Greetings from the Chair

ooking northwest from University Drive Land Parkman Avenue, the Chevron Annex construction project makes it clear that major expansion is underway in the Department of Chemistry. Whether you enter through Chevron, Ashe, or Eberly Halls, renovation projects that are modernizing our research and instructional laboratories, as well as the gathering spaces for students, are apparent. New research labs on the east wing of Eberly Hall and the 14th floor of Chevron, with work areas that are open, flexible, and modern, provide a glimpse into the future for all of the Department's research labs. Building on the success of the new instructional organic laboratories two years ago, a comprehensive renovation of the general chemistry labs will begin this summer. In addition to these research and instructional space renovations, new social and study spaces are being created in the Department. Escaping from its former life as a transit corridor, the Chevron lobby now provides a place to purchase coffee or snacks at the Bunsen Brewer coffee shop, to meet friends and colleagues, or to learn about the Department through posters and a touch screen display.

In addition to these striking physical changes, the growth and quality of the Department's research programs and educational curriculum are evident. Over the past five years, nine new faculty members have joined the Department, two of which started this fall— Dr. Haitao Liu, whose focus is the physical and synthetic chemistry of nanomaterials, and Dr. Xinyu Liu, whose focus is the synthesis of natural products at the interface of chemistry, biology, medicine, and materials science. The graduate program remains vibrant, with 51 students matriculating this fall and four of our existing graduate students winning national awards and fellowships. As the undergraduate program maintains its excellence and continues to attract the best students, we are expanding our course offerings (especially in the areas of nanomaterials and biological chemistry) and our opportunities for undergraduates to pursue research and experiential learning. Our majors' excellence is also recognized from outside the Department, including a Chancellor's Scholar Award to Andrew Savinon and a Rhodes Scholarship to Eleanor Ott. The Department bestowed 19 PhD degrees, seven MSc degrees, and 66 BSc degrees to excellent young chemists during the past year.

This newsletter aims to share some of the Department's accomplishments this year with you. While no twelve-page newsletter can properly describe or recognize all of the accomplishments during the past year, I hope that the articles we have chosen provide you with a glimpse into our activities and motivate you to visit our website www.chem.pitt.edu to learn more about today's Department. Lastly, I would like to thank you, our alumni and friends, for your support. Outside of the individual financial or volunteer assistance you provide to the Department, your successes and accomplishments help to fuel our commitment to science and to the education of our students. I hope that you will take the time this year to share some of your accomplishments with us.



May the upcoming year be productive, healthy, and satisfying for you and yours.

David H. Walder

Issue 7 Fall 2010

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2010 Distinguished Alumni Awardees

On October 8, 2010 of this year, the Department recognized the outstanding accomplishments of four of its alumni.

CALL FOR NOMINATIONS

The Department is soliciting nominations for the Chemistry Department Alumni Awards. Nominees should have a bachelor's, master's or doctoral degree from the Department. The basis for the nomination can be excellence in research, teaching, management, or volunteer efforts.

Nominations should include:

- 1. Your nominating letter
- 2. At least one but no more than three seconding letters
- 3. A CV for the nominee
- 4. Contact information for the nominee

Please see the alumni section of our web page at www.chem.pitt.edu for more information

by
December 1, 2011
to:
University of Pittsburgh
Department of Chemistry
Assistant Chair
234 Chevron Science Center
219 Parkman Place
Pittsburgh PA, 15260



HELEN M. BERMAN (PhD '67G) Professor Helen M. Berman received her PhD in Chemistry in 1967 from the University of Pittsburgh under the direction of George Alan Jeffrey, and stayed on for postdoctoral training as a National Institutes of Health Trainee. She then joined the Fox Chase Cancer Center in 1969, where she initiated and led a research program on nucleic acid crystallography and the interactions between nucleic acids and drugs. In 1989, she joined the faculty at Rutgers where she expanded her research program to include structural studies of proteins. Currently she is a Board of Governors Professor of Chemistry and Chemical Biology and the director of the Protein Data Bank.





EDWARD R. BIEHL (BS '58, PhD '61G) Professor Ed Biehl earned his undergraduate and graduate degrees in chemistry at the University of Pittsburgh School of Arts and Sciences. Since that time, he has had a distinguished career as a scientist, educator, and researcher. Dr. Biehl has received numerous awards for excellence in teaching and mentoring, for which he is known to put the needs of his students and post-doctoral associates first. As departmental chair in chemistry at Southern Methodist University for the past 28 years, he has led the development of their chemistry program and the creation of their PhD program. Professor Biehl's high standards for teaching and research have provided superior learning opportunities for his students and have set an example for meeting the challenges of today's educational environment.





BRUCE W. DIXON, MD (BS '61) Bruce Dixon received a BS in chemistry from the University of Pittsburgh in 1961 and an MD from the University of Pittsburgh School of Medicine in 1965. After completing his residency at Duke University, he served on the faculty at Duke before returning to the University of Pittsburgh in 1975. Currently, Dr. Dixon is an associate professor of medicine at the University of Pittsburgh School of Medicine. He also holds a joint appointment at Pitt's Graduate School of Public Health. In addition to his teaching duties, Dr. Dixon is the director of the Allegheny County Health Department, a position he has held since 1992.



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H. LEE NOBLE (BS '62) H. Lee Noble earned his bachelor's degree in chemistry from Pitt's School of Arts and Sciences in 1962. Following a 25 year career with the Bayer Corporation, Mr. Noble retired as executive vice president. Lee is the CEO of Noble Consulting, which specializes in strategic planning, mergers and acquisitions, and the financing of start-up companies. Lee also serves as chair of the Board of Directors of Fluorous Technologies, Inc. and on the University of Pittsburgh Board of Trustees.







Chemistry Department History 2: On the Move— Our Commitment to Undergraduate Education

rom the beginning, undergraduate education has been of paramount importance in the life of the Chemistry Department. The first chair of the Chemistry Department. The first chair, Francis Clifford Phillips was hired to teach anatomy, all branches of chemistry, as well as mineralogy, geology, botany, physiology, and zoology; literally A to Z. The first organic chemistry professor, Alexander Lowy (1918-1941) coauthored a major, widely used text, A Textbook of Organic Chemistry, which went through seven editions as late as 1951. There was also a companion text, coauthored with fellow faculty member William Baldwin, A Laboratory Book of Elementary Organic Chemistry, that went through at least two editions and was reprinted in India as late as 1947. Other important texts to come out of the Department were Concepts and Models for Inorganic Chemistry by Bodie Douglas (three editions), aimed at senior undergraduates, and Symmetry in Bonding and Spectra, written with C. A. Hollingsworth, which focused on applications of group theory at the graduate level. Finally, what texts have had more impact than the universally used and ubiquitous Schaum's Outline of Theory and Problems of College Chemistry? This was authored, from the third edition in 1949 through eighth edition in 1997, by Jerome Rosenberg, co-authorship of the seventh and eighth editions was with Lawrence Epstein. Recent textbooks authored by faculty are University Chemistry by Peter Siska in 2006 and Principles of Physical Chemistry by David Waldeck in 2009.

As the Department has grown and become a research powerhouse, undergraduate education has remained a pivotal focus of development and innovation. When the University began the honors college, honors-level courses in general and organic chemistry were created. About five years ago, David Waldeck and Lisa Bell-Loncella (University of Pittsburgh, Johnstown) spearheaded the Computing Across the Chemistry Curriculum (CACC) effort that has integrated computational chemistry training into the undergraduate curriculum from the freshmen level through senior level. Joe Grabowski has helped to introduce computer modeling and other high tech improvements to our course presentations. Most importantly, the chemistry course offerings continue to evolve and expand, especially in the areas of nanoscience (led by Alex Star) and biological chemistry (led by Lillian Chong and Michael Trakselis).

While course work remains a core element of the undergraduate program, experiential learning is of growing importance. Between 80 and 90 percent of chemistry majors perform undergraduate research as part of their education. This experience exposes them to the challenge of defining research questions and answering them. Our UTU (Undergraduates Teaching Undergraduates) program introduces nearly two-thirds of our majors to the

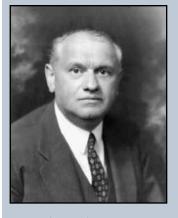
teaching of chemistry. Under the leadership of Michael Golde, this program has expanded from the general chemistry program through all of our laboratory courses, and is now the paradigm for analogous efforts throughout the University.

Another aspect of our commitment to undergraduate education is the excellence of our ACS undergraduate student affiliates, recognized as an Outstanding Chapter for over 20 years. Under the mentorship of George Bandik, students participate in many outreach activities inside and outside the Department. These include giving demonstrations at local schools and youth groups, the Saturday Science Program, which provides instruction and laboratory experiences for disadvantaged high school students, and many other activities. That students participate and excel in these extra activities while completing a rigorous 62 credit sequence of science courses is testimony to our undergraduate students' commitment and the Department's spirit of excellence in education.

The importance of good undergraduate teaching is recognized by the Department and the University. The Department's teacher training has provided a model for the University as a whole. Each year the Department holds the Hurd Safford Awards Ceremony to recognize outstanding graduate student instructors. The University has bestowed numerous teaching awards on the Department's excellent teachers. George Bandik, Joe Grabowski, and Peter Siska have won both Chancellor's Distinguished Teaching Awards and Bellet CAS Teaching Excellence Awards. Ericka Huston has won a Bellet Award, and David Pratt has won the Chancellor's Teaching Award. This record of excellence is of great pride to the Department and a benchmark for all current faculty and students.



George Bandik performs a demonstration for students in the Saturday Science Program.



Alexander Lowy

For more information
on Professor Lowy, see
www.alexanderlowy.com



Department of Chemistry

Faculty 1970

W. Edward Wallace, Chairman

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James Clyde Carter, Assoc. Professor

Toby M. Chapman. Asst. Professor

Johannes Francois Coetzee, Professor

Theodore Cohen, Assoc. Professor

Raymond S. Craig, Professor

Samuel J. Danishefsky, Asst. Professor

Kenneth E. Daugherty, Assoc. Professor

Bodie E. Douglas, Professor

Paul Dowd. Asst. Professor

T.H. Dunkelberger, Professor and Asst. Dean, College of Arts and Sciences

Frank Oscar Ellison, Professor

Lawrence M. Epstein, Assoc. Professor

Henry S. Frank. Professor

Klaus H. Hofmann, Professor and Director of Protein Research Lab

Charles Alvin Hollingsworth, Professor

Kenneth Jeffrey Johnson, Asst. Professor

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Alfred Leon Moyé, Asst. Professor

David Wixon Pratt, Asst. Professor

V. Udaya Shankar Rao, Asst. Professor

Jerome L. Rosenberg, Professor

Hurd Winter Safford, Professor

David Philip Schumacher, Asst. Professor

Darel K. Straub, Assoc. Professor

Joseph J. Taber, Assoc. Professor

William Edward Wallace, Professor

Claude Edwin Wilson, Asst. Professor

Robert L. Wolke, Professor

Class of 1970: Where are they now?

et's turn back the clock to look at some highlights of 1970. Under the leadership of Chair William Edward Wallace, the Department of Chemistry awarded 45 BS and 14 PhD degrees.

- The Kansas City Chiefs beat the Minnesota Vikings in Super Bowl IV; the Baltimore Orioles defeated the Cincinnati Reds to win the World Series; Three Rivers Stadium opened in Pittsburgh.
- Black Sabbath released its debut album, Black Sabbath; the Beatles released their 12th and final album, Let It Be; the Public Broadcasting Service (PBS) was inaugurated.
- The Nuclear Non-Proliferation Treaty, ratified by 43 nations, was enacted; President Richard Nixon signed a measure lowering the voting age to 18.
- · The first Earth Day was celebrated in the United States, the U.S. Environmental Protection Agency (EPA) began operation.
- The U.S. Steel Tower, the tallest skyscraper in Pittsburgh, was completed; the North Tower of the World Trade Center in New York reached 1368 feet, making it, at the time, the tallest building in the world.
- The political climate at colleges and universities across the United States was dominated by protests against the Vietnam War; at Kent State University in Ohio, four students were killed and nine were wounded by National Guardsman.
- In 1970 a new house cost \$23,400, the average income per year was \$9,350, a gallon of gas was 36 cents, the average cost of a new car was \$3,900 and
 a first class US postage stamp was six cents; the Dow Jones Industrials Average closed the year at 838.92.

C. William Angus (BS '70; Advisor: Safford): Dr. Angus went on to receive his PhD from Johns Hopkins in 1984. In 2009 he retired from the NIH and has moved to Chocowinity, NC. He is currently a research associate at the Brody School of Medicine. (angusc@ecu.edu)

Gary Cummins (BS '70; Advisor: Douglas): Gary went on to receive his MD. He worked in family medicine for 20 years and wound care for 10 years. He is currently retired, albeit working part-time, and lives with his wife in Newport, RI. (gcummins2@cox.net)

Richard C. Diehl (PhD '70; Advisor: Cohen): Dr. Diehl is currently retired and resides in Cape Coral, FL.

Timothy R. Drury (BS '70): After graduating from Pitt, Timothy went to Penn State Hershey Medical School and graduated with his MD in 1974. He did his internal medical residency at Rhode Island Hospital in Providence. Since 1978 he has acted as the director of the Emergency Department at Southcounty Hospital. He is married with one child. (timothydrury@cox.net)

Ivor René Fielding (PhD '70; Advisor: Hollingsworth): Dr. Fielding has worked as an industrial research chemist. He retired in 2000 from BP/Amoco and holds thirteen US patents. He is married, and he has two children and five grandchildren.(fielding2000@hotmail.com)

Jerry A. Jenkins (PhD '70; Advisor: Cohen): Dr. Jenkins is professor and chair of the Department of Chemistry and Biochemistry at Otterbein College. He has recently published a book entitled, *Workbook for Organic Chemistry – Supplemental Problems and Solutions*, W.H. Freeman and Company, 2010 (ISBN-13: 978-1-4292-4758-0). (jjenkins@otterbein.edu)

Fran Rattay (BS '68, MS '70; Advisor: Cohen): Fran retired recently from Bayer after 36 years. He began his career at Mobay (now Bayer MaterialScience) as an analytical chemist, and his work included competitive products identification, plant process analysis, and the development of polymer sequence distribution analytical techniques. While at Bayer, he oversaw a Regulatory Affairs Department that is responsible for product compliance and registration with EPA and FDA regulations for industrial, specialty, dyes, polymers and rubber chemicals. Fran has participated in several Trade Association Group projects of the American Chemistry Council including a joint effort to develop standardized nomenclature guidelines for the isocyanate industry. He and his wife Diane are enjoying their six grandchildren and spend their winters in Florida. (drattay@zoominternet.net)

George Rovnyak (BS '66, PhD '70): Advisor: Danishefsky): After graduation George worked at Squibb (now Bristol-Myers Squibb), primarily in cardiovascular and oncology drug discovery. In 2003, he retired from his position as a research fellow. George was married in 1963 and he has three daughters and five grandchildren. He is enjoying his new second home in West Cape May, NJ. (rovnyakg@verizon.net)

ALUMNI UPDATES:

Paul Rupert (PhD '69; Advisor: Frank): Paul is a Professor of Chemistry at Adrian College. He also owns and operates a commercial wine laboratory and has been designated a Certified Wine Chemist by the U.S. Department of the Treasury – Tobacco and Alcohol Tax and Trade bureau (TTB). (prupert@tc3net.com)

Nancy McKeever Targett (BS '72): Nancy met her goal and became a marine chemical ecologist. About five years ago, she became Dean of (and professor in) the University of Delaware's College of Marine and Earth Studies. With her research she has had the opportunity to travel extensively (three underwater habitat missions). She has published and presented papers at meetings around the world and graduated many MS and PhD students. She is very grateful to Professor David Pratt for taking the "time to talk with a geeky kid in the early 70s and listen to her dream!"

Robert Joseph Radnoti (MS '74): Mr. Radnoti is retired from the Maryland State Police Crime Lab after 30 years in forensic science - "more than enough for any sane individual!" He is currently building a new house (doing a lot of the work himself) and fly fishing in his spare time.

Christina Pampena (BS '75): Christina is a field sales representative (South Central territory) for PPG Industries, Inc. in the Cal Hypo business unit. Cal Hypo, calcium hypochlorite, is a water treatment chemical produced by PPG. (cmpampena@gmail.com)

Jeff Moore (PhD '85; Advisor: Butera): Jeff has been employed by various companies since the early 80s, beginning with Bell Labs Murray Hill (Fiber Optics design) in '85. In 1995 he moved to Business Analytics and then became the Director of Business in the Integrated Circuits Operations and Planning division for ATT, then Lucent, and most recently, Agere. From 2000-2004 he was an adjunct professor at Lehigh University. While the Business Analytics Director for Agere, Jeff spent a lot of time commuting to London and later to Munich. He gracefully escaped from trans-Atlantic commuting by working for USA-based Fairchild Semiconductor as Senior Director of Business. He now commutes between eastern Pennsylvania, where he has lived since 1991 and Portland ME where Fairchild Corporate headquarters is located. Jeff is married and has a 16 year-old daughter who is interested in attending Pitt.

Anthony Rosati (BS '82, MS '87; Advisor: Waldeck): For the past two years, Tony has been Director of the Data Integration and Dissemination Division of the Office of Coal, Nuclear, Electric and Alternate Fuels, of the U.S. Energy Information Administration, U.S. Department of Energy. His staff supports the energy analysts in collecting, analyzing, and distributing the results of federal industry surveys of various branches of the U.S. energy markets. Tony has one child with his wife, Benita, of four years.

David Muddiman (PhD '95; Advisor: Hercules): David is currently Professor of Chemistry at North Carolina State University. He was awarded the Biemann Medal by the American Society for Mass Spectrometry (ASMS) in May of this year at the annual ASMS, which it recognizes a significant achievement in basic or applied mass spectrometry made by an individual early in his or her career.

Randy R. Micheletti (MS '01; Advisor: Wipf): Randy is now working as a patent attorney with K&L Gates LLP in Chicago.

Amit Paul (PhD '08; Advisor: Waldeck): Amit is working as a postdoc at the University of North Carolina at Chapel Hill where he is part of an Energy Frontier Research Center (EFRC). He is working on hydrocarbon oxidation by ruthenium and platinum catalysts. Amit and his wife have one child

Eleanor Ott (BS '09): Eleanor was named a 2010 Rhodes Scholar. Eleanor's interests are in human rights, refugee issues, and evidence-based policy. At the University of Oxford, she will study forced migration and evidence-based social intervention, refugee and migration studies, and social science research methods.



Honor Roll

A warm thank you to those who made donations from July 1, 2009-June 30, 2010

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Dr. David M. Hercules and

Dr. Shirley H. Hercules

Anonymous Abbott Laboratories Dr. William D. Abraham Mr. and Mrs. Gary J. Adamczyk Mr. Gregory J. Adamczyk Mr. Shigeru Amemiya Mark R. Ams, PhD Mr. and Mrs. C. William Angus Mr. Giuseppe Luigi Arlia and Ms. Anne Marie Bosynak Dr. Sanford A. Asher and Dr. Nancy L. Day Mr. Jeffrey Paul Balogh George C. Bandik, PhD Mr. John Francis Bargar Dr. Robert Jeffrey Baseman BASF Corporation Bayer USA Foundation Bayshore Environmental David N. Beratan, PhD Holly Mary Bevsek, PhD Joseph N. Biber, PhD Edward Robert Biehl, PhD Dr. and Mrs. Ioannis V. Bletsos Mr. Thomas Warner Boyer Mr. and Mrs. Paul Bradley Mr. Charles Brnardic Philip Frederick Brode III, PhD Mr. Philip R. Brooks Mr. Terry Joseph Brown Mr. and Mrs. Walter Brutsch Dr. Sean M. Buchanan and Dr. Kimberly Jean Durniak Dr. Ellen Lackey Bunyan Mr. Kenneth Elliott Burkman Paul Darwin Carfagna, PhD J. P. Blake Casher, D.O. Mrs. Anna M. Castle Ms. Kate Marie Cerully Ms. Sally Chapman Lillian T. Chong, PhD Dr. Mudan Chow and Dr. Hueiming Chow Mr. and Mrs. Richard Clapp Mark Campion Clawson, MD Dr. Theodore Cohen and Dr. Pearl Bernice Cohen Mr. James Joseph Conners N. John and Karen Cooper Dr. F. Fleming Crim Jr. Mr. and Mrs. Gerry Daher Dr. and Mrs. Kenneth C. DeNardo Dr. and Mrs. Vincent Michael Donnelly Mr. Walter James Dressick Dr. Caroline M. Driscoll and Mr. Tim Geary Mr. Mark David Ellison Family Dentistry Dr. Eric Anthony Farabaugh Mr. James M. Farrar John Joseph Farrell, PhD Martin Louis Feldman, PhD Ms. Carolyn T. Ferguson Fidelity Charitable Gift Fund Mr. Robert W. Field Mr. James Norman Foster Ms. Janet Frank Mr. Edward Charles Frese Mr. and Mrs. Duane Frey Mr Louis D Friedman Michael Brodie Garver, DMD Mr. Steven J. Geib Mr. Thomas J. Gerlowski Jr. Dr. and Mrs. Don Joseph Germano Mr. Nicholas Joseph Gervase Dr. and Mrs. Arun K. Ghosh

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Mr. John F. Quinn

try have a direct impact on the daily lives of students in a variety of ways. Your financial contribution supports undergraduate scholarships, graduate student fellowships, seminar series, graduate student travel to conferences, undergraduate research experiences, and outreach activities.

If you would like to contribute, please visit our web site at www.chem.pitt.edu or return the enclosed envelope.

We appreciate your donation.

Gifts to the Department of Chemis-



Faculty Highlights: Peter Wipf



Chemistry Professor Peter Wipf and his group develop and apply the tool chest of synthetic chemistry to important problems in chemistry, biology, and medicine. They are interested in new methodologies, stereochemical analysis by spectroscopic and computational methods, synthetic strategies and mechanisms, medicinal chemistry and chemical biology, and total synthesis. They select target molecules on the basis of their unique architectures, biological activity, as well as for showcasing their synthetic methods. Below, a few specific examples highlight this approach.

Synthetic Methodologies. Starting with the transmetalation chemistry of organozirconocenes, the Wipf group has greatly expanded the scope of organozirconium chemistry over the past 20 years. They reported the first asymmetric protocol for the addition of alkenylzirconocenes to aldehydes as well as several innovative cascade reactions with imines. For example, the multicomponent reaction of alkenyl zirconocene, alkynyl imine and zinc carbenoid in the presence of dimethylzinc leads to novel C,C-dicyclopropylmethylamines. The formation of intermediate bicyclo[1.1.0]butanes represents the first synthetically useful example of a double C,C- σ -bond insertion, and the increase in structural complexity from starting materials is highlighted by the formation of nine new C,C-bonds in the final product:

These products can be further elaborated into pharmaceutically significant 5-, 6-, and 7-membered heterocycles:

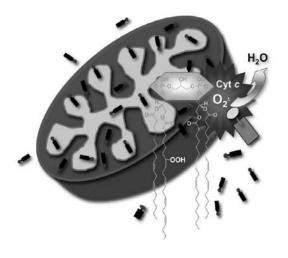
Natural Product Total Synthesis. Tuberostemonine is a member of the Stemona family of alkaloids that has attracted increasing interest from synthetic chemists in the last 10 years. The Wipf group has pioneered the oxidative cyclization of tyrosine as a unified strategy toward the major Stemona alkaloid ring scaffolds:

Unified Retrosynthetic Approach toward Stemona Alkaloids

Their tuberostemonine synthesis highlights a threefold use of ruthenium catalysts, first in azepine ring-closing metathesis and then in alkene isomerization and cross-metathesis propenyl-vinyl exchange, as well as methodology developments from their laboratory such as the stereoselective attachment of the γ -butyrolactone ring to the tetracycle core structure by use of a lithiated ABO-orthoester.

While tuberostemonine illustrates strategic and tactical motivations for a total synthesis program, disorazole C1 and bistramide C were inspired by the pursuit of interesting biological activities and fundamental computational studies, respectively:

Medicinal Chemistry. The application of modern synthetic methodology for solving challenging biological and medical problems is an extremely fertile field, and the Wipf group continues to explore opportunities in this interdisciplinary and collaborative research. Since its discovery in 1942, the cyclodecapeptide antibiotic Gramicidin S (GS, cyclo[(Val-Orn-Leu-DPhe-Pro-)2]) has served as an inspiration for the design of antibacterial agents and antimicrobial peptides, as well as the study of conformational mimicry.





Department of Chemistry

Mitochondria are key organelles that perform essential cellular functions and play pivotal roles in cell death and survival signaling. Hence, they represent an attractive target for drugs to treat metabolic, degenerative, and hyperproliferative diseases. Targeting mitochondria with organelle-specific agents or prodrugs has proven to be an effective therapeutic strategy. More specifically, controlling the cellular ROS balance via selective delivery of an antioxidant "payload" into mitochondria is an elegant emerging therapeutic concept. In exciting biomedical applications of peptidomimetic design principles, the Wipf group was able to design and synthesize a mitochondrial membrane targeting sequence that has shown in vivo efficacy against hemorrhagic shock, age-related neurodegenerative diseases, as well as utility as radiation mitigators and radiation protective agents.



In summary, the research program in the Wipf group aims to broaden the arsenal of synthetic organic chemistry, show-case new methodology in natural product and designed molecule synthesis, apply these tools to cutting edge biological problems, and move forward with the development of new therapeutic strategies.

Faculty Nuggets

Damodaran Krishnan Achary (NMR Director) was promoted to research associate professor.

George Bandik was recognized for his outstanding work with students in the field of chemistry by the members of the University of Pittsburgh Greek Life and received special recognition as an outstanding professor this year.

Kay Brummond was elected to the 2010 class of fellows of the American Chemical Society.

Toby Chapman was inducted as a distinguished member of the University of Pittsburgh Chapter of the National Society of Collegiate Scholars for the academic year 2010-2011. He also was presented an award for being a member of the American Chemical Society for 50 years.

Dennis Curran received a Doctorat Honoris Causa (Honorary Doctorat) from the University of Pierre and Marie Curie in Paris at an awards ceremony on March 26, 2010.

Kenneth Jordan received the ACS Physical Chemistry Division Award in Theoretical Chemistry.

Haitau Liu received the New York Academy of Sciences 2010 Blavatnik Award.

Renã Robinson is the faculty advisor for the newly formed chapter of the National Organization of Black Chemists and Chemical Engineers (NOBCChE). The Pittsburgh chapter was officially inducted at the 2010 Northeast Regional Meeting recently held at the University of Pennsylvania.

Nat Rosi was selected as a 2010 'Emerging Investigator' by Chemical Communications. Also he received a National Science Foundation CAREER award based on his proposal entitled "Designed Peptide Conjugates for Precisely Controlling the Fabrication, Structure, and Properties of Nanoparticle Superstructures."

Megan Spence was featured in the *Pittsburgh Post-Gazette*, for her studies of the structure of proteins in cell membranes.

Alexander Star was named section editor-in-chief of the topical section on "Biosensors" for the journal *Sensors*. Also, he was selected to receive a five-year National Institute of Environmental Health Sciences (NIEHS) Outstanding New Environmental Scientist (ONES) Award for his project, "Investigations and Mitigation of Carbon Nanomaterial Toxicity", and has been selected to receive a National Science Foundation CAREER award based on his proposal entitled "Synthesis and Exploration of Graphitic Nanocapsules."

Michael Trakselis received an American Cancer Society Research Scholar Grant to support the "Mechanism of DNA Polymerase Switching During Replication to Bypass Lesions."

Peter Wipf was elected to the 2010 class of Fellows of the American Chemical Society. Also his research was featured as the News of the Week in *C&E News* and in *Chemistry World*.



Graduate Awards

Andrew Mellon Predoctoral Fellowship Adam Fleisher Andrey Solovyev

Arts and Sciences Fellowships
Anthony Bencivenga

Adam Evans
Benjamin Eyer
George Lengyel
Richard Liberatore
Everett Merling
Brandon Mills
Michael Nardone
Elizabeth Paladin
GuangRong Peh
Youwei Xie
Jie Xu
Yongzhao Yan
Ying Yi
Matthew Zwier

Bayer Materials Science Fellowship Yifan Tang

Hong Zhang

Goldblatt Fellowship
Juanfang Wu

Warga Fellowship Victoria Chu Laura Kocsis

Bayer Fellowship Sean Gardner

Kaufmann Fellowship Cheuk Fai Chiu

Provost's Fellowship
Hao Lu
Madu Mendis

Sunoco Fellowship Todd Vargson

Graduate Highlights: Kathryn Davis

athryn Davis (2005 BS/BA from Hope College and 2010 PhD from the Univ. Pittsburgh) received her PhD in chemistry this past summer. Her research in bioelectrochemistry was performed under the guidance of David Waldeck and focused on the nature of electron transfer from metal electrodes to immobilized redox proteins and to nucleic acids. During her time at Pitt, Kathy received numerous awards, including a Mary E. Warga Fellowship and a Goldblatt Fellowship. She also received a travel award and gave oral presentations of her work at the national ACS meeting in Philadelphia in 2008 and at international meetings of the Electrochemical Society (ECS) in Vienna in 2009 and Vancouver in 2010.



Kathy's thesis is entitled "Charge Transfer in Immobilized Biomolecules." Her experimental studies of immobilized proteins explored how the electron transfer rate constant changes with the chemical nature of the protein's immobilization and with the properties of the electrolyte medium, such as viscosity and isotope (H₂O versus D₂O). These studies demonstrated experimental strategies for exploring proton-coupled electron transfer at electrodes and for exploring changes in the electron transfer mechanism that arise from changes in the coupling strength between a redox protein and the electrode. Kathy's studies of Peptide Nucleic Acid (PNA) revealed the nucleobase dependence for electron transfer through duplex PNA and laid the foundation for exploring electron transfer through PNA duplexes that contain metal ions along the helix's core.

Because of Kathy's long-standing interest in an academic career, she performed a number of different teaching duties in the Department. During her first year in the program, she was a teaching assistant for general chemistry and later in her career she served as a teaching assistant in the physical chemistry laboratory. Throughout her time in the program, Kathy was a private chemistry tutor for undergraduate students, as well as high school students. In the fall of 2009, Kathy was chosen to be a lecturer for our CHEM 0100 course, which is a preparatory course for the subset of undergraduate students who may not have had high school chemistry and need some basic training before taking the mainstream general chemistry sequence. Under the seasoned mentorship of Dr. George Bandik, Kathy performed excellently in this new and challenging role as a course lecturer.

This fall Kathy assumed a position as an Assistant Professor of Chemistry at Manchester College in Indiana, where she teaches physical chemistry, as well as general chemistry labs and an introductory chemistry lecture.

Phi Lambda Upsilon (PLU)

Phi Lambda Upsilon (PLU) is the National Honorary Chemistry Society founded in 1899. The aims and purposes of the society are the promotion of high scholarship and original investigation in all branches of pure and applied chemistry. The University of Pittsburgh Xi Chapter has been a part of the National PLU since it was founded in 1917.

In the 2009-2010 year, PLU organized several social events such as ice skating, bowling, and happy hours. PLU also sponsored the annual first-year picnic as well as the holiday party, which was held at Peter's Pub this year and was a great success.



Dr. Phil Baran with graduate students at the 55th Phillips lecture reception dinner.

One of PLU's biggest events is the annual Francis Clifford Phillips Lecture, the longest running graduate chemistry lecture series organized by graduate students. The 55th Phillips Lecture speaker, Dr. Phil Baran of The Scripps Research Institute was selected by the organic chemistry division. Professor Baran's research focuses on the practical total synthesis of complex natural products, such as alkaloids and terpenes, by aiming to achieve the "ideal synthesis." To date, the Baran group has accomplished total syntheses of numerous highly complex and biologically active natural products.

PLU ended the 2009-2010 year by initiating seven new members into the society in June. In the 2010-2011 year, PLU looks forward to several more social events as well as the 56th Phillips Lecture, which for the first time in PLU history will represent the recently introduced biological chemistry division.

More information about PLU and upcoming events can be found on our web site (www.pitt.edu/~plu) or visit us on Facebook (PluPitt). PLU officers for the 2010-2011 year are Kristy Gogick and Brian Graham (Co-Presidents), Robin Sloan (Vice-President), Amy Hamsher (Secretary), and Tim Cunningham (Treasurer).



Undergraduate In The Spotlight: Kelley Peters



Kelley Peters received her Bachelor of Science degree in chemistry with a biological sciences option in May, 2010. Kelley was one of our many outstanding graduating seniors this past academic year. She graduated with both University and Departmental honors. She also was recognized for her strong performance in analytical chemistry with the ACS Undergraduate Analytical Chemistry Award.

During her time with us, Kelley was actively involved in our undergraduate program. She served as a laboratory instructor in the Organic Chemistry I Laboratory Program and she was responsible for mentoring numerous undergraduate students as they mastered the techniques of organic chemistry.

Kelley was also an active participant in our Undergraduate Research Program. She carried out research under the direction of Professor Steve Weber where she looked at calcium imaging in rat brain tissue. It was for this work, as well as her strong academic performance, that Kelley received the ACS Analytical Chemistry Award.

Kelley also was an active member of our ACS Student Affiliates group during her time in the Department. She volunteered for many of our outreach efforts including the celebration of National Chemistry Week at the Carnegie Science Center. Closer to home she served as a mentor to numerous local high school students as part of our honor's organic laboratory program and our Saturday Science Academy. Kelley's ability to share her enthusiasm and love for science and education with our young visitors was truly inspiring. In addition to this, Kelley also served on our Senior Affairs Committee this past year.

Since leaving Pittsburgh, Kelley has begun graduate studies in forensic chemistry at Florida International University. We wish Kelley and all of this past year's graduates great success in all their future endeavors.

ACS Student Affiliate News

Here at the University of Pittsburgh – ACS-SA chapter, we recognize the important role that we as a large urban university play in our surrounding community. We believe that it is our responsibility to interact with local educational groups in order to share our appreciation of science with others. We also realize that this can only be achieved if local groups are willing to be active players in these undertakings.

All of our outreach efforts began with small group discussions between one or two members of our chapter and of the local community group. During these meetings, we learned about the individual groups' needs, demographics, and ultimate goals for bettering their students' appreciation of science. Because our outreach efforts focus on the educational mission, we were able to expand our efforts through networking with alumni who are now involved in the local classrooms.

We have found that our members are very enthusiastic about participating in these outreach programs. Upon further inquiry, we have received comments from students saying that since the Pittsburgh community had such a positive impact on their college experience, they hoped to return this favor by giving back through these programs. Others have told us that simply seeing the enthusiasm on the faces of our young visitors made getting up early on a Saturday morning worthwhile. Still others are more pragmatic and realize that being involved in these offerings can help them achieve their ultimate long term goals.

We are particularly proud of the makeup of our chapter. We boast nearly 75 active members coming from a wide variety of majors. For example, this year our co-presidents are both biology majors and our treasurer is a civil engineer. We advertise this regularly and believe that it encourages other non-chemistry majors to attend our meetings and participate in our activities. In addition to our strong outreach programs, we have a wide variety of other activities in which our members can participate. We host speakers that discuss topics including making career choices, contemporary research being done in both academics and industry, and the current hot issue of green chemistry. We also make a point of hosting several social events each semester such as birthday celebrations, holiday parties, and senior recognition award ceremonies. Finally, to give all of our members opportunities to actively participate in our group, they are invited to tutor within the Department and assist in our weekly fundraising.

We are very proud of membership and their achievements. We hope to continue our strong legacy here at the University of Pittsburgh.

2010 Undergraduate Senior Awards

The American Institute of Chemists Award Mary Liang

The Mary Louise
Theodore Prize
Alexanrda M. McSorley
Michael G. Olah
Maria T. Panteva
Kelley L. Peters
Ryan A. Wetzel

The Merck Award
Seth A. Patton
Ryan A. Wetzel

The SACP College Award
Michael S. Freedman

The Silverman Prize
Joseph W. Kaus

The Phillips Medal
Danielle N. Chirdon



New Faculty and Staff

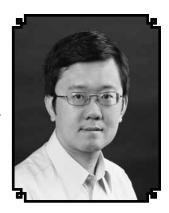
Haitao Liu, Assistant Professor

Haitao Liu received his BS from the University of Science and Technology of China, his PhD from University of California at Berkeley, and he completed postdoctoral work at Columbia University. Research in the Haitao Liu lab is focused on the chemistry and applications of nano-materials. They are interested in a wide range of organic and inorganic materials, including but not limited to DNA, graphene, carbon nanotubes, and colloidal nanocrystals. Current projects include the use of DNA nanostructures to do lithography on a silicon wafer, the synthesis and chemical modification of graphene and single walled carbon nanotubes, and the mechanistic study of colloidal nanocrystal synthesis.

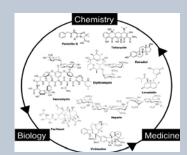


Xinyu Liu, Assistant Professor

Xinyu Liu received his PhD in organic chemistry from the Swiss Federal Institute of Technology (ETH) Zurich in Switzerland and he completed postdoctoral work in biochemistry at Harvard Medical School, Boston. Research in the Xinyu Liu lab resides at the interface of chemistry, biology, and medicine and concerns the study of broadly defined template—independent biological processes in living systems. The current research focus of the laboratory is to develop a next generation (bio)synthetic platform that will serve as the basis to understand the biogenesis and signal transduction events related to polysaccharide, polypeptide and polyprenylated small molecule natural products. By understanding these biological processes at a detailed



molecular level, they aim to facilitate the discovery of novel therapeutics for the treatment of cancer, autoimmune, neurodegenerative, and infectious diseases, as well as the creation of new environmentally friendly biomaterials for biomedical applications. While their strength lies in synthetic organic chemistry, protein biochemistry and enzymology, they also integrate microbiology, cell biology, biophysics, and bioengineering into their research program.



John P. (Jay) Auses, Senior Administrator

John P. (Jay) Auses was recently named senior administrator (assistant chair) of the Department of Chemistry. A native of Western Pennsylvania, Jay grew up in Johnstown, earned a BS in chemistry from St. Francis University in Loretto, and earned an MS in chemistry from West Virginia University. During his industrial career, Jay held positions as research scientist, environmental chemist, technical supervisor, and quality manager at the Alcoa Technical Center. He has been active in the Society for Analytical Chemists of Pittsburgh and the Spectroscopy Society of Pittsburgh, once having served as president of the Pittsburgh Conference on Analytical Chemistry and



Applied Spectroscopy (PITTCON). Among his duties as the senior administrative officer, Jay assists the department chair, oversees the day to day operations of the department, and serves as the graduate student liaison.



Renovation Status

Updates and expansions to Pitt's chemistry facilities continue at a brisk pace.

Two floors of the Chevron Science Center are now in full operation after the completion of major updates. Renovation of the 14th floor has resulted in an open, efficient, flexible research laboratory setting that is home to three organic chemistry groups. Organic chemistry instructional laboratories on the 4th floor now feature a central core for demonstrations and instrumentation plus modern laboratory amenities that are enhancing our students' educational experience in chemistry.

The steel framework has been erected and construction of the annex to the Chevron Science Center is well underway. The resulting structure will house two additional floors dedicated to graduate research. The lobby and mezzanine of the Ashe Auditorium and the lobby of Chevron are undergoing a major facelift that will provide bright and spacious areas for students to gather, relax, or study; it will include a newly designed state-of-the-art computer classroom, and it now houses the Chemistry library. Construction on the 5th floor of Chevron and the former library area in Eberly are also underway and will provide new research space for the Department.

Renovations to support facilities and teaching labs are continuing also. Renovation of the undergraduate stockroom and the electronics shop will be completed this winter. Development of modern designs for renovation of the undergraduate general chemistry laboratories are underway and scheduled to begin this summer.

Department Milestones

RETIREMENTS:

BOB MUHA (2/1971 – 6/2010)

Bob, a degreed electrical engineer, came to us from Westinghouse's former Bettis Atomic Power Laboratory. Under his supervision, the Department's electronics shop grew from a one-person unit to a well-respected and highly valued four-person operation. After 39 years of dedicated service Bob retired to pursue the art of freshwater fishing.

DENNIS SICHER: Machinist (6/1966 – 8/2009)

Dennis came to work for the University at age 17, when he was hired to work for Dr. Raymond Craig and Dr. William E. Wallace. As the Department expanded and demands grew, Dennis eventually became supervisor of the Machine Shop and retired 43 years later. He now resides in Florida.

NANCY WOODRING: Assistant to the Chair (9/1972 – 8/2010)

Nancy was a part of the Department of Chemistry for 38 years. Originally hired as part of the Department's secretarial staff, and she became assistant to the chair in 1989. She remained in that position until her retirement on August 31, 2010.

IN MEMORIAM:

NANCY SATTLER: Graduate Studies Administrator (11/1970 – 7/2000)

Nancy began her work in the Department of Chemistry working as part of the secretarial staff and eventually moving into the position of graduate studies administrator. Nancy always had a positive attitude and a smile on her face. Sadly, Nancy passed away on August 28, 2009.

MARYANN STEVWING: Office Administrator (2/2/1980 – 3/29/1996)

Maryann had more than one title during her career in the Department of Chemistry. She was part of the secretarial staff, eventually becoming office manager of the administrative office, and in her last years with the Department, she was undergraduate office administrator. After a long illness, Maryann passed away on July 6, 2009.





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University of Pittsburgh

Department of Chemistry

Information Please

We are very interested in hearing about the accomplishments of our alumni and former colleagues in the Department of Chemistry. If you have news to share please complete the top portion of the enclosed envelope or contact Michele Monaco by telephone (412-624-8200) or e-mail (monaco@pitt.edu) so that we can share your information with the rest of our readers. The information that you provide to us will be included in future mailings or on the departmental Web site.

We look forward to hearing from you!