27	3,065	78	23	104	150
Rheinische Friedrich Wilhelms Universitat Bonn	459	116	H.J. Biersack	344	34	2,260	96	20	122	150
Rice University	118	215	R.R. Richards-Kortum	230	83	3,309	74	40	30	150
Rochester Institute of Technology	102	225	J.P. Hornak	34	295	205	274	4	302	47
Royal Institute of Technology, KTH	79	236	J. Sundberg	138	155	769	190	12	211	138
Royal Melbourne Institute of Technology	193	181	J.A. Hawley	174	119	2,644	86	34	49	150
Rutgers	477	111	D. Mechanic	200	103	4,399	41	29	72	150
Saint-Petersburg State University	7	323	L.N. Moskvina	194	105	187	278	7	275	150
San Diego State University	464	113	J.F. Sallis	319	41	14,092	9	64	2	150
Sapienza University of Rome	0	348		0	340	0	337	0	329	0
Sciences Po Paris	3	339	P. Castrel	11	326	53	312	5	290	27
Seoul National University	1,173	41	B.I. Choi	286	46	3,040	80	27	81	150
Shanghai Jiao Tong University	172	185	J.H. Wang	468	21	2,507	92	26	88	150
Simon Fraser University	200	176	E.W. Banister	69	240	615	209	6	281	69

Stanford University	3,274	7	D.R. Enzmann	214	89	3,393	69	9	254	150
State University of New York Buffalo	922	56	K.J. Ottenbacher	258	59	3,141	75	26	88	150
Stockholm University	287	152	A. Brahme	182	109	1,949	121	19	135	150
Stony Brook University	439	122	E. Wimmer	253	64	3,896	55	32	57	150
Syracuse University	15	303	M.P. Carey	210	92	3,471	67	33	52	150
Tartu University (University of Tartu)	224	166	T. Jurimae	102	187	428	240	14	185	81
Technical University of Denmark	63	246	E. Mosekilde	169	123	1,199	159	20	122	150
Technion	347	135	O. Israel	154	134	1,854	123	27	81	150
Technische Universität Berlin	68	242	R. Busse	82	220	801	188	12	211	108
Technische Universität Chemnitz	19	292	T. Sterzing	7	333	3	334	1	324	9
Technische Universität Dresden	230	164	B. Dorschel	58	257	201	275	13	201	68
Technische Universität München	782	65	M. Schwaiger	560	13	17,201	6	61	7	150
Tel Aviv University	880	59	G. Navon	203	101	1,563	134	17	153	150
Texas A&M University	655	76	C.H. Shea	87	211	567	215	20	122	60
Texas Tech	12	314	A. Green	19	318	46	317	4	302	45
Tohoku University	457	118	T. Ido	10	329	4	333	1	324	49
Tokyo Institute of Technology	60	250	M. Yoshida	283	47	3,635	62	39	35	150
Trinity College Dublin	346	136	W.C. Torreggiani	210	92	719	196	14	185	150
Tsinghua University	94	231	J. Bai	412	25	1,151	163	16	167	150
Tufts University	585	93	K.I. Kolpan	24	308	0	337	0	329	1
Universidad Autonoma de Madrid	151	197	M.G. Nistal	262	55	1,641	131	15	174	150
Universidad de Chile	68	242	R. Latorre	134	158	3,034	82	23	104	150
Universidad de Granada	151	197	M.G. Nistal	262	55	1,641	131	15	174	150
Universidad del País Vasco	72	239	I. Mujika	48	276	986	171	22	110	82
Universidad Nacional Autónoma de México ...	28	279	C. Roldan-Henriquez	22	314	293	258	12	211	124
Universidad Politecnica de Madrid	102	225	V. Maojo	57	260	211	272	11	226	111
Universidade de São Paulo	960	54	G.G. Cerri	232	81	971	174	15	174	150
Universidade Estadual de Campinas	236	162	F. Cendes	282	48	3,551	64	33	52	150
Università degli Studi di Firenze	366	132	M. Mascaldi	181	112	1,819	126	22	110	150
Università degli Studi di Padova	436	124	D. Rubello	243	70	2,167	105	26	88	150
Università Di Bologna	311	147	G. Pili	106	181	1,178	160	15	174	150
Università di Pisa	1	344	G. Gritti	76	230	115	295	7	275	147
Universitat Autonoma de Barcelona	364	133	T. Franquet	95	198	1,235	153	21	116	150
Universitat Bielefeld	88	232	M. Brambring	23	311	102	298	3	311	13
Universität Bremen	138	204	W. Dreher	57	260	562	217	15	174	79
Universitat d'Alacant	49	259	J.A Perez	6	335	1	336	1	324	20

Universitat de València	236	162	F.M. Bonilla	221	87	1,489	139	17	153	150
Universität Frankfurt am Main	830	61	T. Vogl	278	49	4,005	50	37	41	150
Universität Freiburg	659	75	M. Schumacher	527	16	0	337	40	30	150
Universität Hamburg	228	165	E. Dikomey	71	237	705	199	18	146	98
Universität Karlsruhe	45	264	R. Bolte	10	329	35	319	5	290	26
Universität Leipzig	314	146	T.M. Kahn	236	76	2,192	101	22	110	150
Universität Munster (Westfälische Wilhelms-Un	818	62	P.E. Peters	259	58	2,190	102	12	211	150
Universität Politecnica de Catalunya	86	233	M. Ginjaume	30	301	174	283	8	263	94
Universität Regensburg	391	128	S. Feuerbach	239	73	2,167	105	27	81	150
Universität Stuttgart	37	271	M. Schanz	32	297	198	276	8	263	35
Universität Trier	13	309	G. Krampen	69	240	136	292	5	290	45
Universität Tübingen	923	55	C.D. Clausson	566	12	8,341	18	40	30	150
Universität Wien (University of Vienna)	1,003	50	H. Imhof	262	55	2,518	91	26	88	150
Universität Zu Köln	604	89	H. Schicha	325	39	3,039	81	26	88	150
Université Catholique de Louvain	352	134	B. Gallez	128	163	1,224	155	23	104	150
Universite de Liege	212	169	F. Pirnay	22	314	132	293	5	290	32
Université de Montréal	869	60	B. Charlin	51	272	279	263	11	226	114
Université de Nice Sophia Antipolis	127	211	P. Iaconi	85	216	411	241	11	226	107
Universite Laval	444	121	C. Bouchard	701	9	29,931	2	63	4	150
Universite Libre de Bruxelles	571	96	M.J. Struelens	245	67	4,008	49	36	44	150
Université Paris Sorbonne	1	344	S. Plane	4	339	0	337	0	329	5
Universite Paris-Sud 11	202	174		0	340	0	337	0	329	0
Université Pierre et Marie Curie	198	178	B. Blondel	159	129	1,442	143	20	122	150
Universiti Malaya (University of Malaya)	110	219	B.J.J. Abdullah	65	247	259	269	8	263	11
University College Cork	49	259	J. Sweeney	225	85	5,217	32	40	30	150
University College Dublin	198	178	E.J. Conway	39	291	11	331	0	329	25
University College London	1,604	19	G. Burnstock	1,019	5	32,401	1	62	5	150
University do Porto	196	180	J. Mota	78	226	429	239	15	174	150
University of Aberdeen	572	95	V. Hundley	45	283	379	246	11	226	91
University of Adelaide	186	183	R.K. Morton	22	314	50	314	0	329	24
University of Alabama	1,692	17	L.I. Berland	94	200	1,394	145	8	263	148
University of Alberta	1,338	32	O. Yonge	73	232	264	267	9	254	65
University of Amsterdam	1,153	42	J. Stoker	177	115	2,530	90	31	61	150
University of Antwerp	554	101	R. Remmen	24	308	143	291	6	281	52
University of Arizona	1,404	29	T.B. Hunter	130	161	525	222	9	254	150
University of Athens	574	94	A. Gouliamos	138	155	923	178	13	201	150

University of Auckland	652	78	J. Cronin	73	232	322	255	12	211	70
University of Barcelona	283	154	J. Pavia	66	245	433	236	10	242	150
University of Basel	525	105	K. Scheffler	140	153	1,829	125	26	88	150
University of Bath	53	254	E. Kuhlmann	7	333	21	326	2	319	5
University of Bergen	5	330	B.E. Moen	140	153	645	206	14	185	150
University of Bern	393	127	C. Boesch	125	164	2,259	97	28	76	150
University of Birmingham	916	57	J.H. Fremlin	154	134	183	279	0	329	110
University of Bristol	373	131	D.L. Henshaw	124	166	532	221	9	254	129
University of British Columbia	30	276	K. Ho	42	287	102	298	5	290	111
University of Calgary	20	290	J. Lockyer	105	183	718	197	15	174	150
University of California, Berkley	26	281	S.M. Shortell	258	59	3,561	63	26	88	150
University of California, Davis	160	193	D.A. Moore	45	283	332	252	9	254	65
University of California, Irvine	8	322	J. Shapiro	102	187	596	210	13	201	86
University of California, Los Angeles	3,887	3	L.W. Bassett	245	67	4,300	44	22	110	150
University of California, Riverside	163	190	J. Blacher	69	240	713	198	17	153	61
University of California, San Diego	10	316	R.M. Kaplan	327	38	6,283	25	36	44	150
University of California, San Francisco	61	249	K. Grumbach	151	141	5,057	35	29	72	150
University of California, Santa Barbara	4	335	D.R. Atkinson	46	281	745	193	12	211	57
University of California, Santa Cruz	29	278		0	340	0	337	0	329	0
University of Cambridge	565	97		0	340	0	337	0	329	0
University of Canterbury	132	207	G.T. Gillon	32	297	181	280	8	263	22
University of Cape Town	117	216	L. London	87	211	390	245	11	226	150
University of Central Florida	189	182	R.F. Zoeller	43	285	402	243	13	201	127
University of Chicago	23	285	M.K. Wymia	92	204	620	207	12	211	136
University of Cincinnati	1,367	31	E.B. Silberstein	154	134	1,012	170	15	174	150
University of Colorado at Boulder	5	330	M.W. Frame	9	331	34	320	3	311	5
University of Connecticut	62	247	R.W. Bohannon	328	36	3,648	61	19	135	150
University of Copenhagen	125	212	J.M. Traulsen	35	293	78	304	5	290	21
University of Delaware	5	330	G.H. Wade	6	335	61	308	3	311	8
University of Dundee	286	153	D.M.J. Lilley	239	73	3,757	59	37	41	150
University of Edinburgh	149	199	R. Mander	50	273	72	306	4	302	21
University of Florida	2,254	9	I.F. Hawkins	151	141	1,082	166	13	201	150
University of Geneva	7	323	A. Perrier	236	76	2,771	84	33	52	150
University of Georgia	13	309	R.M. Cervero	28	303	222	271	7	275	32
University of Ghent	558	100	H.M.A. Thierens	193	106	1,932	122	26	88	150
University of Glasgow	485	110	R.W. Pickford	50	273	19	328	0	329	13

University of Gothenburg	154	196	G. Grimby	266	54	4,172	47	22	110	150
University of Groningen	7	323	J.W. Groothoff	214	89	1,800	127	25	97	150
University of Helsinki	455	120	U.M. Kujala	95	198	1,355	149	20	122	150
University of Hong Kong	435	125	P.L. Khong	101	189	1,207	157	20	122	150
University of Houston	380	129	J.P.G. Bergmanson	90	209	433	236	11	226	108
University of Illinois	1,148	43	G.A. Miller	73	232	2	335	0	329	0
University of Illinois, Chicago	1,552	21	M.F. Mafee	235	78	2,089	110	18	146	150
University of Indonesia	9	319	A. Gani	5	338	32	322	2	319	11
University of Iowa	34	273	F.D. Wolinsky	179	114	3,826	56	27	81	150
University of Kansas	20	290	E. Ablah	46	281	88	303	5	290	88
University of Kentucky	57	253	C.H. Griffith	71	237	483	230	14	185	90
University of Lausanne	5	330	L. Benaroyo	15	322	20	327	3	311	20
University of Leeds	19	292	J. Sandars	83	218	172	284	7	275	61
University of Leicester	218	167	M.C.R. Symons	857	8	3,320	73	12	211	150
University of Liverpool	412	126	D.A. Brodie	100	192	1,170	161	14	185	121
University of Ljubljana	250	159	F. Pernus	81	222	516	223	14	185	53
University of London (Kings College of London)	4,502	2	K.H. Nicolaidis	892	6	25,807	3	64	2	150
University of Manchester	1,175	40	A.G. Lyne	254	63	3,550	65	42	23	150
University of Manitoba	652	78	N.P. Roos	122	170	1,684	129	13	201	124
University of Maryland	586	92	B.F. Hurley	100	192	3,085	77	27	81	150
University of Maryland Baltimore County	1,412	28	C.S. White	146	146	2,140	108	23	104	150
University of Massachusetts	19	292	R.F. Zoeller	35	293	269	266	11	226	98
University of Melbourne	962	53	M. Hargreaves	133	160	2,358	94	28	76	150
University of Miami	1,264	35	R.M. Quencer	153	139	2,005	115	10	242	150
University of Michigan	59	252	L.D. Gruppen	92	204	915	179	17	153	150
University of Minnesota	52	255	J.C. Schommer	98	195	473	233	12	211	105
University of Missouri	52	255	K.J. Hagglund	56	263	840	186	11	226	128
University of Nebraska	344	137	T.J. Housch	189	107	1,204	158	21	116	131
University of New Hampshire	166	189	E.E. Swartz	23	311	64	307	7	275	32
University of New Mexico	14	305	S. Kalishman	24	308	188	277	4	302	87
University of New South Wales	14	305	J. Braithwaite	106	181	590	212	14	185	105
University of North Carolina, Chapel Hill	2,287	8	O. Smithies	273	51	18,441	5	46	16	150
University of North Texas	5	330	J.C. Licciardone	61	254	273	265	9	254	61
University of Notre Dame	36	272	A.L. Barabasi	170	122	15,860	8	58	9	150
University of Nottingham	19	292	P. Bissell	55	264	319	256	11	226	68
University of Oklahoma	14	305	H.F. Stein	80	224	277	264	6	281	54

University of Oregon	1,315	33	M.I. Posner	195	104	12,847	11	39	35	150
University of Oslo	15	303	I.B. Corless	73	232	483	230	12	211	150
University of Otago	507	108	S.J. Sullivan	68	243	393	244	10	242	95
University of Ottawa	13	309	I.D. Graham	255	62	7,359	22	42	23	150
University of Oxford	793	64	S. Neubauer	272	52	3,821	57	38	38	150
University of Pennsylvania	41	268	D.R. Hodge	94	200	1,102	165	18	146	112
University of Pittsburgh	51	258	R.M. Arnold	277	50	3,092	76	29	72	150
University of Quebec	7	323	F. Legara	70	239	403	242	12	211	150
University of Queensland	45	264	S. Rodger	86	214	324	254	9	254	107
University of Reading	111	218	S.J. Foley	73	232	50	314	0	329	76
University of Rochester	22	287	R.M. Epstein	113	174	2,471	93	24	100	150
University of Saskatchewan	319	145	P.D. Chilibeck	78	226	926	177	19	135	111
University of Science and Technology of China	27	280	Y. Zhang	321	40	1,676	130	19	135	150
University of Sheffield	604	89	D.W. Hughes	189	107	848	185	14	185	150
University of South Carolina	623	87	R.R. Pate	210	92	7,907	19	43	21	150
University of South Florida	24	283	K. Black	19	318	116	294	4	302	17
University of Southampton	60	250	S. Payne	124	166	1,521	136	20	122	150
University of Southern California	62	247	S. Sussman	203	101	2,147	107	24	100	150
University of St Andrews	6	327	H.T.O. Davies	328	36	5,329	30	44	19	150
University of Surrey	9	319	P. Smith	32	297	162	287	8	263	46
University of Sussex	125	212	A.R. Lehmann	250	66	5,248	31	42	23	150
University of Sydney	1,500	22	M. Nslow	101	189	346	250	16	167	93
University of Technology, Sydney	133	206	A.J. Coutts	52	269	367	247	10	242	77
University of Tennessee Knoxville	457	118	D.R. Bassett	158	130	3,407	68	36	44	150
University of Texas at Austin	16	300	R.R. McDaniel	66	245	687	202	18	146	77
University of Tokyo	3	339	H. Aiga	11	326	33	321	3	311	17
University of Toronto	3,400	6	R.J. Shephard	644	11	8,351	17	31	61	150
University of Tsukuba	1	344	E. Yokoyama	104	185	263	268	8	263	150
University of Twente	201	175	H.B.K. Boom	100	192	538	219	8	263	106
University of Utah	1,854	13	H.R. Harnsberger	148	144	1,733	128	15	174	150
University of Vermont	638	81	B.D. Beynnon	162	126	3,355	72	31	61	150
University of Victoria	10	316	C. Benoit	29	302	94	301	6	281	43
University of Virginia	14	305	P.A. Kulbok	25	306	178	282	6	281	39
University of Warwick	125	212	G. Lindsay	38	292	166	285	10	242	38
University of Washington	3,667	4	L.A. Mack	134	158	2,613	87	4	302	150
University of Waterloo	641	80	R. Hughson	267	53	3,373	70	32	57	150

University of Western Australia	637	82	B. Dawson	171	121	1,289	152	19	135	150
University of Western Ontario	1,201	38	B.K. Rutt	150	143	2,666	85	31	61	150
University of Wisconsin	69	241	R.H. Laessig	112	175	678	203	10	242	136
University of Wollongong	4	335	A. Rosen	52	269	561	218	10	242	150
University of York	13	309	S. Brealey	41	288	179	281	8	263	93
University of Zurich	4	335	L.M. Bachmann	123	168	1,337	150	20	122	150
Univesitas Gadjah Mada	4	335	A. Somanathan	6	335	145	290	5	290	35
Uppsala University	883	58	H.K. Ahlstrom	148	144	2,049	114	21	116	150
Utah State	149	199	R.B. Gillam	47	278	497	227	15	174	61
Utrecht University	1,449	27	M.A. Viergever	313	42	6,626	24	38	38	150
Vanderbilt University	9	319	P.I. Buerhaus	96	197	1,514	137	21	116	74
Victoria University of Wellington	39	269	J. Sigafos	57	260	53	312	4	302	90
Vienna University of Technology	49	259	K. Unterrainer	218	88	1,404	144	24	100	150
Virginia Polytechnic Institute	199	177	S.M. Duma	141	152	329	253	13	201	125
Vrije Universiteit, Brussels	1	344	Y. Vandenplas	13	324	28	325	2	319	49
VU University Amsterdam	1,488	24	F. Barkhof	478	20	9,733	16	62	5	150
Wageningen University	52	255	H. Kromhout	208	96	2,188	103	28	76	150
Wake Forest University	22	287	M.A. Hall	229	84	2,346	95	31	61	150
Waseda University	206	173	T. Fukunaga	222	86	2,531	89	35	47	150
Washington State University	171	186	P.D. Gollnick	67	244	1,852	124	0	329	69
Washington University in St. Louis	25	282	E.M. Andresen	80	224	1,547	135	20	122	135
Wayne State University	1,023	49	J.C. ViVan	78	226	16	329	1	324	6
West Virginia University	24	283	R.L. Seip	76	230	1,224	155	14	185	150
Yale University	47	263	M.A. Hoge	53	266	432	238	11	226	150
Yonsei University	635	84	K.W. Kim	112	175	787	189	17	153	150
York University	244	160	D.A. Hood	92	204	1,450	142	23	104	94
Zhejiang University	103	224	X. Wang	104	185	441	234	13	201	150

Decision Sciences Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	322	159	R.P. Hamalainen	98	132	693	136	15	100	61
Aarhus University	222	219	K.G. Grunert	65	190	678	140	17	81	87
Arizona State University	803	38	D.C. Montgomery	198	55	1,709	47	21	45	150
Ateneo de Manila University	0	347		0	343	0	341	0	321	0
Auburn University	372	134	A.E. Smith	121	105	1,134	84	17	81	96
Australian National University	374	133	P. Hall	289	27	2,165	34	10	178	150
Boston College	112	305	J.L. Ringuest	42	273	179	263	6	265	20
Boston University	321	160	H.E. Stanley	480	10	10,348	17	57	15	150
Brandeis University	72	329	J.E. Haber	252	40	6,952	21	53	17	150
Brigham Young University	136	290	J.V. Hansen	57	219	330	204	9	192	32
Brown University	248	207	A. Landy	99	128	1,375	63	16	91	110
California Institute of Technology (Calt...)	210	227	L.E. Hood	271	34	7,259	20	12	148	150
Cardiff University	588	71	S.M. Disney	58	216	730	131	18	69	42
Carnegie Mellon University	890	31	E. Balas	74	176	1,297	68	10	178	53
Case Western Reserve University	388	127	B. Malakooti	4	339	4	338	1	315	4
Chalmers University of Technology	213	225	M. Patriksson	49	241	359	200	11	166	36
Charles University	179	252	M. Huskova	65	190	137	287	6	265	51
Chinese University of Hong Kong	757	44	D.S. Li	174	70	1,055	95	18	69	150
Chulalongkorn University	41	336	P. Charusiri	25	310	83	308	7	242	57
City University of Hong Kong	782	41	G.R. Chen	679	5	14,882	10	62	9	150
City University of New York	173	256	M.S. Brown	13	333	31	331	2	306	7
Colorado State University	284	182	R.A. Davis	58	216	585	153	13	132	48
Columbia University	848	35	E.R. Kandal	448	13	17,020	7	77	6	150
Cornell University	1,449	7	H.A. Scheraga	1,020	1	21,551	5	47	21	150
Curtin University of Technology	160	268	K.L. Teo	301	22	1,254	72	19	60	150
Dalhousie University	178	254	Q.M. He	62	205	174	268	9	192	49
Dartmouth College	233	215	A.Gunasekaran	158	80	1,484	57	18	69	118
Delft University of Technology	401	120	C. Roos	63	201	358	201	11	166	51
Drexel University	275	186	M. Igbaria	65	190	1,315	66	17	81	53
Duke University	505	90	R.J. Lefkowitz	752	4	43,621	4	93	3	150
Durham University	187	245	D. Boulter	198	55	1,463	58	3	300	150
Ecole Normale Supérieure de Lyon	40	337		0	343	0	341	0	321	0
École Normale Supérieure, Paris	88	321	F. Baccelli	109	119	802	123	14	113	86
École Polytechnique	158	271	P. Bastiste	54	228	195	252	9	192	57

Ecole Polytechnique Fédérale de Lausanne	263	194	D. DeWerra	129	101	533	165	8	218	95
Eindhoven University of Technology	585	72	I.J.B.F. Adan	66	187	251	232	9	192	55
Emory University	144	282	E. Bendoly	32	297	237	240	11	166	34
Erasmus University Rotterdam	652	59	R. Dekker	82	170	1,060	94	18	69	106
ETH Zurich (Swiss Federal Institute of Technology)	401	120	J. Nosberger	102	124	1,131	85	22	40	122
Florida International University	352	142	C.P. Koulamas	93	142	678	140	12	148	35
Florida State University	438	108	A. Kandel	253	38	1,408	62	18	69	150
Freie Universität Berlin	191	242	V.A. Erdmann	23	316	80	309	0	321	40
Friedrich Alexander Universität Erlangen Nürnberg	217	222	J. Jahn	28	306	171	273	8	218	19
Fudan University	271	189	D.L. Zhu	64	198	431	186	9	192	71
Georg August Universität Göttingen	145	281	M.M. Kocker	184	65	1,247	73	13	132	150
George Mason University	323	158	C.M. Harris	23	316	94	302	2	306	19
George Washington University	361	139	S. Kotz	235	47	540	163	10	178	54
Georgetown University	167	261	R. Ernst	16	329	208	248	6	265	14
Georgia Institute of Technology	1,235	13	G.L. Nemhauser	110	115	1,705	48	19	60	84
Georgia State University	248	207	M. Keil	64	198	1,171	82	20	49	66
Goteborg University	293	177	K. Alestig	87	151	896	110	11	166	150
Harvard University	1,230	14	G.M. Whitesides	939	3	75,622	1	109	2	150
Hebrew University of Jerusalem	365	138	G. Mosheiev	63	201	450	184	12	148	17
Heidelberg Universität	294	176	R. Wagnefuhr	18	326	0	341	0	321	4
Hokkaido University	683	55	J.I. Koyama	90	147	188	257	0	321	104
Hong Kong Polytechnic University	931	28	T.C.E. Cheng	367	17	2,060	36	23	36	150
Hong Kong University of Science & Techno...	668	57	H. Yang	128	102	948	106	20	49	92
Humboldt-Universität zu Berlin	254	202	R. Werner	45	259	346	202	11	166	58
Imperial College London	573	76	B. Rustem	84	166	159	277	9	192	52
Indian Institute of Technology Bombay (I...	153	275	P. Vellaisamy	25	310	33	330	4	291	16
Indian Institute of Technology Delhi (II...	241	210	S.G. Deshmukh	97	134	530	166	13	132	95
Indian Institute of Technology Kanpur (I...	217	222	D. Kundu	107	120	277	221	12	148	48
Indiana University Bloomington	590	70	M.L. Puri	97	134	879	113	7	242	67
Indiana University Indianapolis	95	312	J. Sarkar	18	326	93	303	8	218	13
Iowa State University	756	45	W.Q. Meeker	86	155	567	157	12	148	75
Johns Hopkins University	389	126	S.H. Snyder	300	23	14,180	11	75	7	150
Kansas State University	343	147	E.S. Lee	190	61	1,435	60	19	60	150
Katholieke Universiteit Leuven	642	62	M.J. Goovaerts	134	97	360	199	11	166	74
Keio University	304	170	M. Maejima	50	239	174	268	7	242	30

King Fahd University of Petroleum & Minerals	258	198	M. Ben-Daya	42	273	559	159	14	113	21
King Saud University	257	199	M.A. Noor	251	41	869	115	21	45	65
Kobe University	308	167	A. Imai	47	250	653	145	16	91	63
Korea Advanced Institute of Science & Technology	731	47	Y.D. Kim	68	186	757	127	14	113	68
Korea University	251	206	D.H. Kim	1	342	30	332	0	321	2
Kyoto University	464	101	M. Fukushima	163	77	1,320	65	21	45	150
Kyushu University	784	40	M. Nishimura	44	268	75	313	0	321	38
La Trobe University	106	307	P. Kabaila	51	236	73	314	7	242	12
Lancaster University	3	343	G. Johnes	46	253	175	267	6	265	17
Leiden University	140	286	A. Hordijk	63	201	196	250	7	242	36
Linköping University	135	291	T. Larsson	34	290	276	223	7	242	43
London School of Economics and Political Scie	473	98	Rosenhead, J.V.	30	300	260	227	6	265	36
Loughborough University	437	110	J.M. Wilson	56	223	268	226	8	218	29
Louisiana State University	517	86	B.R. Sarker	99	128	871	114	18	69	50
Ludwig-Maximilians-Universität München	367	137	H.G. Zachau	189	62	832	121	6	265	150
Lund University	381	130	S. Axsäter	62	205	464	182	12	148	22
Maastricht University	252	204	F.C.R. Spieksma	46	253	294	216	8	218	45
Macquarie University	133	293	X. Zhou	45	259	80	309	6	265	25
Mahidol University	37	338	Y. Lenbury	54	228	137	287	6	265	91
Masaryk University	26	340	E. Zazimalova	29	304	493	174	13	132	138
Massachusetts Institute of Technology	1,246	12	A. Rich	337	21	5,872	24	32	25	150
McGill University	723	48	J.H. Quastel	144	92	269	225	0	321	85
McMaster University	657	58	N. Balakrishnan	367	17	813	122	16	91	150
Michigan State University	704	51	R. Narasimhan	72	178	950	104	20	49	52
Michigan Technological University	82	324	A.P. Godbole	30	300	85	306	5	281	43
Monash University	398	123	A.S. Sohal	121	105	798	124	18	69	103
Montana State University	75	327	R.J. Boik	38	283	375	197	7	242	35
Moscow State University	118	301	V.E. Tarasov	86	155	209	247	16	91	3
Nagoya University	164	263	T. Namikawa	87	151	569	156	14	113	150
Nanjing University	161	267	L. Wang	153	82	1,055	95	19	60	150
Nanyang Technological University	505	90	Z. Wu	53	233	143	283	9	192	46
National Taiwan University	329	155	J.S. Yao	46	253	277	221	14	113	34
National Tsing Hua University	438	108	U.P. Wen	28	306	195	252	5	281	25
National University of Ireland, Galway	108	306	D. O'Regan	410	15	1,602	52	22	40	143
National University of Singapore	1,180	16	M. Xie	193	60	1,238	76	20	49	150
New Mexico State University	140	286	H.T. Nguyen	218	50	834	120	12	148	150

New York University	645	60	S. Seshadri	46	253	326	207	8	218	40
Newcastle University	174	255	K.D. Glazewood	86	155	168	274	8	218	52
North Carolina State University	637	64	S.C. Fang	107	120	547	162	13	132	69
Northeastern University	310	165	S.M. Gupta	166	75	939	107	23	36	54
Northwestern University	751	46	W.J. Hopd	62	205	791	126	12	148	45
Norwegian University of Science & Technology	261	196	M. Christiansen	20	323	121	292	8	218	21
Ohio State University	1,034	23	N.G. Hall	60	212	1,003	100	16	91	60
Oklahoma State University	253	203	H.S. Lau	85	163	593	152	12	148	26
Open University UK	196	237	M.C. Jones	110	115	1,231	77	15	100	84
Oregon State University	241	210	R. Logendran	57	219	363	198	8	218	34
Osaka University	301	172	T. Kishimoto	626	8	44,277	3	79	5	150
Peking University	303	171	S.Y. He	36	287	87	305	5	281	27
Pennsylvania State University	1,310	10	R.A. Wusk	150	85	835	119	8	218	148
Pohang University of Science And Technology	184	250	H. Cho	123	104	1,165	83	13	132	150
Portland State University	142	284	T. Daim	75	175	155	278	6	265	85
Princeton University	593	68	W.B. Powell	110	115	921	108	17	81	61
Purdue University	1,175	17	R. Uzsoy	101	125	1,107	90	19	60	99
Queen's University	290	179	Y. Levin	16	329	43	327	4	291	9
Queen's University of Belfast	358	141	J.W. Dundee	464	11	1,643	50	0	321	150
Queensland University of Technology	185	248	E. Kozan	34	290	218	244	9	192	12
Radboud University, Nijmegen	166	262	S.H. Tijs	147	88	558	160	10	178	114
Rensselaer Polytechnic Institute	399	122	C.J. Malmborg	88	148	164	275	8	218	42
Rheinisch Westfalische Technische Hochschule Aach	349	145	H.J. Zimmermann	46	253	576	154	10	178	53
Rheinische Friedrich Wilhelms Universitat Bonn	192	241	K. Wilecke	288	28	5,294	25	53	17	150
Rice University	283	184	A. Miele	195	58	245	236	8	218	62
Rochester Institute of Technology	92	316	A.A. Batatyal	112	112	176	266	8	218	19
Royal Institute of Technology, KTH	186	247		0	343	0	341	0	321	0
Royal Melbourne Institute of Technology	89	318	B. Davey	12	334	9	335	2	306	7
Rutgers	971	24	E.A. Elsayed	99	128	481	178	9	192	86
Saint-Petersburg State University	124	297	V.F. Demyanov	25	310	66	317	4	291	19
San Diego State University	143	283	C.W. Chow	47	250	466	181	11	166	49
Sapienza University of Rome	0	347		0	343	0	341	0	321	0
Sciences Po Paris	2	344	F. Bidault	8	337	64	318	3	300	10
Seoul National University	336	152	S. Lee	59	215	124	291	8	218	60
Shanghai Jiao Tong University	466	99	M.O. Han	147	88	525	169	17	81	88
Simon Fraser University	228	217	E.V. Choo	24	314	308	212	4	291	16

Stanford University	1,343	9	S.M. Karlin	243	44	6,593	23	32	25	110
State University of New York Buffalo	577	74	R. Batta	93	142	597	151	11	166	91
Stockholm University	193	240		0	343	0	341	0	321	0
Stony Brook University	324	157	E.A. Feinberg	47	250	185	259	8	218	30
Syracuse University	350	144	U.N. Roy	86	155	509	172	13	132	105
Tartu University (University of Tartu)	28	339	T. Kollo	12	334	40	329	3	300	8
Technical University of Denmark	256	200	E. Mosekilde	169	74	1,200	79	20	49	150
Technion	787	39	B. Golany	65	190	1,105	91	12	148	73
Technische Universität Berlin	231	216	H.O. Gunther	40	278	189	256	9	192	392
Technische Universität Chemnitz	123	299	G. Wanka	56	223	96	301	7	242	14
Technische Universität Dresden	222	219	G. Scheithauer	23	316	177	264	9	192	18
Technische Universität München	330	154	C. Kluppelberg	57	219	444	185	12	148	52
Tel Aviv University	758	43	A. Tamir	88	148	505	173	9	192	59
Texas A&M University	964	26	W.E. Wihelm	65	190	287	219	10	178	52
Texas Tech	308	167	H.C. Zhang	88	148	553	161	12	148	100
Tohoku University	134	292	Z. Yosizawa	160	79	254	229	0	321	90
Tokyo Institute of Technology	372	134	M. Kojima	86	155	643	147	16	91	49
Trinity College Dublin	147	280	H.H. Dixon	37	285	8	337	0	321	6
Tsinghua University	535	84	N. Zhao	138	95	839	118	15	100	150
Tufts University	87	322	H.H. Wortis	85	163	1,196	80	15	100	131
Universidad Autonoma de Madrid	205	230	A. Cuevas	45	259	292	217	11	166	69
Universidad de Chile	196	237	A. Weintraub	45	259	251	232	9	192	87
Universidad de Granada	205	230	A. Cuevas	45	259	292	217	11	166	69
Universidad del País Vasco	204	232	M. De la Sen	405	16	561	158	16	91	71
Universidad Nacional Autónoma de México ...	105	308	L.M. Fridman	174	70	642	148	17	81	93
Universidad Politecnica de Madrid	267	193	C. Romero	131	99	1,176	81	21	45	150
Universidade de São Paulo	510	89	H. Bolfarine	85	163	196	250	9	192	63
Universidade Estadual de Campinas	287	181	J.M. Martinez	243	44	1,817	43	27	31	150
Università degli Studi di Firenze	227	218	F. Schoen	29	304	177	264	7	242	19
Università degli Studi di Padova	461	102	M. Fischetti	76	172	843	117	15	100	64
Università Di Bologna	338	149	P. Toth	87	151	1,294	70	18	69	54
Università di Pisa	295	175	G. Mastroeni	23	316	61	320	3	300	21
Universitat Autonoma de Barcelona	198	234	J. E. Martinez-Legaz	61	208	147	280	7	242	37
Universitat Bielefeld	162	266	D. Biskup	16	329	236	241	8	218	8
Universität Bremen	142	284	K.D. Thoben	50	239	174	268	5	281	78
Universitat d'Alacant	158	271	M.A. Lopez	65	190	190	255	13	132	51

Universitat de València	299	174	R. Marti	57	219	527	167	14	113	51
Universität Frankfurt am Main	113	304	T. Weitzel	30	300	50	322	4	291	31
Universität Freiburg	89	318	L. Ruschendorf	71	181	245	236	7	242	32
Universität Hamburg	333	153	C. Kanzow	72	178	711	133	22	40	34
Universität Karlsruhe	390	125	V.D. Hanebeck	111	113	233	242	9	192	64
Universität Leipzig	89	318	S. Gottwald	49	241	183	260	7	242	20
Universität Munster (Westfälische Wilhelms-Un	190	243	H. Maurer	71	181	258	228	11	166	39
Universität Politecnica de Catalunya	49	334	R. Pastor	45	259	127	290	8	218	39
Universität Regensburg	99	311		0	343	0	341	0	321	0
Universität Stuttgart	104	309	M. Kohler	197	57	949	105	17	81	150
Universität Trier	139	288	N.V. Thoai	26	308	151	279	7	242	17
Universität Tübingen	52	333	F. Lang	643	7	17,517	6	60	12	150
Universität Wien (University of Vienna)	316	162	R.F. Hartl	101	125	738	130	9	192	67
Universität Zu Koln	325	156	K. Rajwsky	120	107	9,130	18	5	281	150
Université Catholique de Louvain	402	119	L.A. Wolsey	94	140	1,039	97	14	113	75
Universite de Liege	94	315	Y. Crama	49	241	608	149	12	148	52
Université de Montréal	713	49	M. Gendreau	147	88	2,111	35	29	30	130
Université de Nice Sophia Antipolis	74	328	F. Cuzin	97	134	1,296	69	15	100	145
Universite Laval	409	116	J.M. Martel	48	246	299	213	9	192	39
Universite Libre de Bruxelles	411	115	M. Labbe	103	123	693	136	15	100	127
Université Paris Sorbonne	169	259	M. Hifi	48	246	173	271	10	178	26
Universite Paris-Sud 11	234	213	G. Schehr	39	279	92	304	7	242	35
Université Pierre et Marie Curie	597	67	B. Bouchard	21	322	79	311	5	281	13
Universiti Malaya (University of Malaya)	114	303	B.B. Zaidan	19	325	9	335	2	306	28
University College Cork	78	325	B. Hnich	41	276	115	294	6	265	37
University College Dublin	160	268	A. Patel	69	185	98	300	6	265	61
University College London	210	227	J.B.S. Haldane	64	198	113	295	1	315	19
University do Porto	201	233	J.M.S. Valente	22	320	64	318	5	281	7
University of Aberdeen	273	187	J.A. Petty	35	289	298	214	4	291	24
University of Adelaide	153	275	R.K. Morton	22	320	50	322	0	321	24
University of Alabama	552	81	J.J.Buckley	199	54	1,245	74	14	113	39
University of Alberta	591	69	E. Erkut	48	246	426	187	9	192	52
University of Amsterdam	449	105	M.J. Goovaerts	144	92	382	195	11	166	89
University of Antwerp	269	190	W. Pullaert	38	283	120	293	7	242	29
University of Arizona	711	50	H.Chen	282	30	1,873	42	27	31	150
University of Athens	234	213	A. Economou	33	294	70	315	5	281	8

University of Auckland	337	150	M. Ehr Gott	53	233	314	211	9	192	57
University of Barcelona	163	264	D. Nualart	120	107	682	139	14	113	72
University of Basel	95	312	T.A. Bickle	111	113	1,068	93	17	81	150
University of Bath	77	326	R.H. Green	26	308	329	205	9	192	12
University of Bergen	215	224	S.D. Flam	54	228	188	257	6	265	27
University of Bern	620	65	H. Bunke	275	32	1,723	46	20	49	150
University of Birmingham	211	226	J.H. Fremlin	154	81	183	260	0	321	110
University of Bristol	541	83	D.J.D. Nicholas	205	51	517	170	0	321	134
University of British Columbia	856	33	M. Queyranne	51	236	486	177	10	178	64
University of Calgary	577	74	E.A. Silver	98	132	967	102	7	242	64
University of California, Berkley	3,471	1	T.A. Henzinger	176	69	2,720	31	20	49	145
University of California, Davis	860	32	H.M. Zhang	66	187	451	183	14	113	73
University of California, Irvine	568	77	R.H. Asch	171	72	1,971	37	2	306	150
University of California, Los Angeles	1,129	20	C.S. Tang	60	212	1,448	59	14	113	68
University of California, Riverside	268	191	S. Schaible	83	169	707	135	13	132	53
University of California, San Diego	2,295	3	M. Krstic	263	36	1,507	56	24	35	105
University of California, San Francisco	300	173	S.B. Prusiner	235	47	8,123	19	73	8	150
University of California, Santa Barbara	1,453	6	A. R. Teel	270	35	2,699	32	25	33	96
University of California, Santa Cruz	66	331	H.F. Noller	178	67	6,647	22	34	24	150
University of Cambridge	1,186	15	A.R. Fersht	367	17	10,551	16	61	11	150
University of Canterbury	185	248	G.R. Wood	44	268	173	271	8	218	49
University of Cape Town	194	239	T.J. Steward	34	290	489	175	8	218	33
University of Central Florida	404	118	J.R. Schott	30	300	131	289	6	265	4
University of Chicago	568	77	G.I. Bell	294	24	11,329	15	48	20	150
University of Cincinnati	384	129	J.R. Evans	44	268	270	224	60	12	31
University of Colorado at Boulder	449	105	F.W. Glover	161	78	1,666	49	19	60	133
University of Connecticut	513	87	P.K. Moon	42	273	145	281	1	315	8
University of Copenhagen	424	111	D. Pisinger	45	259	665	144	13	132	44
University of Delaware	313	164	W.F.G. Swann	91	146	27	333	0	321	10
University of Dundee	70	330	D.M.J. Lilley	239	46	3,757	27	37	23	150
University of Edinburgh	2	344	L. Oxley	76	172	241	238	9	192	32
University of Florida	1,060	22	P.M. Pardalos	274	33	1,639	51	18	69	150
University of Geneva	268	191	S.E. Antonarakis	245	43	11,610	14	54	16	150
University of Georgia	580	73	I.V. Basawa	65	190	320	210	7	242	44
University of Ghent	557	79	B.D. de Baets	204	52	1,205	78	20	49	150
University of Glasgow	553	80	D.M. Titterington	119	109	1,327	64	13	132	150

University of Gothenburg	1	346	V.E. Mooser	37	285	393	193	8	218	150
University of Groningen	482	96	G. Sieksma	46	253	162	276	7	242	36
University of Helsinki	124	297	K. Alitalo	292	25	11,660	13	89	4	150
University of Hong Kong	675	56	K.L. Mak	146	91	1,131	85	20	49	67
University of Houston	380	131	G.R. Chen	679	5	15,000	9	62	9	150
University of Illinois	1,146	19	S.H. Jacobson	110	115	515	171	13	132	63
University of Illinois, Chicago	477	97	W.K. Chen	92	144	79	311	2	306	66
University of Indonesia	12	342	D.I.S. Santoso	2	341	44	326	1	315	9
University of Iowa	823	36	Y.Ye	131	99	1,102	92	18	69	94
University of Kansas	261	196	P.P. Shenoy	4	339	0	341	0	321	5
University of Kentucky	417	113	C.W. Holsapple	96	138	915	109	15	100	63
University of Lausanne	154	274	H.U. Gerber	52	235	487	176	12	148	24
University of Leeds	692	54	A.V. Holden	195	58	1,131	85	16	91	150
University of Leicester	290	179	H.E. Street	79	171	332	203	0	321	70
University of Liverpool	486	95	C.J.R. Parker	39	279	322	209	6	265	37
University of Ljubljana	130	294	D. Matko	86	155	254	229	10	178	71
University of London (Kings College of London)	1,926	4	L.J. Audus	51	236	139	285	0	321	25
University of Manchester	768	42	A.G. Lyne	254	37	3,550	29	42	22	150
University of Manitoba	550	82	A.S. Alfa	117	110	573	155	13	132	75
University of Maryland	901	29	S.I. Gass	61	208	324	208	7	242	36
University of Maryland Baltimore County	443	107	T.G. Mathew	125	103	740	129	17	81	150
University of Massachusetts	42	335	A. Nagurney	117	110	526	168	15	100	51
University of Melbourne	452	103	B.D. Craven	49	241	212	246	3	300	24
University of Miami	360	140	V.J. Jayaraman	39	279	646	146	14	113	34
University of Michigan	1,383	8	R.L. Smith	60	212	391	194	9	192	43
University of Minnesota	1,169	18	R.G. Schroeder	61	208	1,881	41	20	49	60
University of Missouri	450	104	C.M. Klein	55	226	412	189	10	178	42
University of Nebraska	315	163	M.J. Schniederjans	61	208	295	215	7	242	53
University of New Hampshire	86	323	D.L. Meeker	54	228	1,945	38	15	100	93
University of New Mexico	197	236	J.J. Young	20	323	145	281	7	242	15
University of New South Wales	609	66	V. Jeykumar	84	166	380	196	15	100	40
University of North Carolina, Chapel Hill	694	53	P.K. Sen	141	94	534	164	9	192	112
University of North Texas	126	296	R.J. Pavur	33	294	61	320	4	291	35
University of Notre Dame	187	245	A.L. Barabasi	170	73	16,008	8	58	14	150
University of Nottingham	639	63	E.K. Burke	105	122	792	125	19	60	124
University of Oklahoma	282	185	A.B. Badiru	65	190	217	245	5	281	47

University of Oregon	393	124	G.W. Evans	49	241	252	231	10	178	24
University of Oslo	284	182	G. Dahl	48	246	204	249	9	192	25
University of Otago	153	275	I.M. Premachandra	15	332	70	315	6	265	18
University of Ottawa	377	132	M.G. Tyshenko	31	299	2	340	1	315	19
University of Oxford	958	27	G.E. Blackman	33	294	42	328	0	321	23
University of Pennsylvania	1,268	11	B. Chance	452	12	4,881	26	32	25	150
University of Pittsburgh	822	37	T.L. Saaty	94	140	2,411	33	13	132	39
University of Quebec	158	271	F. Legara	70	183	403	190	12	148	150
University of Queensland	465	100	D.N.P. Murthy	136	96	676	143	14	113	79
University of Reading	95	312	S.J. Foley	73	177	50	322	0	321	76
University of Rochester	90	317	A. Seidmann	76	172	973	101	9	192	58
University of Saskatchewan	116	302	W.K. Grassmann	45	259	248	234	4	291	19
University of Science and Technology of China	368	136	T. Hu	151	83	965	103	15	100	150
University of Sheffield	387	128	D.W. Hughes	189	62	848	116	14	113	150
University of South Carolina	337	150	M.K. Malhorta	39	279	710	134	14	113	25
University of South Florida	321	160	A. Kandel	253	38	1,411	61	18	69	150
University of Southampton	703	52	C.N.Potts	87	151	1,563	55	17	81	85
University of Southern California	966	25	R.E. Kalaba	288	28	473	180	10	178	150
University of St Andrews	148	279	C.Carter	947	2	113	295	8	218	15
University of Surrey	121	300	T.J. Bridges	72	178	604	150	15	100	32
University of Sussex	255	201	T.J. Flowers	32	297	402	191	2	306	53
University of Sydney	293	177	D.A. Hewsher	203	53	1,243	75	19	60	128
University of Technology, Sydney	183	251	G.Q. Zhang	92	144	182	262	10	178	66
University of Tennessee Knoxville	308	167	M.M. Srinivasan	36	287	281	220	7	242	25
University of Texas at Austin	347	146	A.B. Whinston	280	31	1,595	54	23	36	150
University of Tokyo	2,565	2	S. Miyachi	164	76	1,125	89	18	69	150
University of Toronto	891	30	O. Berman	150	85	685	138	14	113	70
University of Tsukuba	504	92	T. Fujii	24	314	99	299	0	321	25
University of Twente	519	85	W.M. Albers	58	216	230	243	10	178	46
University of Utah	235	212	L. Horvath	151	83	741	128	12	148	50
University of Vermont	149	278	B.S. Lee	34	290	48	325	4	291	54
University of Victoria	163	264	H.M. Srivastava	366	20	1,009	99	20	49	150
University of Virginia	407	117	J.W. Beams	97	134	112	297	0	321	59
University of Warwick	159	270	N. Chater	99	128	1,129	88	25	33	76
University of Washington	645	60	R.D. Palmiter	291	26	12,644	12	50	19	150
University of Waterloo	1,062	21	Y. Gerchak	86	155	888	112	14	113	49

University of Western Australia	272	188	M. McAleer	181	66	677	142	14	113	113
University of Western Ontario	512	88	P.W. Yu	189	62	1,268	71	22	40	150
University of Wisconsin	1,496	5	O.L. Mangasarian	100	127	1,724	45	13	132	33
University of Wollongong	173	256	J.C.W. Rayner	54	228	142	284	5	281	18
University of York	242	209	M.J. Smith	25	310	328	206	2	306	4
University of Zurich	352	142	T. Rulicke	86	155	3,618	28	32	25	150
Univesitas Gadjah Mada	15	341	Y. Soenarto	18	326	104	298	2	306	150
Uppsala University	310	165	A. Gut	44	268	195	252	6	265	17
Utah State	179	252	P.S. Kokoszka	70	183	481	178	12	148	33
Utrecht University	189	244	J. Oerlemans	150	85	1,749	44	23	36	150
Vanderbilt University	262	195	R.W. Blanning	63	201	248	234	8	218	19
Victoria University of Wellington	128	295	L.M. Corbett	11	336	139	285	7	242	16
Vienna University of Technology	56	332	G. Feichtinger	134	97	417	188	8	218	65
Virginia Polytechnic Institute	208	229	H.D. Serali	246	42	1,310	67	16	91	146
Vrije Universiteit, Brussels	198	234	F.A. Plastria	55	226	238	239	9	192	60
VU University Amsterdam	419	112	P. Nijkamp	436	14	1,911	40	19	60	150
Wageningen University	222	219	J.E.R. Frijters	44	268	1,921	39	0	321	29
Wake Forest University	138	289	J.R. Meredith	56	223	1,027	98	8	218	36
Waseda University	173	256	M. Gendreau	222	49	1,602	52	22	40	134
Washington State University	341	148	M. Jacroux	45	259	85	306	3	300	14
Washington University in St. Louis	502	93	P. Kouvelis	66	187	891	111	13	132	40
Wayne State University	487	94	M. Goodman	177	68	3,040	30	30	29	150
West Virginia University	168	260	R.C. Colwell	41	276	4	338	0	321	13
Yale University	851	34	R.A. Flavell	602	9	50,757	2	115	1	150
Yonsei University	252	204	S.Y. Sohn	96	138	394	192	12	148	64
York University	415	114	W.D. Cook	84	166	717	132	14	113	40
Zhejiang University	101	310	J. Chen	6	338	26	334	1	315	9

Economics/Econometrics/Finance Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	127	288	E. Autio	35	255	1,113	66	13	103	39
Aarhus University	612	90	T.M. Anderson	64	158	208	216	6	253	39
Arizona State University	587	98	J.C. Brada	80	115	304	182	6	253	34
Ateneo de Manila University	7	345	E.L. Beja	3	335	4	334	1	331	0
Auburn University	523	116	R.B. Ekelund	44	219	150	251	6	253	33
Australian National University	1,287	34	A. Liegh	50	195	127	269	6	253	21
Boston College	670	77	E.J. Kane	66	150	379	157	8	196	23
Boston University	944	55	H.E Stanley	480	3	10,348	3	57	3	150
Brandeis University	235	229	G.H. Jefferson	33	260	503	126	10	150	33
Brigham Young University	246	222	C.A. Pope	72	132	6,318	6	23	35	133
Brown University	701	72	L. Putterman	70	136	533	118	14	88	29
California Institute of Technology (Calt...	519	119	C.R. Plott	53	186	806	86	15	79	55
Cardiff University	662	79	D.A. Thomas	1	338	1	335	0	336	2
Carnegie Mellon University	932	57	D. Epple	45	215	788	88	11	128	34
Case Western Reserve University	6,889	1	B. Carlson	27	283	510	125	10	150	20
Chalmers University of Technology	4,623	3	S. Jacobosson	31	270	398	153	10	150	24
Charles University	241	227	E. Kocenda	42	232	101	283	7	226	17
Chinese University of Hong Kong	627	87	C.C. Chao	56	179	167	239	7	226	15
Chulalongkorn University	63	316	P. Limpaphayom	12	324	74	303	6	253	16
City University of Hong Kong	549	108	G.R. Chen	681	1	14,794	1	61	2	150
City University of New York	603	93	T.G. Bali	40	240	144	259	7	226	27
Colorado State University	253	219	J. Loomis	182	31	1,265	59	18	56	150
Columbia University	2,192	9	J. Sachs	31	270	50	312	3	312	96
Cornell University	1,778	18	T. Mitra	68	145	234	199	7	226	36
Curtin University of Technology	203	245	G. Madden	42	232	179	232	9	174	18
Dalhousie University	224	237	B. Worm	50	195	2,294	33	25	26	132
Dartmouth College	621	88	J.T. Scott	43	225	266	191	11	128	22
Delft University of Technology	146	278	J.W. De Leeuw	342	6	4,616	12	30	19	150
Drexel University	299	192	S. Hammoudeh	32	265	83	298	6	253	26
Duke University	1,427	27	H. Petroski	161	41	183	229	3	312	15
Durham University	313	187	S.C. Parker	41	237	247	192	10	150	14
Ecole Normale Supérieure de Lyon	6	346		0	339	0	337	0	336	0
École Normale Supérieure, Paris	108	301	T. Verdier	48	206	786	89	14	88	34
École Polytechnique	266	210	E. Strol	65	152	358	166	10	150	35

Ecole Polytechnique Fédérale de Lausanne	53	323		20	307	139	260	7	226	18
Eindhoven University of Technology	245	223	B. Verspagen	50	195	576	113	12	114	48
Emory University	553	107	R.J. Cebebulu	129	63	166	240	4	296	40
Erasmus University Rotterdam	1,631	19	P.H. Franses	177	34	960	76	18	56	105
ETH Zurich (Swiss Federal Institute of Technology)	1,545	21	H. Gersbach	65	152	153	250	8	196	20
Florida International University	421	150	W.G. Hardin	32	265	71	304	6	253	27
Florida State University	462	138	R.G. Holcombe	69	138	243	194	7	226	26
Freie Universität Berlin	296	195	K.A. Konrad	75	127	461	132	11	128	38
Friedrich Alexander Universität Erlangen Nürnberg	154	272	C. Schnabel	34	258	150	251	8	196	16
Fudan University	115	295		0	339	0	337	0	336	0
Georg August Universität Göttingen	262	214	S. Klasen	38	244	334	171	11	128	34
George Mason University	3,118	6	K. Button	112	79	421	142	10	150	58
George Washington University	637	85	J.M. Logsdon	89	97	1,563	51	21	39	150
Georgetown University	649	81	R. Lagunoff	27	283	86	295	6	253	9
Georgia Institute of Technology	392	155	R.J. Cebula	129	63	166	240	4	296	40
Georgia State University	747	70	J. Alm	54	184	466	130	11	128	50
Goteborg University	428	146	T. Garling	148	49	1,276	58	19	49	150
Harvard University	4,064	5	A. Shleifer	81	113	8,712	4	43	4	38
Hebrew University of Jerusalem	1,118	40	B. Peleg	68	145	629	109	5	277	37
Heidelberg Universität	234	230	H. Gersbach	60	168	130	265	7	226	18
Hokkaido University	94	306	S. Tabata	10	326	47	314	5	277	2
Hong Kong Polytechnic University	454	142	M. Firth	63	161	562	115	14	88	51
Hong Kong University of Science & Techno...	642	83	Y.K. Kwok	47	211	103	281	4	296	27
Humboldt-Universität zu Berlin	504	125	W. Guth	112	79	1,166	63	12	114	89
Imperial College London	593	94	K. Balcombe	41	237	94	287	5	277	31
Indian Institute of Technology Bombay (I...	18	340	V. Kathuria	19	310	93	289	5	277	10
Indian Institute of Technology Delhi (II...	37	331	S.G. Deshmukh	95	91	686	100	14	88	64
Indian Institute of Technology Kanpur (I...	26	337		0	339	0	337	0	336	0
Indiana University Bloomington	1,308	33	D.B. Audretsch	124	66	2,015	37	19	49	63
Indiana University Indianapolis	135	285	P.C. Rangazas	14	322	44	318	4	296	5
Iowa State University	657	80	D.A. Hennessy	83	110	375	159	9	174	32
Johns Hopkins University	827	64	S.H. Snyder	300	10	14,180	2	75	1	150
Kansas State University	317	185	D.L. Weisman	49	204	188	224	9	174	25
Katholieke Universiteit Leuven	815	66	M.J. Goovaerts	134	58	360	165	11	128	74
Keio University	217	241	M. Yano	86	101	234	199	8	196	150

King Fahd University of Petroleum & Minerals	76	310	A.M.M. Masih	38	244	401	152	11	128	13
King Saud University	43	329	M.A. Hariga	34	258	413	148	11	128	11
Kobe University	382	160	S. Hamori	50	195	118	272	5	277	15
Korea Advanced Institute of Science & Technology	144	279	J.C. Kim	21	304	47	314	3	312	16
Korea University	284	201	C.J. Kim	530	2	0	337	34	11	150
Kyoto University	373	165	K. Nishimura	248	18	1,702	44	21	39	150
Kyushu University	28	336	Y. Iwasa	189	29	3,456	19	30	19	139
La Trobe University	290	197	I.A. Moosa	72	132	225	205	8	196	21
Lancaster University	339	175	G. Johnes	46	212	175	236	6	253	17
Leiden University	250	221	W.I.M. Groot	69	138	444	135	9	174	70
Linkoping University	88	307	P. Westermark	266	14	3,030	22	25	26	150
London School of Economics and Political Scie	2,229	8	O.B. Linton	78	119	736	94	17	64	99
Loughborough University	354	172	T.C. Mills	77	123	415	146	9	174	34
Louisiana State University	494	130	G.K. Turnbull	85	104	339	170	10	150	36
Ludwig-Maximilians-Universität München	636	86	P. Egger	138	56	1,584	50	17	64	125
Lund University	523	116	J. Westerlund	44	219	201	219	8	196	35
Maastricht University	964	51	H. Peters	44	219	124	270	6	253	40
Macquarie University	242	226	J.A. Mathews	45	215	556	116	15	79	16
Mahidol University	22	338		0	339	0	337	0	336	0
Masaryk University	43	329	T. Sirovatka	18	314	21	330	2	327	5
Massachusetts Institute of Technology	1,982	13	A. Rich	337	7	5,872	7	32	14	150
McGill University	562	104	N. Van Long	80	115	370	161	8	196	41
McMaster University	588	96	A. Gafri	319	9	5,201	10	35	10	150
Michigan State University	1,245	35	P. Schmidt	62	166	2,803	25	9	174	51
Michigan Technological University	60	318	M.C. Roberts	18	314	37	321	3	312	4
Monash University	839	62	R. Symth	121	67	324	174	12	114	56
Montana State University	199	249	W.A. Stock	106	87	1,780	42	21	39	150
Moscow State University	52	326	V.E. Tarasov	86	101	209	214	16	75	3
Nagoya University	109	299	N. Yamori	29	276	104	280	5	277	36
Nanjing University	44	327	L. Wang	153	48	1,055	68	19	49	150
Nanyang Technological University	375	163	S.T. Lau	14	322	109	274	5	277	12
National Taiwan University	500	127	J.T. Liu	9	328	22	328	3	312	18
National Tsing Hua University	130	286	W.W. Lin	158	42	1,477	53	18	56	150
National University of Ireland, Galway	109	299	S. Fountas	35	255	154	247	9	174	22
National University of Singapore	1,033	46	Y. Sun	42	232	108	275	10	150	17
New Mexico State University	147	275	R.T. Peterson	33	260	408	149	8	196	19

New York University	2,086	11	A. Saunders	68	145	808	85	12	114	65
Newcastle University	514	122	S.K. Runcorn	81	113	163	244	3	312	82
North Carolina State University	566	103	B.K. Goodwin	61	167	416	144	12	114	40
Northeastern University	323	182	K.A. Eddeston	25	293	281	190	11	128	22
Northwestern University	1,876	15	D.G. Sarri	93	92	404	150	11	128	29
Norwegian University of Science & Technology	255	217	J. Rattso	38	244	159	246	6	253	18
Ohio State University	1,441	25	R.M. Stulz	65	152	2,217	34	25	26	57
Oklahoma State University	375	163	J.L. Lusk	69	138	468	129	15	79	65
Open University UK	171	260	I. Wright	112	79	1,034	70	13	103	150
Oregon State University	460	139	R. Fare	155	44	1,605	48	17	64	111
Osaka University	427	147	K. Futagami	24	297	98	284	5	277	14
Peking University	332	177	J.Y. Lin	25	293	135	261	6	253	18
Pennsylvania State University	1,345	30	A. Yavas	37	252	146	257	7	226	22
Pohang University of Science And Technology	15	341	Y. Hong	25	293	183	229	7	226	28
Portland State University	209	243	M.B. Schimdt	26	288	86	295	7	226	5
Princeton University	1,478	24	A.K. Dixt	45	215	1,069	67	17	64	17
Purdue University	1,012	48	T.N. Cason	55	182	732	95	12	114	35
Queen's University	669	78	R. Boadway	59	171	414	147	10	150	32
Queen's University of Belfast	289	198	W.G. Hutchinson	27	283	191	222	10	150	17
Queensland University of Technology	199	249	B. Torgler	37	252	108	275	8	196	17
Radboud University, Nijmegen	255	217	W.F.C. Verschoor	27	283	105	279	5	277	20
Rensselaer Polytechnic Institute	231	231	I. Hasan	59	171	333	173	10	150	57
Rheinisch Westfalische Technische Hochschule Aach	73	311	E. Feess	30	274	53	311	5	277	21
Rheinische Friedrich Wilhelms Universitat Bonn	836	63	R.Selten	40	240	682	102	11	128	53
Rice University	423	149	R. C. Sickles	50	195	518	123	8	196	53
Rochester Institute of Technology	97	304	A.A. Batatyal	112	79	176	234	8	196	19
Royal Institute of Technology, KTH	140	281		0	339	0	337	0	336	0
Royal Melbourne Institute of Technology	181	254	R.W. Faff	111	83	349	167	10	150	89
Rutgers	1,322	32	C.F. Lee	121	67	444	135	11	128	150
Saint-Petersburg State University	35	333	H.V. Hovanov	10	326	45	317	2	327	11
San Diego State University	319	183	C. Amuedo	38	244	203	218	9	174	20
Sapienza University of Rome	0	347		0	339	0	337	0	336	0
Sciences Po Paris	110	298	P.A. Messerlin	20	307	85	297	3	312	8
Seoul National University	276	206	Y. Chun	28	281	134	262	4	296	4
Shanghai Jiao Tong University	101	302	M.A. Han	147	51	523	121	17	64	88
Simon Fraser University	525	114	J. Arifovie	19	310	224	206	7	226	12

Stanford University	2,531	7	P.R. Ehrlich	265	15	4,462	14	30	19	150
State University of New York Buffalo	8	344	E.J. Kreig	6	331	55	310	4	296	1
Stockholm University	607	91	A. Lindbeck	38	244	536	117	9	174	10
Stony Brook University	285	200	P.K. Dubey	65	152	612	112	10	150	96
Syracuse University	518	120	J.S. Kelly	54	184	129	267	5	277	12
Tartu University (University of Tartu)	59	319	T. Tammaru	21	304	79	301	9	174	12
Technical University of Denmark	53	323	E. Mosekilde	169	36	1,199	61	20	43	150
Technion	245	223	D. Monderer	41	237	618	111	10	150	17
Technische Universität Berlin	147	275	G.G. Wagner	38	244	87	294	6	253	72
Technische Universität Chemnitz	57	321	P. Kochel	11	325	59	308	4	296	5
Technische Universität Dresden	147	275	U. Brollo	56	179	148	255	7	226	33
Technische Universität München	140	281	C. Kluppelberg	57	175	444	135	12	114	52
Tel Aviv University	1,039	43	A. Razin	63	161	533	118	9	174	27
Texas A&M University	1,146	39	Q. Li	82	112	685	101	17	64	50
Texas Tech	227	235	B.T. Ewing	87	99	286	187	10	150	48
Tohoku University	112	296	K. Sasaki	26	288	71	304	4	296	17
Tokyo Institute of Technology	116	294		0	339	0	337	0	336	0
Trinity College Dublin	307	191	P.R. Lane	50	195	650	106	13	103	14
Tsinghua University	259	215	Q. Li	181	32	922	77	18	56	150
Tufts University	363	171	Y.M. Loannides	43	225	424	140	11	128	21
Universidad Autonoma de Madrid	167	264	F.J. Vazquez	15	319	24	325	3	312	17
Universidad de Chile	230	233	V. Fernandez	23	300	48	313	5	277	1
Universidad de Granada	167	264	F.J. Vazquez	15	319	24	325	3	312	17
Universidad del País Vasco	310	189	J.C. Barcena-Ruiz	27	283	88	291	7	226	8
Universidad Nacional Autónoma de México ...	58	320	M.Cruz	6	331	8	332	2	327	2
Universidad Politecnica de Madrid	55	322	A. Garrido	17	316	108	275	7	226	20
Universidade de São Paulo	178	256	J. Goldemberg	87	99	575	114	13	103	98
Universidade Estadual de Campinas	53	323	S.B. Suslick	48	206	57	309	5	277	49
Università degli Studi di Firenze	223	239	A. Cigno	30	274	236	198	8	196	10
Università degli Studi di Padova	280	204	G. Bruello	4	333	20	331	1	331	7
Università Di Bologna	517	121	L. Lambertini	80	115	310	180	11	128	47
Università di Pisa	139	283	A. Bonaccorsi	32	265	309	181	10	150	29
Universitat Autonoma de Barcelona	568	102	S. Barbera	33	260	26	324	8	196	28
Universitat Bielefeld	314	186	A. Greiner	43	225	102	282	6	253	19
Universität Bremen	138	284	W. Elsner	16	318	28	323	4	296	8
Universitat d'Alacant	384	158	F. Vega	40	240	660	105	13	103	26

Universitat de València	505	124	J. Maudos	29	276	314	177	12	114	17
Universität Frankfurt am Main	373	165	R. Inderst	44	219	177	233	7	226	14
Universität Freiburg	157	271	T. Gehrig	19	310	122	271	6	253	15
Universität Hamburg	267	209	R.S.J. Toi	154	45	975	73	20	43	103
Universität Karlsruhe	207	244	O. Rentz	139	53	404	150	11	128	142
Universität Leipzig	66	315	M.C. Angermeyer	402	5	4,426	15	37	6	150
Universität Munster (Westfälische Wilhelms-Un	111	297	M.T. Bohl	50	195	227	204	8	196	67
Universität Politecnica de Catalunya	72	313	J. Freixas	36	254	64	307	7	226	19
Universität Regensburg	123	290	K.O. Stetter	223	24	5,256	9	36	8	150
Universität Stuttgart	44	327	O. Renn	65	152	966	74	10	150	39
Universität Trier	36	332	W. Filc	4	333	0	337	0	336	2
Universität Tübingen	231	231	J. Baten	26	288	95	286	7	226	25
Universität Wien (University of Vienna)	575	101	E. Kirchler	69	138	320	175	9	174	113
Universität Zu Köln	371	167	C. Fuest	50	195	133	264	7	226	45
Université Catholique de Louvain	1,150	38	J.F. Thisse	139	53	1,658	46	19	49	124
Universite de Liege	200	248	P. Pestieau	119	69	635	107	14	88	63
Université de Montréal	605	92	W. Bosseert	78	119	288	184	7	226	25
Université de Nice Sophia Antipolis	158	270	J.L. Gaffard	25	293	24	325	3	312	17
Universite Laval	413	151	J.Y. Duclos	114	76	1,116	65	15	79	150
Universite Libre de Bruxelles	378	162	V. Ginsburgh	52	191	231	201	8	196	49
Université Paris Sorbonne	1,036	45	A. Chateauneuf	43	225	386	154	9	174	37
Universite Paris-Sud 11	69	314		0	339	0	337	0	336	0
Université Pierre et Marie Curie	86	308	A. Chateauneuf	43	225	378	158	9	174	37
Universiti Malaya (University of Malaya)	122	291	M.A. Wazed	15	319	8	332	2	327	11
University College Cork	73	311	S.A. Tarim	26	288	47	314	4	296	25
University College Dublin	409	152	F.P. Barry	85	104	2,581	28	23	35	150
University College London	1,037	44	R. Bludell	78	119	2,188	35	20	43	75
University do Porto	96	305	J. Gama	53	186	154	247	8	196	56
University of Aberdeen	537	110	M. Ryan	93	92	1,160	64	23	35	130
University of Adelaide	324	181	K. Anderson	64	158	288	184	10	150	50
University of Alabama	614	89	P. Perorino	46	212	215	211	6	253	11
University of Alberta	728	71	B. Yeung	33	260	847	82	14	88	35
University of Amsterdam	1,433	26	H. Oosterbeek	43	225	439	138	9	174	22
University of Antwerp	326	178	P. Beutels	75	127	741	93	17	64	150
University of Arizona	822	65	A. Rapoport	119	69	781	90	13	103	80
University of Athens	274	207	E. Papapetrou	23	300	176	234	7	226	2

University of Auckland	477	137	P.C.B. Phillips	154	45	3,117	21	18	56	150
University of Barcelona	313	187	J. Costa-Font	57	175	134	262	8	196	43
University of Basel	224	237	G. Schatz	222	25	4,586	13	26	25	150
University of Bath	268	208	J. Hudson	226	23	2,327	32	24	31	150
University of Bergen	179	255	S.D. Flam	67	149	154	247	6	253	31
University of Bern	167	264	H. Dellas	48	206	186	225	4	296	24
University of Birmingham	642	83	J.H. Fremlin	154	45	183	229	0	336	110
University of Bristol	530	112	C. Propper	60	168	912	78	16	75	86
University of British Columbia	1,117	41	M.B. Devereux	78	119	719	96	14	88	58
University of Calgary	427	147	A. Serletis	110	85	461	132	11	128	47
University of California, Berkley	2,167	10	D. Zilberman	2	337	1	335	1	331	4
University of California, Davis	961	52	S. Rozelle	131	60	1,311	57	25	26	138
University of California, Irvine	524	115	A. Glazer	79	118	300	183	7	226	34
University of California, Los Angeles	1,910	14	S. Edwards	63	161	1,001	71	14	88	24
University of California, Riverside	371	167	J.T. Guo	26	288	220	208	7	226	14
University of California, San Diego	671	76	C.W.J. Granger	84	106	2,864	24	18	56	59
University of California, San Francisco	177	257		0	339	0	337	0	336	0
University of California, Santa Barbara	438	143	J.K. Sengupta	113	77	217	210	4	296	19
University of California, Santa Cruz	265	212	Y.W. Cheung	60	168	845	83	15	79	24
University of Cambridge	929	58	P. Dasgupta	139	53	1,635	47	19	49	150
University of Canterbury	170	262	L. Oxley	76	125	241	196	9	174	32
University of Cape Town	176	258	D. McIntyre	50	195	373	160	13	103	107
University of Central Florida	379	161	G.W. Harrison	68	145	884	80	15	79	51
University of Chicago	1,782	17	J.J. Heckman	111	83	2,603	27	31	16	67
University of Cincinnati	282	202	D. Pal	32	265	231	201	12	114	27
University of Colorado at Boulder	545	109	K.E. Maskus	53	186	470	128	11	128	40
University of Connecticut	587	98	C.F. Sirmans	127	65	701	98	14	88	83
University of Copenhagen	589	95	H. Keiding	46	212	166	240	5	277	39
University of Delaware	308	190	W.V. Gehrlein	92	96	283	188	6	253	19
University of Dundee	215	242	D.M.J. Lilley	239	19	3,757	18	37	6	150
University of Edinburgh	266	210	L. Oxley	76	125	241	196	9	174	32
University of Florida	981	49	H. Theil	75	127	88	291	1	331	34
University of Geneva	176	258	M. Hoesli	40	240	242	195	10	150	38
University of Georgia	685	75	C.A.K. Lovell	53	186	1,766	43	13	103	52
University of Ghent	227	235	W. Verbeke	93	92	626	110	17	64	126
University of Glasgow	523	116	J.R. Malley	33	260	97	285	6	253	18

University of Gothenburg	0	347		0	339	0	337	0	336	0
University of Groningen	688	74	M.J. Postma	162	40	1,180	62	20	43	150
University of Helsinki	482	133	E. Koskela	73	131	314	177	10	150	22
University of Hong Kong	21	339	T.W.H. Ng	20	307	191	222	7	226	8
University of Houston	437	144	D.H. Papell	44	219	763	91	15	79	16
University of Illinois	1,795	16	J.K. Brueckner	104	88	1,321	56	20	43	37
University of Illinois, Chicago	583	100	J.F. McDonald	173	35	1,857	40	24	31	150
University of Indonesia	35	333	A. Kuncoro	7	330	346	169	4	296	6
University of Iowa	479	136	F. Dexter	253	16	1,973	38	31	16	150
University of Kansas	292	196	D. Lien	109	86	347	168	11	128	49
University of Kentucky	459	140	C.W. Holsapple	98	90	812	84	14	88	63
University of Lausanne	229	234	H.U. Gerber	44	219	369	162	9	174	25
University of Leeds	319	183	P.J. Buckley	83	110	996	72	18	56	52
University of Leicester	481	134	D. Fielding	52	191	174	237	8	196	13
University of Liverpool	150	274	T. Walley	231	21	2,341	31	24	31	150
University of Ljubljana	192	252	K. Erjavec	17	316	30	322	4	296	6
University of London (Kings College of London)	5,699	2	R. Bludell	77	123	2,390	29	21	39	73
University of Manchester	1,386	29	C. Kirkpatrick	55	182	209	214	10	150	32
University of Manitoba	299	192	V. Smil	57	175	679	103	14	88	25
University of Maryland	1,545	21	R.G. Chambers	116	74	965	75	11	128	56
University of Maryland Baltimore County	220	240	D. Coates	38	244	171	238	9	174	13
University of Massachusetts	354	172	A. Nagurney	117	72	526	120	15	79	51
University of Melbourne	953	53	J. Creedy	84	106	211	213	8	196	33
University of Miami	256	216	M.T. French	136	57	1,330	55	24	31	141
University of Michigan	1,514	23	A.M. Fenrick	210	27	4,267	16	33	13	150
University of Minnesota	1,173	37	R. Feldman	163	39	1,039	69	17	64	150
University of Missouri	647	82	T. Prato	56	179	318	176	12	114	48
University of Nebraska	399	154	W.B. Walstad	21	304	117	273	7	226	15
University of New Hampshire	167	264	K.S. Conway	19	310	130	265	8	196	10
University of New Mexico	171	260	R.P. Berrens	65	152	334	171	12	114	63
University of New South Wales	760	68	M.C. Kemp	84	106	245	193	4	296	35
University of North Carolina, Chapel Hill	1,091	42	R. Gray	86	101	712	97	14	88	80
University of North Texas	166	269	M. Zafirovski	43	225	69	306	5	277	1
University of Notre Dame	368	169	A.K. Dutt	52	191	94	287	3	312	34
University of Nottingham	1,033	46	M. Wright	199	28	1,841	41	28	23	150
University of Oklahoma	281	203	D. Sutter	52	191	147	256	7	226	18

University of Oregon	12	342	M. Gerrity	69	138	1,440	54	18	56	150	
University of Oslo	494	130	M. Hoel	48	206	523	121	12	114	54	
University of Otago	141	280	P. Crampton	59	171	283	188	11	128	90	
University of Ottawa	201	246	M. Lavoie	93	92	745	92	12	114	117	
University of Oxford	1,220	36	A Gray	130	62	3,375	20	34	11	150	
University of Pennsylvania	2,027	12	M.V. Pauly	271	13	3,772	17	25	26	150	
University of Pittsburgh	488	132	J.R. Lave	147	51	2,910	23	27	24	150	
University of Quebec	326	178	J.P. Gervais	29	276	38	320	4	296	23	
University of Queensland	480	135	C. Tisdell	168	38	694	99	13	103	57	
University of Reading	559	105	C. Brooks	57	175	416	144	13	103	41	
University of Rochester	801	67	R.W. Jones	53	186	213	212	6	253	21	
University of Saskatchewan	265	212	M. Altman	24	297	88	291	6	253	2	
University of Science and Technology of China	34	335	Y. Zhang	321	8	1,676	45	19	49	150	
University of Sheffield	498	128	D.W. Hughes	189	29	848	81	14	88	150	
University of South Carolina	588	96	E. Cohn	28	281	163	244	5	277	16	
University of South Florida	201	246	C. Pantzalis	23	300	184	227	8	196	21	
University of Southampton	365	170	N.R. Jennings	218	26	4,705	11	36	8	150	
University of Southern California	876	59	R. Kalaba	287	11	422	141	9	174	150	
University of St Andrews	237	228	D.G. McMillian	64	158	197	220	8	196	38	
University of Surrey	188	253	G. Bird	69	138	231	201	10	150	16	
University of Sussex	333	176	A. Wagstaff	59	171	1,513	52	17	64	64	
University of Sydney	690	73	A. Frino	42	232	150	251	8	196	43	
University of Technology, Sydney	253	219	C. Chiarella	89	97	288	184	8	196	68	
University of Tennessee Knoxville	347	174	R.K. Roberts	49	204	128	268	7	226	67	
University of Texas at Austin	948	54	A.B. Whinston	280	12	1,595	49	23	35	150	
University of Tokyo	435	145	Y. Matsuno	66	150	81	300	6	253	125	
University of Toronto	1,598	20	C. Gourieux	63	161	518	123	9	174	40	
University of Tsukuba	278	205	M. Kaneko	35	255	220	208	5	277	15	
University of Twente	119	293	A.Y. Hoekstra	32	265	150	251	8	196	45	
University of Utah	390	156	M.R. Capecchi	169	36	7,813	5	40	5	150	
University of Vermont	4,589	4	R.S. Costanza	148	49	5,843	8	32	14	150	
University of Victoria	194	251	D.E.A. Giles	84	106	426	139	14	88	71	
University of Virginia	559	105	C.A. Holt	72	132	805	87	16	75	62	
University of Warwick	863	60	M.P. Taylor	249	17	2,699	26	30	19	150	
University of Washington	969	50	S.J. Turnovsky	117	72	634	108	15	79	59	
University of Waterloo	535	111	P.L. Siklos	70	136	383	155	8	196	38	
University of Western Australia	496	129	M. McAleer	181	32	677	104	14	88	113	
University of Western Ontario	752	69	J. Whalley	113	77	382	156	8	196	68	
University of Wisconsin	1,344	31	J. Buongiorno	119	69	458	134	13	103	99	
University of Wollongong	121	292	C. Harvie	31	270	492	127	1	331	29	
University of York	840	61	A. M. ...	75	228	22	1,240	60	16	75	150

Business Management Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	437	127	J.A. Holmstrom	47	203	464	167	12	153	55
Aarhus University	448	123	K.G. Grunert	65	156	678	131	17	77	87
Arizona State University	865	44	W.T. Tsai	189	42	585	142	13	133	150
Ateneo de Manila University	4	345	S.M. Colarelli	15	305	228	225	5	270	21
Auburn University	706	60	H.J. Rotfeld	53	185	91	282	4	290	7
Australian National University	583	84	S.R. Taylor	155	57	5,035	11	10	180	150
Boston College	664	68	A.G. Woodside	138	67	854	106	12	153	111
Boston University	607	78	H.E Stanley	480	3	10,348	1	57	2	150
Brandeis University	76	326		0	332	0	331	0	330	0
Brigham Young University	292	191	J.V. Hansen	57	174	299	206	9	200	32
Brown University	139	270	L. Putterman	71	145	536	149	14	116	30
California Institute of Technology (Calt...	124	280	D.L. Anderson	134	69	4,664	13	21	41	103
Cardiff University	1,162	25	L.C. Harris	49	194	521	157	13	133	18
Carnegie Mellon University	1,013	33	D.M. Rousseau	54	181	1,240	63	18	64	60
Case Western Reserve University	530	97	P. Gambetti	284	15	6,166	8	47	3	150
Chalmers University of Technology	328	182	A. Styhre	43	218	86	285	5	270	150
Charles University	179	249	R. Horvath	22	288	19	318	2	317	14
Chinese University of Hong Kong	577	86	X. Zhao	46	210	349	189	13	133	38
Chulalongkorn University	97	305	M. Techakumphu	45	213	74	293	5	270	104
City University of Hong Kong	1,127	27	C.M. Tam	142	65	916	98	18	64	150
City University of New York	587	83	T.G. Bali	40	226	144	257	7	240	27
Colorado State University	323	183	S.F. Slater	48	200	804	115	16	92	25
Columbia University	1,395	16	M.B. Holbrooke	52	188	791	117	10	180	36
Cornell University	1,426	13		0	332	0	331	0	330	0
Curtin University of Technology	425	136	I. Phau	23	284	92	281	5	270	26
Dalhousie University	140	268		0	332	0	331	0	330	0
Dartmouth College	603	79	A.Gunasekaran	158	53	1,484	53	18	64	118
Delft University of Technology	382	151	E.J. Hultink	36	240	400	176	14	116	26
Drexel University	517	103	M. Igbaria	65	156	1,315	58	17	77	53
Duke University	1,072	30	H. J. Petroski	160	51	197	237	3	301	16
Durham University	335	179	T.S. Clark	37	236	352	187	12	153	35
Ecole Normale Supérieure de Lyon	7	344	E. Varra	29	265	212	232	11	164	24
École Normale Supérieure, Paris	24	341		0	332	0	331	0	330	0
École Polytechnique	88	317		0	332	0	331	0	330	0

Ecole Polytechnique Fédérale de Lausanne	124	280	M.Gruber	11	322	58	298	5	270	8
Eindhoven University of Technology	452	121	G. Duysters	40	226	390	178	15	103	41
Emory University	525	99	J.N. Sheth	44	216	638	136	10	180	43
Erasmus University Rotterdam	1,247	20	P.H. Franses	177	46	960	94	18	64	105
ETH Zurich (Swiss Federal Institute of Technology)	346	171	E. Lichtenthaler	12	320	82	287	7	240	4
Florida International University	700	61	C. Viswesvaran	66	154	1,991	37	25	25	33
Florida State University	667	65	G.R. Ferris	124	78	1,100	79	22	35	142
Freie Universität Berlin	160	256	K.A. Kondrad	74	136	529	153	13	133	36
Friedrich Alexander Universität Erlangen Nürnberg	195	234	D. Holtbrugge	17	302	28	312	4	290	11
Fudan University	197	233	Y.F. Zhong	160	51	1,164	71	16	92	150
Georg August Universität Göttingen	112	296	A Spiller	32	260	26	314	3	301	59
George Mason University	399	145	D.A. Menasce	94	110	846	109	15	103	58
George Washington University	699	62	E.G. Carayannis	51	190	315	201	11	164	39
Georgetown University	512	105	M.R. Czinkota	33	252	177	250	6	251	20
Georgia Institute of Technology	781	51	N.K. Mahotra	79	130	1,663	48	15	103	57
Georgia State University	1,137	26	W.J. Johnston	65	156	757	121	13	133	82
Goteborg University	370	157	A. Styhre	41	225	75	291	5	270	150
Harvard University	1,083	29	S.J. Gould	258	24	6,974	6	44	4	150
Hebrew University of Jerusalem	567	91	I. Gati	67	151	527	155	11	164	47
Heidelberg Universität	78	325		0	332	0	331	0	330	0
Hokkaido University	422	138	M. Onuma	324	12	1,160	72	18	64	150
Hong Kong Polytechnic University	1,828	6	R. Law	101	98	364	182	13	133	75
Hong Kong University of Science & Techno...	680	64	K.Y. Tam	54	181	1,050	84	16	92	51
Humboldt-Universität zu Berlin	183	245	W. Guth	112	88	1,173	70	13	133	89
Imperial College London	551	94	M. Meade	29	265	314	202	8	223	20
Indian Institute of Technology Bombay (I...	85	318	J.N. Madal	63	162	71	296	3	301	22
Indian Institute of Technology Delhi (II...	369	158	S.G. Deshmukh	97	106	530	152	13	133	75
Indian Institute of Technology Kanpur (I...	118	290	P.S. Vankar	94	110	192	241	6	251	59
Indiana University Bloomington	1,567	7	C.M. Dalton	71	145	75	291	5	270	9
Indiana University Indianapolis	100	302	J.L. Perry	34	249	297	207	10	180	43
Iowa State University	421	139	Y. Suzuki	196	38	2,083	33	14	116	150
Johns Hopkins University	314	186	S.H. Hanke	50	191	95	280	3	301	26
Kansas State University	278	195	C. Sheu	52	188	353	185	10	180	38
Katholieke Universiteit Leuven	507	106	M.G. DeKimpe	40	226	575	144	16	92	47
Keio University	113	294	K. Asakawa	14	310	130	265	7	240	7

King Fahd University of Petroleum & Minerals	143	266	M.S. Sohail	15	305	57	299	4	290	19
King Saud University	82	320	M.A. Al-Mashari	14	310	252	217	7	240	7
Kobe University	171	251	H. Kitagawa	405	8	2,935	24	31	14	150
Korea Advanced Institute of Science & Technology	357	162	I. Han	63	162	919	95	18	64	48
Korea University	241	211	S.J. Chang	14	310	404	175	10	180	8
Kyoto University	204	227	N. Manabe	96	107	533	150	17	77	150
Kyushu University	95	307	T. Kusakabe	104	96	1,014	86	17	77	150
La Trobe University	285	193	T. Bartrum	23	284	35	308	4	290	16
Lancaster University	386	150	M. Pidd	63	162	286	210	9	200	57
Leiden University	183	245	K.A. Jehn	35	243	196	239	14	116	50
Linkoping University	220	223	J. Soderlund	18	299	128	267	6	251	9
London School of Economics and Political Scie	965	40	D.C. Lane	24	280	224	228	10	180	10
Loughborough University	800	49	A.R.J. Dainty	80	128	248	221	9	200	65
Louisiana State University	527	98	B. Lin	135	68	735	123	15	103	150
Ludwig-Maximilians-Universität München	330	181	P.H. Egger	91	115	491	162	14	116	49
Lund University	426	135	M. Al Vesson	36	240	998	87	18	64	15
Maastricht University	611	75	K. De Ruyter	74	136	827	113	18	64	41
Macquarie University	341	175	J. Guthrie	24	280	143	258	7	240	20
Mahidol University	51	330	N. Gerd Sri	14	310	19	318	3	301	12
Masaryk University	18	342	M. Filip	3	330	1	330	1	327	0
Massachusetts Institute of Technology	1,330	18	A. Rich	337	11	5,872	9	32	13	150
McGill University	523	101	L. Dube	70	147	751	122	16	92	80
McMaster University	487	111	N. Bontis	36	240	377	180	7	240	36
Michigan State University	1,545	8	R.J. Calantone	129	74	2,178	32	24	26	127
Michigan Technological University	81	322	K.I. Pelc	13	317	12	324	2	317	5
Monash University	979	36	A.S. Sohal	121	82	798	116	18	64	103
Montana State University	122	283	D. Snepenger	26	275	225	227	5	270	33
Moscow State University	33	339	V.E. Tarasov	86	122	209	234	16	92	3
Nagoya University	89	315	M. Ikeda	35	243	340	193	9	200	63
Nanjing University	100	302	L. Wang	153	60	1,055	83	19	56	150
Nanyang Technological University	665	66	H.T. Tan	25	277	210	233	8	223	18
National Taiwan University	431	132	M.S. Chen	269	20	3,055	22	20	44	150
National Tsing Hua University	200	229	S.C. Hung	26	275	96	279	6	251	30
National University of Ireland, Galway	124	280	D.G. Collings	19	296	61	297	5	270	18
National University of Singapore	1,351	17	T.S.H. Teo	91	115	1,113	75	22	35	84
New Mexico State University	315	184	R.T. Peterson	33	252	408	174	8	223	19

New York University	1,463	12	R. Llinas	294	14	9,464	2	30	15	150
Newcastle University	378	155	P.M. Taylor	157	55	829	112	15	103	150
North Carolina State University	749	53	P.F. Williams	24	280	190	243	6	251	16
Northeastern University	603	79	S.M. Puffer	37	236	336	194	12	153	13
Northwestern University	1,112	28	D.E. Schultz	80	128	140	261	10	180	25
Norwegian University of Science & Technology	270	201	M. Langseth	125	77	986	91	24	26	78
Ohio State University	1,537	9	M.G. Bissell	133	71	310	205	9	200	123
Oklahoma State University	590	82	W.G. Kim	32	260	172	252	8	223	43
Open University UK	478	114	S. Bell	29	265	120	268	8	223	9
Oregon State University	392	147	R. Fare	155	57	1,693	46	17	77	111
Osaka University	138	272		0	332	0	331	0	330	0
Peking University	338	177	A.S. Tsui	33	252	1,129	74	17	77	58
Pennsylvania State University	1,850	4	R. Roy	407	7	3,422	18	23	29	150
Pohang University of Science And Technology	41	337	H. Yu	25	277	262	214	10	180	35
Portland State University	454	120	T. Daim	75	135	155	254	6	251	85
Princeton University	350	168	R.H. Austin	158	53	4,526	15	38	7	150
Purdue University	1,202	22	J.J. McConnell	39	231	1,643	49	13	133	39
Queen's University	354	163	J. Barling	84	125	1,506	51	17	77	77
Queen's University of Belfast	286	192	P.D. Cousins	29	265	480	163	14	116	16
Queensland University of Technology	506	108	M. Skitmore	67	151	331	196	11	164	67
Radboud University, Nijmegen	302	189	J. Benders	39	231	239	223	10	180	34
Rensselaer Polytechnic Institute	465	118	W.A. Wallace	262	22	2,747	26	19	56	150
Rheinisch Westfalische Technische Hochschule Aach	121	284	T. Gries	227	29	130	265	5	270	150
Rheinische Friedrich Wilhelms Universitat Bonn	200	229	G. Blickle	34	249	120	268	7	240	39
Rice University	408	141	D. Windsor	29	265	57	299	3	301	2
Rochester Institute of Technology	177	250	E.H. Fram	13	317	17	321	2	317	8
Royal Institute of Technology, KTH	232	214		0	332	0	331	0	330	0
Royal Melbourne Institute of Technology	353	165	J. Zobel	95	109	919	95	17	77	60
Rutgers	1,400	15	G.F. Harris	48	200	155	254	6	251	21
Saint-Petersburg State University	47	335	C. Romano	13	317	2	329	1	327	0
San Diego State University	439	126	C.W. Chow	47	203	466	165	11	164	49
Sapienza University of Rome	0	348		0	332	0	331	0	330	0
Sciences Po Paris	36	338	P.A. Messerlin	20	293	85	286	3	301	8
Seoul National University	433	131	Y. Park	78	131	216	230	10	180	83
Shanghai Jiao Tong University	2,713	2	C. He	261	23	289	209	8	223	150
Simon Fraser University	507	106	R.L. Tung	32	260	331	196	11	164	33

Stanford University	1,466	11		0	332	0	331	0	330	0
State University of New York Buffalo	556	92	D. Talukdar	19	296	416	172	9	200	16
Stockholm University	298	190	M. Sverke	35	243	207	235	9	200	40
Stony Brook University	285	193	P.K. Dubey	64	159	616	139	10	180	90
Syracuse University	347	170	K. Crowston	49	194	997	88	12	153	50
Tartu University (University of Tartu)	48	333	M. Vadi	8	326	49	304	2	317	9
Technical University of Denmark	133	275	E. Mosekilde	169	48	1,206	67	20	44	150
Technion	352	166	A. Sholan	50	191	336	194	11	164	33
Technische Universität Berlin	201	228	H.G. Gemunder	20	293	346	191	9	200	20
Technische Universität Chemnitz	108	298	U. Gotze	11	322	3	328	1	327	6
Technische Universität Dresden	360	161	P. Offermann	195	39	139	262	6	251	150
Technische Universität München	138	272	M. Bichler	40	226	330	198	11	164	41
Tel Aviv University	610	76	E. I. Meir	40	226	244	222	6	251	42
Texas A&M University	1,537	9	M.A. Hitt	85	123	2,665	27	30	15	150
Texas Tech	381	152	B.T. Ewing	87	119	286	210	10	180	48
Tohoku University	116	291	K.Hayashi	151	62	387	179	10	180	150
Tokyo Institute of Technology	170	252	C. Watanbe	124	78	353	185	9	200	119
Trinity College Dublin	160	256	D. Coghlan	21	289	227	226	6	251	19
Tsinghua University	591	81	W. Zheng	235	27	655	135	12	153	150
Tufts University	140	268	B. Brenner	15	305	0	331	0	330	0
Universidad Autonoma de Madrid	188	239	S. Okazaki	31	263	143	258	8	223	17
Universidad de Chile	113	294	A. Weintraub	45	213	251	218	9	200	87
Universidad de Granada	188	239	S. Okazaki	31	263	143	258	8	223	17
Universidad del País Vasco	161	255	I. Heras	14	310	146	256	6	251	21
Universidad Nacional Autónoma de México ...	61	329	J.L. Solleiro	15	305	19	318	2	317	13
Universidad Politecnica de Madrid	115	292	C.M. Romero	130	73	1,262	61	21	41	150
Universidade de São Paulo	185	244	R.M. Faria	190	41	896	100	16	92	150
Universidade Estadual de Campinas	91	313	D. Dequench	18	299	113	272	8	223	0
Università degli Studi di Firenze	93	311	S. Guercini	9	324	13	323	2	317	2
Università degli Studi di Padova	272	200	C. Forza	35	243	705	125	17	77	15
Università Di Bologna	275	197	G. Barbiroli	49	194	99	277	5	270	27
Università di Pisa	95	307	M. Corso	24	280	190	243	8	223	28
Universitat Autonoma de Barcelona	188	239	D. Urbano	21	289	36	307	3	301	31
Universitat Bielefeld	104	301	A. Muller	340	10	5,072	10	41	5	150
Universität Bremen	132	276	B. Scholz-Reiter	62	166	101	274	7	240	80
Universitat d'Alacant	227	218	E. Claver	29	265	78	289	7	240	9

Universitat de València	484	112	D.R. Soriano	365	9	46	305	4	290	21
Universität Frankfurt am Main	232	214	R. Van Dick	57	174	400	176	13	133	68
Universität Freiburg	82	320	T.P. Gehrig	21	289	138	263	6	251	18
Universität Hamburg	84	319	M. Funke	43	218	188	245	8	223	28
Universität Karlsruhe	198	232	S.T. Rachev	123	80	355	184	10	180	114
Universität Leipzig	89	315	G.B. Mohr	17	302	100	275	6	251	15
Universität Munster (Westfälische Wilhelms-Un	97	305	G. Vossen	63	162	164	253	6	251	63
Universität Politecnica de Catalunya	332	180	D. Cayuela	114	87	73	295	4	290	52
Universität Regensburg	95	307		0	332	0	331	0	330	0
Universität Stuttgart	95	307	F. Leymann	85	123	669	133	13	133	108
Universität Trier	48	333	B. Swoboda	14	310	28	312	3	301	27
Universität Tübingen	146	262	M. Pudelko	14	310	53	303	5	270	10
Universität Wien (University of Vienna)	354	163	A. Diamantopoulos	54	181	884	102	15	103	40
Universität Zu Köln	222	221	C. Loebbecke	33	252	100	275	5	270	31
Université Catholique de Louvain	243	209	L. Simar	54	181	578	143	16	92	150
Universite de Liege	81	322	P. Pestieau	119	83	635	137	14	116	63
Université de Montréal	381	152	G. Laporte	254	25	3,148	21	30	15	150
Université de Nice Sophia Antipolis	106	299	J.L. Gaffard	25	277	24	316	3	301	17
Universite Laval	473	116	N. Amara	28	273	341	192	12	153	43
Universite Libre de Bruxelles	132	276	I. Prigogine	81	127	779	119	11	164	39
Université Paris Sorbonne	275	197	S. Saussier	9	324	39	306	3	301	13
Universite Paris-Sud 11	51	330		0	332	0	331	0	330	0
Université Pierre et Marie Curie	49	332		0	332	0	331	0	330	0
Universiti Malaya (University of Malaya)	145	264	B.B. Zaidan	21	289	11	325	3	301	31
University College Cork	120	286	P. Finnegan	45	213	919	95	16	92	150
University College Dublin	311	187	B. Fynes	20	293	214	231	9	200	21
University College London	375	156	A. Furnham	574	1	7,520	5	30	15	150
University do Porto	62	328	E. Oliveira	73	139	98	278	5	270	64
University of Aberdeen	352	166	R. Flin	96	107	992	90	19	56	107
University of Adelaide	229	216	P.G. Quester	47	203	254	216	11	164	42
University of Alabama	892	43	S.E. Beatty	37	236	1,101	78	15	103	40
University of Alberta	806	48	E. Erkut	48	200	426	171	9	200	52
University of Amsterdam	727	57	A. Kolk	42	221	325	200	13	133	21
University of Antwerp	242	210	P. De Pelsmacker	35	243	120	268	7	240	29
University of Arizona	965	40	H. Chen	282	16	1,873	41	27	22	150
University of Athens	157	258	F. Tzortzatos-Stathopo	57	174	350	188	11	164	150

University of Auckland	638	71	R.J. Brodie	33	252	268	213	9	200	32
University of Barcelona	120	286	J. Costa-Font	57	174	134	264	8	223	43
University of Basel	75	327	G. Schatz	222	30	4,586	14	26	24	150
University of Bath	427	133	P. Powell	78	131	480	163	12	153	49
University of Bergen	139	270	P. Laegreid	29	265	115	271	8	223	19
University of Bern	110	297		0	332	0	331	0	330	0
University of Birmingham	633	72	J.H. Fremlin	154	59	183	247	0	330	110
University of Bristol	229	216		0	332	0	331	0	330	0
University of British Columbia	519	102	I. Benbasat	102	97	2,538	28	22	35	77
University of Calgary	407	144	A. Serletis	110	91	461	169	11	164	47
University of California, Berkley	824	45	D.S. Hochbaum	87	119	1,342	57	12	153	44
University of California, Davis	195	234	P.L. Mokhtarian	108	94	847	107	23	29	54
University of California, Irvine	337	178	K.J. Lin	119	83	847	107	14	116	120
University of California, Los Angeles	1,209	21	C.T. Russell	558	2	8,108	3	37	8	150
University of California, Riverside	256	204	J.K. Zhu	200	35	6,821	7	64	1	150
University of California, San Diego	1,187	23	A. Timmermann	60	170	698	127	17	77	31
University of California, San Francisco	98	304		0	332	0	331	0	330	0
University of California, Santa Barbara	808	47	J.Su	76	133	549	148	13	133	67
University of California, Santa Cruz	345	172	Y.W. Cheung	60	170	845	110	15	103	24
University of Cambridge	568	90	R. Phaal	61	168	259	215	9	200	72
University of Canterbury	145	264	L.P. Dana	37	236	57	299	5	270	21
University of Cape Town	121	284	M.R. Caira	183	44	856	105	14	116	150
University of Central Florida	724	58	E.Salas	173	47	3,027	23	34	11	150
University of Chicago	623	73	P.K. Chintagunta	66	154	692	129	19	56	71
University of Cincinnati	493	110	F.R. Kardes	39	231	1,083	80	15	103	107
University of Colorado at Boulder	408	141	F. Glover	167	50	1,738	45	17	77	140
University of Connecticut	537	96	C.F. Sirmans	127	75	701	126	14	116	83
University of Copenhagen	115	292	P. Bogetoft	38	235	250	220	10	180	33
University of Delaware	274	199	W.V. Gehrlein	92	113	283	212	6	251	19
University of Dundee	187	243	D.M.J. Lilley	239	26	3,757	16	37	8	150
University of Edinburgh	248	207	Y.H. Chen-Burger	18	299	20	317	3	301	45
University of Florida	1,045	32	S.M. Shugan	47	203	460	170	13	133	18
University of Geneva	141	267	M.E. Hoesli	42	221	291	208	11	164	38
University of Georgia	732	55	R.T. Watson	74	136	1,225	64	18	64	73
University of Ghent	218	224	P. Demeester	466	4	1,887	40	21	41	150
University of Glasgow	451	122	L.A. Moutinho	33	252	105	273	6	251	33

University of Gothenburg	4	345	M.Z. Axell	4	328	192	241	2	317	24
University of Groningen	396	146	M. Wedel	109	93	1,496	52	20	44	131
University of Helsinki	234	213	E. Koskela	72	142	329	199	9	200	22
University of Hong Kong	437	127	F.T.S. Chan	194	40	1,264	60	19	56	146
University of Houston	614	74	D.H. Papell	44	216	763	120	15	103	16
University of Illinois	1,846	5	A. Griffin	56	180	1,377	56	14	116	44
University of Illinois, Chicago	572	87	R.C. Liden	49	194	1,899	39	20	44	57
University of Indonesia	31	340	L. Gani	4	328	9	326	2	317	1
University of Iowa	315	184	F.L. Schmidt	101	98	3,193	20	20	44	75
University of Kansas	221	222	P.P. Shenoy	49	194	361	183	9	200	25
University of Kentucky	390	148	C.W. Holsapple	98	104	812	114	14	116	63
University of Lausanne	92	312	Y. Pigneur	19	296	29	311	4	290	13
University of Leeds	571	88	P.J. Buckley	83	126	996	89	18	64	52
University of Leicester	344	173	A.J.J. Meadows	70	147	179	249	4	290	65
University of Liverpool	166	254	M. Woolridge	153	60	2,847	25	22	35	150
University of Ljubljana	447	124	M. Nikolic	61	168	26	314	2	317	36
University of London (Kings College of London)	3,330	1	J. Birkinshaw	68	150	1,202	68	20	44	55
University of Manchester	1,856	3	B.G. Dale	140	66	608	140	14	116	102
University of Manitoba	339	176	J. Godard	23	284	349	189	9	200	2
University of Maryland	1,425	14	V. Trimble	87	119	251	218	6	251	33
University of Maryland Baltimore County	190	238	T.W. Finin	112	88	1,775	44	19	56	150
University of Massachusetts	245	208	A. Nagurney	117	85	526	156	15	103	51
University of Melbourne	991	34	D. Samson	47	203	628	138	10	180	47
University of Miami	417	140	Y. Luo	89	117	1,273	59	23	29	28
University of Michigan	1,184	24	R.P. Bagozzi	94	110	3,419	19	23	29	82
University of Minnesota	809	46	R.J. Kauffman	148	63	1,110	76	20	44	123
University of Missouri	759	52	H.G. Fung	53	185	196	239	9	200	54
University of Nebraska	541	95	S.M. Lee	200	35	1,199	69	20	44	150
University of New Hampshire	182	247	L. Bstieler	8	326	74	293	4	290	4
University of New Mexico	194	236	S.T. Walsh	58	173	224	228	9	200	70
University of New South Wales	639	70	B. Bentallah	101	98	1,404	55	15	103	117
University of North Carolina, Chapel Hill	973	38	J. B. E.M. Steenkamp	69	149	3,617	17	33	12	150
University of North Texas	344	173	V.R. Prybutok	57	174	505	159	12	153	52
University of Notre Dame	390	148	S. Devaraj	23	284	558	147	11	164	20
University of Nottingham	661	69	M. Wright	199	37	1,841	42	28	21	150

University of Oregon	474	115	L.R. Kahle	33	252	515	158	4	290	35
University of Oslo	264	202	F.R. Forsund	34	249	498	161	6	251	32
University of Otago	241	211	A.M. Everett	16	304	16	322	3	301	16
University of Ottawa	212	225	J.D. Linton	112	88	368	181	12	153	33
University of Oxford	570	89	G.L. Clark	178	45	671	132	13	133	119
University of Pennsylvania	1,274	19	E.K. Clemons	105	95	1,039	85	9	200	58
University of Pittsburgh	473	116	W.R. King	110	91	1,075	81	13	133	52
University of Quebec	150	261	S. D'Amours	47	203	207	235	8	223	41
University of Queensland	525	99	N.M. Ashkanasy	72	142	531	151	14	116	61
University of Reading	464	119	C. Brooks	57	174	416	172	13	133	41
University of Rochester	199	231	A. Seidmann	76	133	973	93	9	200	58
University of Saskatchewan	252	205	N.T. Sheehan	15	305	31	310	4	290	7
University of Science and Technology of China	154	259	L.Y. Liang	280	18	1,463	54	22	35	150
University of Sheffield	728	56	D.W. Hughes	189	42	875	104	15	103	150
University of South Carolina	976	37	V. Grover	39	231	710	124	14	116	25
University of South Florida	379	154	T.D. Allen	64	159	1,071	82	22	35	86
University of Southampton	208	226	N.R. Jennings	218	31	4,705	12	36	10	150
University of Southern California	735	54	G.J. Tellis	42	221	679	130	17	77	25
University of St Andrews	119	289	D.G. McMillian	64	159	197	237	8	223	38
University of Surrey	278	195	G. Pavlou	148	63	572	145	13	133	150
University of Sussex	146	262	M.Meyer	126	76	2,287	31	29	19	150
University of Sydney	665	66	D.A. Hewsher	203	34	1,243	62	19	56	128
University of Technology, Sydney	368	159	E Chang	314	13	314	202	8	223	130
University of Tennessee Knoxville	435	129	J.T. Mentzer	43	218	567	146	11	164	54
University of Texas at Austin	972	39	A.B. Whinston	280	18	1,595	50	23	29	150
University of Tokyo	799	50	N. Sasaki	282	16	1,834	43	20	44	150
University of Toronto	1,067	31	G.P. Latham	88	118	2,032	35	18	64	60
University of Tsukuba	79	324	K. Tsuda	50	191	76	290	3	301	66
University of Twente	258	203	M. Reichert	100	101	503	160	10	180	78
University of Utah	553	93	M.R. Capecchi	169	48	7,813	4	40	6	150
University of Vermont	188	239	J.M. Sinkula	12	320	600	141	6	251	11
University of Victoria	136	274	W.M. Roth	228	28	1,109	77	24	26	109
University of Virginia	424	137	R.E. Spekman	33	252	882	103	14	116	25
University of Warwick	987	35	J. Swan	53	185	698	127	17	77	17
University of Washington	949	42		0	332	0	331	0	330	0
University of Waterloo	435	129	K.W. Hipel	263	21	831	111	14	116	132

University of Western Australia	364	160	G.N. Soutor	46	210	466	165	10	180	52
University of Western Ontario	683	63	P.W. Beamish	60	170	1,151	73	17	77	59
University of Wisconsin	709	59	J.P. Chaves	92	113	658	134	10	180	61
University of Wollongong	224	219	S. Dolnicar	35	243	87	284	5	270	25
University of York	120	286	K. Hartley	47	203	182	248	7	240	28
University of Zurich	106	299	B.S. Frey	157	55	2,052	34	20	44	111
Univesitas Gadjah Mada	11	343	M.A. Quaddus	46	210	188	245	8	223	44
Uppsala University	151	260	M.O. Karlsson	208	33	2,430	30	27	22	150
Utah State	127	278	D. Paper	29	265	35	308	3	301	16
Utrecht University	350	168	A.B. Bakker	99	102	1,674	47	29	19	146
Vanderbilt University	250	206	P.L. Rousseau	27	274	235	224	9	200	10
Victoria University of Wellington	1	347	M.T. Angelillo	2	331	7	327	2	317	8
Vienna University of Technology	193	237	G. Feichinger	134	69	463	168	9	200	61
Virginia Polytechnic Institute	484	112	M.J. Sirgy	73	139	529	153	13	133	64
Vrije Universiteit, Brussels	608	77	P.N. Nijkamp	436	5	2,024	36	20	44	150
VU University Amsterdam	578	85	P. Nijkamp	436	5	1,911	38	19	56	150
Wageningen University	125	279	R.B.M. Huirne	131	72	895	101	17	77	137
Wake Forest University	182	247	J.G. Grzyacz	72	142	789	118	16	92	95
Waseda University	46	336	J. Watada	122	81	173	251	5	270	106
Washington State University	408	141	J.S. Valacich	62	166	908	99	13	133	65
Washington University in St. Louis	311	187	S. Chib	49	194	1,208	66	18	64	57
Wayne State University	497	109	A. Reinstein	42	221	81	288	5	270	28
West Virginia University	169	253	J.R. Brown	98	104	2,498	29	23	29	150
Yale University	90	314	F.J. Fabozzi	73	139	91	282	5	270	78
Yonsei University	224	219	S.Y. Sohn	99	102	311	204	11	164	67
York University	516	104	R.J. Burke	216	32	1,225	64	16	92	150
Zhejiang University	427	133	J.L. Chen	67	151	57	299	5	270	101

Nursing Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	23	299	J. Kujala	17	303	68	283	6	254	26
Aarhus University	391	102	F. Olesen	214	78	1,757	115	24	95	150
Arizona State University	266	133	B.M. Melnyk	107	159	572	197	14	161	132
Ateneo de Manila University	1	343	E. Bagarinao	19	299	92	278	6	254	31
Auburn University	211	159	K.N. Barker	58	234	924	157	12	182	83
Australian National University	133	200		0	313	0	311	0	308	0
Boston College	406	98	J.W. Hawkins	63	227	144	260	6	254	73
Boston University	1,384	16	A.S. Ash	141	127	4,155	61	37	41	150
Brandeis University	203	165	S.S. Wallack	56	239	273	231	7	243	59
Brigham Young University	199	167	L.C. Callister	100	167	372	220	13	173	114
Brown University	602	65	V. Mor	313	41	7,556	29	48	21	150
California Institute of Technology (Calt...)	7	324	D. Baltimore	192	88	18,947	9	64	11	150
Cardiff University	765	45	P. Burnard	136	130	1,213	138	14	161	84
Carnegie Mellon University	63	265	M.G. Morgan	79	195	771	173	11	199	98
Case Western Reserve University	1,222	24	D. Neuhauser	124	138	623	191	11	199	134
Chalmers University of Technology	15	306	O.Orwar	112	150	1,668	118	27	78	150
Charles University	91	240		0	313	0	311	0	308	0
Chinese University of Hong Kong	449	80	D.R. Thompson	294	51	3,973	65	32	63	150
Chulalongkorn University	64	262	G.J. Kost	69	206	555	198	15	152	103
City University of Hong Kong	33	289	R. Fan	27	292	112	267	7	243	10
City University of New York	370	105	S.L. Baumann	51	249	96	274	5	266	16
Colorado State University	96	235	P.J. Brennan	222	77	4,537	54	41	33	150
Columbia University	1,906	9	E.R. Kandal	448	17	17,020	12	77	5	150
Cornell University	1,229	22	R.B. Devereux	230	74	8,837	24	14	161	150
Curtin University of Technology	314	121	P. M. Davidson	231	73	5,072	47	17	135	150
Dalhousie University	603	64	K.V. Mann	98	169	1,101	143	18	128	150
Dartmouth College	714	54	S.C. Beyer	146	124	291	225	8	234	38
Delft University of Technology	21	301		0	313	0	311	0	308	0
Drexel University	566	72	H.M. Dreher	38	276	41	296	3	289	60
Duke University	1,842	10	E.J. Topol	1,110	2	42,490	3	107	1	150
Durham University	106	226		0	313	0	311	0	308	0
Ecole Normale Supérieure de Lyon	2	337		0	313	0	311	0	308	0
École Normale Supérieure, Paris	6	327		0	313	0	311	0	308	0
École Polytechnique	2	337		0	313	0	311	0	308	0
Ecole Polytechnique Fédérale de Lausanne	7	324		0	313	0	311	0	308	0
Eindhoven University of Technology	21	301	R.J.M. Mercx	17	303	0	311	0	308	5
Emory University	1,276	21	W.S. Weintraub	411	19	11,428	18	45	27	150
Emory University, Research	216	22	D.W. S	1,226	1	22,127	1	27	1	150

Keio University	103	227	S. Ogawa	461	16	9,162	22	48	21	150
King Fahd University of Petroleum & Minerals	4	334		0	313	0	311	0	308	0
King Saud University	78	253	S.A. Al-Shammari	47	256	289	226	6	254	64
Kobe University	51	274	Y. Nishizuka	187	92	9,115	23	11	199	150
Korea Advanced Institute of Science & Technology	4	334		0	313	0	311	0	308	0
Korea University	86	245	Y.J. Park	57	236	515	203	12	182	150
Kyushu University	269	133	S. S.	272	52	7,614	10	10	20	150

New Mexico State University	91	240		0	313	0	311	0	308	0
New York University	1,023	31	M. Mezey	103	162	1,249	136	15	152	150
Newcastle University	505	76	S. Bond	72	198	880	163	16	141	97
North Carolina State University	87	244	G.S. Davidson	21	297	85	281	2	295	21
Northeastern University	290	128	K.I. Tucker	20	298	9	306	1	303	69
Northwestern University	1,103	29	D. Cella	406	21	11,603	17	60	12	150
Norwegian University of Science & Technology	212	158	S. Kaasa	258	61	8,770	25	47	24	150
Ohio State University	1,122	27	P.J. Schneider	101	165	713	181	12	182	133
Oklahoma State University	94	236	F.N. Owens	111	154	1,627	119	13	173	146
Open University UK	129	204		0	313	0	311	0	308	0
Oregon State University	155	185		0	313	0	311	0	308	0
Osaka University	228	151	T. Kishimoto	626	9	44,277	2	79	4	150
Peking University	141	196		0	313	0	311	0	308	0
Pennsylvania State University	664	56	R. Roy	397	25	3,777	69	24	95	150
Pohang University of Science And Technology	1	343	H.J. Kim	111	154	731	178	12	182	150
Portland State University	65	261		0	313	0	311	0	308	0
Princeton University	103	227	U.E. Reinhardt	182	93	998	151	17	135	150
Purdue University	411	93	D.R. Black	112	150	761	174	12	182	150
Queen's University	342	117	P. Katzmarzyk	163	105	3,321	74	35	47	150
Queen's University of Belfast	277	130	S. Porter	24	294	224	242	5	266	11
Queensland University of Technology	353	110	M. Courtney	72	198	286	227	11	199	113
Radboud University, Nijmegen	514	74	R. Grol	478	15	6,402	36	42	31	150
Rensselaer Polytechnic Institute	20	303	R.J. Linhardt	338	36	5,590	41	42	31	150
Rheinisch Westfälische Technische Hochschule Aach	99	232	L. Radbruch	161	108	1,899	110	25	87	150
Rheinische Friedrich Wilhelms Universität Bonn	190	170	M. Kersting	236	68	883	162	23	99	150
Rice University	45	279		0	313	0	311	0	308	0
Rochester Institute of Technology	1	343	I.A. White	65	222	1,062	146	11	199	123
Royal Institute of Technology, KTH	41	282	J.E.F. Sundberg	133	131	804	168	13	173	136
Royal Melbourne Institute of Technology	136	198	J.R. Jamison	43	264	68	283	2	295	17
Rutgers	752	48	D. Mechanic	200	85	4,399	57	29	72	150
Saint-Petersburg State University	2	337	L.N. Moskvina	194	87	187	253	7	243	150
San Diego State University	351	112	J.F. Stichler	69	206	111	269	5	266	31
Sapienza University of Rome	0	346		0	313	0	311	0	308	0
Sciences Po Paris	0	346		0	313	0	311	0	308	0
Seoul National University	241	147	M.A. Choe	40	270	200	248	7	243	75
Shanghai Jiao Tong University	92	237	M.Q. Cai	68	212	435	213	13	173	107

Simon Fraser University	92	237	T.D. Sterling	124	138	590	194	3	289	69
Stanford University	1,429	14	S. Falkow	354	32	14,118	15	55	16	150
State University of New York Buffalo	6	327	J. Karuza	48	254	458	210	9	221	92
Stockholm University	84	249		0	313	0	311	0	308	0
Stony Brook University	381	104	W.J. Lennarz	297	49	2,805	88	27	78	150
Syracuse University	84	249	M.P. Carey	210	80	3,471	72	33	55	150
Tartu University (University of Tartu)	26	294	R. Kalda	33	281	99	273	6	254	60
Technical University of Denmark	47	276		0	313	0	311	0	308	0
Technion	142	194	E. Ben-Arye	34	280	151	256	8	234	56
Technische Universität Berlin	53	273	R. Busse	82	192	801	170	12	182	108
Technische Universität Chemnitz	0	346		0	313	0	311	0	308	0
Technische Universität Dresden	75	254	W. Kirch	340	35	1,837	112	20	117	150
Technische Universität München	297	126	A. Schoming	558	12	20,482	7	65	10	150
Tel Aviv University	439	82	R. Bergman	44	262	39	299	2	295	42
Texas A&M University	345	116	E.R. Dougherty	365	30	4,296	60	35	47	150
Texas Tech	176	175	M.L. Armstrong	64	224	272	232	11	199	55
Tohoku University	135	199	Y. Imai	364	31	4,597	53	43	30	150
Tokyo Institute of Technology	8	323		0	313	0	311	0	308	0
Trinity College Dublin	308	124	F. Timmins	51	249	148	258	7	243	37
Tsinghua University	10	317	J.S. Bai	376	29	861	165	15	152	150
Tufts University	764	46	J.M. Coffin	179	95	4,350	59	27	78	150
Universidad Autonoma de Madrid	132	201	F. Rodriguez-Artalejo	32	283	102	271	4	279	112
Universidad de Chile	201	166	R. Uauy	249	64	5,093	46	34	51	150
Universidad de Granada	132	201	F. Rodriguez-Artalejo	32	283	102	271	4	279	112
Universidad del País Vasco	64	262	I. Labayen	31	289	174	255	8	234	150
Universidad Nacional Autónoma de México ...	56	269	S. C. Hebert	233	71	6,529	35	52	18	150
Universidad Politecnica de Madrid	56	269	M.Gonzalez-Gross	72	198	683	184	16	141	150
Universidade de São Paulo	996	32	M.A. Trevizan	61	229	44	294	4	279	55
Universidade Estadual de Campinas	113	222	M.H. Lopes	42	265	112	267	4	279	103
Università degli Studi di Firenze	155	185	G.F. Gensini	390	26	3,917	66	34	51	150
Università degli Studi di Padova	280	129	E. Manzato	157	114	871	164	16	141	150
Università Di Bologna	166	178	G. Marchesini	280	57	5,070	48	33	55	150
Università di Pisa	100	230	S. Del Prato	49	253	511	204	10	214	150
Universitat Autònoma de Barcelona	185	171	J. Ybarra	53	245	413	215	12	182	142
Universität Bielefeld	37	284	U. Ravens-Sieberer	87	186	1,138	140	19	124	150
Universität Bremen	47	276	W. Ahrens	42	265	494	206	5	266	150

Universitat d'Alacant	71	255	J. Sanz	39	274	45	293	5	266	47
Universitat de València	121	211	D. Corella	56	239	491	207	11	199	150
Universität Frankfurt am Main	162	181	S. Wicker	40	270	53	289	4	279	39
Universität Freiburg	97	234	E.H. Kuner	202	82	720	180	9	221	150
Universität Hamburg	64	262	D.M. Richter	236	68	2,903	85	28	74	150
Universität Karlsruhe	9	320		0	313	0	311	0	308	0
Universität Leipzig	17	305	M.C. Angermeyer	402	24	4,426	56	37	41	150
Universität Munster (Westfälische Wilhelms-Un	170	176	E. Brug	138	129	388	217	7	243	111
Universität Politecnica de Catalunya	12	313	E. Cobo	36	278	699	183	9	221	147
Universität Regensburg	114	219		0	313	0	311	0	308	0
Universität Stuttgart	9	320	M. Schanz	32	283	198	250	8	234	35
Universität Trier	5	331	K.M. Pirke	204	81	3,170	76	17	135	150
Universität Tübingen	120	214	F. Lang	643	6	17,517	11	60	12	150
Universität Wien (University of Vienna)	247	144	A. N. Lagner	297	49	3,069	80	28	74	150
Universität Zu Koln	215	156	L. Radbruch	165	104	2,026	105	26	82	150
Université Catholique de Louvain	111	225	A. Goffeau	232	72	8,644	26	38	37	150
Universite de Liege	46	278	Z.M. Bacq	158	112	59	287	0	308	112
Université de Montréal	593	67	F. Ducharme	154	117	1,506	122	23	99	150
Université de Nice Sophia Antipolis	43	281	A. Iannelli	64	224	424	214	11	199	150
Universite Laval	394	100	A. Tremblay	307	43	7,110	32	35	47	150
Universite Libre de Bruxelles	166	178	D. Razau	68	212	3,832	67	15	152	150
Université Paris Sorbonne	12	313	S. Cadolle	17	303	0	311	0	308	0
Universite Paris-Sud 11	114	219	B.J. Balkau	201	83	7,331	31	45	27	45
Université Pierre et Marie Curie	116	218	J. Belmin	214	78	938	156	16	141	150
Universiti Malaya (University of Malaya)	56	269		0	313	0	311	0	308	0
University College Cork	144	192	G. McCarthy	96	174	919	158	16	141	150
University College Dublin	231	150	A. Hyde	40	270	124	265	7	243	43
University College London	1,361	17	F. Gibson	69	206	207	246	10	214	117
University do Porto	13	310	H. Barros	273	59	1,770	114	22	105	150
University of Aberdeen	576	71	V. Hundley	45	260	379	219	11	199	91
University of Adelaide	383	103	R.K. Morton	22	296	50	291	0	308	24
University of Alabama	1,919	7	N.L. Keltner	70	204	208	245	6	254	60
University of Alberta	1,593	12	K.S. Courneya	224	75	2,395	100	37	41	150
University of Amsterdam	599	66	N.S. Klazinga	123	141	1,091	145	15	152	150
University of Antwerp	140	197	P.P. De Deyn	410	20	6,824	33	41	33	150
University of Arizona	1,337	19	K.B. Kern	147	123	2,920	84	33	55	150

University of Athens	416	90	C. Stefanadis	643	6	8,307	27	40	35	150
University of Auckland	357	107	S. Buetow	77	197	817	167	14	161	75
University of Barcelona	257	140	L. Serra-Majem	112	150	954	155	20	117	150
University of Base	262	136	S. De Geest	129	136	1,359	132	22	105	150
University of Bath	31	290	S.M. Skevington	68	212	1,467	127	16	141	150
University of Bergen	123	209	B.R. Hanestad	96	174	742	177	16	141	108
University of Bern	35	285	A.E. Stuck	96	174	2,328	102	14	161	150
University of Birmingham	759	47	C. Hicks	60	230	349	222	11	199	39
University of Bristol	435	87	G.D. Smith	666	5	24,736	5	69	8	150
University of British Columbia	660	57	J.I. Botcorft	132	132	1,061	147	15	152	150
University of Calgary	394	100	L.E. Carlson	67	217	1,292	135	24	95	125
University of California, Berkley	86	245	J.R. Bloom	84	189	2,808	87	12	182	116
University of California, Davis	177	173	R.L. Kraviz	160	110	4,363	58	33	55	150
University of California, Irvine	127	208	D.B. Mukame	97	171	962	154	22	105	106
University of California, Los Angeles	2,954	4	R.D. Hays	381	28	17,781	10	56	15	150
University of California, Riverside	35	285	A.W. Norman	314	40	3,115	78	9	221	150
University of California, San Diego	165	180	S. Ancol -Israel	236	68	4,007	64	38	37	150
University of California, San Francisco		11	C. Miaskowski	241	66	3,780	68	33	55	150
University of California, Santa Barbara	29	291	L.C. Wilson	201	83	4,789	52	36	45	150
University of California, Santa Cruz	13	310		0	313	0	311	0	308	0
University of Cambridge	66	258	C.Todd	103	162	2,246	103	26	82	150
University of Canterbury	5	331	G.M. Shaw	72	198	227	241	12	182	95
University of Cape Town	24	298	P. Mayers	14	307	55	288	4	279	37
University of Central Florida	354	109	A. Liberman	68	212	93	275	5	266	64
University of Chicago	440	81	M.H. Chin	108	157	4,505	55	29	72	150
University of Cincinnati	982	34	J. Tseva	129	136	2,731	91	25	87	150
University of Colorado at Boulder	58	268	A. Bryan	47	256	656	187	16	141	56
University of Connecticut	407	96	C.T. Beck	101	165	1,436	129	20	117	17
University of Copenhagen	92	237	K. Avlund	102	164	918	159	21	110	137
University of Delaware	142	194	J. Selekman	40	270	67	285	3	289	20
University of Dundee	580	69	R.M. Harden	189	90	1,951	109	27	78	150
University of Edinburgh	250	142	R. Mander	50	251	72	282	4	279	21
University of Florida	1,425	15	C.J. Pepine	258	61	9,718	20	48	21	150
University of Geneva	62	266	D. Pittet	282	56	7,737	28	47	24	150
University of Georgia	59	267	J.W. Cooper	89	182	893	161	9	221	74
University of Ghent	114	219	T. Defloor	52	248	352	221	15	152	105

University of Gothenburg	263	134	E. Danielson	56	239	241	243	9	221	51
University of Groningen	118	216	R. Sanderman	151	120	2,948	82	28	74	150
University of Helsinki	413	91	H. Sintonen	118	114	1,454	128	21	110	150
University of Hong Kong	155	185	T.H. Lam	344	33	3,699	70	31	67	150
University of Houston	34	288	S.S. Sansgiry	59	232	93	275	5	266	67
University of Illinois	409	594	D. H. Baker	385	27	2,967	81	23	99	150
University of Illinois, Chicago	1,919	7	S.S. Epstein	385	27	537	200	6	25	150
University of Indonesia		340	N. Darmawidjaj	2	311	2	310	1	303	12
University of Iowa	879	40	F. Dexter	253	63	1,973	107	31	67	150
University of Kansas	469	77	J.D. Pierce	32	283	201	247	6	254	60
University of Kentucky	459	78	D.K. Moser	189	90	2,85	86	25	87	150
University of Lausanne	18	304	C.J. Bula	64	224	1,296	134	12	182	133
University of Leeds	424	89	K. Hurst	68	212	142	261	6	25	43
University of Leicester	347	113	R. Baker	177	97	2,499	96	28	74	150
University of Liverpool	276	131	P. Salmon	151	120	1,720	116	25	87	150
University of Ljubljana	86	245	M. Loc	56	239	1,245	137	15	152	140
University of London (Kings College of London)	4,159	2	I.J. Higgingson	238	67	3,087	79	31	67	150
University of Manchester	1,345	18	A. Molassoitis	115	14	1,129	142	20	117	150
University of Manitoba	737	50	N.P. Roos	122	142	1,684	117	13	173	124
University of Maryland	310	12	V. Trimble	87	186	251	238	6	254	33
University of Maryland Baltimore County	1,280	20	B. Resnick	170	100	1,162	139	23	99	150
University of Massachusetts	242	146	J. Young-Mason	71	203	14	304	2	295	9
University of Melbourne	840	41	B. Happel	180	94	590	194	18	128	64
University of Miami	262	136	T. Field	306	44	4,135	62	33	55	150
University of Michigan	931	38	B.E. Fries	118	144	2,551	93	25	87	150
University of Minnesota	745	49	R.L. Kane	420	18	6,115	38	34	51	150
University of Missouri	784	43	V.S. Conn	119	143	1,10	143	20	117	134
University of Nebraska	178	172	V.N. Gladshev	150	122	2,352	101	39	36	150
University of New Hampshire	99	232	S. Fetzer	46	258	137	263	6	254	64
University of New Mexico	204	148	P.T. Clements	59	232	142	261	7	243	67
University of New South Wales	130	20	H. Brodaty	16	306	49	29	1	303	31
University of North Carolina, Chapel Hill	2,126	6	M. Sandelowski	118	144	2,776	89	24	95	150
University of North Texas	35	285	B. Haslip	99	168	436	212	10	214	124
University of Notre Dame	6	327	T.V. Merluzzi	24	294	270	233	5	266	28
University of Nottingham	408	95	D. Kendrick	97	171	675	186	12	182	150

University of Oklahoma	217	155	C. Kenner	104	160	148	258	6	254	100
University of Oregon	234	149	Y. Fang	69	206	727	179	15	152	150
University of Oslo	304	125	T. Moum	104	160	1,613	120	21	110	150
University of Otago	86	245	M. Crowe	29	291	129	264	7	243	24
University of Ottawa	337	118	I.D. Graham	301	45	9,196	21	36	45	150
University of Oxford	205	163	S. Ziebland	89	182	1,997	106	21	110	150
University of Pennsylvania	1,533	13	L.H. Aiken	154	117	3,148	77	31	67	140
University of Pittsburgh	1,042	30	N.G. Castle	167	103	965	153	21	110	135
University of Quebec	112	224	G. Godin	155	115	2,462	98	17	135	150
University of Queensland	225	153	D. Hegney	72	198	265	236	11	199	101
University of Reading	160	183	M. Courtenary	62	228	199	249	8	234	22
University of Rochester	511	75	G.R. Morrow	159	111	2,946	83	23	99	150
University of Saskatchewan	403	99	W. Duggleby	48	254	247	239	9	221	48
University of Science and Technology of China	2	337		0	313	0	311	0	308	0
University of Sheffield	950	35	M. Hayter	42	265	92	278	5	266	54
University of South Carolina	646	59	R.F. Valois	98	169	1,469	125	18	128	150
University of South Florida	346	114	P.B. Jacobson	161	108	3,447	73	33	55	150
University of Southampton	368	106	S. Payne	124	138	1,521	121	20	117	150
University of Southern California	206	161	L.S. Schneider	223	76	6,732	34	38	37	150
University of St Andrews	26	294	H.T.O. Davies	328	39	5,329	44	44	29	150
University of Surrey	219	154	V. Tschudin	80	194	40	297	4	279	31
University of Sussex	27	293	L. Fallowfield	190	89	5,249	45	38	37	150
University of Sydney	1,107	28	D. Elliot	46	258	268	234	10	214	74
University of Technology, Sydney	262	136	C. Duffield	89	182	519	201	12	182	77
University of Tennessee Knoxville	249	143	S.P. Thomas	155	115	637	190	14	161	98
University of Texas at Austin	582	68	L. Rew	95	177	518	202	11	199	73
University of Tokyo	121	211	Y. Ohashi	406	21	4,874	50	32	63	150
University of Toronto	2,873	5	T.W. Mak	632	8	47,418	1	101	2	150
University of Tsukuba	25	297	Y. Ohashi	406	21	4,874	50	32	63	150
University of Twente	14	308	E. Taal	70	204	835	166	17	135	117
University of Utah	1,123	26	P.S. Brooke	89	182	22	302	1	303	1
University of Vermont	439	82	S.E. Abrams	45	260	31	300	3	289	12
University of Victoria	205	163	A.E. Molzahn	57	236	229	240	8	234	102
University of Virginia	457	79	M. Gray	116	147	331	223	9	221	87
University of Warwick	83	251	J. Dale	69	206	755	176	13	173	107
University of Washington	2,975	3	R.D. Palmiter	291	53	12,644	16	50	19	150

University of Waterloo	66	258	J.P. Hirdes	94	179	968	152	13	173	150
University of Western Australia	263	134	K. Judd	53	245	478	209	14	161	29
University of Western Ontario	622	61	C. Forchuk	78	196	277	230	9	221	127
University of Wisconsin	773	44	P.F. Brennan	94	179	706	182	14	161	145
University of Wollongong	69	257	A. Shorten	26	293	150	257	8	234	19
University of York	215	156	N. Cullum	115	148	1,059	148	18	128	107
University of Zurich	245	145	O.M. Hess	343	34	6,358	37	33	55	150
Univesitas Gadjah Mada	13	310	M. Julia	4	310	6	307	1	303	4
Uppsala University	311	122	P.O. Sjoden	196	86	3,182	75	25	87	150
Utah State	49	275	D.R. Black	112	150	761	174	12	182	150
Utrecht University	621	62	D.E. Grobbee	530	13	21,406	6	70	7	150
Vanderbilt University	407	96	K.A. Wallston	82	192	2,546	94	11	199	150
Victoria University of Wellington	56	269	P.J. Wood	11	309	5	308	2	295	1
Vienna University of Technology	5	331		0	313	0	311	0	308	0
Virginia Polytechnic Institute	113	222	J.J. Tyson	170	100	2,740	90	26	82	137
Vrije Universiteit, Brussels	7	324	Y. Vandenplas	293	52	2,470	97	21	110	150
VU University Amsterdam	606	63	L. Deilens	131	133	638	189	16	141	150
Wageningen University	15	306	W.A. Van Staveren	276	58	5,521	43	35	47	150
Wake Forest University	128	205	T.A. Arcury	169	102	1,137	141	23	99	150
Waseda University	38	283		0	313	0	311	0	308	0
Washington State University	146	191	D.E. Baker	301	45	443	211	12	182	86
Washington University in St. Louis	208	160	M.H. Kollef	338	36	7,546	30	53	17	150
Wayne State University	996	32	M.H. Oermann	130	134	647	188	12	182	150
West Virginia University	206	161	J.H. Larrabee	32	283	393	216	9	221	59
Yale University	736	51	M. Grey	108	157	1,338	133	19	124	148
Yonsei University	122	210	E.G. Oh	18	301	40	297	4	279	49
York University	177	173	F.B. Pilkington	44	262	93	275	5	266	18
Zhejiang University	10	317	G.Y. Jiang	19	299	26	301	2	295	50

Veterinary Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	2	322		0	305	0	304	0	302	0
Aarhus University	157	109	A. Viidik	98	197	711	209	12	221	137
Arizona State University	18	272	J.P. Collins	246	62	2,275	100	21	134	150
Ateneo de Manila University	1	332	R. Tan-Palanca	1	303	1	303	1	296	0
Auburn University	1,650	19	B.L. Blagburn	182	108	1,796	118	20	145	150
Australian National University	102	143	I.A. McDougall	154	134	3,205	63	23	113	150
Boston College	86	154	J.R. Murphy	176	115	1,484	134	17	174	150
Boston University	74	171	H.E Stanley	480	11	10,348	16	57	8	150
Brandeis University	7	307	C.J. Hall	286	44	7,769	20	57	8	150
Brigham Young University	37	232	B.L. Roeder	31	287	427	241	13	216	88
Brown University	35	237	A.S. De Groot	66	247	705	210	20	145	150
California Institute of Technology (Calt...)	11	288	M.I. Simon	264	51	11,191	13	52	12	150
Cardiff University	76	169	J. Hemingway	165	128	1,896	114	34	58	150
Carnegie Mellon University	6	311	M.G. Morgan	79	224	771	204	11	232	98
Case Western Reserve University	53	200	H.J. Kung	193	93	3,857	48	38	37	150
Chalmers University of Technology	2	322		0	305	0	304	0	302	0
Charles University	58	186	P. Volf	90	208	425	242	15	197	150
Chinese University of Hong Kong	41	226	E.A.S. Nelson	14	299	43	296	1	296	94
Chulalongkorn University	339	72	M. Techakumphu	45	270	74	292	5	280	104
City University of Hong Kong	1	332		0	305	0	304	0	302	0
City University of New York	8	302	E.D. Kilbourne	107	189	817	202	10	241	101
Colorado State University	2,661	9	P.S. Morley	217	75	3,007	68	28	82	150
Columbia University	80	164	E.R. Kandal	448	13	17,020	7	77	2	150
Cornell University	3,453	3	H.N. Erd	334	33	3,572	54	22	122	150
Curtin University of Technology	15	280	J. Jeyaretnam	2	302	33	297	2	292	2
Dalhousie University	75	170	M.W.J. Gray	174	117	4,923	38	32	63	150
Dartmouth College	0	342		0	305	0	304	0	302	0
Delft University of Technology	17	273	J. Rothulize	149	144	926	191	15	197	150
Drexel University	52	204	D.B. Weiner	346	28	6,592	28	46	20	150
Duke University	196	95	E.L. Simons	142	153	954	188	16	190	146
Durham University	22	263		0	305	0	304	0	302	0
Ecole Normale Supérieure de Lyon	10	294	F.L. Cosset	173	118	3,501	57	48	18	150
École Normale Supérieure, Paris	1	332		0	305	0	304	0	302	0
École Polytechnique	1	332		0	305	0	304	0	302	0

Ecole Polytechnique Fédérale de Lausanne	7	307		0	305	0	304	0	302	0
Eindhoven University of Technology	2	322	R. Huiskes	240	65	5,113	35	42	28	150
Emory University	273	82	H.M. McClure	270	48	4,107	46	31	66	150
Erasmus University Rotterdam	286	79	A.D.M.E. Osterhaus	734	4	23,842	1	63	5	150
ETH Zurich (Swiss Federal Institute of Technology)	19	270	J.W. Blum	263	54	1,960	112	27	90	150
Florida International University	4	315		0	305	0	304	0	302	0
Florida State University	7	307	J.E.A. Bertram	57	259	763	205	14	210	67
Freie Universität Berlin	1,189	38	L. Brunnberg	189	99	317	257	9	252	150
Friedrich Alexander Universität Erlangen Nürnberg	30	250		0	305	0	304	0	302	0
Fudan University	27	251	Y.J. Xie	262	55	1,257	159	17	174	150
Georg August Universität Göttingen	355	68	B. Brenig	184	105	779	203	14	210	150
George Mason University	11	288		0	305	0	304	0	302	0
George Washington University	43	221		0	305	0	304	0	302	0
Georgetown University	51	206	V.M. Hirsch	133	162	3,291	61	35	52	150
Georgia Institute of Technology	40	227	T.L. Maple	77	227	298	260	10	241	88
Georgia State University	25	256	D.W. Boykin	254	57	1,977	110	36	46	150
Goteborg University	112	137	J. Holmgren	377	22	5,141	34	37	38	150
Harvard University	23	259	D.C. Wiley	193	93	11,031	14	46	20	150
Hebrew University of Jerusalem	720	50	I. Yeruham	124	172	360	250	8	262	109
Heidelberg Universität	87	153	H. Bujard	120	176	7,512	22	32	63	150
Hokkaido University	1,236	36	M. Onuma	333	34	1,053	181	17	174	150
Hong Kong Polytechnic University	2	322	J.P. Zhang	1,995	1	15,145	8	50	14	150
Hong Kong University of Science & Techno...	6	311	S.Q. Cheng	44	273	259	263	11	232	87
Humboldt-Universität zu Berlin	201	93	H. Bergner	153	138	154	280	4	285	101
Imperial College London	339	72	G. Dougan	376	23	7,965	19	52	12	150
Indian Institute of Technology Bombay (I...	0	342		0	305	0	304	0	302	0
Indian Institute of Technology Delhi (IL...	1	332	S.N. Naik	43	274	692	212	9	252	62
Indian Institute of Technology Kanpur (I...	1	332	D.C. Rai	42	276	469	234	89	1	6
Indiana University Bloomington	45	216	M.D. Pescovitz	207	80	4,257	43	33	60	150
Indiana University Indianapolis	42	223	M.E. Bard	77	227	2,774	76	21	134	150
Iowa State University	1,441	30	P.G. Halbur	133	162	1,875	116	28	82	150
Johns Hopkins University	435	62	S.H. Snyder	300	40	14,180	9	75	3	150
Kansas State University	1,533	26	J.A. Pickrell	96	201	442	238	4	285	126
Katholieke Universiteit Leuven	252	86	B.M. Goddeeris	198	88	1,389	141	23	113	150
Keio University	51	206	T. Iwasaki	57	259	334	254	11	232	150

King Fahd University of Petroleum & Minerals	1	332		0	305	0	304	0	302	0
King Saud University	148	116	A.A. Al-Qarawi	60	255	283	261	10	241	54
Kobe University	151	113	H. Kitagawa	405	18	2,935	72	31	66	150
Korea Advanced Institute of Science & Technology	8	302	O.J. Yoo	78	226	1,710	122	17	174	150
Korea University	32	244	D. Cho	98	197	1,331	151	14	210	150
Kyoto University	289	77	T. Serikawa	202	83	2,089	107	21	134	150
Kyushu University	121	131	M. Furuse	217	75	761	206	20	145	150
La Trobe University	48	212	P.H. Hemsworth	126	171	1,163	165	19	155	112
Lancaster University	11	288	L.A. Birke	46	268	177	276	5	280	31
Leiden University	108	139	T.H.M. Ottenhoff	347	27	4,967	37	41	30	150
Linkoping University	47	213	P. Jensen	95	203	1,069	178	20	145	150
London School of Economics and Political Scie	1	332	LA Smith	154	134	2,418	89	31	66	150
Loughborough University	5	313	B.A. Buffham	74	233	214	269	6	277	46
Louisiana State University	1,623	20	T.R. Klei	154	134	1,095	173	16	190	150
Ludwig-Maximilians-Universität München	1,566	25	K. Heinritzi	115	182	218	268	8	262	150
Lund University	103	142	R. Holmdahl	388	20	5,227	33	41	30	150
Maastricht University	62	183	I.D. Wijnberg	48	267	114	288	9	252	103
Macquarie University	70	180	J.M. Whalley	74	233	349	251	14	210	128
Mahidol University	160	106	P. Kittayapong	68	246	688	213	17	174	141
Masaryk University	117	135	D. Horky	37	282	93	289	4	285	73
Massachusetts Institute of Technology	137	124	J.G. Fox	440	14	6,523	29	46	20	150
McGill University	336	74	X.Q. Zhao	197	89	1,612	129	24	107	150
McMaster University	91	149	F.L. Graham	81	221	4,187	45	35	52	150
Michigan State University	2,311	12	J.B. Kaneene	206	81	21,116	3	24	107	150
Michigan Technological University	3	318		0	305	0	304	0	302	0
Monash University	179	100	B. Adler	191	96	1,595	131	24	107	150
Montana State University	159	107	J.P. Dubey	959	2	20,441	4	50	14	150
Moscow State University	8	302	V.E. Tarasov	86	211	209	271	16	190	3
Nagoya University	139	123	T. Namikawa	85	215	636	216	15	197	150
Nanjing University	5	313	L. Wang	153	138	1,055	179	19	155	150
Nanyang Technological University	3	318		0	305	0	304	0	302	0
National Taiwan University	288	78	C.H. Wang	52	261	172	277	8	262	99
National Tsing Hua University	16	278	W.W. Lin	158	131	1,477	135	18	164	150
National University of Ireland, Galway	38	229	P.R. Smith	61	254	498	229	11	232	80
National University of Singapore	73	174	J. Kwang	124	172	1,365	143	19	155	150
New Mexico State University	125	129	D.M. Hailford	105	190	586	222	10	241	150

New York University	118	134	R.S. Nussenweig	193	93	2,666	82	25	102	150
Newcastle University	234	87	P.A. Flecknell	132	165	962	186	15	197	150
North Carolina State University	269	83	E.B. Breitschwendt	243	64	2,141	104	33	60	150
Northeastern University	17	273		0	305	0	304	0	302	0
Northwestern University	36	235	J.S. Takahashi	360	25	3,375	59	24	107	150
Norwegian University of Science & Technology	21	265	D.B. Chen	91	207	1,389	141	21	134	150
Ohio State University	3,052	6	W.W. Muir	275	46	1,636	127	16	190	150
Oklahoma State University	1,288	34	A.W. Confer	167	126	887	198	17	174	150
Open University UK	20	269		0	305	0	304	0	302	0
Oregon State University	769	48	C.K. Cebra	76	231	371	249	12	221	100
Osaka University	108	139		0	305	0	304	0	302	0
Peking University	51	206	Y.X. Zhu	52	261	325	255	12	221	150
Pennsylvania State University	575	55	A.J. Heinrichs	86	211	675	214	15	197	78
Pohang University of Science And Technology	13	283	Y.C. Sung	84	216	1,950	113	28	82	150
Portland State University	2	322		0	305	0	304	0	302	0
Princeton University	14	282	E.C. Cox	101	193	2,951	70	30	71	150
Purdue University	1,617	21	L.T. Glickman	199	86	2,199	102	23	113	150
Queen's University	46	214	W.P. Aston	35	283	70	293	2	292	41
Queen's University of Belfast	653	52	F. McNeilley	99	195	1,025	183	28	82	150
Queensland University of Technology	35	237	P. Timms	137	156	1,339	148	23	113	150
Radboud University, Nijmegen	142	121	T.B. Vree	435	15	2,010	109	12	221	150
Rensselaer Polytechnic Institute	3	318		0	305	0	304	0	302	0
Rheinisch Westfalische Technische Hochschule Aach	17	273	R. Fischer	240	65	3,361	60	36	46	150
Rheinische Friedrich Wilhelms Universitat Bonn	163	104	H. Sauerwein	72	238	632	217	12	221	146
Rice University	9	298		0	305	0	304	0	302	0
Rochester Institute of Technology	0	342		0	305	0	304	0	302	0
Royal Institute of Technology, KTH	17	273		0	305	0	304	0	302	0
Royal Melbourne Institute of Technology	31	248	G.A. Tannock	88	210	301	259	5	280	105
Rutgers	142	121	R.H. Ebright	123	175	3,273	62	35	52	150
Saint-Petersburg State University	2	322	L.N. Moskvina	194	92	187	274	7	268	150
San Diego State University	16	278		0	305	0	304	0	302	0
Sapienza University of Rome	0	342		0	305	0	304	0	302	0
Sciences Po Paris	0	342		0	305	0	304	0	302	0
Seoul National University	706	51	C. Chae	149	144	910	193	21	134	150
Shanghai Jiao Tong University	35	237	J.H. Wang	522	10	2,941	71	26	97	150
Simon Fraser University	27	251	D.E. Nelson	74	233	1,549	133	6	277	106

Stanford University	159	107	S. Falkow	354	26	14,123	10	55	10	150
State University of New York Buffalo	1	332	D.S. Aga	52	261	705	210	19	155	61
Stockholm University	57	190	P.H. Perlmann	315	36	2,473	86	14	210	150
Stony Brook University	39	228	V. Citovsky	104	191	1,965	111	35	52	150
Syracuse University	23	259	B.N. Singh	27	294	229	266	7	268	50
Tartu University (University of Tartu)	26	253	P. Pokk	25	295	159	278	9	252	23
Technical University of Denmark	598	54	F.M. Aarestrup	169	124	3,068	67	37	38	150
Technion	21	265	B.Z. Levi	69	243	2,107	106	18	164	150
Technische Universität Berlin	23	259	E. Kirst	19	297	19	298	3	291	20
Technische Universität Chemnitz	0	342		0	305	0	304	0	302	0
Technische Universität Dresden	10	294	K. Simons	247	60	18,155	5	55	10	150
Technische Universität München	448	61	M. Kirchgessner	475	12	1,074	177	12	221	150
Tel Aviv University	86	154	J. Klafter	305	39	4,700	39	37	38	150
Texas A&M University	2,840	7	N.D. Cohen	163	129	1,420	138	19	155	150
Texas Tech	99	146	J.J. McGlone	110	184	1,128	169	16	190	148
Tohoku University	204	92	Y. Nakai	103	192	413	246	10	241	150
Tokyo Institute of Technology	7	307	N. Okada	173	118	2,934	73	37	38	150
Trinity College Dublin	147	120	P.J. Hartigan	39	279	385	247	7	268	150
Tsinghua University	17	273	J.F. Bai	376	23	879	199	15	197	150
Tufts University	1,082	40	J.E. Rush	141	155	2,404	91	20	145	150
Universidad Autonoma de Madrid	82	162	A.G. Gonzalez	537	8	7,432	23	36	46	150
Universidad de Chile	196	95	H. Toro	45	270	223	267	10	241	89
Universidad de Granada	82	162	A.G. Gonzalez	537	8	7,432	23	36	46	150
Universidad del País Vasco	37	232	J.L.L. Ponton	183	106	1,476	136	21	134	150
Universidad Nacional Autónoma de México ...	373	67	C.S. Galina	72	238	188	273	7	268	150
Universidad Politecnica de Madrid	84	159	P.G. Rebollar	31	287	121	283	7	268	59
Universidade de São Paulo	858	47	S.M. Gennari	109	186	667	215	18	164	150
Universidade Estadual de Campinas	115	136	C.W. Arns	31	287	118	284	7	268	93
Università degli Studi di Firenze	74	171	P. Bonanni	109	186	1,463	137	23	113	150
Università degli Studi di Padova	343	70	I. Andrighetto	45	270	250	264	9	252	88
Università Di Bologna	472	60	A. Diana	29	292	45	295	4	285	72
Università di Pisa	255	85	F. Mancianti	82	220	616	219	12	221	129
Universitat Autonoma de Barcelona	1,026	42	J. Segales	159	130	1,044	182	28	82	150
Universitat Bielefeld	84	159		0	305	0	304	0	302	0
Universität Bremen	13	283		0	305	0	304	0	302	0
Universitat d'Alacant	9	298	V. Urios	40	277	115	286	9	252	49

Universitat de València	63	182	S. Mas-Coma	124	172	897	197	25	102	150
Universität Frankfurt am Main	31	248	K.P. Hunfeld	63	249	481	233	15	197	150
Universität Freiburg	25	256	J. Timmer	145	149	1,638	126	26	97	150
Universität Hamburg	25	256		0	305	0	304	0	302	0
Universität Karlsruhe	2	322	H. Tatachewski	70	242	489	232	18	164	102
Universität Leipzig	725	49	H.A. Schoon	147	146	530	226	10	241	150
Universität Munster (Westfälische Wilhelms-Un	19	270	M. Bergmann	177	112	2,286	98	27	90	150
Universität Politecnica de Catalunya	8	302		0	305	0	304	0	302	0
Universität Regensburg	57	190		0	305	0	304	0	302	0
Universität Stuttgart	9	298	M. Schanz	32	284	198	272	8	262	35
Universität Trier	3	318	E. Fuchs	153	138	4,070	47	37	38	150
Universität Tübingen	55	195	F. Lang	643	6	17,517	6	60	6	150
Universität Wien (University of Vienna)	545	58	H.E. König	63	249	84	291	5	280	92
Universität Zu Köln	35	237	A.H. Radbruch	238	68	7,083	25	43	26	150
Université Catholique de Louvain	97	148	A. Massip	63	249	851	200	15	197	102
Université de Liege	1,258	35	P. Lekeux	268	50	1,146	166	18	164	150
Université de Montréal	1,145	39	M. Gottschalk	171	122	917	192	21	134	150
Université de Nice Sophia Antipolis	13	283	F. Cuzin	97	200	1,296	154	15	197	145
Université Laval	224	88	M.A. Sirard	173	118	2,456	88	30	71	150
Université Libre de Bruxelles	53	200	A. Goldbeter	146	147	2,174	103	22	122	144
Université Paris Sorbonne	1	332		0	305	0	304	0	302	0
Université Paris-Sud 11	32	244		0	305	0	304	0	302	0
Université Pierre et Marie Curie	54	198	A.P. Moller	594	7	21,728	2	60	6	150
Universiti Malaya (University of Malaya)	35	237	P. Agamuthu	40	277	86	290	4	285	33
University College Cork	71	177	C. Hill	254	57	3,190	64	39	36	150
University College Dublin	989	44	M.P. Boland	197	89	3,167	65	35	52	150
University College London	387	65	P. Lees	221	73	1,294	155	20	145	150
University do Porto	86	154	F. Gartner	49	266	422	244	11	232	125
University of Aberdeen	182	99	C.J. Secombes	261	56	2,469	87	36	46	150
University of Adelaide	154	111	R.F. Seamark	201	85	2,332	95	10	241	150
University of Alabama	194	97	M.D. Cooper	136	158	3,641	52	40	32	150
University of Alberta	341	71	L. Sigler	69	243	577	224	13	216	150
University of Amsterdam	88	152	J. Van Paradijs	229	70	5,024	36	49	17	150
University of Antwerp	186	98	A. Houvenghel	133	162	154	280	1	296	47
University of Arizona	380	66	J.T. Huber	80	222	1,054	180	13	216	117
University of Athens	62	183	G.J. Papaevangelou	143	152	758	207	7	268	150

University of Auckland	74	171	B.H. Brier	151	142	3,166	66	26	97	150
University of Barcelona	221	89	A. Dominguez	169	124	1,116	170	17	174	150
University of Basel	77	167	U. Heininger	177	112	1,588	132	22	122	150
University of Bath	10	294	R.H. French-Constant	172	121	2,314	96	30	71	150
University of Bergen	268	84	A. Nyland	79	224	504	228	16	190	130
University of Bern	1,226	37	J.Frey	225	71	2,311	97	27	90	150
University of Birmingham	85	157		0	305	0	304	0	302	0
University of Bristol	1,913	17	T.J. Gruffydd-Jones	170	123	1,362	144	18	164	150
University of British Columbia	148	116	D.M. Weary	134	160	1,270	157	23	113	136
University of Calgary	149	115	M.E. Olson	158	131	2,478	85	29	79	150
University of California, Berkley	534	59	R.S. Lane	119	178	1,116	170	19	155	150
University of California, Davis	5,106	1	I.A. Gardner	244	63	2,339	94	25	102	150
University of California, Irvine	427	63	E. Head	14	299	156	279	2	292	37
University of California, Los Angeles	175	101		0	305	0	304	0	302	0
University of California, Riverside	105	141	B.A. Mullens	92	206	444	237	10	241	94
University of California, San Diego	148	116	G.D. Shelton	134	160	719	208	17	174	150
University of California, San Francisco	56	194	S.B. Prusiner	213	79	7,579	21	71	4	150
University of California, Santa Barbara	11	288		0	305	0	304	0	302	0
University of California, Santa Cruz	8	302	D.P. Costa	128	170	1,747	120	24	107	150
University of Cambridge	1,079	41	R.J.M. Franklin	142	153	2,355	93	40	32	150
University of Canterbury	55	195	N.J. Gemmell	77	227	908	194	17	174	150
University of Cape Town	57	190	A.L. Williamson	110	184	1,139	167	21	134	150
University of Central Florida	15	280	H.W. Daniell	135	159	2,923	74	36	46	150
University of Chicago	57	190	B.J. Cole	144	150	1,267	158	23	113	150
University of Cincinnati	70	180	J.B. Lingrel	19	297	115	286	5	280	26
University of Colorado at Boulder	137	124	C. Carey	39	279	907	195	15	197	75
University of Connecticut	174	102	S. Frasca	50	265	231	265	9	252	150
University of Copenhagen	1,594	22	P. Nansen	287	43	1,650	125	27	90	150
University of Delaware	54	198	J. Burnside	60	255	1,274	156	18	164	150
University of Dundee	58	186	D.M.J. Lilley	239	67	3,757	50	37	38	150
University of Edinburgh	1,686	18	M.E.J. Woolhouse	191	96	3,007	68	31	66	150
University of Florida	3,133	5	W.W. Thatcher	306	37	3,621	53	32	63	150
University of Geneva	53	200	P.H. Lambert	273	47	3,720	51	22	122	150
University of Georgia	2,687	8	J.N. Moore	185	104	1,191	162	14	210	150
University of Ghent	1,951	16	F. Haesebrouck	4	301	4	302	1	296	19
University of Glasgow	1,585	23	S.W.J. Reid	154	134	1,677	124	26	97	150

University of Gothenburg	23	259	A.M. Svennerholm	264	51	2,717	79	29	79	150
University of Groningen	44	220	J.M. Koolhaas	202	83	3,522	55	40	32	150
University of Helsinki	611	53	S. Pyorala	96	201	940	189	18	164	150
University of Hong Kong	45	216	L.P. Samaranayake	342	31	2,254	101	22	122	150
University of Houston	11	288		0	305	0	304	0	302	0
University of Illinois	2,361	11	H.W. Hannah	337	32	15	299	1	296	1
University of Illinois, Chicago	122	130	B.T. Bennett	31	287	116	285	2	292	48
University of Indonesia	2	322	R.H.H. Nelwan	28	293	460	235	12	221	150
University of Iowa	71	177	J.E. Butler	119	178	1,015	184	17	174	150
University of Kansas	51	206	Y. Chebloune	71	240	335	253	11	232	150
University of Kentucky	553	57	E.T. Lyons	183	106	490	230	11	232	127
University of Lausanne	45	216	G. Corradin	190	98	2,527	83	27	90	150
University of Leeds	91	149	C.P. Wild	253	59	3,386	58	30	71	150
University of Leicester	52	204	A.J. Jefferys	217	75	5,330	32	34	58	150
University of Liverpool	1,446	29	S.D. Carter	269	49	2,679	81	30	71	150
University of Ljubljana	278	81	M. Ocepek	32	284	185	275	11	232	111
University of London (Kings College of London)	3,308	4	P. Lees	217	75	1,361	145	22	122	150
University of Manchester	150	114	C.W. Wardlow	30	291	7	300	0	302	2
University of Manitoba	216	90	C.M. Nyachoti	83	218	582	223	15	197	110
University of Maryland	350	69	R.A. Erdman	71	240	1,338	149	18	164	117
University of Maryland Baltimore County	280	80	M.M. Levine	399	19	8,222	18	43	26	150
University of Massachusetts	85	157	R.A. Fissore	86	211	1,305	152	28	82	150
University of Melbourne	981	45	B.W. Parry	60	255	273	262	4	285	84
University of Miami	77	167	J.C. Beier	204	82	1,843	117	21	134	150
University of Michigan	80	164	V. Padmanabhan	137	156	1,337	150	22	122	150
University of Minnesota	2,196	13	M.P. Murtaugh	186	103	2,385	92	23	113	150
University of Missouri	1,506	27	G.E. Rottinghaus	189	99	1,419	139	20	145	150
University of Nebraska	420	64	F.A. Osorio	74	233	938	190	22	122	150
University of New Hampshire	58	186	C.G. Schwab	32	284	423	243	10	241	73
University of New Mexico	33	243	E.S. Loker	109	186	903	196	18	164	150
University of New South Wales	119	132	A.T.J. Lee	178	110	5,546	31	33	60	150
University of North Carolina, Chapel Hill	155	110	O. Smithies	264	51	13,183	11	47	19	150
University of North Texas	12	287	J.W. Simecka	63	249	977	185	16	190	124
University of Notre Dame	26	253	N.J. Besansky	89	209	1,237	160	23	113	150
University of Nottingham	197	94	J.M. Behnke	223	72	1,410	140	20	145	150
University of Oklahoma	32	244	K.E. Bartels	83	218	337	252	7	268	150

University of Oregon	83	161	S.W. Tolle	146	147	1,343	147	17	174	143
University of Oslo	89	151	O. Wiig	117	180	1,130	168	27	90	150
University of Otago	126	128	J.F.T. Griffin	80	222	515	227	12	221	89
University of Ottawa	55	195	H.L. Davis	94	204	4,209	44	40	32	150
University of Oxford	170	103	D.W. MacDonald	383	21	4,322	42	35	52	150
University of Pennsylvania	2,645	10	R.L. Brinster	306	37	9,252	17	37	38	150
University of Pittsburgh	133	126	E.P. Krenzelok	276	45	1,686	123	17	174	150
University of Quebec	42	223	M.A. Sirard	176	115	2,408	90	30	71	150
University of Queensland	1,020	43	C.C. Pollitt	69	243	415	245	17	174	89
University of Reading	332	76	M.J. Bryant	52	261	372	248	10	241	69
University of Rochester	32	244	J.H. Werren	120	176	2,286	98	27	90	150
University of Saskatchewan	2,162	14	B.H. Grahn	144	150	316	258	9	252	119
University of Science and Technology of China	2	322		0	305	0	304	0	302	0
University of Sheffield	79	166	R. Jennings	115	182	561	225	9	252	113
University of South Carolina	37	232	R. Refinetti	86	211	490	230	13	216	16
University of South Florida	36	235	D.B. Weiner	346	28	6,635	27	46	20	150
University of Southampton	50	210	D. Goodwin	25	295	148	282	9	252	28
University of Southern California	38	229		0	305	0	304	0	302	0
University of St Andrews	43	221	H.T.O. Davies	325	35	5,932	30	46	20	150
University of Surrey	101	144	R.E. Spier	177	112	459	236	6	277	57
University of Sussex	9	298	T.J. Roper	98	197	1,088	175	19	155	85
University of Sydney	1,488	28	R. Malik	199	86	1,089	174	20	145	150
University of Technology, Sydney	34	242	J.T. Ellis	100	194	1,185	163	21	134	150
University of Tennessee Knoxville	1,419	32	T.W. Schultz	166	127	1,617	128	30	71	150
University of Texas at Austin	38	229	M.E. Menaker	195	91	4,580	40	25	102	150
University of Tokyo	947	46	K. Doi	773	3	10,395	15	37	38	150
University of Toronto	211	91	N.M. Mrosovsky	182	108	2,074	108	28	82	129
University of Tsukuba	61	185	M. Yamashita	43	274	214	269	8	262	79
University of Twente	4	315		0	305	0	304	0	302	0
University of Utah	73	174	T.E. Cerling	132	165	3,503	56	31	66	150
University of Vermont	119	132	P.S. Kindstedt	46	268	437	239	13	216	46
University of Victoria	13	283	B.F. Koop	132	165	4,477	41	25	102	150
University of Virginia	42	223	K.C. Hazen	77	227	1,727	121	17	174	150
University of Warwick	130	127	L.E. Green	129	169	1,086	176	20	145	150
University of Washington	335	75	R.D. Palmiter	291	42	12,644	12	50	14	150
University of Waterloo	22	263	S.M. Smith	73	237	624	218	12	221	86

University of Western Australia	154	111	G.B. Martin	151	142	1,608	130	17	174	150
University of Western Ontario	45	216	P.W. Yu	189	99	1,298	153	22	122	150
University of Wisconsin	2,090	15	O.J. Ginther	420	17	2,513	84	28	82	150
University of Wollongong	10	294	E.J. Steele	59	258	322	256	8	262	45
University of York	53	200	P.C.L. White	84	216	957	187	19	155	140
University of Zurich	1,576	24	U. Braun	234	69	1,352	146	17	174	150
Univesitas Gadjah Mada	26	253	K. Fukuta	66	247	431	240	7	268	150
Uppsala University	162	105	J. Hau	178	110	601	221	12	221	150
Utah State	148	116	T.D. Bunch	99	195	827	201	11	232	150
Utrecht University	3,627	2	A.C. Beynen	434	16	2,759	77	19	155	150
Vanderbilt University	21	265	R.C. Gupta	694	5	6,648	26	26	97	150
Victoria University of Wellington	2	322	K. Zhang	1	303	0	304	0	302	4
Vienna University of Technology	11	288	C.P. Kubicek	247	60	2,728	78	29	79	150
Virginia Polytechnic Institute	1,393	33	D.S. Lindsay	344	30	2,712	80	30	71	150
Vrije Universiteit, Brussels	50	210	V. Rogiers	187	102	1,890	115	21	134	150
VU University Amsterdam	99	146	A. Stolk	75	232	68	294	0	302	28
Wageningen University	560	56	W. Takken	117	180	1,105	172	22	122	150
Wake Forest University	46	214	J.M. Cline	94	204	1,165	164	22	122	150
Waseda University	4	315		0	305	0	304	0	302	0
Washington State University	1,437	31	T.C. McGuire	296	41	2,111	105	24	107	150
Washington University in St. Louis	58	186	L.D. Sibley	152	141	2,921	75	45	25	150
Wayne State University	71	177	A. Wortinger	38	281	5	301	1	296	12
West Virginia University	73	174	E.K. Inskeep	158	131	1,234	161	15	197	150
Yale University	112	137	E. Fikrig	221	73	3,786	49	42	28	150
Yonsei University	21	265	J.K. Seong	63	249	607	220	15	197	150
York University	0	342		0	305	0	304	0	302	0
Zhejiang University	100	145	L. Yu	131	168	1,791	119	22	122	150

Arts and Humanities Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	35	232	O.V. Lounasmaa	97	75	2,342	45	6	126	150
Aarhus University	336	105	T.S. Barfod	20	192	51	183	4	164	39
Arizona State University	7	270	H.E. Canary	7	278	2	274	1	245	5
Ateneo de Manila University	23	243	A.R.O. Moralina	3	300	0	299	0	290	3
Auburn University	206	141	W.O. Hayes	25	176	131	141	4	164	23
Australian National University	976	23	M.J.T. Spriggs	32	147	336	95	7	112	79
Boston College	406	83	P.S.H. Tang	10	254	0	299	0	290	0
Boston University	799	36	H.E Stanley	480	2	10,348	8	57	9	150
Brandeis University	312	110	A. Wingfield	102	70	1,243	64	18	62	100
Brigham Young University	6	276	R.B. Zabriskie	13	229	43	189	4	164	19
Brown University	901	27	R.C. Archibald	33	142	2	274	0	290	2
California Institute of Technology (Calt...	168	153	A.H. Zewail	428	4	7,875	12	51	10	150
Cardiff University	568	59	C. Norris	17	207	1	284	1	245	0
Carnegie Mellon University	4,531	2	H.A. Simon	137	53	4,415	25	13	76	92
Case Western Reserve University	209	140	P. Gambetti	284	24	6,166	16	47	15	150
Chalmers University of Technology	22	245	R. Bergman	52	105	740	74	18	62	36
Charles University	1	324	V. Baca	24	181	55	179	5	145	61
Chinese University of Hong Kong	1	324	T. Wong	133	57	1,713	52	17	65	150
Chulalongkorn University	24	241	P. Charusiri	25	176	83	166	7	112	57
City University of Hong Kong	233	134	J. Flowerdew	46	116	274	105	11	91	110
City University of New York	5	283	H. Liu	50	108	294	102	13	76	131
Colorado State University	3	302	L. Barnes	1	311	4	261	1	245	1
Columbia University	1,288	11	E.R. Kandal	448	3	17,020	3	77	2	150
Cornell University	893	28	J. Stratton	9	257	6	248	1	245	1
Curtin University of Technology	77	199	J. Stratton	9	257	6	248	1	245	1
Dalhousie University	230	136	M.W. Gray	189	38	3,732	29	29	31	150
Dartmouth College	378	92	J.C. Dunlap	118	64	3,389	32	35	19	150
Delft University of Technology	109	186	J.W. De Leeuw	341	11	4,720	22	30	28	150
Drexel University	60	213	G. Benersky	19	198	34	198	4	164	9
Duke University	817	31		0	318	0	299	0	290	0
Durham University	633	53	E.J. Lowe	33	142	54	180	5	145	1
Ecole Normale Supérieure de Lyon	31	234	C. Hanni	46	116	1,300	62	18	62	144
École Normale Supérieure, Paris	107	187	A. Badiou	23	185	22	219	3	189	5
École Polytechnique	64	209		0	318	0	299	0	290	0

Ecole Polytechnique Fédérale de Lausanne	38	228	O. Blanke	90	80	1,170	65	21	52	117
Eindhoven University of Technology	56	217	R.P.J.M. Raven	26	170	151	134	9	97	37
Emory University	451	75		0	318	0	299	0	290	0
Erasmus University Rotterdam	206	141	F.A. Muller	20	192	37	194	4	164	3
ETH Zurich (Swiss Federal Institute of Technology)	92	190		0	318	0	299	0	290	0
Florida International University	168	153	S. Heine	7	278	1	284	1	245	1
Florida State University	665	49	J.Gert	23	185	24	215	2	221	0
Freie Universität Berlin	480	73	S. Rosenkranz	12	237	16	234	3	189	1
Friedrich Alexander Universität Erlangen Nürnberg	154	159	K.J. Holtgen	23	185	2	274	0	290	1
Fudan University	52	219		0	318	0	299	0	290	0
Georg August Universität Göttingen	233	134	K. Hentschel	18	203	24	215	2	221	6
George Mason University	4	293	J. Offutt	47	113	428	91	12	87	42
George Washington University	286	118	C.M. Fraser	227	35	24,291	1	64	6	150
Georgetown University	778	38	D.C. O'Connell	40	123	130	142	7	112	23
Georgia Institute of Technology	165	156	J.P. Telotte	16	212	6	248	1	245	0
Georgia State University	281	120	D. Belcher	24	181	73	171	5	145	2
Goteborg University	1	324	S. Hemlin	11	246	32	203	3	189	13
Harvard University	2,135	4		0	318	0	299	0	290	0
Hebrew University of Jerusalem	1,282	12	B. Shannon	51	107	324	96	5	145	43
Heidelberg Universität	280	121	H.E. Wiegand	14	224	8	241	2	221	2
Hokkaido University	66	207	P. Stapleton	19	198	47	186	6	126	4
Hong Kong Polytechnic University	119	179	W. Cheng	14	224	72	172	5	145	8
Hong Kong University of Science & Techno...	38	228	L. Flowerdew	8	267	27	211	3	189	0
Humboldt-Universität zu Berlin	357	101	B.J. Schnieder	23	185	20	221	3	189	1
Imperial College London	127	175	L. Wilson	12	237	36	196	1	245	2
Indian Institute of Technology Bombay (I...	6	276		0	318	0	299	0	290	0
Indian Institute of Technology Delhi (IL...	8	266		0	318	0	299	0	290	0
Indian Institute of Technology Kanpur (I...	24	241	G. Neelakantan	5	290	1	284	1	245	2
Indiana University Bloomington	1,810	6	A.W. Shipp	151	49	0	299	0	290	0
Indiana University Indianapolis	9	261	S. Ochs	95	78	311	97	4	164	63
Iowa State University	1	324	E.A. Goeneken	14	224	19	224	1	245	3
Johns Hopkins University	748	43	S.H. Snyder	300	16	14,180	6	75	4	150
Kansas State University	200	145	G.R. Brown	32	147	0	299	0	290	1
Katholieke Universiteit Leuven	775	39	I. Douven	49	109	107	151	78	1	19
Keio University	50	220	P. Skeldon	391	6	2,071	48	29	31	150

King Fahd University of Petroleum & Minerals	10	259	B.S. Yilbas	391	6	1,093	67	19	57	150
King Saud University	37	230	R.T. Mortel	4	294	3	268	1	245	0
Kobe University	23	243	H. Kishimoto	12	237	21	220	3	189	0
Korea Advanced Institute of Science & Technology	0	344		0	318	0	299	0	290	0
Korea University	68	206	A.E. Kim	11	246	32	203	3	189	4
Kyoto University	114	184		0	318	0	299	0	290	0
Kyushu University	25	240		0	318	0	299	0	290	0
La Trobe University	407	82	J.P. Arnason	36	135	17	233	3	189	7
Lancaster University	7	270	A. Mackenzie	13	229	98	156	3	189	25
Leiden University	506	68	J. McAllister	26	170	41	190	3	189	1
Linköping University	132	172	P. Westermark	266	27	3,030	37	25	42	150
London School of Economics and Political Scie	602	57	C.Howson	35	138	115	149	3	189	5
Loughborough University	147	162	C. Antaki	44	119	290	103	12	87	27
Louisiana State University	5	283	R. Good	4	294	48	184	2	221	5
Ludwig-Maximilians-Universität München	498	70	W. Balzer	53	101	381	94	7	112	115
Lund University	347	103	W. Rabinowicz	20	192	121	147	6	126	11
Maastricht University	92	190	N.O. Schiller	43	121	285	104	13	76	41
Macquarie University	365	98	M. Coltheart	158	46	3,544	30	28	36	147
Mahidol University	12	255		0	318	0	299	0	290	0
Masaryk University	75	201	J. Raclavsky	20	192	20	221	3	189	0
Massachusetts Institute of Technology	651	51	A. Rich	337	12	5,872	17	32	24	150
McGill University	813	34	J.H. Quastel	166	44	24	215	0	290	80
McMaster University	443	77		0	318	0	299	0	290	0
Michigan State University	825	30	A. Sherbo	54	99	3	268	1	245	0
Michigan Technological University	50	220	M.M. Cooper	6	285	1	284	0	290	0
Monash University	609	56	L. Humberstone	26	170	81	167	3	189	5
Montana State University	116	182	N.C. Carpenter	9	257	0	299	0	290	0
Moscow State University	83	197	V.E. Tarasov	86	84	209	117	16	71	3
Nagoya University	55	218		0	318	0	299	0	290	0
Nanjing University	66	207	L. Wang	153	47	1,055	68	19	57	150
Nanyang Technological University	121	178	A. Whitehead	12	237	1	284	1	245	0
National Taiwan University	80	198		0	318	0	299	0	290	0
National Tsing Hua University	49	224	J. Truscott	12	237	134	138	6	126	3
National University of Ireland, Galway	137	166	P. Diskin	9	257	0	299	0	290	0
National University of Singapore	380	91	L. Wee	26	170	33	200	4	164	134
New Mexico State University	144	163		0	318	0	299	0	290	0

New York University	1,089	19	R. Llinas	294	18	9,464	10	30	28	150
Newcastle University	520	65	D.H. Tarling	116	65	544	84	7	112	127
North Carolina State University	239	131	S.M. Fitzpatrick	30	157	66	174	7	112	23
Northeastern University	176	150	A.L. Barbasi	11	246	20	221	2	221	28
Northwestern University	802	35	C.A. Mirkin	352	10	15,071	4	73	5	150
Norwegian University of Science & Technology	136	168	I. Bull	5	290	3	268	1	245	1
Ohio State University	1,048	20	W.A. Brantley	152	48	1,434	55	13	76	150
Oklahoma State University	136	168	S.M. Kennison	17	207	154	133	6	126	16
Open University UK	622	54	S.P.R. Rose	292	19	132	140	4	164	12
Oregon State University	184	148	D.M. Robinson	11	246	1	284	1	245	3
Osaka University	50	220		0	318	0	299	0	290	0
Peking University	204	144	D.H. Shen	84	85	542	85	14	75	150
Pennsylvania State University	1,251	14	R. A. Roy	397	5	3,891	27	25	42	150
Pohang University of Science And Technology	16	248	G.G. Lee	66	92	1,276	63	13	76	150
Portland State University	118	181	V.L. Bulter	15	216	182	125	6	126	18
Princeton University	1,313	10	R.M. May	360	9	14,341	5	29	31	150
Purdue University	685	48	J.T. Gandour	104	69	655	78	17	65	80
Queen's University	361	99	P.C. Dodwell	61	94	149	136	1	245	43
Queen's University of Belfast	514	67	M.J. Benton	187	40	2,556	40	26	38	150
Queensland University of Technology	71	203	B.E. Hanna	3	300	1	284	1	245	3
Radboud University, Nijmegen	565	60	R. Schreuder	54	99	608	82	13	76	63
Rensselaer Polytechnic Institute	75	201		0	318	0	299	0	290	0
Rheinisch Westfalische Technische Hochschule Aach	90	193	W. Huber	187	40	2,002	49	21	52	150
Rheinische Friedrich Wilhelms Universitat Bonn	181	149	H. Mommsen	73	89	195	119	8	105	132
Rice University	374	94	D.C. Queller	136	54	2,481	42	26	38	146
Rochester Institute of Technology	70	204	V.V. Raman	8	267	2	274	1	245	0
Royal Institute of Technology, KTH	95	188	S.O. Hannsen	119	62	390	93	10	95	48
Royal Melbourne Institute of Technology	46	226	J. Smart	9	257	6	248	2	221	0
Rutgers	1,103	18	R.H. Ebright	123	61	3,273	33	35	19	150
Saint-Petersburg State University	30	235	L.N. Moskvina	194	37	187	122	7	112	150
San Diego State University	412	80	A.C. Nichols	24	181	18	229	1	245	21
Sapienza University of Rome	0	344		0	318	0	299	0	290	0
Sciences Po Paris	62	210	J.F. Sirinelli	7	278	0	299	0	290	0
Seoul National University	93	189	S. Choi	27	167	33	200	3	189	21
Shanghai Jiao Tong University	30	235		0	318	0	299	0	290	0
Simon Fraser University	371	95	B. Hayden	31	154	308	99	7	112	13

Stanford University	1,496	9	I.L. Weissman	316	15	18,005	2	77	2	150
State University of New York Buffalo	549	63	R. Gasche	15	216	7	245	2	221	0
Stockholm University	391	87	P. Needham	25	176	60	177	6	126	1
Stony Brook University	450	76	R.A. Levin	26	170	4	261	1	245	0
Syracuse University	2	313	H. Synder	13	229	190	120	6	126	15
Tartu University (University of Tartu)	119	179	T. Tulviste	21	190	41	190	6	126	10
Technical University of Denmark	22	245	R. M.J. Cotterill	59	95	772	73	7	112	150
Technion	60	213	M. Ben Chaim	9	257	15	235	3	189	0
Technische Universität Berlin	136	168	D.C. O'Connell	67	91	134	138	6	126	46
Technische Universität Chemnitz	29	238	U. Hentschel	7	278	2	274	1	245	0
Technische Universität Dresden	87	195	H. Wansing	39	127	91	161	6	126	8
Technische Universität München	40	227		0	318	0	299	0	290	0
Tel Aviv University	814	33	D. Ravid	38	131	429	90	8	105	150
Texas A&M University	500	69		0	318	0	299	0	290	0
Texas Tech	3	302	J.A. Wasserman	3	300	1	284	1	245	4
Tohoku University	70	204	A.P. Tsai	322	14	2,614	39	31	25	150
Tokyo Institute of Technology	29	238		0	318	0	299	0	290	0
Trinity College Dublin	317	109	J.B. Gatenby	38	131	1	284	0	290	13
Tsinghua University	130	174	W.M. Zheng	231	32	674	76	12	87	150
Tufts University	310	112	J.M. Coffin	172	43	4,904	20	30	28	150
Universidad Autonoma de Madrid	415	78	J. Polo	9	257	1	284	1	245	0
Universidad de Chile	149	161	R. Latorre	134	56	3,034	36	23	47	150
Universidad de Granada	415	78	J. Polo	9	257	1	284	1	245	0
Universidad del País Vasco	256	129	J.J. Lanz	36	135	136	137	9	97	19
Universidad Nacional Autónoma de México ...	309	113	M. Gomez-Torrente	13	229	34	198	5	145	0
Universidad Politecnica de Madrid	48	225	R.E. Chavez-Segura	34	140	171	128	4	164	71
Universidade de São Paulo	295	117	A.j.G. Simpson	275	26	4,628	23	33	23	150
Universidade Estadual de Campinas	153	160	P.P.A. Funari	15	216	28	209	3	189	7
Università degli Studi di Firenze	205	143	E. magnelli	12	237	4	261	1	245	0
Università degli Studi di Padova	298	115	C. Semenza	115	66	1,001	71	15	72	150
Università Di Bologna	263	127	G. Pasquino	19	198	41	190	4	164	3
Università di Pisa	162	157	M.P. Colombini	97	75	683	75	17	65	150
Universitat Autonoma de Barcelona	376	93	V. Lull	10	254	26	212	3	189	12
Universitat Bielefeld	220	137	P. Weingart	28	162	269	107	7	112	102
Universität Bremen	116	182	M.P. Ferretti	8	267	5	255	1	245	4
Universitat d'Alacant	174	152	A. Del Castillo	8	267	4	261	1	245	1

Universitat de València	282	119	N.V. Perea	89	81	654	79	23	47	58
Universität Frankfurt am Main	277	122	W.K. Essler	16	212	2	274	0	290	7
Universität Freiburg	239	131	M. Fludernik	15	216	38	193	4	164	1
Universität Hamburg	271	125	T.B. Berg	230	33	5,074	18	40	17	150
Universität Karlsruhe	57	216	A.M. Braun	119	62	3,065	35	20	55	150
Universität Leipzig	1	324	K. Alter	38	131	472	88	15	72	71
Universität Munster (Westfälische Wilhelms-Un	1	324	M. Kotter	2	305	30	207	2	221	2
Universität Politecnica de Catalunya	217	138	J. Gacén	290	22	123	144	5	145	97
Universität Regensburg	113	185		0	318	0	299	0	290	0
Universität Stuttgart	88	194	M. Schanz	32	147	198	118	8	105	35
Universität Trier	91	192	H. Breuer	12	237	3	268	1	245	0
Universität Tübingen	300	114	F. Hoffman	368	8	9,887	9	60	7	150
Universität Wien (University of Vienna)	358	100	A. Zeilinger	292	19	7,470	13	49	13	150
Universität Zu Köln	369	97	T. Gartner	56	98	176	127	7	112	27
Université Catholique de Louvain	466	74	X. Seron	110	68	1,129	66	17	65	150
Universite de Liege	140	165	M. Otte	28	162	303	100	9	97	74
Université de Montréal	553	62	M. Albert	11	246	53	181	4	164	7
Université de Nice Sophia Antipolis	125	176	G.T. Feraud	99	73	1,955	51	25	42	150
Universite Laval	297	116	M.Steriade	243	28	6,712	14	46	16	113
Universite Libre de Bruxelles	257	128	N. Delvaux	27	167	521	86	6	126	44
Université Paris Sorbonne	1,224	15	J. Bessiere	13	229	5	255	2	221	11
Universite Paris-Sud 11	62	210	C. Colliex	197	36	4,463	24	29	31	150
Université Pierre et Marie Curie	50	220	C. Bustarret	2	305	1	284	1	245	1
Universiti Malaya (University of Malaya)	76	200	M.A. David	9	257	8	241	2	221	10
University College Cork	122	177	J. McCarthy	28	162	516	87	9	97	80
University College Dublin	400	85	P.J. Lucas	14	224	2	274	0	290	0
University College London	2,593	3	E. Bensly	100	72	0	299	0	290	0
University do Porto	30	235	A.A.C. Teixeira	12	237	8	241	2	221	13
University of Aberdeen	350	102	A. McKie	81	86	1,407	57	21	52	150
University of Adelaide	343	104	E. Bensly	39	127	0	299	0	290	0
University of Alabama	618	55	E. B. Cooper	45	118	182	125	1	245	29
University of Alberta	729	44	P. Brett-MacLean	11	246	47	186	3	189	23
University of Amsterdam	816	32	J. Van Paradijs	229	34	5,024	19	49	13	150
University of Antwerp	191	146	J. Caen	3	300	6	248	1	245	11
University of Arizona	1,026	21	A. Classen	53	101	14	238	2	221	2
University of Athens	137	166	S. Psillos	24	181	68	173	5	145	6

University of Auckland	516	66	R. Ellis	53	101	237	112	11	91	11
University of Barcelona	411	81	M. Garcia-Carpintero	16	212	37	194	3	189	1
University of Basel	176	150	S. Jacomet	30	157	189	121	9	97	131
University of Bath	5	283	A. D. Brown	25	176	161	132	8	105	13
University of Bergen	4	293	E. Aarseth	4	294	7	245	2	221	1
University of Bern	1	324	J. Barth	141	51	1,007	70	12	87	150
University of Birmingham	1,272	13	L.R.M. Strachan	243	28	0	299	0	290	0
University of Bristol	698	47	R.P. Evershed	235	31	2,507	41	35	19	150
University of British Columbia	6	276	I. Meikejohn	35	138	4	261	4	164	10
University of Calgary	543	64	K. Nielsen	48	111	19	224	2	221	0
University of California, Berkley	16	248	T. Katz-Gerro	14	224	84	164	7	112	9
University of California, Davis	770	41	A.B. Damania	30	157	107	151	3	189	10
University of California, Irvine	787	37	F.J. Ayala	278	25	4,805	21	31	25	150
University of California, Los Angeles	1,726	7	J.M. Diamond	189	38	3,272	34	23	47	89
University of California, Riverside	382	90	J.M. Fischer	33	142	95	157	5	145	5
University of California, San Diego	4	293	T. Levy	22	189	85	163	6	126	56
University of California, San Francisco	2	313	J.R. Merighi	17	207	65	175	4	164	22
University of California, Santa Barbara	954	26	A.L. Brueckner	57	96	76	169	4	164	3
University of California, Santa Cruz	2	313	E. Zyzik	7	278	18	229	2	221	3
University of Cambridge	17	247	K.M. Becvar	4	294	2	274	1	245	4
University of Canterbury	2	313	D. Bainbridge	102	70	597	83	13	76	106
University of Cape Town	13	253	A. Jerardino	17	207	123	144	5	145	42
University of Central Florida	144	163	T. Pugh	8	267	5	255	2	221	0
University of Chicago	14	252	M.B. Hansen	5	290	28	209	3	189	0
University of Cincinnati	399	86	C. Gauker	18	203	35	197	4	164	1
University of Colorado at Boulder	8	266	S.S. Lowe	2	305	5	255	1	245	0
University of Connecticut	1	324	R. Shaw	27	167	274	105	7	112	28
University of Copenhagen	4	293	L.J. Whalley	186	42	2,446	43	27	37	150
University of Delaware	2	313	A.L. Ardis	1	311	0	299	0	290	0
University of Dundee	156	158	D.M.J. Lilley	239	30	3,757	28	37	18	150
University of Edinburgh	4	293	R. Gertz	8	267	29	208	3	189	50
University of Florida	660	50	K.M. Heilman	488	1	6,457	15	29	31	150
University of Geneva	1	324	M. Louis-Courvoisier	40	123	19	224	3	189	5
University of Georgia	4	293	E.A.S. Pierre	4	294	18	229	2	221	1
University of Ghent	5	283	G. Van Hooydonk	31	154	250	110	8	105	27
University of Glasgow	752	42	C. Hough	47	113	15	235	2	221	0

University of Gothenburg	3	302	E. Soderpalm	19	198	117	148	7	112	19
University of Groningen	7	270	W.A.J. Meijer	6	285	3	268	1	245	0
University of Helsinki	3	302		0	318	0	299	0	290	0
University of Hong Kong	332	106	A.H.W. Ngan	131	59	805	72	17	65	111
University of Houston	3	302	R. Westerfelhaus	7	278	31	206	3	189	5
University of Illinois	1,590	8	S.H. Ambrose	49	109	1,312	61	17	65	120
University of Illinois, Chicago	483	72	N.R. Smalheiser	92	79	1,635	53	22	51	127
University of Indonesia	6	276	H. Muluk	2	305	3	268	1	245	11
University of Iowa	4	293	R.J. Yetman	8	267	210	115	3	189	8
University of Kansas	2	313	J. Coulehan	32	147	187	122	6	126	13
University of Kentucky	1	324	W. Yan	1	311	0	299	0	290	2
University of Lausanne	1	324	M. Louis-Courvoisier	40	123	19	224	3	189	5
University of Leeds	9	261	E.F. Halpin	11	246	15	235	2	221	9
University of Leicester	493	71	K.A. Pounds	96	77	2,351	44	58	8	150
University of Liverpool	5	283	P. Whitten	74	88	643	80	13	76	103
University of Ljubljana	253	130	D. Jaksic	40	123	10	240	2	221	17
University of London (Kings College of London)	5,108	1	R.A. Weiss	289	23	8,808	11	50	11	150
University of Manchester	1,016	22	C.W. Wardlow	30	157	7	245	0	290	2
University of Manitoba	327	107	B. Caplan	13	229	26	212	4	164	4
University of Maryland	848	29	V. Trimble	87	83	251	109	6	126	33
University of Maryland Baltimore County	166	155		0	318	0	299	0	290	0
University of Massachusetts	3	302	T. Roeper	11	246	26	212	3	189	23
University of Melbourne	771	40	D.A. Denton	295	17	2,085	47	19	57	150
University of Miami	1	324	J.H. Yoepp	1	311	8	241	1	245	3
University of Michigan	16	248	L. Schiesari	10	254	79	168	4	164	17
University of Minnesota	11	257	M.M. Eaton	6	285	18	229	2	221	1
University of Missouri	5	283	K. Welch	34	140	261	108	13	76	79
University of Nebraska	370	96	C. Sayward	36	135	4	261	1	245	4
University of New Hampshire	132	172		0	318	0	299	0	290	0
University of New Mexico	5	283	D.L. Van Cott	15	216	48	184	5	145	4
University of New South Wales	9	261	C.S. Wilson	44	119	210	115	9	97	34
University of North Carolina, Chapel Hill	1,132	17	W.G. Lycan	39	127	74	170	3	189	6
University of North Texas	2	313	C. Blankson	18	203	52	182	4	164	22
University of Notre Dame	4	293	R. Goulding	2	305	0	299	0	290	0
University of Nottingham	13	253	A. Booth	68	90	1,421	56	20	55	61
University of Oklahoma	2	313	T.S. Murphy	6	285	1	284	1	245	2

University of Oregon	584	58	J.M. Erlandson	62	93	673	77	15	72	96
University of Oslo	2	313	O. Eide	5	290	2	274	1	245	5
University of Otago	1	324	M.G. Russell	1	311	0	299	0	290	4
University of Ottawa	3	302	P. Kanaroglou	75	87	643	80	13	76	72
University of Oxford	36	231	P.J. Mitchell	16	212	60	177	4	164	14
University of Pennsylvania	7	270	P. Stallybrass	8	267	5	255	1	245	3
University of Pittsburgh	7	270	E.M. Rasmussen	28	162	214	114	8	105	28
University of Quebec	1	324	R.T. Burnett	136	54	4,007	26	35	19	150
University of Queensland	9	261	I. Woodward	17	207	84	164	6	126	27
University of Reading	561	61	R. Bradley	52	105	162	131	6	126	23
University of Rochester	3	302	E.L. Newport	31	154	1,398	58	13	76	62
University of Saskatchewan	214	139	D. Groves	9	257	0	299	0	290	256
University of Science and Technology of China	15	251	C.S. Wang	39	127	299	101	11	91	127
University of Sheffield	969	24	G.C.M. Smith	19	198	0	299	0	290	0
University of South Carolina	402	84	E.T. Long	13	229	4	261	1	245	0
University of South Florida	325	108	P. Rogers	32	147	6	248	2	221	1
University of Southampton	12	255	A. Pinnock	3	300	1	284	1	245	1
University of Southern California	6	276	D.A. Scott	163	45	1,323	60	26	38	150
University of St Andrews	1	324	M. Bird	141	51	2,116	46	26	38	150
University of Surrey	3	302	M. Blythe	15	216	95	157	5	145	21
University of Sussex	8	266	M.L. Murphy	4	294	5	255	2	221	4
University of Sydney	1,222	16	R.G. Howarth	48	111	2	274	0	290	0
University of Technology, Sydney	6	276	C. Rhodes	25	176	164	129	8	105	13
University of Tennessee Knoxville	2	313	S. Das	33	142	99	155	4	164	19
University of Texas at Austin	10	259	S. Vaughn	99	73	1,050	69	19	57	103
University of Tokyo	185	147	T.D. White	88	82	1,443	54	19	57	150
University of Toronto	2,025	5	M. Dennis	115	66	1,331	59	25	42	150
University of Tsukuba	60	213	D.R.J. Macer	47	113	163	130	5	145	41
University of Twente	1	324	P. Benneworth	12	237	89	162	5	145	9
University of Utah	383	89	T.E. Cerling	132	58	3,503	31	31	25	150
University of Vermont	276	123	P.A. Prelock	32	147	122	146	5	145	34
University of Victoria	5	283	H. Brown	6	285	65	175	4	164	9
University of Virginia	7	270	L.B. Smolkin	8	267	32	203	3	189	9
University of Warwick	6	276	P. Hancock	15	216	47	186	4	164	8
University of Washington	958	25	R.D. Palmiter	291	21	12,644	7	50	11	150
University of Waterloo	0	344		0	318	0	299	0	290	0

University of Western Australia	276	123	M.P. Levine	26	170	14	238	3	189	3
University of Western Ontario	719	45	T. Rajan	20	192	19	224	3	189	3
University of Wisconsin	5	283	J.S. Russell	144	50	435	89	9	97	144
University of Wollongong	1	324	G. Barwell	1	311	1	284	1	245	0
University of York	5	283	M. Blythe	15	216	95	157	5	145	21
University of Zurich	1	324	P.B. Batles	128	60	2,922	38	25	42	109
Univesitas Gadjah Mada	4	293	R.P. Soejono	7	278	248	111	3	189	33
Uppsala University	1	324	D. Parker	32	147	100	154	6	126	27
Utah State	3	302	G. Kiger	21	190	104	153	6	126	15
Utrecht University	651	51	F.A. Muller	20	192	33	200	4	164	3
Vanderbilt University	705	46	L.O. Mills	13	229	0	299	0	290	0
Victoria University of Wellington	388	88	J. Holmes	42	122	408	92	10	95	89
Vienna University of Technology	32	233	P. Weinberger	326	13	1,988	50	23	47	150
Virginia Polytechnic Institute	311	111	R.M. Burian	33	142	108	150	5	145	17
Vrije Universiteit, Brussels	134	171	Y. Lebrun	53	101	151	134	1	245	24
VU University Amsterdam	9	261	F.J. Meijman	57	96	92	160	5	145	36
Wageningen University	0	344		0	318	0	299	0	290	0
Wake Forest University	2	313	A. Mitra	28	162	184	124	9	97	40
Waseda University	61	212		0	318	0	299	0	290	0
Washington State University	266	126	M.E. Wingate	38	131	130	142	1	245	4
Washington University in St. Louis	3	302	D. Walmer	2	305	0	299	0	290	22
Wayne State University	0	344		0	318	0	299	0	290	0
West Virginia University	234	133	J.C. McCrosey	30	157	310	98	11	91	26
Yale University	8	266	A.L. Mishara	18	203	218	113	5	145	23
Yonsei University	86	196	T.P. Murphy	8	267	6	248	2	221	0
York University	11	257	D. Zwick	8	267	23	218	4	164	6
Zhejiang University	1	324	Z. Cao	1	311	0	299	0	290	1

Dentistry Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	7	267	M.H.O. Kononen	95	150	1,202	107	14	144	128
Aarhus University	1,0	23	P. Sueysson	221	50	1,915	59	34	23	150
Arizona State University	7	267		0	274	0	273	0	272	0
Ateneo de Manila University	5	281	M. Iwaku	86	167	937	135	12	164	114
Auburn University	0	336		0	274	0	273	0	272	0
Australian National University	9	252		0	274	0	273	0	272	0
Boston College	1	328		0	274	0	273	0	272	0
Boston University	883	36	T.E. Van Dyke	232	45	3,965	17	29	40	150
Brandeis University	3	301	C.J. Miller	286	29	7,887	6	57	2	150
Brigham Young University	26	195	G.J. Christensen	258	40	861	142	12	164	42
Brown University	37	178		0	274	0	273	0	272	0
California Institute of Technology	1	328		0	274	0	273	0	272	0
Cardiff University	1,0	24	M.E. Addy	338	16	2,403	46	28	43	150
Carnegie Mellon University	8	260	M.G. Morgan	79	178	771	150	11	173	98
Case Western Reserve University	488	65	N.F. Bissaba	100	143	657	162	10	188	118
Chalmers University of Technology	22	204	H. Odelius	38	221	253	222	4	244	70
Charles University	34	184	T. Dostalova	82	174	282	218	10	188	125
Chinese University of Hong Kong	8	260	K.K.F. Cheng	146	95	2,001	57	25	50	150
Chulalongkorn University	200	108	K. Dhanuthai	32	229	44	261	4	244	82
City University of Hong Kong	3	301		0	274	0	273	0	272	0
City University of New York	8	260	E.W. Gresik	62	194	398	200	10	188	58
Colorado State University	7	267		0	274	0	273	0	272	0
Columbia University	926	33		0	274	0	273	0	272	0
Cornell University	48	165		0	274	0	273	0	272	0
Curtin University of Technology	6	273		0	274	0	273	0	272	0
Dalhousie University	353	85	E.J. Sutton	43	217	178	235	3	256	43
Dartmouth College	3	301		0	274	0	273	0	272	0
Delft University of Technology	0	336		0	274	0	273	0	272	0
Drexel University	72	148	B.H. Hendler	24	243	139	241	4	244	37
Duke University	91	140	R.F.D. Kay	83	171	1,225	103	16	113	128
Durham University	13	236		0	274	0	273	0	272	0
Ecole Normale Supérieure de Lyon	5	281	H. Magloire	102	141	712	157	14	144	150
École Normale Supérieure, Paris	1	328		0	274	0	273	0	272	0

Ecole Polytechnique Fédérale de Lausanne	7	267	J. Botsis	80	177	538	174	15	128	86
Eindhoven University of Technology	3	301		0	274	0	273	0	272	0
Emory University	353	85	C.A. Waldron	60	200	964	130	2	264	46
Erasmus University Rotterdam	114	133	E.B. Wolvius	34	224	169	237	8	213	65
ETH Zurich (Swiss Federal Institute of Technology)	34	184		0	274	0	273	0	272	0
Florida International University	3	301		0	274	0	273	0	272	0
Florida State University	4	291		0	274	0	273	0	272	0
Freie Universität Berlin	132	128	P.A. Reichart	290	25	2,458	42	24	52	150
Friedrich Alexander Universität Erlangen Nürnberg	363	82	F.W. Neukam	127	112	1,225	103	21	71	150
Fudan University	9	252	W.Q. Huang	1,141	1	13,096	1	53	4	150
Georg August Universität Göttingen	284	95	T. Attin	168	83	1,076	115	23	58	150
George Mason University	1	328	J.K. Lunney	142	99	1,247	101	20	81	150
George Washington University	44	171		0	274	0	273	0	272	0
Georgetown University	158	120	J.C. Posnick	138	104	1,337	91	9	200	150
Georgia Institute of Technology	44	171	B.D. Boyan	287	28	5,339	11	45	9	150
Georgia State University	3	301		0	274	0	273	0	272	0
Goteborg University	1,158	17	J. Lindhe	361	11	5,023	13	33	29	150
Harvard University	1,232	13	G.S. Shklar	263	36	1,278	97	8	213	150
Hebrew University of Jerusalem	1,312	11	B. Peretz	74	182	338	208	10	188	79
Heidelberg Universität	284	95	P. Rammelsberg	75	180	362	203	11	173	108
Hokkaido University	448	69	H. Sano	124	116	2,583	38	34	23	150
Hong Kong Polytechnic University	11	247	M.C.M. Wong	51	213	621	167	16	113	85
Hong Kong University of Science & Techno...	6	273	F.R. Tay	282	30	2,927	31	51	6	150
Humboldt-Universität zu Berlin	66	153	P.A. Reichart	290	25	2,458	42	24	52	150
Imperial College London	59	159		0	274	0	273	0	272	0
Indian Institute of Technology Bombay (I...	2	314		0	274	0	273	0	272	0
Indian Institute of Technology Delhi (IL...	3	301		0	274	0	273	0	272	0
Indian Institute of Technology Kanpur (I...	2	314		0	274	0	273	0	272	0
Indiana University Bloomington	539	57	B. K. Moore	126	114	1,630	68	17	104	150
Indiana University Indianapolis	777	42	G.K. Stookey	245	44	1,165	110	17	104	150
Iowa State University	4	291		0	274	0	273	0	272	0
Johns Hopkins University	203	107		0	274	0	273	0	272	0
Kansas State University	1	328		0	274	0	273	0	272	0
Katholieke Universiteit Leuven	638	51	M. Quirynem	207	57	2,647	34	28	43	150
Keio University	46	168	T. Nakajima	256	42	860	143	12	164	150

King Fahd University of Petroleum & Minerals	3	301		0	274	0	273	0	272	0
King Saud University	397	77	K. Almas	57	206	204	231	9	200	79
Kobe University	34	184	T. Komori	114	125	469	187	1	268	150
Korea Advanced Institute of Science & Technology	0	336		0	274	0	273	0	272	0
Korea University	19	211	Y.K. Lim	11	266	14	267	2	264	13
Kyoto University	165	119	T. Lizuka	86	167	945	134	15	128	150
Kyushu University	680	46	S. Kanda	110	132	1,163	111	11	173	150
La Trobe University	6	273	S.M. Reilly	38	221	461	189	11	173	83
Lancaster University	4	291	F.L. Martin	112	126	761	151	18	90	150
Leiden University	77	145	C. Lekkas	21	247	70	252	3	256	18
Linköping University	104	136	P. Astrand	19	253	286	216	11	173	53
London School of Economics and Political Scie	3	301		0	274	0	273	0	272	0
Loughborough University	10	250	R. Smith	27	239	67	255	5	238	6
Louisiana State University	549	55	M.S. Block	122	121	1,513	74	15	128	121
Ludwig-Maximilians-Universität München	292	94	R. Hickel	198	61	1,702	63	26	49	150
Lund University	672	48	M. Rohlin	122	121	870	140	10	188	150
Maastricht University	30	192	P.J.W. Stoelinga	186	72	1,021	123	16	113	150
Macquarie University	22	204	P. Petocz	95	150	1,359	87	21	71	150
Mahidol University	172	117	R. Srisatjluk	2	271	3	272	1	268	14
Masaryk University	19	211	A. Fassmann	15	257	118	242	7	222	36
Massachusetts Institute of Technology	48	165	A. Rich	337	17	5,872	9	32	32	150
McGill University	329	90	J.S Fiene	88	159	1,478	78	22	62	150
McMaster University	56	163	A.T. Merchant	64	192	982	128	16	113	126
Michigan State University	25	198		0	274	0	273	0	272	0
Michigan Technological University	2	314		0	274	0	273	0	272	0
Monash University	48	165	D. Figdor	21	247	959	131	9	200	21
Montana State University	14	230	K.F. Woodmansey	13	260	64	256	4	244	5
Moscow State University	4	291	V.E. Tarasov	86	167	209	230	16	113	3
Nagoya University	1,681	6	M. Ueda	427	6	2,632	36	29	40	150
Nanjing University	18	217	L. Wang	153	89	1,055	117	19	84	150
Nanyang Technological University	15	226	A. Asundi	301	21	110	245	18	90	150
National Taiwan University	206	105	C.P. Chaing	132	108	1,015	124	18	90	150
National Tsing Hua University	5	281		0	274	0	273	0	272	0
National University of Ireland, Galway	5	281	M.J.T. Fitzgerald	13	260	78	248	2	264	138
National University of Singapore	451	68	A.V.J. Yap	147	94	1,258	99	22	62	150
New Mexico State University	2	314		0	274	0	273	0	272	0

New York University	1,298	12	G.R. Goldstein	138	104	607	169	9	200	119
Newcastle University	959	27	J.F. McCabe	197	63	1,640	67	18	90	150
North Carolina State University	8	260		0	274	0	273	0	272	0
Northeastern University	15	226		0	274	0	273	0	272	0
Northwestern University	425	72	E.H. Greener	161	85	864	141	3	256	132
Norwegian University of Science & Technology	9	252	U. Syversen	64	192	1,652	65	20	81	150
Ohio State University	1,174	16	M.C. Nahata	456	4	2,572	39	21	71	150
Oklahoma State University	12	240	R.T. Glass	29	236	84	247	5	238	32
Open University UK	12	240		0	274	0	273	0	272	0
Oregon State University	13	236	D.O. Kaldenberg	29	236	242	224	7	222	23
Osaka University	1,044	21	S. Ebisu	187	71	1,958	58	24	52	150
Peking University	311	93	C.F. Cao	59	202	243	223	7	222	97
Pennsylvania State University	22	204	P.W. Brown	67	189	728	155	15	128	50
Pohang University of Science And Technology	4	291	J.K. Lee	60	200	477	184	12	164	91
Portland State University	4	291		0	274	0	273	0	272	0
Princeton University	5	281	W.O. Soboyejo	195	64	1,080	114	17	104	150
Purdue University	37	178	M. Analoui	16	256	239	225	8	213	50
Queen's University	14	230	K.G. Munhall	54	210	814	145	18	90	71
Queen's University of Belfast	369	80	P.J. Lamey	219	52	1,443	79	16	113	150
Queensland University of Technology	21	208	Y.M. Xiao	24	243	454	192	12	164	88
Radboud University, Nijmegen	1,027	25	A.M. Kuijers-Jagtman	223	49	1,153	112	18	90	150
Rensselaer Polytechnic Institute	26	195		0	274	0	273	0	272	0
Rheinisch Westfälische Technische Hochschule Aach	141	123	H. Spiekermann	32	229	836	144	15	128	67
Rheinische Friedrich Wilhelms Universität Bonn	199	109	C. Bouraue	107	134	517	177	14	144	149
Rice University	26	195	A. G. Mikos	340	15	9,934	3	67	1	150
Rochester Institute of Technology	4	291	K. Hickman	10	268	4	271	0	272	5
Royal Institute of Technology, KTH	9	252	T. Arnebrant	93	153	957	132	18	90	115
Royal Melbourne Institute of Technology	0	336		0	274	0	273	0	272	0
Rutgers	37	178	R.H. Ebright	123	119	3,273	24	35	21	150
Saint-Petersburg State University	1	328	L.N. Moskvina	194	66	187	234	7	222	150
San Diego State University	12	240		0	274	0	273	0	272	0
Sapienza University of Rome	0	336		0	274	0	273	0	272	0
Sciences Po Paris	0	336		0	274	0	273	0	272	0
Seoul National University	439	71	Y.K. Lee	297	22	1,211	105	23	58	150
Shanghai Jiao Tong University	117	130	F.Q. Zhang	17	255	5	270	1	268	38
Simon Fraser University	17	221	M.P. Rosin	111	128	1,389	84	18	90	150

Stanford University	137	125	M.T. Longaker	453	5	5,583	10	48	7	150
State University of New York Buffalo	9	252	J. Karuza	48	216	458	191	9	200	92
Stockholm University	20	209	M. Bergdahl	22	246	347	205	10	188	32
Stony Brook University	546	56	H.B. Waldman	391	8	341	207	9	200	37
Syracuse University	14	230	C.M. Davis	7	269	19	266	3	256	9
Tartu University (University of Tartu)	19	211	M. Saag	13	260	53	259	4	244	74
Technical University of Denmark	12	240	S. Kreiborg	124	116	1,398	83	16	113	150
Technion	136	126	M. Peled	98	147	780	149	16	113	122
Technische Universität Berlin	5	281	A. Zouni	40	219	1,744	62	14	144	81
Technische Universität Chemnitz	3	301	J.L. Calvo-Guirado	26	241	34	263	4	244	70
Technische Universität Dresden	136	126	U. Eckelt	81	175	403	199	12	164	143
Technische Universität München	83	143	H.H. Horch	107	134	441	194	11	173	150
Tel Aviv University	1,076	20	L. Levin	81	175	415	196	14	144	82
Texas A&M University	37	178	S.H. Safe	258	40	9,533	4	52	5	150
Texas Tech	4	291	B.K. Bartee	13	260	61	257	4	244	12
Tohoku University	530	58	K. Ooya	93	153	672	160	14	144	121
Tokyo Institute of Technology	18	217	N. Okada	173	80	2,992	28	37	16	150
Trinity College Dublin	235	99	N. Claffey	73	184	708	158	10	188	137
Tsinghua University	12	240		0	274	0	273	0	272	0
Tufts University	932	32	G. Shklar	263	36	1,201	108	7	222	150
Universidad Autonoma de Madrid	67	151	M. Sanz	70	186	1,030	120	22	62	150
Universidad de Chile	198	110	R. Miralles	54	210	323	211	9	200	97
Universidad de Granada	67	151	M. Sanz	70	186	1,030	120	22	62	150
Universidad del País Vasco	86	142	J.M. Agurrie	30	234	314	213	11	173	77
Universidad Nacional Autónoma de México ...	63	156	C. Montes-Ledesma	30	234	154	239	6	235	66
Universidad Politecnica de Madrid	0	336		0	274	0	273	0	272	0
Universidade de São Paulo	2,201	2	J.D. Pecora	173	80	636	165	16	113	150
Universidade Estadual de Campinas	112	134	E.A. Sallum	126	114	467	188	15	128	144
Università degli Studi di Firenze	328	91	T. Baccetti	180	78	976	129	21	71	150
Università degli Studi di Padova	175	115	D. Manfredini	73	184	285	217	12	164	80
Università Di Bologna	383	79	C. Prati	135	107	1,256	100	19	84	150
Università di Pisa	66	153	M. Bosco	40	219	168	238	9	200	35
Universitat Autonoma de Barcelona	24	200		0	274	0	273	0	272	0
Universitat Bielefeld	2	314		0	274	0	273	0	272	0
Universität Bremen	8	260		0	274	0	273	0	272	0
Universitat d'Alacant	4	291		0	274	0	273	0	272	0

Universitat de València	341	89	M.A. Penarrocha	88	159	383	201	9	200	102
Universität Frankfurt am Main	186	112	P. Eickholtz	89	157	471	186	16	113	148
Universität Freiburg	409	74	J. Strub	171	82	1,342	89	19	84	150
Universität Hamburg	76	146	I. Nergiz	33	226	225	227	7	222	38
Universität Karlsruhe	10	250	H.J. Scirdler	27	239	68	253	6	235	40
Universität Leipzig	100	137	M.T. John	61	198	324	210	14	144	89
Universität Munster (Westfälische Wilhelms-Un	139	124	E. Schafer	62	194	412	197	18	90	62
Universität Politecnica de Catalunya	8	260	J.A. Planell	207	57	1,873	60	28	43	150
Universität Regensburg	354	84	G. Schmalz	212	54	2,124	52	28	43	150
Universität Stuttgart	2	314	M. Schanz	32	229	198	232	8	213	35
Universität Trier	2	314	R. Zougmore	2	271	0	273	0	272	13
Universität Tübingen	194	111	R. Weiger	67	189	444	193	10	188	150
Universität Wien (University of Vienna)	262	98	G. Watzek	14	258	88	246	7	222	28
Universität Zu Köln	223	102	W.J. Finger	88	159	983	127	16	113	71
Université Catholique de Louvain	116	132	G. Leloup	21	247	344	206	11	173	37
Universite de Liege	45	170	P. Maquet	151	92	3,136	27	34	23	150
Université de Montréal	222	103	C. Bedos	20	251	40	262	4	244	24
Université de Nice Sophia Antipolis	57	162	M.M. Muller-Bolla	23	245	173	236	8	213	60
Universite Laval	177	114	D. Grenier	152	91	1,502	75	20	81	148
Universite Libre de Bruxelles	70	149	C. Malevez	34	224	411	198	12	164	98
Université Paris Sorbonne	32	188	J.P. Ouhayoun	55	208	645	164	8	213	103
Universite Paris-Sud 11	16	224		0	274	0	273	0	272	0
Université Pierre et Marie Curie	53	164	A. Berdal	92	155	633	166	17	104	150
Universiti Malaya (University of Malaya)	204	106	C.H. Siar	98	147	478	183	11	173	135
University College Cork	61	157	C.D. Lynch	50	214	215	229	9	200	80
University College Dublin	7	267		0	274	0	273	0	272	0
University College London	856	38	A. Sheiham	270	35	2,240	50	30	39	150
University do Porto	25	198	H. Clausen	190	67	3,662	23	37	16	150
University of Aberdeen	81	144	N.B. Pitts	190	67	1,496	76	24	52	150
University of Adelaide	807	41	A.N. Goss	185	73	984	126	16	113	150
University of Alabama	1,146	18	D.H. Retief	179	79	1,073	116	3	256	150
University of Alberta	365	81	R.V. Rajotte	316	18	4,964	14	33	29	150
University of Amsterdam	346	88	J. Hoogstraten	101	142	671	161	17	104	96
University of Antwerp	46	168	M. Braem	66	191	1,694	64	9	200	75
University of Arizona	32	188		0	274	0	273	0	272	0
University of Athens	672	48	G. Eliades	99	144	934	136	14	144	100

University of Auckland	22	204	M. Horrock	69	188	272	219	13	157	98
University of Barcelona	235	99	C. Gay-Escoda	138	104	582	172	11	173	150
University of Basel	277	97	N.U. Zitzmann	61	198	735	154	16	113	82
University of Bath	12	240	L.D. Hurst	198	61	4,181	16	43	10	150
University of Bergen	501	62	O. Haugejorden	86	167	524	176	13	157	49
University of Bern	520	60	N.P. Lang	363	10	4,837	15	38	14	150
University of Birmingham	875	37	A.D. Walmsley	159	87	650	163	14	144	150
University of Bristol	915	35	M. Addy	342	12	2,253	48	27	48	150
University of British Columbia	505	61	M.I. MacEntee	111	128	811	147	15	128	123
University of Calgary	28	194	A.K.C. Leung	409	7	1,797	61	15	128	150
University of California, Berkley	29	193	R.O. Ritchie	308	20	3,963	18	37	16	150
University of California, Davis	24	200	C. Selmi	111	128	814	145	22	62	150
University of California, Irvine	20	209	L.G. Glance	55	208	473	185	15	128	57
University of California, Los Angeles	1,521	7	A.A. Caputo	190	67	1,316	92	13	157	150
University of California, Riverside	3	301		0	274	0	273	0	272	0
University of California, San Diego	23	203	R. Yawn	29	236	236	226	7	222	58
University of California, San Francisco	1,098	19	D. Fried	144	98	782	148	23	58	129
University of California, Santa Barbara	6	273	M.O. Culjat	33	226	55	258	5	238	60
University of California, Santa Cruz	2	314	T.G. Bromage	58	204	498	179	7	222	82
University of Cambridge	35	182		0	274	0	273	0	272	0
University of Canterbury	4	291	A. Udalski	209	56	2,533	40	40	13	150
University of Cape Town	19	211	L.P. Adams	31	233	118	242	3	256	48
University of Central Florida	11	247	R. Ruiz	25	242	71	251	4	244	51
University of Chicago	76	146	J.A. Tojjanic	33	226	196	233	7	222	68
University of Cincinnati	70	149	R.D. Marciani	59	202	337	209	9	200	72
University of Colorado at Boulder	35	182	C.N. Bowman	252	43	2,740	33	38	14	150
University of Connecticut	58	160	C.H. Pameijer	13	260	72	250	5	238	39
University of Copenhagen	751	43	E. Asmussen	195	64	2,589	37	21	71	70
University of Delaware	5	281	J.R. Freed	42	218	111	244	6	235	61
University of Dundee	443	70	N.B. Pitts	189	70	1,610	70	24	52	150
University of Edinburgh	117	130	A. Santini	37	223	143	240	7	222	34
University of Florida	715	44	K.J. Anusaavice	149	93	1,521	73	18	90	150
University of Geneva	352	87	I. Krejci	153	89	1,284	95	16	113	147
University of Georgia	13	236	J. Potempa	199	60	2,882	32	32	32	150
University of Ghent	166	118	R.J.G. De Moor	87	164	493	181	13	157	89
University of Glasgow	948	31	D.F. Kinane	166	84	2,247	49	31	36	150

University of Gothenburg	414	73	T. Berglundh	128	111	2,017	56	31	36	106
University of Groningen	838	40	G.M.A. Raghoobar	185	73	1,438	80	24	52	150
University of Helsinki	1,001	26	J.H. Meurman	224	48	2,167	51	21	71	150
University of Hong Kong	1,036	22	L.P. Samaranayake	342	12	2,254	47	22	62	150
University of Houston	5	281	M.C. Advincula	184	75	2,090	54	32	32	150
University of Illinois	119	129	D.P. Kuehun	56	207	313	214	9	200	58
University of Illinois, Chicago	957	28	J.B. Epstein	274	33	3,250	25	31	36	150
University of Indonesia	14	230	C. Lekkas	21	247	68	253	3	256	18
University of Iowa	1,365	9	S.M. Levy	140	102	1,026	122	22	62	134
University of Kansas	44	171	P. Spencer	99	144	1,036	118	19	84	106
University of Kentucky	669	50	C.S. Miller	92	155	927	137	18	90	150
University of Lausanne	6	273	C. Madrid	20	251	29	265	3	256	31
University of Leeds	218	104	C. Robinson	341	14	3,178	26	35	21	150
University of Leicester	18	217		0	274	0	273	0	272	0
University of Liverpool	395	78	S.M. Higham	88	159	605	170	17	104	73
University of Ljubljana	112	134	U. Skaleric	87	164	492	182	11	173	141
University of London (Kings College of London)	3,508	1	A. Sheiham	263	36	2,440	44	32	32	150
University of Manchester	1,332	10	H.V. Worthington	276	31	2,104	53	21	71	150
University of Manitoba	464	67	C.M. Dawes	129	109	1,185	109	10	188	89
University of Maryland	1,193	15	R.L. Wynn	146	95	269	221	7	222	73
University of Maryland Baltimore County	1,199	14	R.L. Wynn	146	95	271	220	7	222	73
University of Massachusetts	3	301	L.R. Godfrey	53	212	461	189	15	128	113
University of Melbourne	847	39	M.F. Burrow	142	99	1,594	72	23	58	150
University of Miami	65	155	A.K. Garg	78	179	433	195	14	144	71
University of Michigan	1,807	5	H.L. Wang	140	102	1,310	93	19	84	150
University of Minnesota	949	30	N.L. Rhodus	106	137	714	156	15	128	150
University of Missouri	521	59	J.D. Eick	160	86	1,620	69	15	128	150
University of Nebraska	175	115	R.A. Reinhardt	94	152	1,203	106	13	157	150
University of New Hampshire	2	314	R.B. Alley	184	75	5,198	12	34	23	150
University of New Mexico	6	273	R.L. Williams	107	134	1,380	86	14	144	150
University of New South Wales	16	224	H. Zreiqat	58	204	611	168	18	90	148
University of North Carolina, Chapel Hill	1,888	4	E.J. Swift	231	46	2,416	45	22	62	150
University of North Texas	2	314	A. Vekua	19	253	378	202	11	173	42
University of Notre Dame	0	336		0	274	0	273	0	272	0
University of Nottingham	0	336		0	274	0	273	0	272	0
University of Oklahoma	234	101	R.S. Nanda	127	112	1,131	113	14	144	129

University of Oregon	5	281	A.M.S. Erbaugh	1	273	9	269	1	268	1
University of Oslo	677	47	G. Rolla	261	39	1,350	88	10	188	136
University of Otago	578	53	W.M. Thomson	83	171	954	133	17	104	104
University of Ottawa	18	217	D.S.K. Park	115	124	3,861	20	43	10	150
University of Oxford	43	176		0	274	0	273	0	272	0
University of Pennsylvania	683	45	T.P. Croll	219	52	527	175	10	188	64
University of Pittsburgh	465	66	P.A. Moore	212	54	3,819	22	34	23	150
University of Quebec	90	141	D. Grenier	156	88	1,419	81	19	84	150
University of Queensland	495	63	G.J. Seymour	276	31	2,643	35	25	50	150
University of Reading	11	247		0	274	0	273	0	272	0
University of Rochester	925	34	R.H. Tallents	124	116	1,014	125	15	128	150
University of Saskatchewan	155	121	D.T. Lanigan	32	229	294	215	2	264	150
University of Science and Technology of China	1	328	Y.F. Zheng	183	77	1,649	66	37	16	150
University of Sheffield	597	52	R. van Noort	111	128	1,247	101	14	144	150
University of South Carolina	13	236		0	274	0	273	0	272	0
University of South Florida	14	230	C. Claudio	11	266	34	263	4	244	20
University of Southampton	15	226	A.R.S. Collins	313	19	8,433	5	56	3	150
University of Southern California	957	28	J. Slots	274	33	3,846	21	29	40	150
University of St Andrews	15	226	G.M. Humphris	105	139	1,275	98	22	62	150
University of Surrey	6	273	W. Xu	12	265	52	260	5	238	15
University of Sussex	2	314		0	274	0	273	0	272	0
University of Sydney	555	54	M.V. Swain	295	23	2,969	29	28	43	150
University of Technology, Sydney	9	252	R. Anderson	4	270	14	267	4	244	2
University of Tennessee Knoxville	44	171	D. Xie	129	109	1,479	77	18	90	150
University of Texas at Austin	14	230		0	274	0	273	0	272	0
University of Tokyo	40	177	H. Kiyono	384	9	6,374	8	48	7	150
University of Toronto	1,502	8	D. Locker	220	51	2,951	30	34	23	150
University of Tsukuba	17	221	H. Yoshida	835	2	7,660	7	33	29	150
University of Twente	9	252	C.A. Van Blitterswijk	288	27	3,950	19	41	12	150
University of Utah	100	137		0	274	0	273	0	272	0
University of Vermont	24	200	P.M. Fives-Taylor	75	180	1,035	119	18	90	85
University of Victoria	2	314		0	274	0	273	0	272	0
University of Virginia	34	184		0	274	0	273	0	272	0
University of Warwick	9	252	D. Wolke	14	258	78	248	4	244	49
University of Washington	2,008	3	P. Milgrom	206	59	1,301	94	17	104	150
University of Waterloo	0	336		0	274	0	273	0	272	0

University of Western Australia	183	113	P.V. Abbott	62	194	350	204	10	188	61
University of Western Ontario	407	75	T.D. Daley	88	159	747	153	8	213	99
University of Wisconsin	44	171		0	274	0	273	0	272	0
University of Wollongong	1	328		0	274	0	273	0	272	0
University of York	8	260	F. Song	99	144	2,058	55	21	71	150
University of Zurich	495	63	F. Lutz	227	47	1,399	82	15	128	150
Univesitas Gadjah Mada	17	221	W. Sosroseno	50	214	217	228	8	213	63
Uppsala University	60	158	J.M. Hirsch	74	182	1,279	96	15	128	150
Utah State	2	314		0	274	0	273	0	272	0
Utrecht University	357	83	F. Boseman	62	194	877	139	11	173	47
Vanderbilt University	31	191	G.A. Weinberg	89	157	1,341	90	16	113	150
Victoria University of Wellington	12	240	T.W. Cutress	106	137	888	138	8	213	89
Vienna University of Technology	7	267	E. Wintner	98	147	494	180	11	173	115
Virginia Polytechnic Institute	19	211	I.J. Good	87	164	318	212	5	238	30
Vrije Universiteit, Brussels	2	314	Y. Vandenplas	293	24	2,470	41	21	71	150
VU University Amsterdam	401	76	D.B. Tuinzing	105	139	586	171	12	164	89
Wageningen University	0	336		0	274	0	273	0	272	0
Wake Forest University	58	160	R.L. Webber	119	123	751	152	13	157	150
Waseda University	6	273		0	274	0	273	0	272	0
Washington State University	5	281		0	274	0	273	0	272	0
Washington University in St. Louis	98	139	C.F. Hildebolt	141	101	1,605	71	21	71	150
Wayne State University	0	336		0	274	0	273	0	272	0
West Virginia University	142	122	P. Ngan	83	171	705	159	11	173	150
Yale University	19	211	Y.C. Cheng	519	3	10,915	2	37	16	150
Yonsei University	328	91	K.N. Kim	112	126	512	178	13	157	150
York University	3	301	J. Lexchin	123	119	1,382	85	15	128	105
Zhejiang University	32	188	M. Hannig	110	132	568	173	17	104	150

Undefined Data	Department Publications	Rank	Most Prolific Author	Published	Rank	Cited	Rank	H-Index	Rank	# of Coauthors
Aalto University	49	220		0	310	0	304	0	256	0
Aarhus University	304	95	J. Frokiaer	195	70	2,278	62	33	31	150
Arizona State University	5	321	K. Baldwin	5	295	79	258	0	256	9
Ateneo de Manila University	0	346		0	310	0	304	0	256	0
Auburn University	87	187	M.C. Jordan	1	305	0	304	0	256	0
Australian National University	422	68	T.R. Ophel	118	127	383	185	8	168	150
Boston College	115	162	J.A. Vessey	77	171	258	210	7	178	77
Boston University	436	62	T.E. Van Dyke	232	52	3,965	39	29	42	150
Brandeis University	139	151		0	310	0	304	0	256	0
Brigham Young University	1	340	W.W. Winder	147	98	2,413	59	25	52	150
Brown University	648	38	J.S. Buechner	113	134	213	220	3	229	87
California Institute of Technology (Calt...	444	61	W.T. Huntress	96	152	569	160	3	229	138
Cardiff University	393	72		0	310	0	304	0	256	0
Carnegie Mellon University	381	76	A.H. Meltzer	63	194	89	256	4	218	11
Case Western Reserve University	550	44		0	310	0	304	0	256	0
Chalmers University of Technology	115	162	G. Skarnemark	90	158	318	195	10	150	150
Charles University	11	299	E.E. St. Lezin	26	257	868	126	12	133	88
Chinese University of Hong Kong	16	280	F.L. Chan	91	156	1,170	105	19	79	150
Chulalongkorn University	48	221	V. Wiwanitkit	645	5	733	137	9	158	120
City University of Hong Kong	7	311		0	310	0	304	0	256	0
City University of New York	7	311	M. Fitting	43	232	353	188	5	204	2
Colorado State University	16	280	J.T. Belisle	103	145	3,710	40	34	28	150
Columbia University	1,241	7	J.J. Cimino	196	69	1,377	93	19	79	150
Cornell University	770	25	H.A. Scheraga	1,035	1	5,503	26	44	11	150
Curtin University of Technology	1	340	D. Wynaden	31	248	339	191	8	168	57
Dalhousie University	304	95	F. Batlis	66	185	283	204	10	150	48
Dartmouth College	296	97	P.B. Bataleden	103	145	11,211	8	18	85	150
Delft University of Technology	458	59	S. Emid	46	227	145	240	0	256	31
Drexel University	225	117	L.L. Pytlewski	132	112	312	196	0	256	51
Duke University	681	32	P. Smith	146	99	2,638	52	25	52	150
Durham University	190	129	T.C. Waddington	160	89	203	225	0	256	98
Ecole Normale Supérieure de Lyon	9	305	J.T. Quintero	3	300	0	304	0	256	0
École Normale Supérieure, Paris	111	166	G.R. Bishop	24	263	9	291	0	256	14
École Polytechnique	94	182	L. Behr	33	244	857	128	2	237	150

Ecole Polytechnique Fédérale de Lausanne	79	195	F. Levy	219	58	2,423	58	14	113	150
Eindhoven University of Technology	175	137	N.G. De Bruijn	47	222	287	202	0	256	3
Emory University	506	53	J. Augustine	106	138	512	168	9	158	139
Erasmus University Rotterdam	184	133	A.M. Van Ginnekem	61	198	241	214	8	168	71
ETH Zurich (Swiss Federal Institute of Technology)	555	43	R.R. Ernst	73	173	4,557	35	0	256	75
Florida International University	37	235		0	310	0	304	0	256	0
Florida State University	5	321	D.L.D. Casper	89	161	1,225	103	9	158	150
Freie Universität Berlin	218	120	K. Mobius	151	96	1,156	107	19	79	150
Friedrich Alexander Universität Erlangen Nürnberg	230	115		0	310	0	304	0	256	0
Fudan University	907	19	Q.W. Jiang	104	144	389	183	12	133	150
Georg August Universität Göttingen	277	106	A. Michler	10	289	120	249	0	256	7
George Mason University	4	328	D.M. Berman	45	229	3,607	41	18	85	150
George Washington University	256	110	S. Rosenbaum	118	127	613	153	12	133	150
Georgetown University	327	90	L.O. Gostin	266	38	2,078	67	23	61	150
Georgia Institute of Technology	126	157	E.W. Thomas	55	214	82	257	0	256	42
Georgia State University	52	214	C.G. Grindel	56	210	222	219	8	168	78
Goteborg University	27	250	M. Kubista	98	149	2,231	63	25	52	147
Harvard University	550	44	E.G. Rochow	97	151	588	156	0	256	62
Hebrew University of Jerusalem	659	35	A.S. Kertes	72	175	432	180	0	256	58
Heidelberg Universität	369	77	R. Haux	139	106	548	165	14	113	150
Hokkaido University	762	27	M. Asaka	510	10	5,089	31	35	25	150
Hong Kong Polytechnic University	52	214	K.C. Lam	30	252	183	235	5	204	51
Hong Kong University of Science & Techno...	12	294	P. Shi	113	134	193	231	8	168	80
Humboldt-Universität zu Berlin	230	115		0	310	0	304	0	256	0
Imperial College London	658	36		0	310	0	304	0	256	0
Indian Institute of Technology Bombay (I...	43	227	R.N. Mukherjee	71	176	294	200	6	189	60
Indian Institute of Technology Delhi (II...	105	171	H.P. Garg	187	75	467	174	6	189	129
Indian Institute of Technology Kanpur (I...	137	153	S.K. Dogra	105	143	445	178	14	113	62
Indiana University Bloomington	504	54	E.S. Duke	69	180	580	158	7	178	18
Indiana University Indianapolis	331	88	A.G. Christen	132	112	691	143	6	189	111
Iowa State University	24	257	G.T. Leavens	48	221	471	173	11	142	63
Johns Hopkins University	1,145	9	S.H. Gottlieb	32	247	265	209	6	189	44
Kansas State University	3	331	D.G. Anders	3	300	22	282	0	256	3
Katholieke Universiteit Leuven	402	70	G. Willems	84	165	882	123	14	113	131
Keio University	602	41	M. Kitajima	700	3	1,016	116	34	28	150

King Fahd University of Petroleum & Minerals	37	235	F. Abu-Jarad	56	210	167	238	7	178	53
King Saud University	115	162	K. Almas	57	207	204	224	9	158	79
Kobe University	367	78	M. Okada	31	248	66	264	4	218	53
Korea Advanced Institute of Science & Technology	63	207	S.C. Shim	233	51	1,412	91	23	61	150
Korea University	46	224	Y.J. Park	57	207	515	167	12	133	150
Kyoto University	1,634	3	K. Nakao	507	11	37,338	1	63	1	150
Kyushu University	850	22	S. Ohashi	68	182	209	222	0	256	64
La Trobe University	289	101	R.J. MaGee	130	116	420	181	0	256	85
Lancaster University	1	340	D.M. Coates	47	222	662	148	14	113	91
Leiden University	1,006	15	N.J. Poulis	146	99	137	241	0	256	109
Linkoping University	122	158	T. Timpka	155	93	602	154	11	142	147
London School of Economics and Political Scie	39	231		0	310	0	304	0	256	0
Loughborough University	116	161	A.H. Norbury	26	257	29	280	0	256	29
Louisiana State University	37	235	C. Bouchard	621	6	23,796	2	47	9	150
Ludwig-Maximilians-Universität München	382	75	B. Wrackmeyer	399	21	1,419	90	21	66	150
Lund University	326	91	S.G. Pierzynowski	129	118	512	168	13	124	150
Maastricht University	127	156	A. Hasman	217	59	959	117	14	113	150
Macquarie University	50	218	E.T. Linarce	23	264	189	234	2	237	8
Mahidol University	23	263	G. Sastravaha	2	303	20	285	2	237	5
Masaryk University	23	263	O. Navratil	5	295	5	297	0	256	1
Massachusetts Institute of Technology	1,062	13	B.L. Averbach	103	145	1,288	99	0	256	78
McGill University	638	39	S.G. Manson	139	106	1,731	73	0	256	70
McMaster University	524	51	T.J. Kennett	116	130	255	211	0	256	59
Michigan State University	536	49	A.I. Popov	167	84	748	135	1	249	120
Michigan Technological University	67	204		0	310	0	304	0	256	0
Monash University	548	46	C. Hased	62	196	191	232	5	204	22
Montana State University	81	192	L.L. Jackson	95	154	792	131	5	204	145
Moscow State University	654	37	V.A. Kabonov	226	54	564	162	7	178	150
Nagoya University	1,088	10	S. Iwase	182	79	1,138	110	17	94	150
Nanjing University	94	182	D.X. Zhu	31	248	7	292	2	237	94
Nanyang Technological University	37	235	M.K. Sakharkaar	52	216	202	228	9	158	74
National Taiwan University	104	173	I.M. Liu	7	292	1	301	0	256	2
National Tsing Hua University	72	203	C.S. Su	53	215	230	216	6	189	25
National University of Ireland, Galway	27	250	M. Dowling	20	271	47	272	4	218	16
National University of Singapore	170	139	T.Y. Leong	16	277	21	283	3	229	21
New Mexico State University	66	205		0	310	0	304	0	256	0

New York University	679	33	M. Glanzer	50	217	703	142	6	189	34
Newcastle University	264	108	J.F. McCabe	197	68	1,640	83	18	85	150
North Carolina State University	243	114	E. Hodgson	235	50	1,696	78	20	75	150
Northeastern University	110	168		0	310	0	304	0	256	0
Northwestern University	921	18	B.J. Underwood	127	119	713	140	0	256	64
Norwegian University of Science & Technology	88	186	S. Liaan-Jensen	164	86	803	130	11	142	150
Ohio State University	706	29	J.I. Haring	123	124	38	276	0	256	7
Oklahoma State University	115	162	J.R. Sauer	211	64	2,563	56	29	42	150
Open University UK	89	184		0	310	0	304	0	256	0
Oregon State University	200	124	R.W. Newburgh	62	196	39	274	0	256	49
Osaka University	1,414	4	T. Ogihara	537	9	11,681	7	53	5	150
Peking University	1,821	2	C. Cao	59	203	213	220	6	189	96
Pennsylvania State University	560	42	J. Heicklen	179	81	509	170	0	256	94
Pohang University of Science And Technology	15	286	S. Lee	254	41	1,216	104	18	85	150
Portland State University	21	268		0	310	0	304	0	256	0
Princeton University	402	70	A.V. Tobolsky	116	130	785	133	0	256	96
Purdue University	511	52	R.G. Cooks	612	7	12,767	6	43	14	150
Queen's University	272	107	R.J.C. Brown	59	203	118	250	4	218	7
Queen's University of Belfast	191	128	H.G. Heal	35	236	38	276	0	256	28
Queensland University of Technology	96	180	H. Edwards	66	185	385	184	12	133	93
Radboud University, Nijmegen	536	49	A.J. Plasschaett	168	83	507	171	8	168	150
Rensselaer Polytechnic Institute	152	145	G.S. Ansell	63	194	177	236	0	256	56
Rheinisch Westfalische Technische Hochschule Aach	222	118	V. Schumpelick	174	82	1,357	94	20	75	150
Rheinische Friedrich Wilhelms Universitat Bonn	279	105	H.D. Beckey	65	189	74	260	0	256	53
Rice University	292	98	J.L. Margrave	421	19	4,735	33	23	61	150
Rochester Institute of Technology	17	276	G.A. Takacs	31	248	108	253	4	218	58
Royal Institute of Technology, KTH	186	132	B.O. Jonssen	14	280	113	251	0	256	12
Royal Melbourne Institute of Technology	45	225	M.J. Johnson	50	217	93	255	6	189	19
Rutgers	428	64	L.L. Pytlewski	132	112	310	197	0	256	52
Saint-Petersburg State University	175	137	V.N. Tsvetkov	217	59	128	247	0	256	150
San Diego State University	82	190		0	310	0	304	0	256	0
Sapienza University of Rome	0	346		0	310	0	304	0	256	0
Sciences Po Paris	1	340	F. Haegel	1	305	0	304	0	256	0
Seoul National University	203	122	Y.S. Vu	125	122	736	136	17	94	150
Shanghai Jiao Tong University	103	177	T.G. Zhung	125	122	134	243	5	204	150
Simon Fraser University	104	173	C.H.W. Jones	50	217	224	218	3	229	45

Stanford University	1,245	6	M.A. Nusen	212	63	1,926	71	21	66	150
State University of New York Buffalo	410	69		0	310	0	304	0	256	0
Stockholm University	152	145	J. Kowalewski	131	115	653	150	17	94	129
Stony Brook University	354	80	H.B. Waldman	391	22	341	189	9	158	37
Syracuse University	16	280	J.M. Chen	56	210	710	141	16	103	150
Tartu University (University of Tartu)	29	247	H. Kaarma	20	271	54	270	3	229	25
Technical University of Denmark	104	173	L. Gerward	157	92	1,114	112	18	85	150
Technion	281	104	A.A. Hirsch	28	253	15	286	0	256	16
Technische Universität Berlin	129	155	H. Boersch	56	210	121	248	0	256	56
Technische Universität Chemnitz	12	294	M. Wobst	3	300	1	301	0	256	1
Technische Universität Dresden	95	181		0	310	0	304	0	256	0
Technische Universität München	429	63	J.R. Siewert	503	13	16,706	4	35	25	150
Tel Aviv University	314	93	G. Navon	203	66	1,563	86	17	94	150
Texas A&M University	358	79	A.E. Martell	547	8	8,286	10	26	48	150
Texas Tech	5	321	L.H. Young	22	268	671	146	9	158	59
Tohoku University	944	17	T. Kondo	680	4	6,369	18	33	31	150
Tokyo Institute of Technology	331	88	M. Sekine	360	25	2,786	51	21	66	150
Trinity College Dublin	170	139	S.R. Flint	44	230	566	161	7	178	100
Tsinghua University	84	188	M.Y. Ding	70	179	283	204	11	142	79
Tufts University	335	85	M.B. Papageogre	47	222	147	239	6	189	65
Universidad Autonoma de Madrid	75	199	A.M. Munico	143	102	203	225	0	256	133
Universidad de Chile	100	179	S. Bunel	23	264	71	263	4	218	16
Universidad de Granada	75	199	A.M. Munico	143	102	203	225	0	256	133
Universidad del País Vasco	53	212		0	310	0	304	0	256	0
Universidad Nacional Autónoma de México ...	12	294	I. Lopez Gonzales	13	281	196	229	10	150	68
Universidad Politecnica de Madrid	45	225	A. Soler	66	185	205	223	12	133	13
Universidade de São Paulo	30	245	W. Marques-Junior	6	294	6	295	0	256	3
Universidade Estadual de Campinas	15	286	G. Hessel	35	236	134	243	6	189	84
Università degli Studi di Firenze	292	98		0	310	0	304	0	256	0
Università degli Studi di Padova	318	92		0	310	0	304	0	256	0
Università Di Bologna	333	86	F. Zanetti	64	191	375	186	12	133	123
Università di Pisa	20	270	M. Mosca	64	191	1,724	74	19	79	150
Universitat Autonoma de Barcelona	106	170	F. Fernandez	44	230	62	267	5	204	131
Universitat Bielefeld	51	216	U. Laaser	90	158	1,025	115	7	178	150
Universität Bremen	80	193		0	310	0	304	0	256	0
Universitat d'Alacant	34	241		0	310	0	304	0	256	0

Universitat de València	84	188		0	310	0	304	0	256	0
Universität Frankfurt am Main	333	86	O. Werz	89	161	864	127	21	66	150
Universität Freiburg	292	98	S. Schulz	162	87	1,643	82	21	66	150
Universität Hamburg	14	289	N. Miekle	8	290	21	283	4	218	40
Universität Karlsruhe	176	135		0	310	0	304	0	256	0
Universität Leipzig	7	311	S. Pritz-Hohmeier	11	287	64	266	1	249	31
Universität Munster (Westfälische Wilhelms-Un	18	274	P. Young	106	138	5,864	22	37	20	150
Universität Politecnica de Catalunya	1	340	A.S. Desyatnikov	91	156	570	159	18	85	109
Universität Regensburg	136	154		0	310	0	304	0	256	0
Universität Stuttgart	139	151	A. Seeger	282	35	1,441	89	12	133	150
Universität Trier	6	318	S. Mecklenbrauker	25	261	110	252	5	204	25
Universität Tübingen	222	118	G. Gaultitz	206	65	2,859	50	29	42	150
Universität Wien (University of Vienna)	245	111	N. Getoff	194	72	945	118	14	113	148
Universität Zu Köln	245	111	W. Kleinow	33	244	62	267	2	237	28
Université Catholique de Louvain	190	129	R. Debuyst	60	200	303	198	10	150	120
Universite de Liege	764	26		0	310	0	304	0	256	0
Université de Montréal	306	94	M. Barkati	1	305	0	304	0	256	11
Université de Nice Sophia Antipolis	34	241		0	310	0	304	0	256	0
Universite Laval	194	127	R.J. Slobodrian	126	121	66	264	2	237	102
Universite Libre de Bruxelles	455	60	C. Szpirer	243	46	2,606	54	22	64	150
Université Paris Sorbonne	24	257	T. Lefebvre	34	241	6	295	1	249	1
Universite Paris-Sud 11	424	67	F. Tfibel	42	233	247	213	7	178	88
Université Pierre et Marie Curie	244	113	D. Aslanian	19	274	37	278	1	249	34
Universiti Malaya (University of Malaya)	164	141	L.M. Looi	138	108	925	122	8	168	150
University College Cork	57	209	T.G Cotter	183	78	6,386	17	36	23	150
University College Dublin	78	197	J.E. Allen	71	176	659	149	13	124	130
University College London	851	21	C.P.D. Wheller-Johns	80	168	1,136	111	20	75	150
University do Porto	7	311	A. Remppis	96	152	1,793	72	21	66	150
University of Aberdeen	289	101	A.D. Dick	150	97	1,334	96	25	52	150
University of Adelaide	338	82	C.A. Crowther	195	70	2,005	69	20	75	150
University of Alabama	427	65	T. Simpson	26	257	131	246	4	218	24
University of Alberta	683	31	P.V. Nguyen	47	222	1,702	76	21	66	87
University of Amsterdam	840	23	N.J. Trappeniers	165	85	488	172	0	256	76
University of Antwerp	117	159	P.T. Hoff	13	281	191	232	10	150	33
University of Arizona	389	73	C. Hammerschlag	60	200	3	298	1	249	9
University of Athens	161	142	J. Mantas	67	184	268	208	5	204	88

University of Auckland	338	82	A. Lethaby	82	167	676	145	14	113	110
University of Barcelona	176	135	L. Morales	68	182	194	230	5	204	110
University of Basel	284	103	J.T. Lambrecht	73	173	273	207	7	178	105
University of Bath	5	321	R.M. Tyrrell	130	116	3,456	45	24	57	150
University of Bergen	17	276	K. Malterud	145	101	1,226	102	16	103	108
University of Bern	25	254	T. Studer	20	271	34	279	4	218	12
University of Birmingham	1,078	11	S.A. Durrani	241	47	450	177	6	189	141
University of Bristol	466	57	J.R. Sandy	137	110	937	119	19	79	150
University of British Columbia	55	211	M.E. Gleave	229	53	4,406	36	44	11	150
University of Calgary	30	245	R. Wang	19	274	274	206	13	124	52
University of California, Berkley	39	231	G.L. Firestone	135	111	2,621	53	33	31	150
University of California, Davis	50	218	C.J. Miller	279	36	6,967	14	52	6	150
University of California, Irvine	38	233	A.J. Tenner	98	149	2,479	57	27	47	150
University of California, Los Angeles	1,197	8	J.V. Richardson	33	244	42	273	4	218	5
University of California, Riverside	142	150	N.T. Keen	115	132	3,145	48	17	94	150
University of California, San Diego	66	205	P.A. Insel	383	24	5,772	23	41	16	150
University of California, San Francisco	117	159	J.R. Oksenberg	184	77	4,645	34	37	20	150
University of California, Santa Barbara	11	299	S. Mysore	11	287	7	292	2	237	14
University of California, Santa Cruz	5	321	J.L. Collier	21	269	563	163	6	189	81
University of Cambridge	42	228	A. Compston	236	48	3,589	43	33	31	150
University of Canterbury	1	340	I.D. Coope	21	269	136	242	5	204	9
University of Cape Town	9	305	J.M. Wilmshurst	41	234	286	203	9	158	116
University of Central Florida	57	209		0	310	0	304	0	256	0
University of Chicago	76	198	Y.X. Fu	186	76	3,607	41	38	19	150
University of Cincinnati	699	30	E. Deutsch	226	54	1,659	80	7	178	150
University of Colorado at Boulder	22	266	R.G. Ham	60	200	1,043	114	0	256	72
University of Connecticut	26	253	S.E. Pfeiffer	99	148	1,939	70	18	85	125
University of Copenhagen	32	243	Y. Ardo	34	241	372	187	13	124	76
University of Delaware	7	311	R.D. Joerger	35	236	729	139	8	168	60
University of Dundee	199	125	W. McGuire	250	43	6,421	16	26	48	150
University of Edinburgh	32	243	E. Laurier	26	257	236	215	11	142	29
University of Florida	546	47	R. Baughman	88	163	168	237	5	204	115
University of Geneva	25	254	A. Pechere-Bertschi	46	227	292	201	10	150	73
University of Georgia	27	250	C.L. Hofacre	69	180	587	157	13	124	150
University of Ghent	24	257	F. Haesbrouck	434	18	2,863	49	28	45	150
University of Glasgow	542	48	K.H. Lockey	23	264	225	217	0	256	3

University of Gothenburg	12	294	H. Wijk	18	276	57	269	4	218	26
University of Groningen	24	257	P. Muller	12	284	73	262	5	204	23
University of Helsinki	203	122	E. Spring	8	290	2	299	0	256	11
University of Hong Kong	29	247	Y.L. Kwong	451	17	5,173	30	36	23	150
University of Houston	4	328	R. Bianchi	79	169	1,238	101	17	94	150
University of Illinois	878	20	C.M. Wayman	310	29	2,407	60	6	189	150
University of Illinois, Chicago	425	66	B.Z. Rappaport	12	284	2	299	0	256	18
University of Indonesia	79	195	I. Alwi	15	278	7	292	2	237	25
University of Iowa	53	212	R.G. Strauss	222	57	1,722	75	15	108	150
University of Kansas	17	276	S.K. Dey	324	28	6,348	19	52	6	150
University of Kentucky	23	263	C. Leroux	35	236	461	175	13	124	100
University of Lausanne	12	294	F. Levi	384	23	5,709	25	39	18	150
University of Leeds	19	273	C.P. Wild	253	42	3,386	47	30	41	150
University of Leicester	190	129		0	310	0	304	0	256	0
University of Liverpool	21	268	E.W. Parry	28	253	54	270	0	256	5
University of Ljubljana	153	144	J. Slivink	15	278	13	289	0	256	16
University of London (Kings College of London)	2,768	1	A. While	236	48	933	120	15	108	79
University of Manchester	1,037	14	H.V. Worthington	276	37	2,104	66	21	66	150
University of Manitoba	344	81	A.H. Katz	66	185	547	166	9	158	100
University of Maryland	463	58	E.R. Lippincott	138	108	615	152	0	256	111
University of Maryland Baltimore County	473	55		0	310	0	304	0	256	0
University of Massachusetts	14	289	B.G. Zorn	59	203	321	194	9	158	60
University of Melbourne	830	24	B. Happell	180	80	590	155	18	85	64
University of Miami	29	247	M.A. Perez-Pinzon	84	165	1,396	92	24	57	122
University of Michigan	111	166	S.J. Weiss	106	138	6,835	15	24	57	150
University of Minnesota	101	178	J.R. Johnson	460	16	5,391	27	44	11	150
University of Missouri	48	221	H. Zaghouani	64	191	792	131	13	124	132
University of Nebraska	150	147	N.J. Rosenburg	90	158	872	125	11	142	116
University of New Hampshire	48	221		0	310	0	304	0	256	0
University of New Mexico	25	254	H.W. Kelly	127	119	1,502	88	13	124	150
University of New South Wales	16	280	A.R. Lloyd	191	73	5,297	29	31	38	150
University of North Carolina, Chapel Hill	740	28	L.I. Gilbert	249	45	1,538	87	22	64	150
University of North Texas	3	331	A. Younes	13	281	408	182	6	189	50
University of Notre Dame	8	309	P.C. Burns	263	40	1,697	77	32	35	150
University of Nottingham	7	311	C.D. Vass	4	297	132	245	3	229	9
University of Oklahoma	20	270	F.C. Lai	114	133	443	179	7	178	50

University of Oregon	198	126	J.L. Ferracane	160	89	2,193	64	25	52	150
University of Oslo	24	257	P. Brandtzaeg	495	14	7,834	11	40	17	150
University of Otago	24	257	C.H. Sissions	59	203	326	192	10	150	73
University of Ottawa	20	270	L.P. Renaud	162	87	1,593	85	14	113	105
University of Oxford	38	233	P. Klenerman	201	67	6,126	20	47	9	150
University of Pennsylvania	105	171	M.I. Greene	330	27	4,341	37	28	45	150
University of Pittsburgh	110	168	P.M. Kochanek	304	31	5,767	24	43	14	150
University of Quebec	14	289	C. Lodeiros	65	189	323	193	10	150	120
University of Queensland	37	235	T.H. Marwick	409	20	7,486	13	49	8	150
University of Reading	149	148	M.G.B. Drew	733	2	7,560	12	37	20	150
University of Rochester	37	235	B.C. Berk	266	38	9,684	9	55	4	150
University of Saskatchewan	177	134	J.A. Weil	87	164	732	138	8	168	87
University of Science and Technology of China	82	190	Y. Tabata	190	74	549	164	12	133	150
University of Sheffield	632	40	C. Bassett	34	241	39	274	2	237	25
University of South Carolina	259	109	P.D. Ellis	154	94	1,141	109	14	113	150
University of South Florida	18	274	A.W. Andrews	2	303	24	281	2	237	6
University of Southampton	6	318	S. Welchert	4	297	75	259	3	229	29
University of Southern California	41	229	M.R. Lieber	506	12	22,070	3	60	2	150
University of St Andrews	3	331	J. Dunlop	214	62	1,158	106	16	103	150
University of Surrey	11	299	S.M.O. Hourani	94	155	1,280	100	13	124	82
University of Sussex	3	331	A. Anstey	121	126	1,292	98	16	103	150
University of Sydney	660	34	D.J. Henderson-Smart	224	56	1,611	84	18	85	150
University of Technology, Sydney	3	331	R. Braun	27	256	15	286	2	237	30
University of Tennessee Knoxville	17	276	M. Shah	35	236	772	134	11	142	150
University of Texas at Austin	14	289	K.S. McKinley	109	137	811	129	17	94	133
University of Tokyo	51	216	S. Sugano	289	33	5,945	21	34	28	150
University of Toronto	1,282	5	A.G. Harrison	47	222	341	189	0	256	41
University of Tsukuba	11	299	G.A. Alexandrov	23	264	74	260	5	204	29
University of Twente	2	336	J. Greve	338	26	5,330	28	35	25	150
University of Utah	467	56	D.M. Grant	489	15	4,826	32	32	35	150
University of Vermont	148	149		0	310	0	304	0	256	0
University of Victoria	156	143		0	310	0	304	0	256	0
University of Virginia	75	199	C.L. Slingluff	118	127	3,425	46	31	38	150
University of Warwick	4	328	N.J. Dimmock	154	94	933	120	15	108	106
University of Washington	1,069	12	L.R. Beach	57	207	460	176	3	229	60
University of Waterloo	2	336	V.P. Godambe	78	170	96	254	2	237	8

University of Western Australia	210	121	H.H. Thies	25	261	14	288	0	256	21
University of Western Ontario	336	84	A. Paivivo	74	172	1,347	95	6	189	52
University of Wisconsin	80	193	R.W. Guillery	159	91	2,358	61	15	108	95
University of Wollongong	6	318	X.D. Fang	49	220	301	199	8	168	47
University of York	9	305	O. Leyser	61	198	2,596	55	31	38	105
University of Zurich	16	280	H. Hengartner	250	43	12,962	5	57	3	150
Univesitas Gadjah Mada	8	309	J. Kurnianda	4	297	0	304	0	256	14
Uppsala University	15	286	K. Nilsson	289	33	4,295	38	26	48	150
Utah State	2	336	L.S. Chou	12	284	249	212	7	178	30
Utrecht University	949	16	P.M. Endt	110	136	876	124	5	204	122
Vanderbilt University	41	229	A. Pozzi	71	176	1,300	97	21	66	150
Victoria University of Wellington	59	208		0	310	0	304	0	256	0
Vienna University of Technology	5	321	T. Eiter	143	102	1,050	113	17	94	109
Virginia Polytechnic Institute	10	304	M. Youssef	7	292	0	304	0	256	13
Vrije Universiteit, Brussels	89	184		0	310	0	304	0	256	0
VU University Amsterdam	388	74	I. Van der Waal	309	30	3,502	44	26	48	150
Wageningen University	16	280	M. Massola	41	234	628	151	16	103	53
Wake Forest University	22	266	R.C. Prielpp	106	138	1,154	108	14	113	150
Waseda University	2	336	W. Kim	1	305	1	301	1	249	4
Washington State University	11	299	T.C. McGuire	296	32	2,111	65	24	57	150
Washington University in St. Louis	104	173	J.L. Marsh	142	105	1,649	81	19	79	150
Wayne State University	0	346		0	310	0	304	0	256	0
West Virginia University	9	305	J.E. Riggs	217	59	1,673	79	11	142	150
Yale University	75	199	L. Manuelidis	123	124	2,046	68	17	94	95
Yonsei University	13	293	S. Park	28	253	680	144	32	35	11
York University	5	321	D. Ashforth	1	305	10	290	1	249	1
Zhejiang University	7	311	J. Zhou	106	138	670	147	15	108	150

