ACS chemical biology

Introducing Our Authors

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BRANDI M. BAUGHMAN

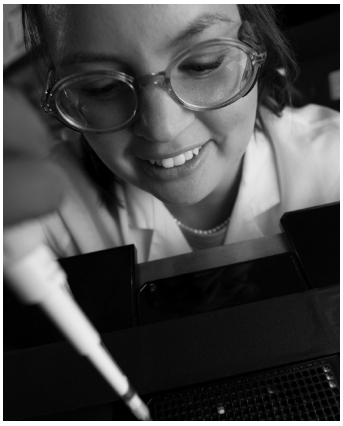

Image courtesy of St. Jude Biomedical Communications.

Current position: Ph.D. candidate in Integrated Biomedical Research, The University of Tennessee Health Science Center, Research Advisor: Thomas R. Webb, St. Jude Children's Research Hospital, Department of Chemical Biology & Therapeutics.

Education: The College of Wooster, B.A. in Chemistry, 2007; Research Advisor: Sarah J. Schmidtke

Nonscientific interests: Scottish Highland dancing, raising and showing rabbits, and playing harmonica.

As a graduate student at St. Jude Children's Research Hospital, I have had the unique and fortunate opportunity to conduct premier basic research in an industrial-paced drug discovery environment with state-of-the-art equipment. Collaborations with the high-throughput centers and the departments of infectious diseases, structural biology, and virology have proven immensely beneficial toward the progress of my dissertation research, which includes the design and evaluation of influenza endonuclease inhibitors. These collaborative efforts expedited the design, optimization, and publication of our novel fluorescence polarization assay that measures small molecule binding to the influenza endonuclease activity domain, PA_N. Through this work I have been able to hone my assay development skills, a skill set I would like to expand upon as I begin a career in research. (Read Baughman's article, DOI: 10.1021/cb200439z)

KATJA FAUSTER

Image courtesy of Katja Fauster.

Current position: Graduate student pursuing Ph.D. at the Institute of Organic Chemistry of the Leopold-Franzens University, under the supervision of Prof. Ronald Micura.

Education: Leopold-Franzens University, Diploma in Chemistry, 2009.

Nonscientific interests: Playing hautbois, traveling, and shopping!

My research is focused on synthesis of modified nucleosides for use in chemical RNA solid-phase assembly. In this paper, I have carried out a synthetic strategy to generate 2′-azido-modified cytidine and guanosine nucleotides. These compounds were incorporated into selected functional RNAs such as siRNAs to evaluate the effect of these modifications on gene silencing in cells. Additionally, data from X-ray crystallography, CD spectroscopy, UV denaturation experiments, and NMR studies revealed that 2′-azido incorporations are very well tolerated and are accessible for bioconjugation reactions exemplified in this work by Click-labeling to fluorescent dyes. (Read Fauster's article, DOI: 10.1021/cb200510k)

KRISTIN FINCH

Image courtesy of Kristin Finch.

Current position: St. Jude Children's Research Hospital, Departments of Developmental Neurobiology and Chemical Biology & Therapeutics, Postdoctoral Research Associate with Dr. Michael Dyer and Dr. Kip Guy

Education: Hampton University, B.S. in Chemistry, 2005; University of Illinois Urbana−Champaign, Ph.D. in Chemistry with Prof. Paul Hergenrother, 2011

Nonscientific interests: Serving as a youth mentor, volunteering at the hospital, cooking, and watching SEC football

My graduate work at the University of Illinois focused on the discovery of small molecule inhibitors of poly (ADP-ribose) glycohydrolase (PARG), including the development and optimization of *in vitro* and cell lysate assays, the screening of compounds, and the examination of compound specificity. With the help of my colleagues, we were able to identify a novel class of compounds that specifically inhibited PARG. Due to their facile synthesis, these compounds will allow for a greater study of PARG and hopefully validate PARG as a potential anticancer target. In 2011, I moved to St. Jude Children's Research Hospital as a postdoctoral research associate where I have continued my work in the field of drug discovery and evaluating small molecules in model systems. (Read Finch's article, DOI: 10.1021/cb200506t)

Published: March 16, 2012

YUUKI HAYASHI

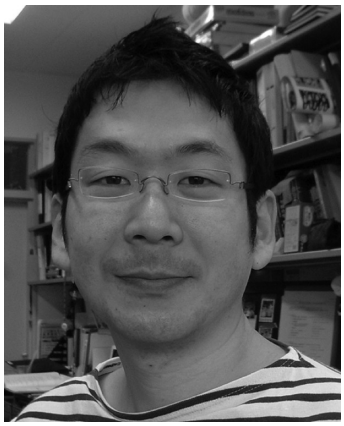

Image courtesy of Yuuki Hayashi.

Current position: The University of Tokyo, Tokyo, Japan, Department of Chemistry, Postdoctoral fellow with Prof. Hiroaki Suga since June 2006.

Education: Osaka University, Osaka, Japan, B.S. in Department of Engineering, 2001; Osaka University, Osaka, Japan, M.S. in Department of Engineering, 2003; Osaka University, Osaka, Japan, Ph.D. in Department of Information Science with Prof. Tetsuya Yomo, 2006;

Nonscientific interests: Movies, sports, traveling, and shopping

My postdoctoral research has focused on the discovering of novel peptide inhibitors with a nonproteinogenic scaffold against proteins related with carcinomas and bone diseases. Our group has established a novel and rapid selection methodology, termed RaPID (Random nonstandard Peptide Integrated Discovery) system, which allows us to select novel peptides binder to the target protein of interest from diverse peptide libraries containing nonstandard amino acids and structures. In this article, we report a selection of Akt-selective and Akt2 isoform-selective inhibitors with thioether-macrocyclic scaffold discovered by the RaPID system. My present focus is on evaluating in-cell activities of the peptides and their modified peptides and also elucidating the mechanism of their isoform-selectivity. (Read Hayashi's article, DOI: 10.1021/cb200388k)

ZACHARY HILL

Image courtesy of Stephanie J. Benight.

Current position: University of California San Francisco, Department of Pharmaceutical Chemistry, Postdoctoral Researcher with Prof. James A. Wells starting February 2012

Education: University of Alaska Fairbanks, Department of Chemistry and Biochemistry, B.S. in Chemistry (emphasis in Biochemistry and Molecular Biology), advisors Prof. John W. Keller and Prof. Kelly L. Drew, 2006; University of Washington, Ph.D. in Chemistry, advisor Prof. Dustin J. Maly, 2011

Nonscientific interests: Music, cooking, traveling, snowboarding, and flying

My graduate work focused on developing a general method to generate selective bivalent inhibitors of protein kinases. While a large number of potent small-molecule kinase inhibitors are known, engineering inhibitor selectivity remains difficult. By utilizing the self-labeling protein SNAP-tag to link ATP-competitive small-molecule inhibitors of protein kinases to peptide ligands of protein kinases, we have been able to rapidly generate both potent and selective inhibitors of the protein kinases SRC, ABL, Pim1, p38α, and EGFR. In addition we have shown that these bivalent inhibitors can be self-assembled in living cells, greatly increasing their utility in studying cellular signaling pathways. With new combinations of small-molecule and peptide ligands, we believe this method can be applied to a large number of protein kinases. (Read Hill's article, DOI: 10.1021/cb200387g)

MING LI

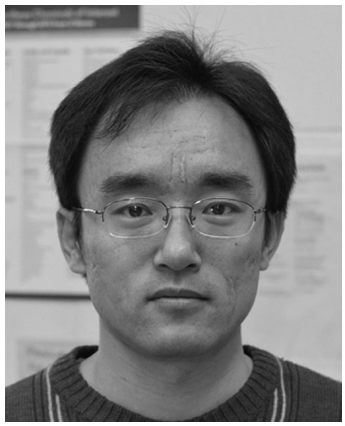

Image courtesy of Ming Li.

Current position: Research Associate in Dr. Reuben Harris laboratory, University of Minnesota at Twin Cities, Department of Biochemistry, Molecular Biology and Biophysics.

Education: China Pharmaceutical University, B.E. in Biological Pharmaceuticals, 1997 and M.S. in Biological Pharmaceuticals with Dr. Xiangdong Gao, 2000; Peking Union Medical College, Ph.D. in Biochemistry and Molecular Biology with Dr. Dexian Zheng, 2004; University of California at Davis, Postdoctoral Researcher with Dr. Gino Cortopassi, 2005–2007.

Nonscientific interests: Reading, movies, sports, and history

My major focus is the human DNA cytosine deaminase APOBEC3G, which prevents HIV-1 infection by mutating viral single-strand cDNA. Strong evidence indicates that these mutations contribute to the high degree of HIV-1 genetic variation. To be able to probe the mechanism of viral cDNA deamination and HIV-1 restriction, we have developed a fluorescence-based high-throughput screen and identified the first-in-class APOBEC3G inhibitors reported in this article. I'm interested in creating second-generation inhibitors with even greater potency in order to probe APOBEC3G function *in vivo*. (Read Li's article, DOI: 10.1021/cb200440y)

JUMPEI MORIMOTO

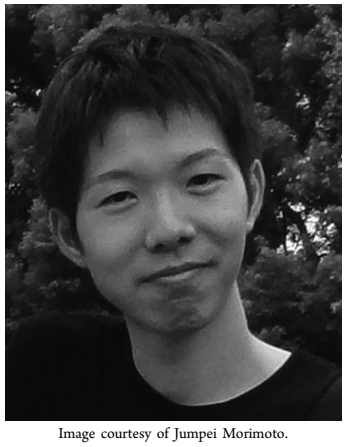

Image courtesy of Jumpei Morimoto.

Current position: The University of Tokyo, Ph.D. candidate in Department of Chemistry and Biotechnology under the supervision of Professor Hiroaki Suga

Education: The University of Tokyo, B.E. in Chemistry and Biotechnology, 2007; M.E. in Chemistry and Biotechnology, 2009

Nonscientific interests: Swimming, reading

My Ph.D. research has focused on the development of new methodologies for construction and screening of nonstandard peptide libraries based on the RaPID platform

technology. Currently, I am applying this system for the discovery of potent inhibitors against various posttranslational modification enzymes. In addition to the present work in this issue, my independent work in the discovery of SIRT2 inhibitors is also in press in *Angewandte Chemie*. I will start my postdoctoral work in the laboratory of Professor T. Kodadek from April, 2012. (Read Morimoto's article, DOI: 10.1021/cb200388k)

AMANDA NOTTBOHM

Image courtesy of Christoph Nottbohm.

Current position: Medical writer at Boehringer Ingelheim GmbH & Co. KG, Germany

Education: University of Illinois at Urbana−Champaign, Department of Chemistry, Ph.D. with Prof. Paul Hergenrother, 2008; Albion College, B.A. in Chemistry and German, research advisor Prof. Andrew French, 2002

Nonscientific interests: Music, tango, gardening, and cats

During my Ph.D. study, I worked on the development of chemical tools to study poly(ADP-ribosyl)ation. Poly(ADP-ribose) polymerases (PARPs), which synthesize ADP-ribose polymers from β-NAD$^+$, play an important role in cellular survival after DNA damage. In order to more closely study PARP activity, my colleagues and I developed a novel colorimetric *p*-nitrophenoxy-substituted PARP substrate. Poly(ADP-ribosyl)ation of proteins by PARPs is short-lived due to the complementary action of the enzyme poly(ADP-ribose) glycohydrolase (PARG). Despite the fact that PARP inhibitors are readily available and have shown promise as anticancer agents, few PARG inhibitors exist and thus their therapeutic utility has not been fully elucidated. Accordingly, I carried out a focused screen to identify rhodanine-based PARG inhibitors. Hit compounds were synthesized and further characterized *in vitro* and *in vivo*. (Read Nottbohm's article, DOI: 10.1021/cb200506t)

KATHY PARTLOW

Image courtesy of Claire Knezevic.

Education: University of Illinois, Urbana−Champaign, B.S. in Life Sciences option in Bioengineering; Washington University, St. Louis, M.S. in Biomedical Engineering, Advisor: Samuel Wickline, M.D.; Washington University, St. Louis, Division of Biology and Biomedical Sciences, Ph.D. in Molecular Cell Biology, Advisor: Samuel Wickline, M.D.; University of Illinois, Urbana−Champaign, Dept. of Chemistry, Postdoctoral Research Associate, Advisor: Paul Hergenrother, Ph.D.

Nonscientific interests: Spending time with family, playing tennis and golf, and reading a good book

My research experience has involved the development and characterization of novel drugs, as well as applications for improving delivery and therapeutic outcomes. I really enjoy the unique challenges of multidisciplinary research and feel broad strides can be made in science with such approaches. The current work is an example of a team of chemists and biologists coming together to discover and optimize the efficacy of potent and specific poly(ADP-ribose) glycohydrolase (PARG) inhibitors. In head-to-head comparisons, we discovered that these novel inhibitors were an improvement over currently available PARG inhibitors and hope that they will be a useful tool for the PARG community. (Read Partlow's article, DOI: 10.1021/cb200506t)

ANA BELÉN RODRÍGUEZ URRA

Image courtesy of Ana Belén Rodríguez Urra.

Current position: Biofungitek, Research Scientist

Education: University of Zaragoza, Spain, graduated in Biochemistry, 2003; Ph.D. student at the Faculty of Chemistry in San Sebastian, Spain (UPV/EHU) since 2004.

Nonscientific interests: Reading, traveling, sports.

My Ph.D. work focused on the search for autoregulatory signals governing colony growth and differentiation in the model organism *Aspergillus nidulans*. I am currently working as a researcher in Biofungitek, a startup company that specializes in the development and marketing of chemical fungicides of natural origin, for the control of agricultural and postharvest diseases. One of the projects of Biofungitek is the identification of autoregulatory compounds that control the growth and development of phytopathogenic fungi. In this work we report on the association of two endogenous fungal metabolites that signal the emergence of fungal cells to the air, which finally leads to the induction of sporulation in *A. nidulans*. (Read Rodriguez Urra's article, DOI: 10.1021/cb200455u)

PETER "JAKE" SLAVISH

Image courtesy of St. Jude Biomedical Communications.

Current position: Postdoctoral Research Assistant at St. Jude Children's Research Hospital, Department of Chemical Biology & Therapeutics, Memphis, Tennessee.

Education: Millikin University, Decatur, IL, B.S. in Chemistry, 1999; University of Arizona, Tucson, AZ, Ph.D. in Organic Chemistry, 2004; St Jude Children's Research Hospital, postdoctoral research assistant, Memphis, TN, 2007−present.

dx.doi.org/10.1021/cb300085c | *ACS Chem. Biol.* 2012, 7, 421−424

Nonscientific interests: Weightlifting, guitar playing, practicing yoga, and reading (fiction and nonfiction).

My Ph.D. dissertation focus was the synthesis of natural product mimetics. My postdoctoral research has included the generation of kinase inhibitors (anticancer) and endonuclease inhibitors (antiviral), which is featured in our recent *ACS Chemical Biology* publication. This manuscript exemplifies the rapid success achievable when skilled and intelligent scientists work harmoniously on an interdepartmental project using state-of-the-art equipment, thanks in large part to the gracious donors to one of the most prestigious research hospitals, St. Jude Children's Research Hospital. My passion, much like my parents' passion, involves conducting experiments with carefully selected reagents while paying attention to important experimental conditions like time and temperature in the hopes of generating our respective desired products in superior form. The difference is I make molecules, while my parents make pottery. (Read Slavish's article, DOI: 10.1021/cb200439z)

■ ŁUKASZ J. SZNAJDER

Image courtesy of Łukasz J. Sznajder.

Current position: Ph.D. student at Adam Mickiewicz University, Institute of Molecular Biology and Biotechnology, Poznań, Poland, Supervisor: Krzysztof Sobczak.

Education: Poznań University of Life Sciences, Poland, M.Sc. degree in Biotechnology, specialization: Genetic Diagnostics, 2010. M.Sc. thesis was carried out at Institute of Bioorganic Chemistry, Polish Academy of Sciences, Supervisor: Włodzimierz J. Krzyżosiak.

Nonscientific interests: Spending time with my wife and baby daughter, traveling, mountain trekking, experimental archeology and reconstruction of the Middle Ages.

My research is focused on understanding the molecular pathomechanism of myotonic dystrophy type1 (DM1). DM1 is caused by sequestration of splicing factor Muscleblind-like 1 (MBNL1) by toxic RNA with expanded CUG repeats, which leads to many abnormal alternative splicing changes in cells. I have employed a method termed CLIP-seq (cross-linking and immunoprecipitation followed by high-throughput sequencing) to elucidate physiological influence of MBNL1 on muscle development and assess the number of affected alternative splicing events in DM1. I am also interested in pathomolecular mechanism of other diseases caused by short nucleotide repeats, *e.g.*, Huntington's disease. (Read Sznajder's article, DOI: 10.1021/cb200413a)

■ KENWARD VONG

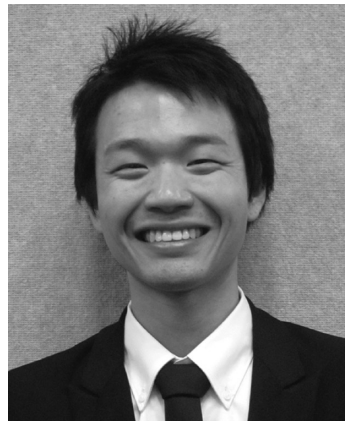

Image courtesy of Amélie Ménard.

Education: Queen's University, B.Sc. (Hons) in Biochemistry, 2007; McGill University, Ph.D. Candidate in Chemistry, Research Advisor: Karine Auclair

Nonscientific interests: Dir en gray, music, traveling, and soccer

In my pursuit to become a capable researcher, my interests have encompassed aspects of organic chemistry, microbiology, and molecular biology. For my graduate studies, my research is focused on combating aminoglycoside resistance by blocking resistance owing to 6′-*N*-acetyltransferases (AAC(6′)) by small molecule inhibitors. In this study, I present an approach to inhibit AAC(6′)s through the usage of cell-membrane permeable prodrugs that can be activated *in vivo* to target these resistance causing enzymes. The ultimate goal of this study is to develop a compound that can be administered in conjunction with aminoglycosides that will be clinically effective in treating infections caused by bacteria harboring aminoglycoside resistance factors. (Read Vong's article, DOI: 10.1021/cb200366u)

■ HIROSHI YANAGITA

Image courtesy of Hiroshi Yanagita.

Current position: Postdoctoral Fellow at Chiba University, Graduate school of Pharmaceutical Sciences, Chiba, Japan with Prof. Dr. Tyuji Hoshino

Education: Kinki University, Fukuoka, Japan, B.S. in Engineerrig, 2002; Kyushu University, Fukuoka, Japan, M.S. in Science, 2004; Kyushu University, Fukuoka, Japan, Ph.D. in Science, 2007; North Dakota state University, Fargo, USA, Postdoctoral Fellow with Prof. Dr. Mukund P. Sibi, 2007−2009

Nonscientific interests: Fishing, traveling, cooking, cycling, playing with my kids

My postdoctoral research at the Chiba University is focused on the development of new drugs for antivirus include the anti-AIDS drugs targeting HIV-1 RNase H and the anti-influenza drugs targeting influenza virus hemagglutinin. I have performed *in silico* screening to find low-molecular-weight compounds showing inhibitory activity of virus and synthesized those low-molecular-weight compounds by organic synthesis. I am also focused the development of new enantioselective reactions utilizing metal catalysts and organocatalysts for synthesis of chiral organic compounds. Finally I can further help in design of drugs for another virus using *in silico* screening and organosynthesis. (Read Yanagita's article, DOI: 10.1021/cb200332k)