Introducing our AUTHORS

Image courtesy of Renate Maria Bannwarth.

Michael Bannwarth

Current position: Looking for a new challenge after working as a postdoctoral scholar at the Swiss Federal Institute of Technology/École Polytechnique Fédérale de Lausanne, Switzerland, Institute of Chemical Sciences and Engineering with Prof. Kai Johnsson
Education: Albert-Ludwigs-Universität Freiburg, Germany, Institute for Organic Chemistry and Biochemistry, Integrated in the Special Research Program Cellular Functions of Dynamic Protein Interactions, Diplom and Ph.D. in biochemistry and structural biology with Prof. Georg E. Schulz, 2005
Nonscientific interests: Walking, thinking, books, comedy, games, music

My research focuses on the biochemistry going on at the submicroscopic but supermolecular level. For example, there are changing protein assemblies with transient interactions and dynamic modifications of the protein surfaces. There are also highly localized accumulations of signaling molecules like calcium ions near a channel or receptor. One approach to measure site-specific concentrations of these molecules is to use localized indicators. In the article presented in this issue, a calcium sensor specifically and covalently bound to a protein is used. In the future, perhaps even more localized processes can be investigated. Together with knowledge from other investigations, such as identification of proteins interacting with the exit sites of calcium channels, this might extend our thinking about how cell signals are working on the nanometer scale. (Read Bannwarth's article, DOI 10.1021/cb800258g and Point of View, DOI 10.1021/cb9000525).

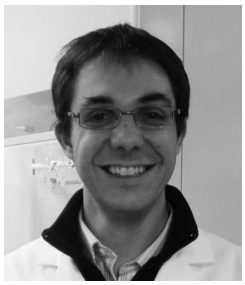

Image courtesy of Brenda Desmond.

Ivan R. Correa, Jr.

Current position: New England Biolabs, Chemical Biology Division, Staff Scientist
Education: State University of Campinas, Brazil, B.Sc. in chemistry, 1996; M.Sc. with Prof. P. J. S. Moran, 1998; Ph.D. with Prof. R. Pilli, 2003
Postdoctoral work: Max Planck Institute of Molecular Physiology, Department of Chemical Biology, with Prof. H. Waldmann, 2003–2006; Swiss Federal Institute of Technology in Lausanne, with Prof. Kai Johnsson, 2006–2008
Nonscientific interests: Traveling, sports, friends, family

My research interests lie in the design and generation of small-molecule probes for chemical modification of fusion proteins for proteomics applications, multicolor cell imaging, and biomolecular sensing. Answering important biological questions that cannot be resolved by traditional genetic-based approaches depends primarily on identifying small molecules that can confer the desired chemical or optical properties on the target proteins. The study of the role of calcium in cell physiopathology requires the ability to monitor variations in the concentration of calcium in living cells with both spatial and temporal accuracy. In this work, we describe an approach to monitor cellular calcium concentration that combines the spatial specificity of SNAP-tag fusion proteins with the superior kinetics and dynamic range of small synthetic fluorescent sensors. (Read Correa's article, DOI 10.1021/cb800258g and Point of View, DOI 10.1021/cb9000525.)

Image courtesy of Jeff Case.

Kathleen England

Current position: Colorado State University, Department of Microbiology, Immunology, and Pathology, Ph.D. candidate with Prof. Richard Slayden
Education: University of North Carolina, Chapel Hill, B.S. in chemistry, 1988; University of North Carolina, Chapel Hill, M.S. in chemistry, 1989; University of Hawaii, Manoa, M.S. in microbiology, 2005
Nonscientific interests: Diving, snorkeling, hiking, biking, outrigger canoeing, culture and travel, artistic passions for painting and cooking

Through life experiences and travel, my career has led to studies in infectious disease and drug discovery. My primary focus of research is centered on drug discovery efforts for category A and B select agent pathogens and tuberculosis. Through structure-based design approaches, we have designed and optimized FabI inhibitors with demonstrated efficacy in priority pathogens such as *Francisella tularensis*. Through genomic-based strategies I have identified several cell division regulators in *Mycobacterium tuberculosis* that may provide unique targets for chemotherapy. Targeting the FASII lipid biosynthesis pathway and critical events of cell division offers unique strategies for the development of broad-spectrum chemotherapeutics against bacterial pathogens. (Read England's article, DOI 10.1021/cb800306y.)

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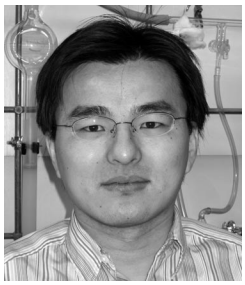

Image courtesy of Brian Anderson.

Xiangtian Long

Current position: Brigham Young University, Department of Chemistry and Biochemistry, Ph.D. candidate with Prof. Paul B. Savage
Education: Nanjing University, China, B.S. in chemistry, 2000; M.S. in organic chemistry with Prof. Yi Pan, 2003
Nonscientific interests: Soccer, movies, history

My research is focused on the determination of the structural features of glycolipids, such as the triglycosylceramide iGb3, responsible for stimulation of natural killer T cells (NKT cells). This work is done in a collaborative group of synthetic organic chemists and immunologists at three institutions. NKT cells play a regulatory role in immune responses to infection and tumor growth. Their responses have also been implicated in autoimmune diseases. Consequently, there is significant interest in the types of antigens that stimulate the regulatory functions of NKT cells. Few glycolipids have been identified as antigens for NKT cells, and an understanding of the scope of glycolipids that stimulate NKT cells will facilitate the use of this cell type in controlling immune responses. (Read Long's article, DOI 10.1021/cb800277n.)

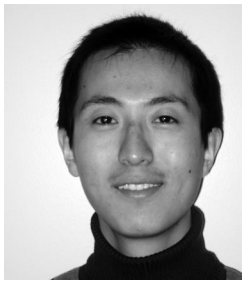

Image courtesy of Nina Liu

Hao Lu

Current position: State University of New York at Stony Brook, Department of Chemistry and Institute for Chemical Biology and Drug Discovery, Ph.D. student with Prof. Peter J. Tonge
Education: The Chinese University of Hong Kong, B.S. in chemistry, 2005
Nonscientific interests: Skiing, swimming, volleyball, pop music

My current research focuses on enzymatic mechanisms of enoyl reductases from different pathogens and the development of novel antimicrobials using rational design. In our studies of enoyl reductase from *Francisella tularensis*, we identified a series of diphenyl ethers that showed high affinity to the target protein and great *in vitro* antibacterial activity. However, our *in vitro* data (K_i and MIC_{90}) do not correlate with the *in vivo* efficacy for our selected promising compounds in the animal model study of tularemia. Using pre-steady-state kinetics, I characterized the drug–target interaction time (residence time) and proved that residence time is a better indicator to predict *in vivo* efficacy of these compounds. This concept is important for drug discoveries that normally used thermodynamic parameters as predictors of *in vivo* activity. I extended my work to *Mycobacterium tuberculosis* aiming at developing the next generation of our diphenylether-based inhibitors with longer residence time and hence enhanced *in vivo* efficity. (Read Lu's article, DOI 10.1021/cb800306y.)

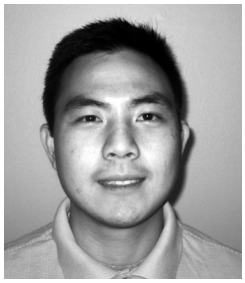

Image courtesy of Edwin S. Tan.

Edwin S. Tan

Current position: Harvard Medical School, Postdoctoral Fellow with Prof. Timothy J. Mitchison
Education: University of California, Riverside, B.S. in biochemistry with chemistry emphasis, 2001; University of California, San Francisco, Ph.D. in chemistry and chemical biology with Prof. Thomas S. Scanlan, 2007
Nonscientific interests: Watching sports and movies, weightlifting, cooking

In general, I am interested in studying the role and mechanism of action of biologically active endogenous or synthetic small molecules. My graduate work focused on understanding the molecular basis of trace amine-associated receptor 1 ($TAAR_1$) activation by thyronamines and related analogs. Thyronamines are endogenous compounds that elicit physiological responses that are the opposite of those of thyroid hormones. Our previous structure–activity relationship studies on thyronamines have revealed important insights into deciphering the code to aminergic G-protein-coupled receptor drug design. The article in this issue complements our extensive medicinal chemistry efforts and presents pharmacological experiments on wild-type and mutant $TAAR_1$ receptors to identify critical binding site residues involved in the ligand–receptor interaction that can influence compound selectivity and functional activity of $TAAR_1$. (Read Tan's article, DOI 10.1021/cb800304d.)