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Zhen Chen

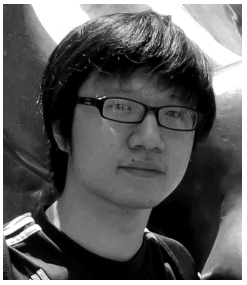

Image courtesy of Hui Fang.

Current position Rice University, Department of Chemistry, Ph.D. candidate in Chemistry with Prof. Zachary Ball

Education Peking University, China, B.S. in Chemistry, 2009

Nonscientific interests Table tennis, movies, photography

My graduate work focuses on the design of artificial enzymes and the use of metallopeptide catalysts as tools for chemical biology. In my work, I draw on ideas from biochemistry and enzymology as well as organometallic chemistry to create entirely nonbiological metallopeptides with enzyme-like function. A key insight of this paper, combining a designed molecular recognition motif with efficient transition-metal catalysis, should allow the design of orthogonal catalysts targeting multiple proteins. This concept has intrigued me ever since I joined my current lab. During my study of this underdeveloped field, surprising experimental results stimulate my scientific curiosity every day. (Read Chen's article, DOI: 10.1021/cb2001523)

Carlos Contreras-Martel

Image courtesy of Carlos Contreras-Martel.

Current position Bacterial Pathogenesis Group, Institut de Biologie Structurale, Permanent Staff Scientist (CR1 CNRS)

Education Ph.D., University of Concepción, Chile; postdoctoral fellowships, Institut Pasteur and Institut de Biologie Structurale, France

Nonscientific interests Skiing, music, movies, books, history

Since the time of my Ph.D. in Chile, my work has focused on understanding protein structure using crystallography methods. At first, I studied the process of photochemical transfer carried out by phycobiliproteins (Dr. M. Bunster's group) and later became interested in understanding electron transfer in metalloproteins (Dr. Fontecilla-Camps's group, France). I am presently a staff researcher at the Bacterial Pathogenesis Group within the Institut de Biologie Structurale (Grenble, France). My research interests focus on the structural characterization and development of inhibitors for penicillin binding proteins (PBPs), which are involved in bacterial cell division and participate in the development of antibiotic resistance in multiple pathogens. In this paper, my collaborators and I describe the structure-based study of a number of boronate analogues that inhibit specific PBPs from a multidrug resistant strain of *Staphylococcus aureus*; this work involved crystallization and solution of 11 crystal structures of a PBP in complex with the ligands. These results will be useful toward the development of novel antibiotics that target drug-resistant pathogens (Read Contreras-Martel's article, DOI: 10.1021/cb2001846)

Emily Cross

Image Courtesy of Rebecca Thomason.

Current position Vanderbilt University, Department of Cell and Development Biology, Ph.D. candidate with Prof. David Bader

Education Gannon University, Erie, Pennsylvania, B.S. in Biology, 2005

Nonscientific interests Triathalons, reading, yoga, playing with my dog

My graduate research interest is in the development of the epicardium, a progenitor population that differentiates to provide several cell types to the developing heart. I seek to understand basic molecular mechanisms that control epicardial cell decision-making. Epicardial cells undergo many behaviors including two forms of migration, differentiation, secretion of factors and extracellular matrix, and proliferation. The study published here demonstrates that the Dosomorphin analogue family of small organic molecules can specifically modify a single epicardial behavior while leaving others intact, and that two signal cascades previously linked to development of this tissue cooperatively regulate a single behavior. This study provides novel screening techniques and tools to the epicardial field, which is currently very interested in harnessing this population for regenerative purposes. (Read Cross' article, DOI: 10.1021/cb200205z)

Kommireddy Vasu

Image courtesy of Prof.Valakunja Nagaraja.

Current position Indian Institute of Science, Department of Microbiology and Cell Biology, Ph.D. student with Prof. Valakunja Nagaraja

Education Osmania University, Hyderabad, India, B.Sc. in Biochemistry, 2003; Indian Institute of Science, Bangalore, India, M.S. in Biological Sciences, 2007

Nonscientific interests Traveling, gardening, chess, reading

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My research is aimed at understanding mechanistic details of protein−DNA interactions and the evolution of sequence specificity. Restriction endonucleases serve as excellent tools to study how proteins evolve to recognize specific DNA sequences. These are a very diverse group of enzymes that differ in their primary sequence, active site architecture, requirement of metal ion, mechanism of DNA recognition and cleavage. As a Ph.D. student in Prof. Nagaraja's group, I utilize R.*Kpn*I, an inherently promiscuous restriction endonuclease, as a model system to address how nature tinkers the enzyme's active site and modulate the substrate and cofactor specificities. The present studies involved understanding active site plasticity of this enzyme and the role of metal ions in modulation of DNA binding and cleavage by R.*Kpn*I. This knowledge would be useful in designing enzymes with altered cofactor or new substrate specificities. (Read Kommireddy's article, DOI: 10.1021/cb200107y)

Nora L. Sullivan

Image courtesy of Nora Sullivan.

Current position Harvard University, Cambridge, Massachusetts, Postdoctoral Fellow in Cell and Molecular Biology, Advisor: Dr. Karine Gibbs

Education Massachusetts Institute of Technology, Postdoctoral Fellow in Biology, 2009−2010, Advisor: Dr. Dianne Newman; Harvard Medical School, Ph.D. in Microbiology and Molecular Genetics, 2003−2009, Advisor: Dr. David Rudner; University of Cambridge, Masters of Philosophy (M.Phil.) in Biochemistry, 2002−2003, Advisor: Dr. Sarah Lummis; Amherst College, Bachelor of Arts (A.B.) in Biology, 1998−2002, Advisor: Dr. Caroline Goutte

Nonscientific interests Rowing, gardening, cooking, and playing with my two young daughters

My research interests center on how bacterial cells communicate with each other. These tiny cells have evolved numerous mechanisms to collaborate with as well as to compete with their neighbors. I find the complexity of these systems amazing and a rewarding puzzle to tease apart. In the work described here, we examined a collection of fluorescent small molecules produced by *Pseudomonas aeruginosa* that play a role in redox homeostasis and as cell-to-cell signaling molecules. In my current research project, in Karine Gibbs' lab at Harvard University, I am investigating how a population of the bacterium *Proteus mirabilis* is able to sense the presence of a nearby nonidentical *P. mirabilis* population and to alter its communal behavior to segregate itself from the "non-self" population. (Read Sullivan's article, DOI: 10.1021/cb200094w)

Supannee Taweechai

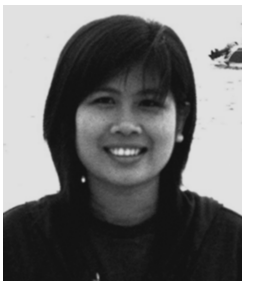

Image courtesy of Supannee Taweechai.

Current position Research assistant at Protein−Ligand Engineering and Molecular Biology, Medical Molecular Biology Research Unit of BIOTEC, National Science and Technology Development Agency (NSTDA), Program Head: Prof. Dr. Yongyuth Yuthavong

Education Mahasarakham University, B.Sc. in Biology, 2001; Rangsit University, M.Sc. in Biomedical Science with Assistant Professor Dr. Patamaporn Sukplang and Dr. Sumalee Kamchonwongpaisanfrom, 2007

Nonscientific interests Watching TV, listening to music and socializing with friends.

I have been working on antifolate screening against *Plasmodium falciparum* dihydrofolate reductase (PfDHFR) since joining Prof. Yuthavong's laboratory in 2001. After my Master's degree, my research focus has extended to protein engineering and kinetic study of DHFR from malaria and other protozoa. In this work, I demonstrated a similar pattern of antifolate binding affinity of dihydrofolate reductase (DHFR) from *Trypanosoma brucei* (TbDHFR) to a resistant type of PfDHFR. I also engineered Thr86Ser- and Thr86Asn-TbDFHR to mimic antifolate-sensitive and -resistant types of PfDHFR to prove our hypothesis that natural resistance of TbDHFR is indeed due mainly to its Thr86 residue and that the flexible-type antifolates are suitable for TbDFHR. These data provide important clues for the design of more effective inhibitors against this parasite. (Read Taweechai's article, DOI: 10.1021/cb200124r)

Sandra Tückmantel

Image courtesy of Dr. Armin Robubi.

Current position Applying for scholarships and positions to do postdoctoral studies abroad

Education University of Bonn, Germany, diploma in Biology with Prof. Dorothea Bartels, 2006; Max Planck Institute of Molecular Physiology, Dortmund, Germany, Ph.D. in Biochemistry with Prof. Herbert Waldmann and Prof. Daniel Rauh, 2011

Nonscientific interests Guitar and Spanish lessons, reading, cooking

My doctoral research focused on small-molecule kinase inhibitors as antifungal agents. While this type of inhibitor is increasingly used to treat human disease, the concept of employing them as pesticides is a novelty. My goal was to elucidate the fungal targets of a small-molecule inhibitor showing significant antifungal effects. In my paper, I present Aurora kinase as a novel target in fungi that may lead to the development of a new class of fungicides targeting protein

kinases. As my Ph.D. work was carried out in a group focusing on small-molecule inhibitors of kinases involved in cancer progression, I became interested in cancer research and, in my postdoctoral work, would like to study novel approaches for cancer treatment. Read Tückmantel's article, DOI: 10.1021/cb200112y)

Jarunee Vanichtanankul

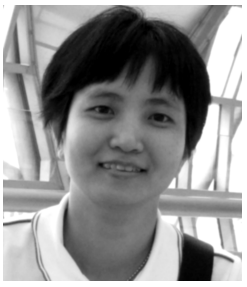

Image courtesy of Jarunee Vanichtanankul.

Current position BIOTEC, National Science and Technology Development Agency, Thailand Science Park, Researcher with Prof. Yongyuth Yuthavong

Education Chulalongkorn University, B.Sc. in Medical Technology, 1994; M.Sc. in Biochemistry, 1998; Mahidol University, Ph.D. in Biochemistry with Assoc. Prof. Jirundon Yuvaniyama, 2010

Nonscientific interests Relaxing music, traveling, and meditation

I joined Prof. Yuthavong's research group and worked with dihydrofolate reductase-thymidylate synthase (DHFR-TS), a drug target in *Plasmodium falciparum* for 10 years. Our research interests focus on the use of X-ray crystal structure of the target protein to design effective inhibitors. In this work, we determined the structure of DHFR of *Trypanosoma brucei*, the causative agent of African sleeping sickness. The structure together with kinetic studies indicated that trypanosomal DHFR is similar to a quadruple mutant plasmodial DHFR causing antifolate resistance. This work provides opportunities to develop antifolate antitrypanosomal chemotherapy. (Read Vanichtanankul's article, DOI: 10.1021/cb200124r)

Alexander Wahba

Image courtesy of Nancy Hebert.

Current position Environmental Health Science and Research Bureau, Health Canada, Government of Canda, Visiting Fellow with Dr. Rocio Aranda-Rodriguez

Education McGill University, B.Sc. Biochemistry, 2002; McGill University, Ph.D. in Chemistry with Dr. Masad J. Damha, 2010

Nonscientific interests Swimming, kendo, humanitarian work, traveling, languages

My fascination for nucleic acid chemistry began in my first year of undergraduate studies, when I had the good fortune to meet my future Ph.D. supervisor, Professor Masad Damha. I eagerly pursued doctoral studies in his laboratory, where my research focused on the chemical synthesis and biological properties of modified nucleotides and nucleic acids. Our work demonstrated how modified nucleic acids can serve as tools to improve our understanding of natural DNA and RNA, provide information on their interactions with other biomolecules, and improve nucleic acid based therapies. In the current study we investigated the incorporation of a fluorescent nucleobase analogue in siRNA, 6-phenylpyrrolocytidine, and demonstrated how it has nearly the same properties as natural RNA with the added benefit of simultaneously reporting on biodistribution. I am currently pursuing a postdoctoral fellowship in the Department of Health of the Government of Canada, where I am interested in utilizing nucleic acids in biosensors, diagnostics, and personalized medicine. (Read Wahba's article, DOI: 10.1021/cb200070k)