

Annual Student Awards Day

Student Awards Day showcases the Department and recognizes our top students in academics and research. On May 10, 2011, all areas of study and research were represented with a total of 62 posters presented, 20 of which were by undergraduates. Our judges for the competition were Dr. Brian Volkman, Medical College of Wisconsin, Dr. Haiyan Grady ('96), Takeda Global Research & Development, and Dr. Diab Qadah ('09), City of Milwaukee Health Department. In true department tradition, the day began with a lecture by Professor Volkman entitled "Extreme Protein Dynamism: Functional Unfolding in the Native State."

Undergraduate Poster Winners:

1st Place – McFarland Award to Derek McLain, "Environmentally Benign Approaches to Chemical Analysis: Gas Chromatographic Determination of Ethanol in Gasoline Following Headspace Microextraction Into a Single Drop of Water." Advisor: Mark Dietz (Analytical).

2nd Place – Chemistry Alumni Award to Mike Roesch and Aaron Herzog, "Structural Studies of Two Proteins of Unknown Function from the Enduracidin Biosynthetic Pathway." Advisor: Nicholas Silvaggi (Biochemical).



3rd Place – Chemistry Alumni Award to Sarah Oehm, "New Enamine Substrate for

Undergraduate Julia Keys receives the Kovacic Award for Outstanding Performance in Organic Chemistry from Professor Xiaohua Peng

Intramolecular Buchwald-Hartwig Indole Synthesis." Advisor: M. Mahmum Hossain (Organic).

Graduate Poster Winners:

1st Place – Keith Hall Award for Excellence in Research to Cory Hawkins, "Fundamental Aspects of Group 1 and 2 Metal Ion Transfer Into Imidazolium-based Room Temperature Ionic Liquids." Advisor: Mark Dietz (Analytical).

2nd Place – Keulks Award for Research to Dharaben Shah, "Hydroxylation Regiospecificity Determinants in the Two-Substrate α -Keto Acid Dependent Enzymes." Advisor: Graham Moran (Biochemical).

3rd Place – McFarland Award to Taher Ababneh, "Design and Optimization of Near-field Scanning Optical Microscope." Advisor: Jorg Woehl (Physical).

4th Place – Keith Hall Award for Excellence in Research to William Wobig, "LA-ICP-MS: An Innovative Method for the Detection of Toxic Metal Binding Sites in Cells." Advisor: David Petering (Biochemical).

From the Chair's Desk



Dr. Kristine Surerus

Welcome to the summer edition of the Chemistry and Biochemistry newsletter. It has been my pleasure to write the chair's letter for the last five years. Looking back, there have been many changes in the department. Most notably, a tremendous increase in the number of students we serve – an 11% increase in students taking courses in chemistry/biochemistry, a 17% increase in the number of declared majors and a 46% increase in intended majors. Our undergraduate program has grown from awarding 14 undergraduate degrees in 2005-06 to awarding 42 in 2009-10 – a 300% increase! While we have had a smaller increase in the number of graduate students, going from 70 to just over 80, our research effort has almost doubled with extramural funding increasing from ~\$1.7 million to over ~\$3.1 million.

There has also been a significant change in staffing in the last five years with a number of people moving on to new challenges. Just this spring three members retired – Walter England and Alan Thompson after 33 years, and Keith Krumnow after 30 years. We wish them well and many more years enjoying films, singing and photography. While we miss those who have left, we have been fortunate with our new hires and look forward to working with them in the years to come. One notable change for next year: I will be stepping down as chair. Peter Geissinger has graciously agreed to take on the chair's position starting this fall. His enthusiasm and energy will guide the department through upcoming challenges and continue our growth.

We are very gratified with your donations this past year and appreciate your willingness to help support our undergraduate and graduate students even in this unsettled economic environment. Your donations are used to support student travel to conferences and in part to recognize the outstanding performances of undergraduate and graduate students at our Awards Day.

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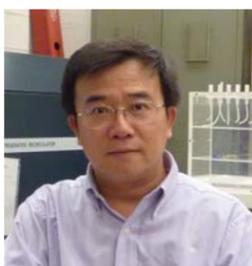
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New to the Department:



Zhiqiang (Mark) Wang received his B.S. and Ph.D. degrees in medicinal chemistry from the School of Pharmaceutical Sciences at Peking University Health Sciences Center in 1982 and 1990, respectively. His past experience includes teaching at research positions at Shanxi Medical University; the Department of Applied Chemistry at China Agricultural University; Southwest Foundation for Biomedical Research; College of Pharmacy at Purdue University; and the University of Windsor, Canada. While in Windsor, he

focused on the research of artificial blood agents and also obtained his B.S degree in computer science.

More recently, he worked in the College of Pharmacy at the University of Illinois at Chicago from where he was recruited to join UWM's Department of Chemistry and Biochemistry. He is an Instrumentation Innovator-Research and directly supervises and operates the Mass Spectrometry facility in the department.

Dr. Wang has been profoundly engaged in the design, synthesis, structure elucidation, and bio-analysis of a variety of new molecular entities in the development of hormone antagonist, anticancer, artificial blood, anti-Alzheimer, and anti-inflammatory agents. His major areas of expertise include: development, optimization and validation of LC/MS/MS methods for quantification of biologically interesting molecules and their metabolites in biological matrices; preparative HPLC purification, and structure elucidation of biologically interesting molecules and their metabolites; monitoring enzyme-catalyzed reactions; development of regular and high throughput assays with the use of various modes of detection (UV/Vis, fluorescence, LC-MS-MS).

Outside of his research work, he enjoys playing table tennis, swimming, reading, and most of all spending time with his family and friends.



The Milwaukee Institute for Drug Discovery (MIDD) began organizational activities during the spring semester with the appointment of **Douglas Stafford** as its Director.

Previously, Doug was Executive Vice President for International Corporate Development for GenExel-Sein, Inc., a publicly traded diversified medical products company headquartered in South Korea. He managed intellectual property strategy, business development, contracts and licensing, and US commercial operations. He was previously President of Ophidian Pharmaceuticals, Inc., a publicly traded bio-pharmaceutical company. Earlier he was employed at Baxter Healthcare Corporation, with senior management assignments in product development and operations. He has held several academic positions, including adjunct faculty duties at Edgewood College and UW-Madison.

Doug is inventor on over a dozen biomedical patents, has formed numerous public and private research collaborations, and participated in the development of several entrepreneurial businesses. Doug received BS and MS degrees in biology from the University of Detroit, PhD in immunology from the Tufts University School of Medicine, and MS in management from Lesley College.



Comings & Goings

Mary Eckert, our new Undergraduate Coordinator, came to us from the Physics Department to fill the shoes of **Tamika Bradford** who graduated from UWM with her degree and accepted a position to continue her education at North Central University in Phoenix.

In April, **Dr. Alan Thompson** hung it up after 33 years of outstanding service. His well-rounded knowledge will be missed. He plans to continue traveling and singing.

In June, **Keith Krumnow** after 30 years of true service to others, will be taking it easy to enjoy photography and an occasional trip to Las Vegas.

In August, **Professor Walter England** will retire after 33 years of dedicated service.

Promotion

Dr. Graham Moran received full Professorship. Congratulations!

Funding

Research Growth Initiative (RGI) is an internal seed-funding competition aimed at enhancing the university's research and scholarly work and supporting the state's economic development through innovation. The 2011-2012 Awards to Chemistry/Biochemistry are:

"Predicting Phase Formation and Transitions in Functional Oxide Nanolaminates," Carolyn Aita

"Remote-Controlled, Self-Healing Shape Memory Polymer Composites," Jian Chen

"Drug Discovery for Hepatitis C: Hit-to-lead Development of Helicase Inhibitors," David Frick

"The Reaction of Nitric Oxide with Mycobacterium Tuberculosis Hemoglobin N," Marius Schmidt (Physics) with co-PIs from Chem/Biochem Arsenio Pacheco and Alan Schwabacher

For someone interested in a career in human health, the choicest institutional experience is arguably a research position at the National Institute of Health (NIH), an agency of the U.S. Department of Health & Human Services.

Dr. M. Shahjahan Kabir, a 2011 Ph.D. graduate, has been offered a position as a Post-Doctoral Research Fellow at the Drug Design and Synthesis Section, Chemical Biology Research Branch, National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA) under the supervision of the Chief of this section, Dr. Kenner C. Rice. One of this unit's principal research focus is in the area of drug development for the treatment and prevention of drug abuse e.g., heroine, morphine, and codeine.

Dr. Kabir is a graduate student of Professor James M. Cook, University Distinguished Professor at UWM. He joined Professor Cook's group in 2005 for his Doctoral Research on "Part I: Development of New Organic Synthetic Methods: Palladium and Copper Catalyzed Carbon-Carbon, Carbon-Sulfur, Carbon-Nitrogen, and Carbon-Oxygen Bond Formation" and "Part II: Design, Synthesis and SAR of a New Class of Agents to Treat Drug-Resistant Bacteria, Anthrax and Tuberculosis Infections."

Dr. Kabir has made major contributions to Professor Cook's program in the development of five new organic synthetic methods for different classes of natural and synthetic biologically important compounds. He has made three major discoveries in the field of medicinal chemistry: a new selective antimicrobial lead for multi-resistant, Gram-positive pathogens that is slated for formal preclinical studies; a new class of anti-tuberculosis agents, and; a new class of small molecule,

non-toxic antihelminthic agents. These accomplishments exemplify his acumen in applying skills in organic chemistry to relevant questions in drug discovery. In addition, two of his newly developed organic synthetic methods made to published papers (Organic Letters, 2008 10(15), 3363-3366, & Organic Letters, 2010, 12(3), 464-467) were chosen for their significance by SYNFACTS, a journal dedicated to finding the most significant papers published in the field of synthetic organic chemistry each month.



Dr. James Cook (left) and Dr. Shahjahan Kabir (right)

Dr. Kabir has 11 publications to date and at least four forthcoming publications. He has presented 15 papers at the National American Chemical Society's (ACS) meetings, including the American Microbiological Society, and other international professional meetings. Kabir is named on three of the joint U.S. and International patent applications on anti-

bacterial agents including drug-resistant MRSA, VRE, anthrax and tuberculosis.

Before joining Professor Cook's research group he did his master's research at the University of Saskatchewan, Canada (2001-2005) under the supervision of Professor Dale E. Ward. He hailed his previous Bachelor with honors and Master's Degree from Jahangirnagar University, Dhaka, Bangladesh.

Frederick C. Hoppe Memorial Award

After 15 years in commercial construction, Elizabeth Hoppe returned to UWM to complete her undergraduate degree in Civil Engineering. In an effort to more fully understand the structural properties of materials, she pursued graduate degrees in Materials Science and Engineering with Professor Carolyn Aita. Dr. Hoppe transferred to the Chemistry and Biochemistry department last summer from the College of Engineering's Advanced Coating Experimental Laboratory (AceLab). Her work includes the investigation of the optical behavior, structural properties and thermal stability of nascent metastable phases of transition metal oxides.

Dr. Hoppe has long been an advocate for the development of the enhanced student/teacher experience and was among the first group to introduce Blackboard, the web-based interactive teaching program. She has received recognition as the Teacher of the Semester from Tau Beta Pi and has served as President of the College of Engineering's Alumni Association. She was also a member of the UWM Alumni Association Board of Trustees and UWM Honors Scholarship Awards committee.

In memory of her recently departed beloved husband, Dr. Hoppe has established the Frederick C. Hoppe Memorial Award to benefit and support women in science. Three talented and deserving young women received their awards during Awards Day.



Award-Winning Faculty

Congratulations to our faculty members who recently were honored for their exceptional research efforts:

- The 2011 UWM Research Foundation Senior Faculty Award was given to Professor Dennis Bennett.
- The 2011 Graduate School Research Award was given to Professor Peter Geissinger

Durward Layde Memorial Fellowship

The Chemistry Department would like to thank the Durward Layde family for their continued support in honor of their husband and father. The "Durward Layde Memorial Fellowship" is given to an undergraduate who is not immediately graduating, shows academic promise and demonstrates financial need. This year's recipient is Matthew Shanahan.



Professor Mark Dietz's Research Group (Analytical)

Back Row L to R: Cory Hawkins, Derek McLain, Md. Abdul Momen, and Alan Pawlak
Front Row L to R: Sarah Oplawski, Elizabeth Doucette, Sarah Garvey, Golbon Shahmohammadi, Anna Rudd and Professor Mark Dietz.

WE WANT TO HEAR FROM YOU!

To share alumni news or provide feedback to the editor, please contact the Department of Chemistry and Biochemistry:

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Friends of Chemistry Make a Difference

We would like to take this opportunity to thank our alumni and friends for their generosity towards the Chemistry and Biochemistry Department. Your contributions allow us to enhance the educational experience of our students and to strengthen the research and development of our faculty and staff.

Please join us in thanking our current friends (based on donations December 2010 – present.)

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Meet the Student Awards Day Judges

Dr. Haiyan Grady ('96)

Takeda Global Research & Development

Haiyan Grady, Ph.D., is a research fellow at Pharmaceutical Science, Takeda Global R&D in Deerfield, IL. She has more than 15 years of experience in leading pharmaceutical development projects at companies, such as Abbott Laboratories, TAP Pharmaceuticals and Takeda. At one point in life, she was a graduate student in organic chemistry under the guidance of Dr. Alan Schwabacher. Her organic synthesis career ended at the same time as graduate school, followed by joining the pharmaceutical industry and analytical chemistry field. With her background in making and confirming the structures of molecules, this transition was easy. The industrial experience has broadened her knowledge from analytical development to formulation, manufacturing process, and global regulatory filing. Her current technical interests are focused on analytical development for novel dosage forms or novel processes. Another area is the development of correlations between in vitro drug testing and in vivo performance in humans for extended release formulations. She was fortunate to lead several drug products successfully through all development phases to final FDA approval and commercialization. She holds publications, patents and awards. She is a long distance runner, follows Chicago sport teams, and is a volunteer for local churches and schools.



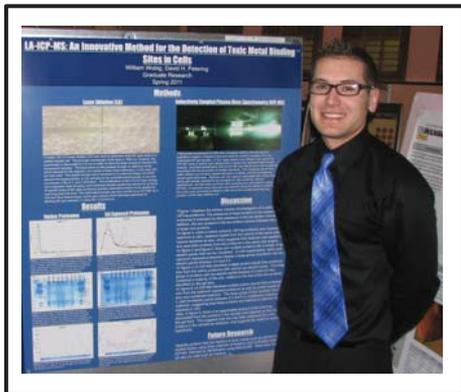
Graduate Student Steve Kopitske (Physical) receives the Mocznski Outstanding Teacher's Assistant Award from Distinguished Professor Carolyn Aita (Physical).

Dr. Diab Qadah ('09)

Chemist, City of Milwaukee Health Department

Diab Qadah received a B.S. degree in chemistry in 1995 from Alquds University, Jerusalem, Palestine. After graduation, Dr. Qadah worked as a teaching and research assistant in the Chemistry Department at Alquds University. In 2000, Dr. Qadah received a Masters degree in Environmental Analytical Chemistry & Aquatic Toxicology at the Free University of Brussels in Belgium.

Then, he worked as a research associate and instrumentation innovator at the Department of Ecophysiology, Biochemistry & Toxicology at the University of Antwerp, Belgium, where he was in charge of a metal analysis facility. From there, Diab studied at the University of Wisconsin-Milwaukee, Department of Chemistry and Biochemistry under Professor Joseph Aldstadt and received a Ph.D. in analytical Chemistry in 2009. He was then employed in the Chemistry Department as a Research Associate in Professor Mark Dietz's lab. Currently, Diab is working as a chemist at the city of Milwaukee Health Department.



Professor Petering's student, William Wobig was displaying his poster, "LA-ICP-MS: An Innovative Method for the Detection of Toxic Metal Binding Sites in Cells," when Professor Woehl's group became interested and requested an immediate private meeting. A new collaboration of William Wobig's work with Woehl's group was established. THIS is what Award's Day is all about.

Brian F. Volkman

Department of Biochemistry, Medical College of Wisconsin

Brian Volkman obtained his Bachelor of Science degree in Chemistry and Physics from Butler University in 1989. His undergraduate studies included a semester at the University of New South Wales in Sydney, where he began his protein NMR training in the laboratory of Ray Norton. He went on to earn a Ph.D. in biophysical chemistry in 1994 from UC Berkeley with David Wemmer, followed by postdoctoral training at the University of Wisconsin with John Markley at the National Magnetic Resonance Facility at Madison (NMRFAM). In 2000, Dr. Volkman began his independent research career at the Medical College of Wisconsin where he is currently Professor of Biochemistry. Using NMR and other biophysical approaches, Brian's goal is to learn enough about protein structure, folding and dynamics that he can exploit this knowledge for useful purposes in medicine and biotechnology.