



## From the Desk of the Chair

**The department has successfully finished its first year under the new undergraduate curriculum that features four ACS-certified degree tracks.** New courses such as Nuclear Chemistry, Nutrition, Chemical Biology, Drugs and Toxicology, and Medicinal Chemistry, are attracting new students.

To better prepare students, the faculty continue to update and redesign pre-existing courses. For example, CHE341 is completely redesigned as a project-based lab in which students dissect a mushroom, purify and characterize the localization and activation mechanism of an enzyme in its anatomical parts.

The faculty continues to be productive in research, training an increasing number of M.S. and undergraduate students, presenting in local and national conferences, and publishing in peer-reviewed journals. Summer in particular was a time of intensive research activity. In addition to laboratory research, students continue to participate in weekly journal club, a tradition started in summer 2010.

The new curriculum, newly hired faculty and the increased research activity have contributed to a significant increase in the number of chemistry majors, which was at approximately 160 students as of May 2012. The graduate program also has seen a significant increase in enrollment with a current enrollment of B.S./M.S. and M.S. of 27.

Another development that marked the past year was the establishment of the Chemistry Alumni Advisory Board. Acting on the board's feedback on the essential role of writing skills in job success, the department's assessment committee has continued its focus on lab report writing, and the department has implemented relevant changes across the curriculum.

This fall quarter, the department also organized a new event known as "Planning Your Future." Designed to foster a sense of community and to bring to the students information on career planning, the event featured presentations from several university offices and a fantastic panel of recent graduates.

Please read on to learn more about the recent developments in the department. I also encourage you to share with us your accomplishments, and we will be proud to include them in the next issue of The Catalyst. I wish you all great success in the coming year.

Sincerely,  
LIHUA JIN  
Associate Professor and Chair

# What are they doing now?

An update on professor emeritus Jurgis A. Anysas, Ph.D.

By: Gregory Kharas

Professor Jurgis A. Anysas, after working on his undergraduate degree in chemistry at the University of Toronto, earned a Ph.D. from Illinois Institute of Technology in 1966. Enthusiasm for teaching led Professor Anysas to decline a lucrative offer to work in industry and join DePaul the same year. He taught physical chemistry, quantum chemistry, general chemistry, environmental chemistry, and natural science and mathematics, until he retired in 1995.

I met with Professor Anysas and his wife Dalia and asked a few questions about life after DePaul. Professor Anysas and Dalia have been very active members in the Lithuanian American community for many years. Their activity includes being board members of the Lituanius Foundation, the publisher of the English language journal, Lituanius, a journal of arts and sciences dedicated to the presentation and examination of all issues pertaining to the countries and peoples of the Baltic States, particularly Lithuania. Dalia is president of A Child's Gate to Learning, an organization supporting day centers in Lithuania for school children from dysfunctional families. Jurgis is president of the Foundation of Lithuania Minor, which publishes books and an encyclopedia on the history and cultural heritage of the culture that vanished in the wake of World War II. In a separate endeavor, they helped publishing Newberry Lituania, a catalog of the old Lithuanian books in the Newberry Library, and continue dancing at Lithuanian Folk Dance Festivals.

Professor Anysas is very happy to follow his three great passions: sailing, theatre and travels. In the departmental archives are pictures of chemistry faculty enjoying outing on Jurgis' sailboat. He still goes out sailing on a good day. I have met Jurgis and Dalia over the years in various Chicago theaters. He and Dalia just came back from their 42nd consecutive season at the Stratford Ontario Shakespeare festival. International travels to exotic lands and people are another passion of this amazing family. The walls of their cozy apartment are filled with Jurgis' National Geographic level photographs made in distant lands.

I had a very pleasant and stimulating meeting with Jurgis and Dalia Anysas. He shared his warm reminiscences of his 30-year career at DePaul and unabated excitement of his many endeavors. ●

# Alumni Feature

By: Stephanie Boussert

**When Michael Kharas started his undergraduate studies at DePaul in 1997, he had no idea he would become a principal investigator at Memorial Sloan-Kettering Center, one of the top cancer hospitals in the U.S. But what he already knew he wanted to be a scientist.**

His first lab experience started when he was a freshman in high school and had the opportunity to help a former DePaul chemistry professor, Kathleen Helm-Bychowski, set up her lab. Kharas still feels excited when he remembers what it was like to perform his first experiments. It was enough to make him want to return to Helm-Bychowski's lab the following summer. From that point forward he never stopped getting lab research experience not only at DePaul, but also at Northwestern University and the University of Illinois at Chicago.

As an undergraduate student at DePaul, Kharas joined the lab of Philip Funk, Ph.D., who introduced him to immunology. This collaboration led him to his first scientific publication in the journal *Cellular Immunology*. Kharas fondly remembers Funk as one of the professors who had the greatest impact on his career, along with Thomas J. Murphy, Ph.D., his organic chemistry professor. "I truly appreciated the small classes and having the ability to discuss and interact with all my professors encouraging my scientific curiosity," Says Kharas.

Kharas also actively contributed to the creation of the DePaul Life Science Club (formerly Biology Club), which organized events such as biotech debates on genetic testing and ethics, in addition to arranging for graduate school admissions departments to make visits to DePaul.

After graduating from DePaul in 2001, Kharas followed his path toward science and enrolled in the graduate program of the University of California, Irvine. He said, "When I first visited the campus, I was impressed by the great environment, the excellent interaction with the faculty and the exceptional graduate program. I felt instantly attracted to this new scientific challenge." He joined the lab of David A. Fruman, Ph.D., and started his first cancer-related project involving leukemia cells.

During his postdoctoral fellowships at Brigham Women's Hospital and Harvard Medical School, Kharas pursued his research on cancer and investigated the connection between cancer and normal stem cells.

Today Kharas runs a lab managing graduate students, technicians and postdocs, and is the author of 22 scientific publications in prestigious professional journals. His research focuses on identifying critical pathways in both normal and leukemic hematopoietic stem cells (HSC). The Kharas lab works to uncover novel RNA regulators in stem cell biology and development in hopes of improving our understanding of cancer pathogenesis and treatment. Kharas feels lucky to have the privilege to work as an independent investigator and hopes that the hard work will translate into discoveries that can enhance our understanding and treatment of cancer. ●

# Formation of Chemistry Alumni Advisory Board

By: Quinetta Shelby

Under the leadership of Matthew Dintzner, Ph.D., during the 2011–12 academic year, the Department of Chemistry reached out to alumni to establish a Chemistry Alumni Advisory Board, and many responded favorably to the call. The board members are Marina Damiano, Julie Ellefson, Felix Gallo, Michael Kharas, Katherine J. Kim, Larissa Kozij, Aaron Kunzer, Eric Leser, Joe Lezon, Lani A. MacArtney, Ken Malinowski, Luis Nunez, Nicholas Richert, Katherine Stolzenbach and Dennis J. Wesolowski.

The mission of the board is to give the department suggestions and feedback to further improve the offerings and quality of the current curriculum and programs to better prepare graduates for various career paths, to increase enrollment in both undergraduate and graduate programs, to improve the department's and the College of Science and Health's visibility, and to improve the interaction between the department and alumni.

The semiannual advisory board meetings were held on campus during the fall and spring quarters. At the first meeting on November 18, 2011, Dintzner began the discussion among faculty and board members with a report on the recent changes that the department had undergone (departmental move from O'Connell to McGowan South in 2009, new curricula for both the B.S./B.A. and M.S. programs in 2011, continued increase in undergraduate enrollment and expansion of faculty research areas). Niedziela, associate dean of instruction for the College of Science and Health, described the goals of the new college to respond to the growing demands for science and health professionals. The meeting was followed by a reception where the board met with students and toured the modern "smart" classrooms and state-of-the-art laboratory facilities in McGowan South. At the second meeting on June 1, 2012, alumni were asked to bring questions and ideas related to the mission of board. Several board members attended the Annual Chemistry Research and Award Symposium and reception that immediately followed the board meeting.

The Chemistry Alumni Advisory Board members have given valuable feedback to the department, and they have connected alumni with the department and current students through the departmental Alumni Facebook page and the DePaul Alumni Sharing Knowledge (ASK) network. ●

## New Funding for Graduate Research

By: Justin Maresh

This year the College of Science and Health launched the Graduate Research Funding Program (GRF), which provides DePaul graduate students funding to pursue research and scholarship, particularly to present their work at conferences. In its inaugural year, chemistry master's student Matthew Ascitto received funding to present his work in a poster at the 51st Annual Meeting of Phytochemical Society of North America (PSNA) in London, Canada.

This was Matt's first experience attending a scientific conference. He appreciated that the PSNA was "small, community-driven society... they worked hard to try to make sure everyone had an opportunity to network with important people in the field." When asked what he gained, he said, "an appreciation for how much I don't know. As a graduate student we start to believe that we've learned almost everything, forgetting just how little we actually know. I also gained some valuable knowledge about my own research in talking to [people who] stopped by my poster." When asked what he would say to other DePaul graduate students about this funding opportunity he shared the advice, "Come to a conference prepared to have your brain act as an upturned hat in a thunderstorm—filling to the brim with tempests of knowledge. This is particularly applicable if you have little background in the diverse subjects. With regards to the funding opportunity itself—take advantage of it. As a student, our pockets aren't very deep. Without the GRF I never would have been able to go to this conference." ●

## Chemistry Defeats Biology in Annual Softball Game

By: Quinetta Shelby

On May 24, 2012, the Department of Chemistry won in the annual softball game against the Department of Biological Sciences. The final score was 20-14.



# Department of Chemistry

## Research Highlights

By: Justin Maresh

2012 was yet another productive and active year for faculty in the Department of Chemistry. The following are highlights of published manuscripts and conference presentations from around the nation and abroad. Complete references can be found on our faculty's pages on [chemistry.depaul.edu](http://chemistry.depaul.edu).

**Sandra Chimon Peszek, Ph.D.**, presented five posters at the Biophysical Conference in San Diego along with student contributors Sean Reinsalu, Jennifer Sepe, Nadrine Omar and Sarah Zawadski. She and student Alvin Kang also presented two posters at the Annual Experimental NMR Conference in Miami. Additionally, her team of students also included Jared Isaacs, Luvleen Kaur, Ryan Kravetz, Tsvetozara Kyoseva, Bethany Litt, Shawna Liszewski, Anjeanette Mendez, Ilysha Minor, Luke Mockaitis, Aleksandra (Sasha) Oleynichenko, Stephen Pena, Veronica Perez, Brandon Polaskey, Rana Sweis, Rosemary Uluocha and Raymond (Chuck) Wenk, and presented research posters at local Chicago conferences: seven at the Chicago Chapter of the Society for Neuroscience, 19 at the Chicago Area Undergraduate Research Symposium, and 20 at the CSH Science Showcase.

**Matthew Dintzner, Ph.D.**, published two papers in the Journal of Chemical Education and presented a talk at the ACS National Meeting in San Diego. His students, Nathan Brown, Kara Brasovan, Neal Herink, Maqsood Khan, Daniel Portillo, Tom Speltz and Matthew Zuziak collectively presented two research posters at the same conference.

**Caitlin Karver, Ph.D.**, gave an invited talk at Rosalind Franklin University and presented a poster at the Bioorganic Chemistry Gordon Research Conference. Her students Carine Gregory, Alexis Hall, Dana Klug, Jill Marcus and Hannah Stern presented three posters at the CSH Science Showcase.

**Greg Kharas, Ph.D.**, published four manuscripts in the Journal of Macromolecular Science and presented a poster at the ACS National Meeting in San Diego with several undergraduate students as co-authors all related to novel multifunctional copolymers prepared by his group.

**Lihua Jin, Ph.D.**, published a chapter in Methods in Enzymology.

**John Kozak, Ph.D.**, published seven articles in Journal of Chemical Physics, Chemical Physics Letters, Advances in Chemical Physics, ISRN Computational Mathematics, and Molecular Physics.

**Justin Maresh, Ph.D.**, published an article in the Journal of Chemical Education in collaboration with Dintzner. He and student Matthew Ascitutto presented a poster including the contributions of Maher Budron, James Burke, Sean Crowe, Zack Gaskell, Michael Mullowney, Art Ralko and Tom Speltz at the Annual Meeting of Phytochemical Society of North America in London, Canada. Alberts, Crowe, Mullowney, Speltz along with Mark Aparece, Adil Mohyuddin and Samantha Sasnow presented four posters at the CSH Science Showcase.

**Richard Niedziela, Ph.D.**, and student collaborators Lauren Blanc and Elizabeth Foreman presented a poster at the American Geophysical Union Meeting in San Francisco and at the CSH Science Showcase.

**Ruben Parra, Ph.D.**, published two papers in Computational and Theoretical Chemistry along with student co-author Kristina Streu. Parra also presented a seminar at National Meeting of Theoretical and Computational Chemists in Cali, Colombia.

**Quinetta Shelby, Ph.D.**, and her student Karla Arias presented a poster at the ACS National Meeting in San Diego.

**Roger Sommer, Ph.D.**, along with his students Mary Hannon and Jason Kositarut presented two research posters at the ACS National Meeting in San Diego.

**Carey Southern, Ph.D.**, and her students Michael Kelliher and Ramiah Jacks presented a poster at the 56th Annual Meeting of the Biophysical Society in San Diego. Jacks additionally presented a poster at the Illinois Louis-Stokes Alliance for Minority Participation Conference. Irina Timoshevskaya presented a poster at the CSH Fall Science Showcase.

**Wendy Wolbach, Ph.D.**, published a paper in the Proceedings of the National Academy of Sciences of the United States of America.

# Celebration of Students at Annual Chemistry Symposium

By: Quinetta Shelby

The Department of Chemistry held its Annual Chemistry Research and Awards Symposium on June 1, 2012, to celebrate student research activities, academic success, and outstanding service to the departmental community. Lihua Jin, Ph.D., departmental chair, opened the symposium by introducing members of the newly established Chemistry Alumni Advisory Board, who attended the event. Jin then acknowledged the exceptional service and contributions made by Matthew Dintzner, Ph.D., to the department, and she encouraged the audience to wish him well in his new academic position in the College of Pharmacy at Western New England University.

Next, two graduating seniors gave research presentations on work that they had conducted during the 2011-2012 academic year. The students and the titles of their research presentations were:

**Elizabeth Foreman** (Niedziela, advisor)

“Optical and Chemical Properties of Cooking-related Aerosols”

**Sean Crowe** (Maresh, advisor)

“Explorations into the Synthesis of 4-HPAA Analogues as Precursors to Unnatural Isoquinoline Alkaloid Analogues”

After the research presentations, Jin announced the recipients of the academic and service awards granted by the department for the academic year. The award and respective award winners were:

## Senior Honors Convocation Award

**Lauren Blanc**

## Merck Index Award

**Samantha Sasnow**

## Chemist of the Year Sponsored by the American Institute of Chemists Foundation

**Elizabeth Foreman**

## Analytical Chemistry Award Sponsored by the American Chemical Society

**Sean Crowe**

## Departmental Award for Outstanding Performance in Biochemistry

**Sophia Robinson**

## ACS Division of Inorganic Chemistry Undergraduate Award in Inorganic Chemistry

**Sean Crowe**

## POLYED Award for Outstanding Performance in Organic Chemistry

**Sean Reinsalu**

## Departmental Award for Outstanding Performance in Organic Chemistry

**Mary Hannon and Noelle Falk**

## CRC Press General Chemistry Achievement Award

**Mark Bevill, Madline Gemoules, Fiona Lane, Anthony Lowando and Kevin Keingsadaphone**



### **Celeste Diener Memorial Award for Outstanding Graduate Assistant Performance**

**Karla Arias, Matt Ascitutto and Michael Kelliher**

### **Outstanding Undergraduate Assistant Awards**

**Kara Brasovan, Nathan Brown, Nick Hawley and Grace Van Metre**

Jin continued the proceeding by announcing the recipients of numerous scholarship awards that were made possible by generous donations from the greater DePaul community that totaled more than \$27,000 for the 2011-2012 academic year. The scholarship recipients were:

### **Ueberbacher Scholarship**

**Nathan Brown and Elizabeth Foreman**

### **Department of Chemistry Scholarship**

**Veronica Perez, Matt Raymond and Azra Vilic**

### **Sanat K. Dhar Endowed Scholarship**

**David Lane and Sean Reinsalu**

### **Jonaitis Endowed Scholarship**

**Sean Crowe and Anda Oprescu**

### **Soiya Endowed Scholarship**

**Max Avila and Jessica Rozemberg**

### **Sprovieri Memorial Endowed Scholarship**

**Kara Brasovan**

### **Dieter Family Endowed Science Scholarship**

**Khrystyna Hlukhenka and Maya Navarro**

### **Richard E. Welch, Jr. Endowed Scholarship**

**Samuel Knewstubb**

### **James T. and Mary K. Schaefer Endowed Scholarship in the College of Science and Health**

**Brittany Smith**

### **Fritchle Endowed Scholarship**

**Jeffrey Hayes, Stephen Pena and Emily King**

### **Expendable Chemistry Scholarship**

**Mary Hannon, Kelli Peck, Kathryn Roznai and Brittany Smith**

### **General Science Scholarship**

**Tempest Moore**

After the symposium, refreshments and conversation were enjoyed by students, faculty, staff and members of the Chemistry Alumni Advisory Board.

# Summer 2012 Department of Chemistry Journal Club

By: Cathrine Southern

In the summer of 2012, the Department of Chemistry continued its journal club tradition. Faculty members and students met once a week at lunchtime to discuss a paper from the literature. The topics discussed included: fluorescence probes for biological systems, mutational biosynthesis, tetracycline interactions with metal ions and enzymes, and fluorescence studies of intrinsically disordered proteins. A list of the papers presented and the presenters appears below. The tradition will continue in the summer of 2013. All new-comers are welcome.

## **Caitlin Karver, Ph.D.**

Lee, J.; Bogoy, M. (2010) Development of Near-Infrared Fluorophore (NIRF)-Labeled Activity-Based Probes for in vivo Imaging of Legumain, *ACS Chem. Bio.* 5, 233 – 243.

## **Dana Klug and Hannah Stern (Karver group)**

Xie, Y.; Zhao, R.; Tan, Y.; Zhang, X.; Liu, F.; Jiang, Y.; Tan, C. (2012) Conjugated Polymer-Based Real-Time Fluorescence Caspase Assays, *ACS Appl. Mater. Interfaces* 4, 405 – 410.

## **Sarah Lopez and Nathan Brown (Karver group)**

Salisbury, C. M.; Cravatt, B. F. (2008) Optimization of Activity-Based Probes for Proteomic Profiling of Histone Deacetylase Complexes *J. Am. Chem. Soc.* 130, 2184 – 2194.

## **Sean Crowe (Maresh group)**

Taft, F.; Harmrolfs, K.; Nickleleit, I.; Heutling, A.; Kiene, M.; Malek, N.; Sasse, F.; Kirschning, A. (2012) Combined Muta- and Semisynthesis: A Powerful Synthetic Hybrid Approach to Access Target Specific Antitumor Agents Based on Ansamitocin P3, *Chem. Eur. J.* 18, 880 – 886.

## **Karla Arias (Jin group)**

Ohtama, T.; Cowan, J. A. (1995) Calorimetric Studies of Metal Binding to Tetracycline. Role of Solvent Structure in Defining the Selectivity of Metal Ion-Drug Interactions, *Inorg. Chem.* 34, 3083 – 3086.

## **Sophia Robinson (Jin group)**

Gu, Y.; Lee, H. M.; Simon, S. R.; Golub, L. M. (2011) Chemically Modified Tetracycline-3 (CMT-3): A Novel Inhibitor of the Serine Protease, Elastase, *Pharm. Res.* 64, 595 – 601.

## **Michael Kelliher and Madeline Gemoules (Southern group)**

Trexler, A. J.; Rhoades, E. (2010) Single Molecule Characterization of  $\alpha$ -Synuclein in Aggregation-Prone States, *Biophys. J.* 99, 3048 – 3055.

# Seminar Speakers

By: Cathrine A. Southern

During the 2011–12 academic year, three speakers were invited to give a seminar at DePaul as part of Chemistry 394 (Seminar) or Chemistry 364 (Nutrition). These speakers included Ram Mohan, Ph.D., of the Department of Chemistry at Illinois Wesleyan University, Eric Walters, Ph.D., of the College of Pharmacy at Rosalind Franklin University of Medicine and Science, and Helen Farrell, Ph.D., from the Idaho National Laboratory.

Mohan presented his work in the field of green chemistry in a talk entitled “Environmentally Friendly Organic Synthesis Using Bismuth(III) Compounds.” Mohan presented his group’s work regarding the use of nontoxic bismuth(III) compounds as catalysts for a variety of organic reactions that typically require harsh conditions or toxic reagents. Walters presented an overview of taste receptors and the different responses of these receptors to glucose and artificial sweeteners in his talk, “Sweet Taste and Sweeteners.” Farrell, a collaborator of Ruben Parra, Ph.D., gave a talk entitled “A Universal Model for Nanoparticle Size Effects” in which she presented theoretical studies of the structures and binding energies of metal oxide nanoparticles.

This year, we will once again have several outside speakers present their research. On October 19, Russell Dahl, Ph.D., of the College of Pharmacy at Rosalind Franklin University of Medicine and Science, will discuss his work related to the design of inhibitors for the treatment of diseases. On November 2, Ka Yee Lee, Ph.D., from the Department of Chemistry at the University of Chicago, will discuss her group’s work regarding protein-lipid interactions with an aim toward developing ways to treat diseases related to breakdowns in these interactions. Finally, on November 9, Sylvie Garneau-Tsodikova, Ph.D., of the College of Pharmacy at the University of Michigan, will present her group’s research related to the generation of biologically active compounds for the treatment of a variety of diseases. All are welcome to attend any of the seminars. The location and time of the seminars will be posted on the Department of Chemistry website. ●

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## LOGIC Puzzle

Source: [emsb.qc.ca/laurenhill/science/logic.html](https://emsb.qc.ca/laurenhill/science/logic.html)

Among the six molecules below, there are two that are classified as alcohols, two ketones, one aldehyde and one carboxylic acid.

$C_3H_6O$ ,  $C_2H_4O_2$ ,  $CH_4O$ ,  $C_3H_8O$ ,  $C_2H_4O$ ,  $C_4H_8O$

Use the following statements to figure out which formulas correspond to which groups (alcohol, ketone, aldehyde or carboxylic acid). Careful: one of the statements below is **FALSE**.

1. Neither  $CH_4O$  nor  $C_4H_8O$ , which is not an alcohol, is an aldehyde;  $C_3H_6O$  isn't either.
2. The carboxylic acid is not  $C_3H_6O$  or  $C_3H_8O$ .
3. The aldehyde is not  $C_2H_4O_2$  or  $C_3H_8O$ .
4.  $C_2H_4O$  is neither a ketone nor an alcohol.
5. The acidic molecule is neither  $CH_4O$  nor  $C_4H_8O$ , which is not an alcohol.
6.  $C_2H_4O$  is neither an aldehyde nor a carboxylic acid.
7.  $C_3H_6O$  is not one of the alcohols.

### SOLUTION

Formula	Group
$C_3H_6O$	Ketone
$C_2H_4O_2$	Carboxylic acid
$CH_4O$	Alcohol
$C_3H_8O$	Alcohol
$C_2H_4O$	Aldehyde
$C_4H_8O$	Ketone

