Introducing our AUTHORS

Image courtesy of Andreas Åslund.

Andreas Åslund

Current Position: Linköping University, Department of Physics, Chemistry and Biology, Ph.D. candidate with Prof. Peter Konradsson

Education: Linköping University, M.S. in Organic Chemistry, 2003

Nonscientific Interests: ATVs, home remodeling, hiking, floorball

My research is focused on the design and synthesis of new thiophene-based optical probes (LCOs and LCPs). The probes are predominately designed for imaging of protein aggregates. But we constantly look for other processes where our probes might be of use, either in their current molecular form or by appropriate chemical modifications. The probes have a flexible thiophene backbone, and binding, *e.g.*, with protein aggregates, alters the twist of the backbone. This can be seen optically as the fluorescent signature of the probe changes with the twisting. The research project is truly multidisciplinary and has given me the opportunity to visit many laboratories and learn a lot of different techniques. Apart from standing at the hood doing synthesis, I have been involved in all steps concerning our probes, from the basic characterization of their physical properties to *in vivo* experiments. (Read Åslund's article, DOI: 10.1021/cb900112v)

Image courtesy of Louisa McConnell.

Michael D. McConnell

Current Position: Postdoctoral Research Scholar, the Biodesign Institute at Arizona State University; Advisor John C. Chaput

Education: Brock University, St. Catharines, Ontario, Canada, B.Sc. Biological Sciences, 2000, M.Sc. Biological Sciences, 2002 with Doug H. Bruce; Arizona State University, Tempe, AZ, Ph.D Plant Biology, 2008 with Andrew N. Webber; Institute for Biological Chemistry, Washington State University, Pullman, WA, Postdoctoral Research Associate, 2008 with David M. Kramer

Nonscientific interests: Being in the great outdoors, especially while being out-fished by my son

My scientific upbringing occurred within the realm of photosynthesis, training as a spectroscopist. I truly enjoyed working with green things. And then, this opportunity to work in synthetic biology arose and offered me a chance to try something radically different and add to my "laboratory toolbox". My current work involves the biochemical analysis of synthetic, nonbiological proteins, created *de novo* by directed evolution. Also, I am working toward evolving new proteins that, coupled with the ones described in this paper, may offer insight into how nature began to fold proteins and, in some ways, reveal how hard nature worked to develop her repertoire in protein-folding space. (Read McConnell's article, DOI: 10.1021/cb900109w)

Image courtesy of Victoria Albrow.

Aaron Puri

Current position: Stanford University, Department of Chemical and Systems Biology, Ph.D. student with Prof. Matthew Bogyo

Education: University of Chicago, B.S. in Biological Chemistry and B.A. in Economics, 2008

Nonscientific interests: Backpacking, water sports, music, gastronomy, San Francisco 49ers

My research interests focus on using chemical tools to understand and manipulate biological systems. Chemical biology provides powerful methods for deciphering some of the most remarkable mechanisms found in nature. I am especially fascinated with studying how highly evolved organisms such as bacteria carry out complex processes such as pathogenesis in hostile environments. This includes examining both sides of host–pathogen interactions in an effort to understand these interfaces as completely as possible. Dr. Bogyo's laboratory specializes in using small molecule activity-based probes to study a wide array of biological processes including microbial pathogenesis. In this Review we discuss the past, present, and future use of small molecules to examine mechanisms of microbial pathogenesis. (Read Puri's article, DOI: 10.1021/cb9001409)

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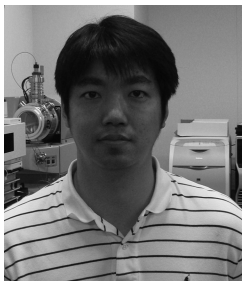

Image courtesy of Kentaro Takada.

Kentaro Takada

Current position: Ritsumeikan University, Japan, College of Pharmaceutical Sciences, Assistant Professor
Education: The University of Tokyo, Japan, Ph.D. in Agriculture with Dr. Nobuhiro Fusetani, 2004; National Cancer Institute, Molecular Targets Development Program, Postdoctoral Fellow with Dr. Kirk R. Gustafson, 2004–2007
Nonscientific interests: Swimming, scuba diving

My research interests have been focused on the discovery of natural organic molecules that interact with specific molecular targets associated with cancer and other diseases. In a screening campaign to discover bioactive molecules from a large repository of natural product extracts maintained by the NCI, we found a fascinating class of small molecules, the botryllamides, that block the multidrug resistance transporter ABCG2 with characteristic specificity. The overexpression of ABCG2 in cancer cells leads to an increased efflux chemotherapeutic agents from the cell and resistance to the cytotoxic effects of these drugs. Therefore, the botryllamides represent a new class of ABCG2 inhibitors that could be used to develop therapeutic agents that reduce multidrug resistance in cancer cells. (Read Takada's article, DOI: 10.1021/cb900134c)

Image courtesy of Debarati Mazumder Tagore.

Nawaporn (Yui) Vinayavekhin

Current position: Harvard University, Department of Chemistry and Chemical Biology, Ph.D. candidate in organic chemistry with Prof. Alan Saghatelian
Education: University of Chicago, B.S. in Chemistry and Biological Chemistry, 2006; Harvard University, M.A. in Chemistry, 2008
Nonscientific Interests: Gardening, learning about different cultures, exploring nature, positive psychology

Found almost everywhere on Earth, bacteria have evolved the ability to survive in many different environmental conditions. Yet, unlike most eukaryotes, this ability is achieved through only very simple and small genomes. Fascinated by this fact, as well as the diverse types of molecules synthesized by these organisms, I have focused my research on studying metabolites produced by bacteria. Specifically, my interest involves refining and applying the untargeted metabolomics approach to study biochemistry and biology behind the production of different metabolites and how these metabolites relate to genes on bacterial genomes. In fact, this interest is reflected partly in this study, where untargeted metabolomics was used to identify both known and novel metabolites related to the pyochelin gene cluster in *Pseudomonas aeruginosa*. In the future, I hope that this approach will help accelerate our understanding about one of the smallest, yet most numerous, organisms on Earth, bacteria. (Read Vinayavekhin's article, DOI: 10.1021/cb900075n)

Image courtesy of Christopher Williams.

Christopher Williams

Current position: University of Bristol, School of Chemistry. Postdoctoral researcher with Matthew Crump
Education: Aberystwyth University, B.Sc. in Microbiology, 1998; Nottingham University, M.Sc. in Molecular Microbiology, 2000; University of Bath, Ph.D in structural biology with Stefan Bagby, 2004; University of Bristol, School of Chemistry, Postdoctoral Researcher with Matthew Crump, 2004 to present
Nonscientific interests: Martial arts, reading, hiking, sports

The main focus of my research is the insulin-like growth-II receptor (IGF2R), a membrane protein involved in lysosomal trafficking, fetal organogenesis, tumor suppressor and cytotoxic T-cell induced apoptosis. In particular, we are looking at the structural and biochemical evolution of the IGF-II binding site in IGF2R. Over the 450 million years of mammalian evolution, the binding of IGF-II, a key hormone in mammalian growth and development, was acquired and optimized for binding. High-resolution information on the molecular evolution of binding will be used in the development of therapeutic forms of the molecule. I am also interested in the polyketide synthase enzymes from *Streptomycetes* that are involved in the biosynthesis of numerous important antibiotics. This research takes a structural approach to the problem. (Read Williams' article, DOI: 10.1021/cb900099e)