CHEM/BIOCHEM

Newsletter for Alumni and Friends Fall 2015

From the Chair's Desk

Peter Geissinger

Dear Friends of the Chemistry & Biochemistry Department,

We are pleased to present the Fall 2015 edition of our departmental newsletter. As always, we highlight the accomplishments of some of our students, staff, and faculty. In this issue, our featured outstanding undergraduate student is Ms. Kelsey Holbert, who has excelled in her coursework, research (under the supervision of Prof. Aldstadt), and in athletics. The featured outstanding graduate student, Mr. Veera Venkata Naga Phani Babu Tiruveedhula, is a Ph.D. student in the group of Prof. Cook, whose research accomplishments have been recognized at international conferences! We are proud of both students, as they epitomize the excellence seen throughout our programs.

We also congratulate Assistant Professor Xiaohua Peng and Assistant Professor Alexander Arnold, who were both promoted to Associate Professor with tenure following a rigorous promotion process that included the evaluation of their professional stature by research faculty from universities and research laboratories across the United States and from abroad. We are proud to have such talented researchers and educators in our Department!

The American Chemical Society Examinations Institute has returned to our Department on July 1st , when Prof. Kristen Murphy assumed the position of Director. Congratulations Kristen! We will provide a more detailed report on the Institute in a future newsletter.

On October 2nd, UWM celebrated the official opening of the Kenwood Interdisciplinary Research Complex, which is the first new academic building on campus since 1995. While the Department of Chemistry & Biochemistry's footprint in this building is small, it is a highly visible and significant presence, namely the Shimadzu Center for Advanced Analytical Chemistry. The installation of the sixth mass spectrometer in this Center, an ICP-MS, was completed on the day before the official opening of the building. We now have a suite of mass spectrometers for every possible research need. Countless visitors toured the Center on opening day, which provided great exposure for our Department.

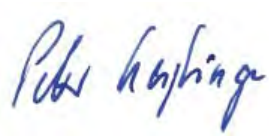
We are pleased to report that student enrollments have increased slightly, counter to the downward trend seen in almost any other department and program on campus. We are stepping up recruitment and retention efforts to sustain this trend by innovative programing (such as the new "Industrial Fermentation and Biotechnology Option") and by offering tutoring and supplemental instruction for many courses in our department. Prof. Murphy has been spearheading this effort, which has been well received by students, thanks to the dedication of our graduate and undergraduate teaching assistants who are providing this service.

And, as part of an "early stage" recruiting effort, we were happy to lend the walls of our outreach classroom to students from College for Kids for a chemistry-themed mural. You can find pictures in this newsletter. Our Department Manager, Kevin Blackburn, has worked tirelessly to bring more innovative College for Kids courses into our building. Thanks Kevin!

I would be remiss not to mention the critical budget situation of the University. The natural-sciences departments continue to perform well, although the overall budget crisis will affect us. We remain committed to provide outstanding educational and research programs in spite of these challenges.

Finally, we would like to say a BIG "Thank You" to all of you who donated to our Department. We use these funds to recognize students through awards or fellowships and to support professional development opportunities for students such as conference attendances.

Best Wishes,



The information in this Newsletter was compiled by our Undergraduate Coordinator, Megan Garrett. Special thanks to everyone who submitted stories and provided photos.

Visit our website

Learn more about our department and find up-to-date information on our different facilities, outreach programs, and current events.

Alumni? We'd love to hear your story and even feature your profile on our Alumni page or in an upcoming newsletter. Please email our Department Manager, Kevin Blackburn (chem-dept@uwm.edu), with your success stories and photos.

www.uwm.edu/chemistry

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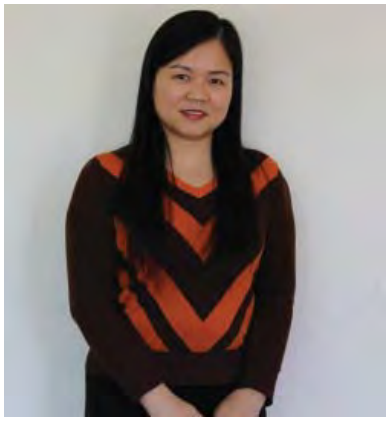
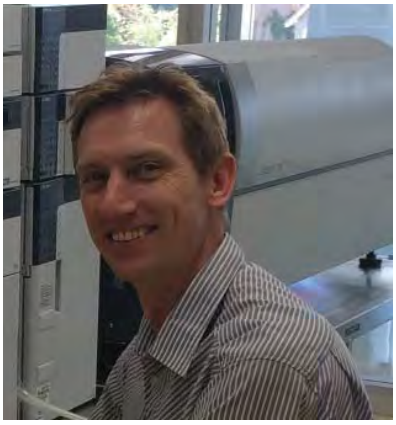
Faculty Promotions

Xiaohua Peng and Alexander "Leggy" Arnold have both been promoted to Associate Professors.

Congratulations!





Ph.D Graduate Degrees Conferred (Ph.D.)

Summer 2015:

German Oscar Fonseca Cabrera

"Enantiospecific Stereospecific Strategy For The Total Synthesis of Sarpagine and Macroline Related Oxindole Alkaloids: First Total Synthesis of Affinisine Oxindole, Isoalstonisine, Alstofoline, Macrogentine, *N*(1)-Demethylalstonisine, Alstonoxine A and Second Generation Synthesis of Alstonisine"

Karl Koebke

"Mechanistic Study of Heme Protein-Mediated Nitric Oxide Dioxygenation Using Photolytically Produced Nitric Oxide"

Md. Sharif Asad

"Asymmetric synthesis of All-Carbon Aryl Quaternary Carbonyl Compounds By Palladium-Catalyzed Asymmetric Allylic Alkylation (Pd-AAA) And Their Application To The Synthesis of Biologically Important 3,3'-disubstituted Oxindole And Disubstituted Quaternary Lactone Frameworks"

Grants & Publications:

James Cook, Alexander Arnold and Fred Helmstetter received a Research Grant from National Institutes of Health Design of New Therapeutic Agents to treat Schizophrenia in the amount of $371,529

"Behavorial Effects of the Benzodiazepine-Positive Modulator SH-053-2'F-S-CH3 in an Immune-Mediated Neurodevelopmental Disruption Model," Richetto, J.; Labouesse, M.; Poe, M.M.; Cook, J.M.; Grace, A.; Riva, M.; Meyer, U., Eur. J, Neuropsychopharmacol., Int. J. of Neuropsychopharmacology, 1-11 (2015); doi: 10. 1093/ijnp/pym05

"Simultaneously Targeting the NS3 Protease and Helicase Activities for More Effective Hepatitis C Virus Therapy," Ndjomou, J., Corby, M. J., Sweeney, N. Hanson, A. Aydin, C. Ali, A. Schiffer, C.A., Li, D. Frankowski, K.J, Schoenen, F.J.; Frick, D.

"Rapid quantification of imidazolium-based ionic liquids by hydrophilic interaction liquid chromatography: Methodology and an investigation of the retention mechanisms," Hawkins, C.; Rud, A.; Guthrie, M.L.; Dietz, M.

Welcomes & Farewells

Graduate Student, Josie Corby, welcomed her daughter Nora Adelaide on July 7th. Nora was two weeks late at 9lbs, 10.5 oz. and 21 inches long! Congrats Josie!

Graduate Student, Jackie Trate, welcomed her 2nd baby boy Jameson Patrick on June 11th. The cutie is seen pictured here with his handsome older brother, Leo. Congrats Jackie

After 28 years of service, our very own Senior Electronics Technician Researcher, Daniel Shurilla, has retired. Dan's last day was July 3rd. On June 26th, we held a retirement gathering to bid farewell to our beloved friend and co-worker. His expertise, willingness to help, great smile and jokes will truly be missed.

Nora Adelaide

Leo & Jameson

Dan Shurilla and his wife, Jan

Spotlight on Industrial Microbiology & Biochemistry Laboratory

BIOSCI/CHEM 537

Biosci/Chem 537 is a new laboratory course offered this Fall, currently taught by Dr. Graham Moran of Chemistry and Dr. Daad Saffarini of Biological Sciences, that forms part of a five course suite that collectively comprise the new Industrial Fermentation & Biotechnology Option. This option can be obtained by biochemistry and microbiology majors generally by selecting these courses in place of electives. The 537 course seeks to demonstrate that cultured organisms can be used and manipulated to produce a wide array of molecules that are of use to mankind. In the first iteration of the course, yeasts are induced to produce alternate alcohols, production of antibiotics by bacteria is evaluated and described and the students gain familiarity with modern instrumentation used for tightly controlled batch culture, namely the assembly and programing of modern bioreactors.

Eppendorf bioflow 115

GEAR UP Summer Program

Like in previous years, our department has been involved in GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs). The program, funded by the US Department of Education, strives to expose students and their families to college campuses and increase their knowledge of post-secondary options, available financial aid and scholarships, high school courses needed to enter college and other entrance requirements.

This summer, six groups of high-school students from Milwaukee Public Schools were welcomed in our department between June 29th and July 14th. Faculty member Anja Blecking, and on one occasion, graduate student Christian Hoydic, presented information about a variety of career opportunities related to chemistry and how students can prepare in high-school before entering these career paths. The students were very surprised to learn about the many different career fields in which chemistry plays an integral role and in how many ways knowledge about chemical concepts can be beneficial.

After the presentation and discussion, students were invited to conduct research on their own by investigating different properties of water and explaining these phenomena on a particulate level using molecular models. It was a lot of fun to see how engaged everyone was in the hands-on activity and the process of problem solving.

"I am sure some of these students will find their way back to the department, either again through the GEAR UP program or as UWM students," said Dr. Blecking. "I can definitely see a STEM career path for some of them in the future."

College for Kids and Teens

The Department of Chemistry & Biochemistry was excited to be a part of College for Kids and Teens (CFK/CFT) again this year. CFK/CFT provides hands-on enrichment programs for talented students entering grades k5-12th. The program utilized three instructional labs and the department computer lab (McFarland Learning Center) to instruct the courses. The program ran from June 18th-August 7th. We are happy to provide space for the children to learn, experiment, create, explore and have fun!

Shimadzu Lab in the KIRC

The grand opening of the Kenwood Interdisciplinary Research Complex (KIRC) was held on October 2, 2015. This campus celebration highlighted world-class scientific research at UWM and showcased the advanced analytical chemistry facilities of the Department of Chemistry and Biochemistry. The Department's Shimadzu Laboratory for Advanced Applied and Analytical Chemistry is housed in a gleaming 2,000 square foot glass enclosed laboratory at the center of the KIRC's two-story atrium. The lab, funded by grants from the UW System and Shimadzu Scientific Instruments, Inc., hosts six mass spectrometers, UV/Vis and FT-IR spectrophotometers, sample preparation instruments, liquid and gas chromatography systems, a preparative liquid chromatography system, cell culture suite, and offices for students and staff. The instrumentation cluster supports diverse research in new drug discovery, environmental and water analysis, materials, and neurobiology and is open for collaboration across the UWM campus and other research centers. The Milwaukee Institute for Drug Discovery is a principal user of the lab and its instrumentation, with major new drug discovery programs in asthma, pain, and antibiotics.

3rd place: Nicholas Zahn

2nd place: Bushra Fathima

1st place: Kelsey Holbert

SURF Undergraduate Poster Awards

On August 19th, we concluded our Summer Undergraduate Research Program with our annual poster session in the Department of Chemistry and Biochemistry. This year we had fifteen undergraduate students over the summer months working in eight different research groups. This annual opportunity is an essential part of the undergraduate education and enables students to explore and experience academic research. In addition, we visited AbbVie in Northern Illinois and had the opportunity to see their structure-based drug design department as well as their high throughput chemistry facility. Vincent Stoll did an outstanding job showing us around. The poster session ended with the obligatory poster award ceremony. Dr. Alexander Arnold presented this year's awards. Nicholas Zahn was awarded with the third best poster award and received a backpack from Eppendorf. Bushra Fathima had the second best poster and received a signed book by Craig Jordon "Estrogen Action, Selective Estrogen Receptor Modulators and Women's Health. The best poster was prepared and presented by Kelsey Holbert and she received an ipod Shuffle. Further acknowledgements go to the UWM Office of Undergraduate Research and Nigel Rothfels, who enabled finaancial support provided the UW System. (Pictured above are the winners with Dr. Arnold).

Friends of Chemistry

Your contributions enhance the educational experience of our students and strengthens the research and development of our faculty and staff. Please join us in thanking our friends (gifts from (4/2015-9/2015):

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For more information on becoming a Friend of Chemistry and Biochemistry, please see the pledge form on the back, visit our website or contact Christina McCaffery at (414) 229-4963 or cmmakal@uwm.edu.

Outstanding Undergraduate Student

Kelsey A. Holbert, a senior chemistry major at UWM, is our featured "Outstanding Undergraduate Student" for this edition of the newsletter. Kelsey has excelled as a student, athlete, and researcher. She has accrued a near perfect grade point average in UWM's prestigious Honors College and is presently applying to medical school. Kelsey is also co-captain of our Division I Women's Soccer team and was recognized as a first-team All-Horizon League midfielder as a sophomore and junior as well as first-team All-District during her junior year. Kelsey sustained a season-ending injury last season and is returning for an "extra semester" this fall for her fourth year of eligibility. Kelsey has been studying analytical chemistry in Prof. Aldstadt's lab since January 2014, having received multiple fellowships from the Office of Undergraduate Research. She is studying the application of proton NMR spectroscopy using a benchtop 82 MHz instrument in a flow-injection (FI) system as a means to study the kinetics of the Maillard Reaction. Earlier this year, Kelsey presented her research at the UW System Symposium and at the Pittsburgh Conference on Analytical Chemistry & Applied Spectroscopy. Kelsey and Dr. Aldstadt are preparing a manuscript on using reversed-phase liquid chromatography in the FI system to isolate and pre-concentrate analytes for NMR quantitation; a second manuscript on using the FI-NMR instrument to study the kinetics of the reaction of methyl glyoxal and phenylalanine methyl ester is in preparation as well. Kelsey received the "Outstanding Senior Chemistry Major" and "Excellence in Analytical Chemistry" awards at our ceremony in April for her exceptional efforts. Kelsey truly epitomizes the "student-athlete" concept and the Department is proud of her accomplishments!

Outstanding Graduate Student

Veera Venkata Naga Phani Babu Tiruveedhula, better known as Phani, is our featured "Outstanding Graduate Student", whose work was recently featured in *C & E News* and the *Royal Society of Chemistry*. He is working on new molecules to reduce alcohol use in humans. This requires synthesis of multigram quantities of the key agent and he has designed an excellent new route cutting the steps from 6-8 to only 2. He has scaled this up to the 20 gram scale for safety studies in rodents since he already established (with Dr. June) that his lead compound reduces alcohol self-administration in alcohol preferring rats with no side effects and is active in a model against binge drinking as well. The other agents on the market are effective in some patients, but have severe limitations based on side effects and toxicity for most people. He is also working on agents to treat tuberculosis and they are active in several strains of TB as well as on agents to treat resistant MRSA infections. He has done synthetic organic chemistry and medicinal chemistry at a very high level, as well as chemical biology with Dr. Arnold and Dr. Silvaggi. To date he has 7 publications, with another one just accepted. He is working on two more at the present time. He has also given 4 posters at American Chemical Society conference, the most recent conference taking place in Boston, MA, August 16th-20th. After, he was interviewed at a press conference on the work directed toward treatment of human alcoholics. He is also part of the Milwaukee Institute of Drug Discovery where he has flourished because of his creativity and work ethic. Phani truly represents what hard work, dedication and a passion for research, can produce!

Annual Department Picnic Welcomes New Graduate Students

Every year, in August, our department hosts a picnic for the entire department and their families, to get to know the new graduate students and enjoy the last of the good weather. This year, although the weather wasn't perfect, everyone had a great time. Our 8 new graduate students are:

Taukir Ahmed
Md. Shahnawaz Ali
Dulmini Jaywardana
Steven Reinhardt
Joseph Roman
Shahid
Nemanja Vuksanovic
Kevin Wolters

The new graduate students participated in two weeks of orientation, testing and training. They are now spending their first semester as teaching assistants, as well as rotating throughout various labs to learn more about each Professor's research. By the end of their first semester, students can elect which research group they would most like to join. We are excited to have you here in the Department of Chemistry & Biochemistry. Welcome!

Why choose Chemistry & Biochemistry's Graduate Program at UW-Milwaukee?

Atreyei Ray: "I graduated in 2014 from Heritage Institute of Technology in India, majoring in Biochemistry. I was never a fan of theoretical classes but loved the little bit of research that undergrad in India offered. That was my main motivation to apply for graduate school in the United States. I applied to UWM because the research opportunities were to my liking, and also, I had a couple of friends from my undergrad joining me here. I am loving every day of it! It has definitely been a learning experience in every aspect. My favorite things about Milwaukee are the people, the cheese and the beach; in that order. I seldom miss home because of the friends that I have made here. I spend most of my time reading at the beach. If there is something to complain about, it would definitely be how the weather can never seem to make up its mind. When I first joined graduate school, I wanted to join the pharmaceutical industry. But, after my first year as a TA, I can see myself as a professor someday, too!"

Mark Yerukhimovich: "I love UWM for the location. Many summer and winter activities available not too far away from everything. I got my undergrad here as well in Biochemistry. I have lived in Milwaukee since I was 1, yet English is my second language. My family is here so that is why I chose UWM for grad school. I decided to go to grad school because I love research! CHEM 603 Biochemistry lab was what I was wanting to do the rest of my life.I love tennis in the summer, sailing, hiking, and camping. In winter I like to ski and hike.With research, I want to find low cost drug alternatives to current therapies as well as find new drugs for infectious and non-infectious diseases.My dream job would be with the CDC as a field scientist and then becoming a professor. UWM is a great school to learn great teaching skills through TAships. Another dream would be on the drug discovery side in a big pharmacy corporation."

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