ACS chemical biology

Introducing Our Authors

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BRADLEY S. EVANS

Image courtesy of Kathryn Coulter.

Current position: Director of the Proteomics and Mass Spectrometry Facility at the Donald Danforth Plant Science Center in Saint Louis, Missouri

Education: Louisiana State University, Shreveport, B.S. in Biochemistry, 2004; University of Illinois Urbana−Champaign, Ph.D. in Biochemistry, 2010, Research Advisors: Neil L. Kelleher and Huimin Zhao; Postdoctoral Research Associate, Institute for Genomic Biology at the University of Illinois Urbana−Champaign, 2010−2012, Advisors: Jonathan V. Sweedler and William W. Metcalf

Nonscientific interests: Home beer-, wine-, and cheese-making − ancient natural products research

During my Ph.D. research, I developed a proteomics approach for discovering natural products by searching for expressed NRPSs and PKSs. My postdoctoral work focused on studying metabolites themselves, both secondary and primary metabolic natural products. Here we developed sample preparation steps and a mass spectrometric assay specifically for phosphonate natural products. Phosphonate -containing natural products are an exciting class of natural products because until now they have been a relatively under-studied group. Phosphonates have a diverse set of biological activities but share a stable C−P bond, the source of their activity. We have implemented this phosphonate-specific screening platform and have discovered the antibiotic phosacetamycin. I look forward to collaborations with my new colleagues at the Danforth Center focusing on proteomics and metabolomics in plants. (Read Evans' article, DOI: 10.1021/cb400102t)

CHRISTOPHER D. FAGE

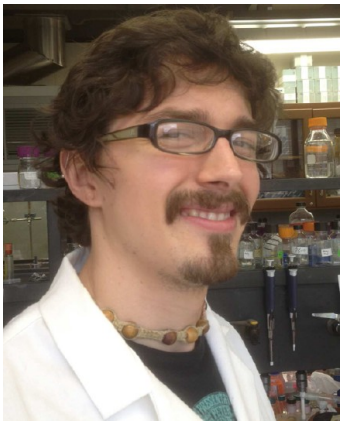

Image courtesy of Christopher Fage.

Current position: Ph.D. candidate under Dr. Adrian Keatinge-Clay, Department of Chemistry and Biochemistry, University of Texas at Austin

Education: University of Michigan-Flint, B.S. Biochemistry, 2008

Nonscientific interests: Playing guitar, hiking, camping, watching obscure films

My dissertation work focuses on structural investigation of modular polyketide synthases, molecular assembly lines responsible for the production of complex organic molecules, such as the antibiotic erythromycin, from basic building blocks, such as (2*S*)-methylmalonyl-CoA. In the current manuscript, we employed X-ray crystallography, multi-dimensional NMR, and analytical ultracentrifugation to examine the mysterious dimerization element N-terminal to the ketoreductase domain. Assuming a previously uncharacterized fold, this small three-helix bundle is the only intramodular, nonenzymatic domain known to promote dimerization in modular polyketide synthases. We hope that our findings are valuable to researchers designing chimeric modules for the purpose of synthesizing new polyketides. In addition to modular polyketide synthases, I am studying the structures of various enzymes involved in modifying bacterial cell wall components. (Read Fage's article, DOI: 10.1021/cb400047s)

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HÅVARD FOYN

Image courtesy of Sven Isungset Stove.

Current position: Ph.D. student at the University of Bergen, Department of Molecular Biology; Advisor: Thomas Arnesen

Education: University of Bergen, B.S. in Molecular Biology, 2008; University of Bergen, M.S. in Molecular Biology, 2010

Nonscientific interests: Soccer, skiing, movies, and reading

My Ph.D. research is focused on protein modifications, specifically N-terminal acetylation. This process is catalyzed by N-terminal acetyltransferases (NATs). These enzymes, and particularly NatA, are potential therapeutic targets. For example, knockdown of NatA subunits in a variety of thyroid cancer cell lines inhibited cell proliferation and increased sensitivity to drug-induced cytotoxicity. Our latest work, presented in this journal, is the design and synthesis and kinetic characterization of the first potent and selective inhibitors for this enzyme class. For this project we have collaborated with Paul R. Thompson's lab at The Scripps Research Institute in Florida where I had the pleasure to visit and work for 8 months. The collaboration is now continuing with efforts to make the inhibitors cell permeable. (Read Foyn's article, DOI: 10.1021/cb400136s)

TOMOSHIGE FUJINO

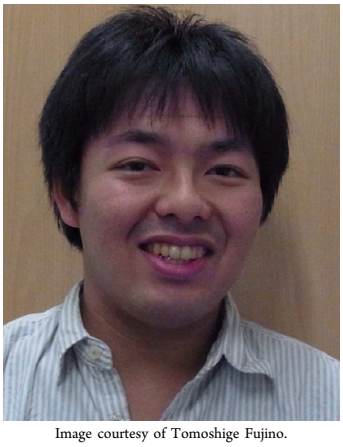

Image courtesy of Tomoshige Fujino.

Current position: The University of Tokyo, graduate student in Department of Life Sciences under the supervision of Prof. Hiroshi Murakami

Education: The University of Tokyo, Bachelor of Arts and Sciences, 2011

Nonscientific interests: Othello (board game also known as Reversi)

One of my current researches is to evaluate the compatibility of unnatural amino acids with translation. Some previous studies have reported that D-amino acids are compatible with translation, whereas the others have reported they are not. In my work, I have comprehensively reevaluated the D-amino acid incorporation into the peptide with a reprogrammed genetic code using the *in vitro* translation system. As a result, I found that 12 D-amino acids can be actually incorporated into the peptide. I also found that D-amino acids could not be consecutively incorporated or incorporated by alternating them with L-amino acids, but the double-incorporation efficiency was restored by insertion of two or three L-amino acids between the D-amino acids. The detail of the research is published in *J. Am. Chem. Soc.* 2013, *135*, 1830−1837. (Read Fujino's article, DOI: 10.1021/cb300697h)

JESSICA HEARN

Image courtesy of Jason Piper.

Current position: Ph.D. student at University of Warwick, joint between the Warwick Systems Biology Centre and The Department of Chemistry. My advisors are Prof. Peter J. Sadler and Prof. David L. Wild.

Education: University of Warwick, MSc in Systems Biology, 2011; University of Leicester, MChem in Biological Chemistry, 2008

Nonscientific interests: Music and film, stage shows, reading, traveling, shopping, and socializing with friends and family

My research interests are focused on drug development in the field of cancer research. Inorganic platinum drugs cisplatin and oxaliplatin are among the most widely used anticancer agents; however, there are several key limitations to their use, including natural and acquired platinum resistance, which reduces the range of treatable tumors, as well as severe patient toxicity. We have developed highly potent organometallic chemotherapy agents as alternatives to these inorganic platinum drugs. Their mechanism of action (MoA) now needs to be elucidated. My Ph.D. project is interdisciplinary, combining chemical, biological, and statistical techniques to investigate the MoA of selected organo-metallic anticancer agents. In this work we investigate the MoA of organo-iridium compounds using cell screens and predictive tools of the National Cancer Institute, cell-based imaging and fluorescence assays. Our studies suggest that these compounds disrupt the redox balance inside cancer cells, resulting in mitochondrial swelling and apoptosis. This new insight into their MoA provides a basis for future research on these novel anticancer drugs. (Read Hearn's article, DOI: 10.1021/cb400070a)

TAKAHIRO ISHIZAWA

Image courtesy of Takahiro Ishizawa.

Current position: The University of Tokyo, Department of Life Sciences, Master's degree student with Prof. Hiroshi Murakami

Education: The University of Tokyo, B.E. in Arts and Sciences 2011; M.E. in Arts and Sciences, 2013 with Prof. Hiroshi Murakami

Nonscientific interests: Reading, visiting museums, and watching plays

My graduate research focused on the development of a high-speed selection method for the generation of functional peptides, proteins and peptidomimetics. This new technology, TRAP display (transcription−translation coupled with association of puromycin linker), uses a new cell-free translation system that automatically creates a polypeptide library from template DNA. Six rounds of selection using TRAP display was performed in 14 h, yielding targetbinding macrocyclic peptides with nanomolar affinity (in press in *J. Am. Chem. Soc.*). In this issue, TRAP display produced VEGFR2 antagonist peptides from multiple diverse libraries. (Read Ishizawa's article, DOI: 10.1021/cb300697h)

TAKASHI KAWAKAMI

Image courtesy of Takashi Kawakami.

Current position: The University of Tokyo, Department of Life Sciences, HFSP Long-term fellow with Prof. Hiroshi Murakami

Education: The University of Tokyo, B.E. in Chemistry and Biotechnology, 2003, M.E. in Chemistry and Biotechnology, 2005 with Prof. Teruyuki Nagamune, Ph.D. in Chemistry and Biotechnology, 2009 with Prof. Hiroaki Suga; Massachusetts Institute of Technology, Department of Chemistry, HFSP Long-term fellow with Prof. Alice Y. Ting, 2009−2011

Nonscientific interests: Listening to music and playing instruments

Small molecule ligands that specifically bind to biomolecules of interest to monitor or control them in the context of living cells are useful to elucidate their complex cellular behavior at the molecular level. However, creating such small molecule ligands is still a challenging task, and one of my studies aims at developing methodologies to generate such small molecule ligands. In this article, by applying genetic code reprogramming and *in vitro* display selection techniques to ribosomally synthesized peptides, I conducted screening of extremely diverse combinatorial libraries of macrocyclized peptides and discovered macrocyclized peptide ligands that antagonize VEGF-induced VEGF receptor 2 activation in the living cells. I found that one of the ligands successfully inhibited VEGF receptor 2 autophosphorylation, proliferation and angiogenesis of living vascular endothelial cells. (Read Kawakami's article, DOI: 10.1021/cb300697h)

ANDERS KNIGHT

Image courtesy of Anders Knight.

Current position: University of Wisconsin-Madison, Department of Chemistry, undergraduate research associate with Prof. Silvia Cavagnero

Education: University of Wisconsin-Madison, B.S. in Chemical Engineering and Chemistry, expected 2014

Nonscientific interests: Running, bicycling, bread baking, programming, reading

My work has been focused on using fluorescence spectroscopic techniques to investigate events occurring during cotranslational folding of a nascent polypeptide chain. This project was an exciting opportunity to take knowledge gained from multiple disciplines and apply it to biophysical research. The selection of models and use of a complete transcription-translation system were particularly fascinating to me. I am looking into research at the graduate level that builds upon this foundation of protein research and incorporates both genetic and protein engineering approaches. The research at the interface of biochemical engineering and chemical biology is advancing at a fast rate, and I hope to contribute to it further in the future. (Read Knight's article, DOI: 10.1021/cb400030n)

KYLE KONZE

Image courtesy of Jacob I. Stuckey.

Current position: University of North Carolina-Chapel Hill, Ph.D. Student, Pharmaceutical Sciences-Chemical Biology and Medicinal Chemistry, Advisor: Dr. Jian Jin

Education: University of Minnesota, Bachelor of Biomedical Engineering, 2011, Undergraduate Advisors: Dr. Jonathan Sachs and Dr. Yuk Sham.

Nonscientific interests: Golf, watching MLB and NFL, fetch with Tubby

My graduate research is focused on the discovery and development of small molecule inhibitors of protein lysine methyltransferases such as EZH2. As described in our manuscript, UNC1999 is a potent orally bioavailable small molecule capable of inhibiting EZH2 enzymatic activity *in vitro* and *in vivo*. We have also created a close structural analoueg, UNC2400, which is a negative control for UNC1999. Further, we functionalized UNC1999 with PEG-biotin and a cell penetrant dye for use in pull-down assays and live cell-tracking studies, respectively. Our manuscript is exciting because we describe a full set of chemical tools that can be used by the scientific community to further understand the role that EZH2 plays in tumorigenesis and developmental disorders. (Read Konze's article, DOI: 10.1021/cb400133j)

NESE KURT-YILMAZ

Image courtesy of Nese Kurt-Yilmaz.

Current position: Research Associate Professor, Department of Biochemistry and Molecular Pharmacology, UMASS Medical School.

Education: Bogazici University, Turkey, Ph.D. in Chemical Engineering, 2002; University of Wisconsin-Madison, postdoctoral research with Prof. Silvia Cavagnero

Nonscientific interests: Reading and writing, traveling and spending time with my family, cooking, learning gardening, photography and photo books

My research in Dr. Cavagnero's group first as a postdoctoral fellow and then a scientist aimed to understand how proteins fold in the cell. Specifically, I studied the interaction of polypeptides with cotranslational chaperones, chain length dependence of folding, and effect of ribosome on the folding behavior of the protein chain being synthesized. Our article in this issue of *ACS Chemical Biology* demonstrates the charge dependence of ribosome-bound nascent chain dynamic behavior. Two very bright and talented undergraduate students, A. Knight and P. Culviner, carried out the experiments presented in this article, which required meticulous sample preparation and high-level technical skills. My main role was to help with data analysis and interpretation. Due to the highly complex nature of our system, it was not straightforward to determine the best model to fit the fluorescence depolarization data and explain the dynamic behavior of the polypeptide chains. Since the completion of this work, I have moved to UMASS Medical School, where I work with Prof. Celia Schiffer to understand the basis of drug resistance in viral proteases. I devote most of my time to writing, rewriting, and editing articles. Two such articles on the extraordinary thermodynamic behavior of a drug-resistant HIV-1 protease variant have recently been published in *ACS Chemical Biology*. (Read Kurt-Yilmaz's article, DOI: 10.1021/cb400030n)

LAURIANE LECOQ

Image courtesy of Lauriane Lecoq.

Current position: Postdoctoral fellow at Montréal University, Department of Biochemistry, with Pr. James G. Omichinski since February 2013

Education: Master's Degree in Physics and Chemistry, Joseph-Fourier University, Grenoble (France), 2009; Ph.D. in Structural Biology, Grenoble University, 2012, Ph.D. supervisor: Dr. Jean-Pierre Simorre.

Nonscientific interests: Traveling, spending time with friends, ski, squash, and TV series

My Ph.D. research focused on the structural studies of L,D-transpeptidases (LDts), enzymes involved in peptidoglycan formation in some bacterial strains that are resistant to β-lactam antibiotics. Only the carbapenem class of this antibiotic family is known to inhibit LDts through a covalent binding with the catalytic cystein of the enzyme. Our aim is to understand the mechanisms of this inhibition in order to pave the way for the design of new antibiotics. In the present article, we describe the NMR structures of the LDt from *Enterococcus faecium* in its free form and acylated by a carbapenem. A model of the reaction intermediate, the oxyanion, is also presented and reveals a structural reorientation of the antibiotic upon covalent binding with the enzyme. (Read Lecoq's article, DOI: 10.1021/cb4001603)

GRAŽVYDAS LUKINAVIČIUS

Image courtesy of Rūta Gerasimaitė.

Current position: École Polytechnique Fédérale de Lausanne (EPFL), Institute of Chemical Sciences and Engineering, Postdoctoral Fellow with Prof. Kai Johnsson

Education: B.S., M.S., and Ph.D. in Biochemistry, Vilnius University, Institute of Biotechnology, Lithuania, Supervisor: Prof. Saulius Klimašauskas

Nonscientific interests: Sci-fi movies and books, computer gaming, hiking, and traveling.

During my undergraduate and graduate research projects I was developing sequence-specific DNA labeling technique based on AdoMet-dependent methyltransferases. Later, I became interested in protein labeling via self-labeling tags and moved to Prof. Kai Johnsson's laboratory for postdoctoral research. Currently, my research is focused on developing fluorescent tags and methods for labeling various cellular structures. Especially I am interested in applying a combination of labeling and microscopy techniques to the organization of the cell structures. In this manuscript, we describe new enhanced stability AdoMet analogues that are well suitable for sequence-specific methyltransferase-directed Transfer of Activated Groups (mTAG) on DNA *in vitro* and in bacterial cell lysates. I hope that such improvement will accelerate a development of covalent tagging methods of other biological molecules with a help of methyltransferases. (Read Lukinavičius' article, DOI: 10.1021/cb300669x)

ANQI MA

Image courtesy of Xinpeng Jiang.

Current position: Postdoctoral Fellow, Professor Jian Jin's laboratory at University of North Carolina at Chapel Hill since March 2012

Education: Nanjing University, P. R. China, B.S. in Chemistry, 2002−2006; Shanghai Institute of Organic Chemistry, P. R. China, Ph.D. in Organic Chemistry, 2006−2011, Advisor: Professor Dawei Ma.

Nonscientific interests: Singing, traveling, watching news channels

My postdoctoral research mainly focuses on design and synthesis of small-molecule inhibitors of histone methyltransferases, a class of epigenetic writers. In this paper we report the first orally bioavailable EZH2 inhibitor UNC1999, which is highly potent and selective, displays robust on-target activities in cells, and selectively kills diffused large B-cell lymphoma cell lines with gain-of-function mutations. I am very excited that we have provided UNC1999 to so many research laboratories for testing in various *in vivo* cancer models and look forward to exciting results from these studies. I am currently synthesizing UNC1999 in multigram quantity and we will continue to freely provide this well-characterized chemical probe to the research community. In addition to EZH2 and EZH1, I am developing selective small-molecule inhibitors of SETD8 under Dr. Jin's guidance. (Read Ma's article, DOI: 10.1021/cb400133j)

AGUSTIN MOHEDAS

Image courtesy of Agustin Modedas.

Current position: Ph.D. candidate, Massachusetts Institute of Technology, Harvard-MIT Division of Health Sciences and Technology, working in Dr. Paul Yu's laboratory at Brigham and Women's Hospital

Education: Texas A&M University, B.S. in Biomedical Engineering, 2007

Nonscientific interests: Investing, reading, eating, and traveling.

My Ph.D. thesis research is focused on developing and characterizing highly selective small molecule kinase inhibitors of the BMP signaling pathway for use as biological probes and as potential therapeutic agents. Our approach uses medicinal chemistry, structural biology, cell-based assays, and animal models as described in our recent *ACS Chemical Biology* publication. Highly selective inhibitors targeting individual receptors in this pathway would permit selective modulation of the receptors responsible for pathologic states, and could be employed to identify specific receptors and/or ligands responsible for both normal physiologic and pathologic function. I hope my research will further the field of BMP signaling biology and contribute to the development of therapeutics for diseases of inappropriate BMP signaling such as fibrodysplasia ossificans progressiva. (Read Modedas' article, DOI: 10.1021/cb300655w)

LIEN NGUYEN

Image courtesy of Lien Nguyen.

Current position: Graduate student at University of Illinois at Urbana−Champaign, pursuing Ph.D. in Chemical Biology in the lab of Professor Steven C. Zimmerman.

Education: Hanoi University of Science, Hanoi National University, B.Sc. in Chemistry, 2006−2011

Nonscientific interests: Yoga, traveling

My Ph.D. research focuses on rational design, synthesis and study of biological activities of inhibitors for CUG repeats and MBNL proteins, the novel therapeutics for myotonic dystrophy (DM). Our paper in *ACS Chemical Biology* showed our ligand for DM1 is active not only *in vitro* but also in cell culture experiments. I am excited to study the ligands in confocal and splicing experiments to investigate effects of ligands on disease foci and rescuing IR minigene mis-splicing in DM1 cell model. Our future plan is to study activities of the ligand and its derivatives in animal models. (Read Nguyen's article, DOI: 10.1021/cb400046u)

SOFIE NYSTRÖM

Image courtesy of Sofie Nyström.

Current position: Senior Staff Scientist, Linköping University, IFM-department of Chemistry, Hammarstrom lab, Linköping, Sweden

Education: Linköping University, Linköping, Sweden, M.Sc. in Biochemistry, 2003; M.Edu for the Upper Secondary School 2003; Ph.D. in Protein Chemistry, 2009, Advisor: Prof Per Hammarström

Nonscientific interests: Family life and being a proud mother at the soccer field, in the dance studio, or by the music scene, socializing with friends, choir singing

My research is focused on different aspects of protein misfolding and amyloid formation, mainly with Aβ peptides and the prion protein from both human and other species. I use tissue from animal models, patient samples, and proteins from recombinant sources in my work. Our lab is equipped with instrumentation for biophysical characterization of proteins and a park of fluorescence microscopes and spectrometers for samples in solution. Using these tools together with a library of various conformation-sensitive amyloid probes we can address different morphologies and misfolding intermediates to shed light on how they contribute to the misfolding cascade leading to disease. (Read Nystrom's article, DOI: 10.1021/cb4000376)

JIA PAN

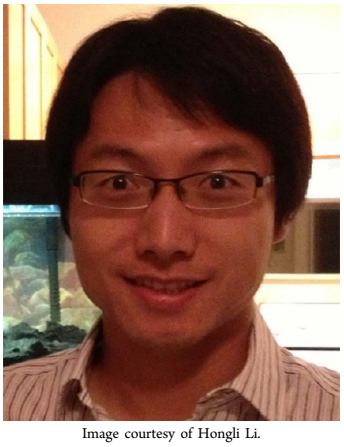

Image courtesy of Hongli Li.

Current position: The Scripps Research Institute, Florida, Department of Chemistry, Postdoc in Prof. Kate Carroll's lab.

Education: Nanjing University, B.S. in Chemistry; Nanjing University, M.S. in Organic Chemistry, with Prof. Jie Wang; Washington State University, Ph.D. in Organic Chemistry, with Prof. Ming Xian

Nonscientific interests: Soccer, music, reading, photography

I'm currently working on the development of chemoselective probes for the detection of persulfide, which is the product of protein S-sulfhydration. A significant challenge in this research area is that the persulfide group (RSSH) exhibits reactivity akin to other sulfur species such as thiols, and there are few persulfide models for identifying such reactivity. In this manuscript, we describe the preparation of several persulfides including protein models, with which we clearly identified the reactivity of persulfide toward nucleophiles such as MMTS, as well as its reactivity toward electrophiles. This work affords new insights into protein S-sulfhydryl chemistry, which may be exploited in future detection strategies (Read Pan's article, DOI: 10.1021/cb4001052)

MIGLĖ TOMKUVIENĖ

Image courtesy of Miglė Tomkuvienė.

Current position: Vilnius University, Institute of Biotechnology, Dept. of Biological DNA modification, Junior research associate and Ph.D. candidate in Biochemistry; Research Advisor Prof. Saulius Klimašauskas.

Education: Vilnius University, B.S. in Molecular Biology, 2004; M.S. in Genetics, 2006; Research Advisor Prof. Saulius Klimašauska.

Nonscientific interests: Ballroom and lindy-hop dancing, singing in a choir, volunteering in a homeless pet charity organization, traveling

My research interests focus on DNA and RNA methyltransferases, their mode of action and possibility, together with synthetic cofactor analogues, to use them as a precise tool for site-specific nucleic acid labeling. Which could further serve for molecular dynamics, epigenetics, nanostructure building, *etc.* research. In our *ACS Chemical Biology* paper we describe a selection of well-tuned cofactor analogues which enable functionalization of DNA with different chemical groups and show that a reporter molecule can be coupled to the functionalized DNA sites. We use a specially engineered DNA methyltranferase that is, unlike the wild type, active with these cofactors. Finally, we show that using our molecular system and a copper-free click chemistry DNA can be labeled even in a crude cell lysate. (Read Tomkuvienė's article, DOI: 10.1021/cb300669x)

VINCENZO VENDITTI

Image courtesy of Vincenzo Venditti.

Current position: Postdoctoral fellow at National Institute of Health; Research advisor: G. Marius Clore

Education: Università degli Studi di Siena, B.S. in Chemistry, 2004; Università degli Studi di Siena, Ph.D. in Biotechnology, 2008, Advisor: Neri Niccolai; University of Wisconsin-Madison, Biochemistry Department, Visiting fellow, 2006, Advisor: Samuel E. Butcher.

Nonscientific interests: Family, music, books, traveling, rock climbing, SSC Napoli

My research activity focuses on the investigation of structure, dynamics and interactions of large biomolecules using primarily NMR and computer simulations. Since I joined the Clore's lab, I am involved in an exciting project consisting in analyzing the structural and dynamical features of Enzyme I (EI) regulating its enzymatic activity. EI is a central enzyme in bacterial metabolism, and its inhibition by α-ketoglutarate (αKG) has been shown to link the rate of glucose uptake across the bacterial membrane to the availability of nitrogen source. Here we characterize the structural basis for this inhibition using biophysical methods and enzymatic assays. We also present a structural model for the EI-αKG complex that may provide the basis for engineering new bacterial strains with uncoupled nitrogen and carbon metabolism. (Read Venditti's article, DOI: 10.1021/cb400027q)

ZHAOJUN YIN

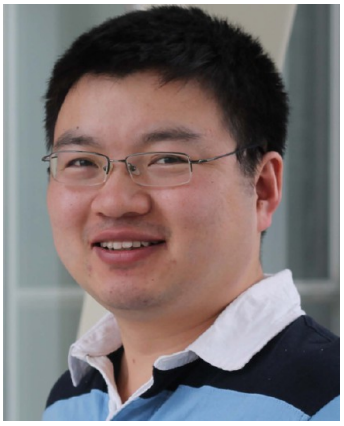

Image courtesy of Fangli Xing.

Current position: Michigan State University, Department of Chemistry, Research Associate with Prof. Xuefei Huang since 2010

Education: Peking University, China, B.S. in Pharmaceutical Science, 2005; Peking University, M. S. in Chemical Biology with Prof. Zhong-Jun Li and Prof. Qing Li, 2007; Peking University, Ph. D. in Chemical Biology with Prof. Zhong-Jun Li, 2010

Nonscientific interests: Reading, music, table tennis, watching soccer

My current research focuses on development of new strategies to improve the efficacy of cancer vaccine against tumor associated carbohydrate antigens (TACAs). As self- and T cell independent antigens, TACAs typically need be coupled to a T cell dependent carrier to elicit strong immune responses. One such promising carrier is virus-like particles, which offer advantages over traditional carriers due to their intrinsic properties such as highly organized structure, stability, and package of immunostimulatory motifs. We have discovered that bacteriophage Qβ can overcome the weak immunogenicity of monomeric Tn antigen and local antigen density is found to be very crucial for breaking the tolerance of such a self-antigen. Further studies are ongoing to optimize the system and to develop highly effective carbohydrate based vaccines. (Read Yin's article, DOI: 10.1021/cb400060x)

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YU ZHAO

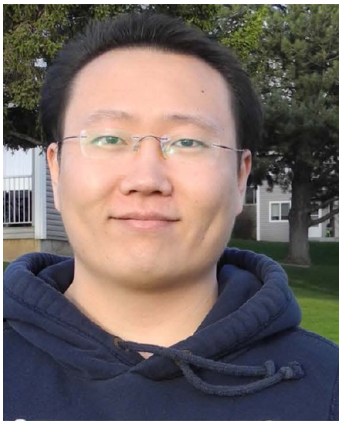

Image courtesy of Ang Gong.

Education: Shanxi University, China, B.S. in Pharmacy, 2007; Southern Illinois University, Edwardsville, USA, M.S. in Chemistry, 2009; Washington State University, Pullman, USA, Ph.D. candidate in Chemistry, Research Advisor: Prof. Ming Xian.

Nonscientific interests: Soccer, fishing, cooking, and travel

My current research focuses on the development of controllable hydrogen sulfide (H2S) donors. As described in our paper, we have designed and synthesized a new class of H2S donors based on the perthiol template. These donors release H2S in the presence of cellular thiols, such as cysteine and glutathione. We also demonstrated that H2S release capability from these donors can be regulated by structural modification. *In vivo* studies demonstrated this type of donors could have potent activity against myocardial ischemia-reperfusion (MI/R) injury due to H2S generation. Taking together, perthiol-based H2S donors have the potential to be useful tools for H2S research and potential therapeutic agents. (Read Zhao's article, DOI: 10.1021/cb400090d)

JIANTING ZHENG

Image courtesy of Jianting Zheng.

Current position: University of Texas at Austin, Department of Chemistry and Biochemistry, Postdoctoral Research Associate in Dr. Adrian Keatinge-Clay's lab since March 2009

Education: Shandong University, B.S. in Biotechnology, 2001; Institute of Microbiology, Chinese Academy of Sciences, Ph.D. in Biochemistry and Molecular Biology, 2007, Advisor: Ke-Qian Yang

Nonscientific interests: Movies, music, traveling, jogging

My research has focused on the structure and function of modular polyketide synthases (PKSs). I have solved the crystal structures of several PKS ketoreductase (KR) domains and an enoylreductase (ER) domain and have studied their function using site-directed mutagenesis. In this study, we characterized a heretofore-uncharacterized PKS dimerization motif by both X-ray crystallography and NMR spectroscopy. Using the structure of this dimerization element (DE) and other available PKS domains, we built a model of a PKS module containing DE and KR. This structural information will help in the engineering of PKSs to produce new polyketides for drug development. (Read Zheng's article, DOI: 10.1021/cb400047s)