BIOLOGICAL CHEMISTRY
UNIVERSITY OF MICHIGAN

News & Review
2015

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On the Cover

Image provided by Tom Kerpoola. The Kerppola laboratory visualizes protein interactions in living cells using engineered fluorescent protein fragments for bimolecular fluorescence complementation (BiFC) analysis. For more details please see Hu CD and Kerppola TK. *Nature Biotechnology*, 21: 539-545.

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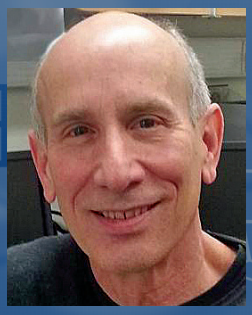
Letter From the Chair Dr. Dan Goldman



Dear Colleagues and Friends of Biological Chemistry,

Welcome to our annual newsletter. As some of you may know, Dave Engelke, our past interim departmental Chair has taken a new position at the University of Colorado, Denver as Dean of the Graduate School where he is overseeing the educational programs of over 6,000 students. We sorely miss Dave and wish him luck with these new challenges and responsibilities.

So as you might have guessed, I am the new interim Chair. By way of background, I received my Ph.D. in Biochemistry from the University of Illinois, Champaign-Urbana studying protein methylation/demethylation and its role in bacterial chemotaxis, which is a primitive sensory system by which bacteria are attracted or repelled by chemicals in their environment. I did postdoc work at the Salk Institute in La Jolla, CA where I learned to apply the techniques of molecular biology to study nervous system development and function. I joined the U-M biochemistry faculty in 1986 when Jud Coon was our Chair. My lab's current research investigates signaling mechanisms, epigenetic mechanisms and gene expression programs that drive cellular reprogramming and regeneration in retina and at the neuromuscular junction.

I am honored to be the interim Chair for this great department and have enjoyed wonderful support from all my colleagues as I learn the ropes and help prepare the department for its next, more permanent Chair. This is an exciting time to be a Chair at the University of Michigan. We have a new University President, Dr. Mark Schlissel and the Medical School has a new Executive Vice President for Medical Affairs, Dr. Marschall Runge. Both these leaders have a basic science background, are committed to advancing basic science on campus, and will be helping us move forward in further strengthening Biological Chemistry at the University of Michigan.

Although I have only been in this role for a few months, there is a lot of good news to report. As always, our Departmental Retreat at Kellogg Biological Station was a big success. The students and faculty talks were inspiring, and fun was had by all. We hosted a number of 1st year PIBS students contemplating biological chemistry as a Ph.D. program and welcomed 2 Masters students into the program.

Our seminar series is going strong and, as usual, highlights were the Martha Ludwig Lecture in Structural Biology given by Karolin Luger (Colorado State), G. Robert Greenberg Lecture in Biological Chemistry given by David Baker (University of Washington), Irwin J. Goldstein lecture in Glycobiology given by Vincent Hascall (Cleveland Clinic), William Lands Lecture on the Biochemical Basis for the Physiology of Essential Nutrients given by Alan Brash (Vanderbilt University) and the Distinguished Graduate Lecture given by Steven Quay (Atossa Genetics). We are approved to hire a couple of new Assistant Professors and will be filling our winter seminar schedule with talks from top candidates. Hearing the latest cutting edge science from faculty candidates is always a treat and I look forward to these seminars.

We are approved to hire a couple of new Assistant Professors and will be filling our winter seminar schedule with talks from the top candidates.

A major event this year was the celebration of Dave Ballou's career in our department and his transition to active Emeritus Professor. Dave has been with our department for almost 50 years and spent his total academic training from undergrad to professor at Michigan. We held a symposium for Dave this fall that brought people from all over the world to help celebrate. I was in awe of the list of Dave's colleagues that agreed to speak and who are some of the best enzymologists of our time. Dave has not only had a great impact on our department, but also on his scientific peers. We are very proud of him.

A number of our faculty have been recognized for their accomplishments. Briefly, congratulations go to Audrey Seasholtz who is the recipient of the Kaiser-Permanente Award for Excellence in Teaching Medicine for Pre-Clinical Teaching; Audrey and Bruce Palfey were elected to the League of Educational Excellence which was established in 2013 to honor our instructional faculty for their extraordinary contributions to teaching and inspiring the next generation of Michigan physicians and scientists; and Alex Ninfa will receive this year's EBS teaching award. Uhn-Soo Cho received a Basil O'Connor Starter Scholar Award from the March of Dimes Foundation, Tom Kerppola and I were elected Fellows of the American Association for Advancement of Science and Yang Zhang made the prestigious Thomson Reuters 2015 list of Highly Cited Researchers. Carol Fierke, the Jerome and Isabella Karle Distinguished University Professor of Chemistry and Professor of Biological Chemistry was named Dean of the Rackham Graduate School and Vice Provost for Academic Affairs – Graduate Studies.

A number of our students also deserve kudos – Erin Taylor, Rene Arvola, Michael Wolfe, Claire Cato and Grace Kroner received a variety of prestigious fellowships; Brad Klemm received the 2015 EBS Endowment for the Development of Graduate Education (EDGE) Award; postdoctoral fellow, Dan Eyler, received an award for giving the best postdoctoral talk at the Midwest DNA Repair Symposium at Indiana University in Bloomington; and our department recognized graduate students Elizabeth Abshire, Justin McNally, Meredith Skiba, Erin Taylor and Curtis Powell for their intellectual and scientific contributions. Congratulations to all.

I would like to conclude with a reminder that we are interested in hearing from you. Our department members and the friends of the department would love to keep abreast of what you are up to. Please send correspondence to my email address: neuroman@umich.edu.

I wish you a safe, healthy and happy holiday season.

With warm regards,

Dan Goldman

BallouFest 2015 *A Celebratory Symposium in Honor of Dr. David Ballou*

On Friday October 9, 2015 the Department hosted a celebratory symposium in Palmer Commons that honored the 43-year career of Dr. David Ballou at the University of Michigan and his recent retirement. He is an internationally renowned scientist for his research on flavins and biological oxidation mechanisms.

Dr. Dan Goldman, Interim Chair of Biological Chemistry, opened the symposium with comments about Dr. Ballou's career at the University of Michigan. Dr. Ruma Banerjee, Professor and Associate Chair, then described Dr. Ballou's service and history within the Department.

The symposium's speakers included former students, scientists, and collaborators of Dr. Ballou. They included:

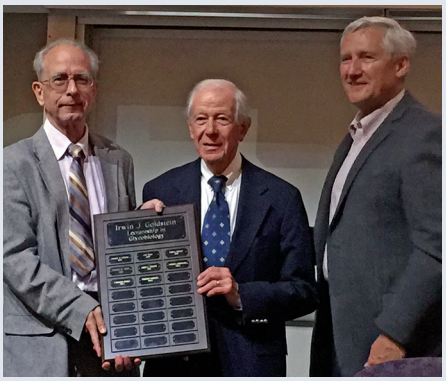
- Dr. Pimchai Chaiyen (former student), Mahidol University in Bangkok, Thailand
  "*Flavins and Flavoproteins*"
- Dr. Jay Groves, Princeton University
  "*P450 and All That: Do We Know What the Active Species is Yet?*"
- Dr. Joan Broderick, Montana State University
  "*Harnessed or Free? A Tale of Radical Intermediates in Radical SAM Enzymes*"
- Dr. John Lipscomb, University of Minnesota
  "*Old Dog New Tricks – Lessons in Enzymology from Ring-Cleaving Dioxygenases*"
- Dr. Steve Benkovic, Penn State University
  "*On De novo Purine Biosynthesis: The Purinosome*"
- Dr. Steve Ragsdale, University of Michigan and the Inaugural David P. Ballou Professor of Biological Chemistry
  "*The Radical Mechanism of Biological Methane Formation*"
- Dr. Steve Sligar, University of Illinois
  "*Kinetic Experiments With a Kinetic Man*"
- Dr. Michael Marletta, UC Berkeley
  "*Nitric Oxide Signaling: Welcome to Dave's Subterranean World*"

Following a memorable day of laughter, pictures, and science, there was a celebratory BallouFest dinner. All of the speakers, multiple members of the Department, and many students, postdocs, friends, family, and former colleagues came to enjoy an evening of celebrating the science, mentorship, and friendship of Dr. Dave Ballou. Many thanks to Professor Bill Smith and Amanda Howard for all their efforts in the organization of the BallouFest. It was an event that will be remembered by everyone who attended and talked about for years to come!

The Endowed Lectureships: 2014-2015

Irwin J. Goldstein Lectureship in Glycobiology

Vincent Hascall, Ph.D.
September 8, 2015
"How Do Synthesis of Hyaluronan and Heparin Affect Diabetic Pathologies"



Dr. Vincent C. Hascall received a B.S. from the California Institute of Technology and a Ph.D. from Rockefeller University where he worked with the late Dr. Dominic Dziewiatkowski (Dr. "Jay") who became a long time faculty member in Biological Chemistry at the University of Michigan. During his thesis studies, Dr. Hascall developed techniques for the extraction and characterization of what were known then as protein-polysaccharides but are now widely known as proteoglycans. A series of his papers devoted to this topic have been cited as a *Journal of Biological Chemistry* classic. After completing his Ph.D. studies, Dr. Hascall moved to the University of Michigan in 1969 as an Assistant Professor in the Department of Oral Biology in the Dental School and an Assistant Professor of Biological Chemistry in the Medical School. Shortly after his promotion to Associate Professor, he moved to the NIH as Staff Fellow in the Laboratory of Biochemistry becoming Chief of the Proteoglycan Chemistry Section in 1978. In 1994 Dr. Hascall moved to his current positions in the Department of Biomedical Engineering at the Lerner Research Institute of the Cleveland Clinic and the Department of Biological Chemistry at Case Western Reserve University. From 2001-2005, he served as Co-Director of the Orthopaedic Research Center at the Cleveland Clinic.

Work in Dr. Hascall's laboratory has focused on proteoglycans, most recently in determining the structure, biosynthesis and biological functions of hyaluronan-based matrices in the context of chronic inflammatory diseases. He has authored over 300 peer reviewed papers during his career and has been acknowledged with numerous awards including several honorary degrees, an NIH MERIT grant, the Karl Meyer Award for Glycoconjugate Research from the Society for Complex Carbohydrates and most recently the Senior Investigator Award from the American Society of Matrix Biology (2014). Among his many other scientific contributions, Dr. Hascall has served as President of the Society for Complex Carbohydrates and as a member of numerous editorial boards. He served as Associate Editor of the *Journal of Biological Chemistry* from 1995-2014.

William E.M. Lands Lectureship on the Biochemical Basis for the Physiology of Essential Nutrients

Alan Brash, Ph.D.
October 6, 2015
"The Critical Role of Linoleic Acid in the Mammalian Epidermal Barrier"

Dr. Alan Brash, a native of Scotland, received his Bachelor's degree in Medical Sciences from Cambridge University (1970) and his Ph.D., focused on LC and GC-MS methods for the analysis of prostaglandins, from the University of Edinburgh in 1976. After completing a Research Fellowship at the Department of Clinical Pharmacology, Royal Postgraduate Medical School in London, he moved to Vanderbilt University in Nashville, Tennessee, where he is now Professor of Pharmacology. In the course of his career at Vanderbilt his research interests evolved towards analysis of the mechanisms of formation and transformation of lipoxygenase products with an interest in their physiological role. A co-author on over 200 research articles, his work includes studies on stereochemical aspects of lipoxygenase catalysis and on the role of epithelial lipoxygenases. His findings also initiated work on the biochemistry of the CYP74 family of cytochrome P450s, and on the catalase-related hemoproteins which also metabolize fatty acid hydroperoxides.

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The occurrence of high levels of 12R-hydroxy-arachidonic acid (12R-HETE) in human psoriatic skin was recognized in the 1980s, and Dr. Brash pursued the concept that it is formed by a then-unknown lipoxygenase forming the *"R"* chirality product. With a foray into marine biology he established the existence of *R*-lipoxygenases in animals, and by the late 1990s had succeeded in cloning and characterizing human 12*R*-LOX, the ultimate goal of the earlier exploratory work. In 2002, genetic evidence pointed to a role of 12*R*-LOX (and a second lipoxygenase, eLOX3) in forming the epidermal water barrier. Dr. Brash's work on lipoxygenase metabolism in the mammalian epidermis has provided a novel hypothesis and rational explanation for the role of these two LOX enzymes in sealing of the epidermal barrier, required by higher animals for "life on dry land".

Martha Ludwig Lectureship in Structural Biology

Karolin Luger, Ph.D.
March 31, 2015
"Histone Chaperones in Nucleosome Assembly and Disassembly"

Dr. Karolin Luger received a B.S. in Microbiology and an M.S. in Biochemistry from the University of Innsbruck in Austria. She obtained her Ph.D. (summa cum laude) in Biochemistry and Biophysics from the University of Basel in Switzerland, and completed her training as a postdoctoral fellow and research assistant professor at the Swiss Federal Institute of Technology in Zurich. She is currently a University Distinguished Professor of Biochemistry and Molecular Biology at Colorado State University, and an Investigator for the Howard Hughes Medical Institute. She has won the Monfort Professor Award and is a Searle Scholar. In 2013, she was selected as the National Lecturer at the annual Biophysical Society meeting. Luger has served as a member of several NIH study sections. From 2010-2013, she was appointed to the *National Advisory General Medical Sciences Council.* This group performs the second level of peer review for research grant applications assigned to NIGMS, and advises the NIH leadership on policy.

Luger was a key player in efforts to elucidate the three-dimensional structure of the nucleosome, the basic repeating unit in chromatin. Since joining Colorado State University in 1999, she has expanded on this work using a wide range of techniques, such as X-ray crystallography, fluorescence spectroscopy, atomic force microscopy, analytical ultracentrifugation, molecular biology, and in vivo experiments. Her recent work has focused on how histone "chaperones" promote structural changes in chromatin, and how nucleosome dynamics affect gene expression. She is engaged in numerous national and international collaborations and, together with two other Investigators in the Department of Biochemistry and Molecular Biology, is a PI on a collaborative program project grant to investigate histone chaperones and acetyltransferases in chromatin transitions.

G. Robert Greenberg Lectureship in Biological Chemistry

David Baker, Ph.D.
April 28, 2015
"Post-Evolutionary Biology: Design of Novel Protein Structures, Functions and Assemblies"

Dr. David Baker is a biochemist and computational biologist whose research focuses on the prediction of macromolecular structures and functions. He is the director of Rosetta Commons, a consortium of labs and researchers that develop the Rosetta biomolecular structure prediction and design program, which has been extended to the distributed computing project Rosetta@Home and the online computer game Foldit. He received his Ph.D. in biochemistry at the University of California, Berkeley and did postdoctoral work in biophysics at University of California, San Francisco.

Dr. Baker has received numerous awards in recognition of his work, including the AAAS Newcomb Cleveland Prize, the Sackler International Prize in Biophysics, the Overton Prize from the International Society of Computational Biology, and the Feynman Prize from the Foresight Institute. Most recently he has been honored with the University of Washington Inventor of the Year Award, the Biochemical Society Centenary Award and the David Perlman Memorial Award. He is also a member of the National Academy of Sciences and the American Academy of Sciences. Dr. Baker has been appointed as a Howard Hughes Investigator since 2005. The primary goals of the research in the Baker group over the past several years have been to predict the structures of naturally occurring biomolecules and interactions and to design new molecules with new and useful functions. These prediction and design challenges have direct relevance for biomedicine and provide stringent and objective tests of our understanding of the fundamental underpinnings of molecular biology.

The Distinguished Graduate Lecture

Steven Quay, M.D., Ph.D.
May 21, 2015
"A Walk in Nature with Stops Along the Way"

Dr. Steven Quay received his B.A. degree in Biology, Chemistry, and Mathematics from Western Michigan University in 1971. He received both his Ph.D. (with Dale Oxender) and M.D. degrees from University of Michigan in 1977. He did postdoctoral research in the laboratory of Nobel Laureate Gobind Khorana at the Massachusetts Institute of Technology studying the photochemistry of membrane lipid-protein interactions. He then completed a residency in Anatomic Pathology at Harvard Medical School. In 1980, Dr. Quay joined the faculty at Stanford University School of Medicine and was a Staff Physician at the Palo Alto Veterans Administration Hospital before moving to the University of Kentucky School of Pharmacy. Since 1983, Dr. Quay has founded six companies, most recently Atossa Genetics in Seattle where he serves as President and Chief Executive Officer. He has over 76 U.S. patents and has authored more than 130 papers on diagnostic imaging, RNA interference, and oncology. As both a physician scientist and biotechnology entrepreneur, Dr. Steven Quay was able to talk to the biological chemistry graduate students not only about his research in biotechnology and drug design, but also his experience with medical device invention, technology transfer, patent law and venture capital.

New Faculty

The Department is pleased to announce that **Dr. Peter Freddolino** has joined the faculty as an Assistant Professor of Biological Chemistry. Dr. Freddolino also holds a joint appointment as Assistant Professor in the Department of Computational Medicine and Bioinformatics.

Dr. Freddolino received his Ph.D. at the University of Illinois in 2009 under the direction of Professor Klaus Schulten, where he developed and applied methods for using molecular dynamics simulations to study long time- and length-scale biological processes such as protein folding and lipoprotein assembly. His work provided a detailed molecular understanding of the folding process of a key model protein, the villin headpiece, and of the light-sensing mechanism of plant phototropin LOV domains.

For his postdoctoral research, he transitioned to bacterial systems biology, in the laboratory of Saeed Tavazoie at Princeton University and Columbia University. During this time, he developed several methods for high-throughput measurements of bacterial fitness landscapes and regulatory states, and showed that hypomorphic and null mutations can play a crucial role in bacterial adaptation to new environmental stresses such as antibiotics.

At the University of Michigan, Dr. Freddolino's lab will continue to pursue innovative approaches to map the biomolecular interactions that comprise cellular regulatory networks, using a combination of high-throughput experiments and multi-scale simulations. In addition, he plans to expand his work on bacterial evolution of stress tolerance from laboratory to natural populations of bacteria, to determine the role played by loss-of-function mutations in the development of antibiotic resistance in clinical settings. The long-term aim of his research is to enable quantitative, predictive modeling of bacterial behavior in the face of new environments, which would be tremendously useful for both antimicrobial drug development and synthetic biology applications.

Faculty Retirement

David R. Engelke, Ph.D. retired from his position as Professor and Interim Chair of the Department of Biological Chemistry at the University of Michigan in September 2015. He was appointed Dean of the Graduate School at the University of Colorado Denver/ Anschutz Medical Campus, effective Oct. 1, 2015 where he will oversee educational programs for more than 6,000 graduate students.

Dave performed his graduate work at Washington University and postdoctoral training at UC San Diego and Caltech. He joined the University of Michigan faculty in 1983 as Assistant Professor of Biological Chemistry. He was promoted to Associate Professor in 1989 and Professor in 1996. He served as interim chair of Biological Chemistry from July 2013 to September 2015.

Dave is internationally recognized for his pioneering research on gene silencing, the biosynthesis of small RNAs, and pre-tRNA processing by RNase P. His laboratory elucidated the RNA and protein composition of eukaryotic RNAse P and demonstrated the absolute requirement for protein components in the function of this RNA-based catalyst, or ribozyme.

Dave has a long history of leadership at the University of Michigan, including Associate Dean of the Horace H. Rackham School of Graduate Studies and Assistant Dean for Graduate and Postdoctoral studies in the Medical School. He was also founding director of the Program in Biomedical Sciences and has served as interim director of the Medical Scientist Training Program and director of the Cellular and Molecular Biology Graduate Program.

During his 32 years at Michigan, he earned many awards for his research, teaching and service, including the U-M Faculty Recognition Award and Distinguished Faculty Achievement Award and the Medical School's Distinguished Faculty Lectureship in Biomedical Research. In 2007, he received the Distinguished Faculty Mentor Award from the Rackham Graduate School.

The department hosted a retirement reception for Dave in September to thank him for all his contributions to the Department and University. We will miss Dave and his wife, Sandy Krikos, but wish them all the best as they begin a new adventure at the University of Colorado Denver.

Faculty News

Uhn-Soo Cho received a Basil O'Connor Starter Scholar Research Award from the March of Dimes Birth Defect Foundation.

Dan Goldman and **Tom Kerppola** have both been elected as Fellows of the American Association for the Advancement of Science.

Alex Ninfa was the 2014 recipient of the University of Michigan Medical School's Endowment for Basic Science Teaching Award for Biological Chemistry.

Bruce Palfey and **Audrey Seasholtz** were selected as 2015 members of the University of Michigan Medical School's League of Educational Excellence.

Audrey Seasholtz was the 2015 recipient of the Kaiser-Permanente Award for Excellence in Pre-Clinical Teaching at the University of Michigan Medical School.

Yang Zhang has been selected for the prestigious Thomson Reuters 2015 list of Highly Cited Researchers.

Dr. Carol Fierke, Ph.D. Named as Dean of Horace Rackham Graduate School

Dr. Carol Fierke, Jerome and Isabella Karle Distinguished University Professor of Chemistry and Professor of Biological Chemistry, was recently named as the Dean of the Rackham Graduate School and Vice Provost for Academic Affairs - Graduate Studies.

Dr. Fierke received a B.A. in Chemistry from Carleton College and a Ph.D. in Biochemistry from Brandeis University. After her postdoctoral training at Penn State University, she served on the faculty of Duke University's Biochemistry and Chemistry departments. Dr. Fierke joined the University of Michigan faculty in 1999.

Dr. Fierke is the recipient of the American Chemistry Society's 2011 Repligen Award in Chemistry of Biological Processes and the 2014 Emil Thomas Kaiser Award for her highly significant contributions to applying chemistry to the study of enzymes. Her research explores the structure, function and biological relevance of metalloenzymes and RNA catalysts, highly relevant to the development of enzyme inhibitors as therapeutic agents. She is a member of the American Association for the Advancement of Science (AAAS) and has published over 200 articles.

Dr. Fierke has made many contributions to improving the campus environment for all faculty, especially women in science, including her active involvement in ADVANCE and the faculty committee STRIDE (Strategies and Tactics for Recruiting to Improve Diversity and Excellence). This work was recognized by the 2009 Harold R. Johnson Diversity Service Award and the 2016 ACS Award for Encouraging Women into Careers in the Chemical Sciences. She has also been highly influential for postdocs, graduate students, and undergraduates from a wide variety of backgrounds and recently received the 2011 Rackham Distinguished Graduate Mentoring Award. Her work as a scholar, teacher, and leader was recognized by the university through the prestigious Distinguished University Professorship in 2013.

Alumni News

Pimchai Chaiyen was selected as the 2015 Thai Scientist of the Year. Professor Chaiyen completed her Ph.D. in Biological Chemistry in 1997 under the mentorship of Professors Vincent Massey and David Ballou. Indicative of her international scientific status, Prof. Chaiyen is also on the editorial board of the Journal of Biological Chemistry, one of the most prestigious journals in the field. She also was selected to be a speaker in the TEDx Bangkok program, another high honor.

Shameka J. Shelby, Ph.D. (Debra Thompson Lab) accepted a position as Assistant Professor of Chemistry, Florida Southern College, Lakeland, FL.

Ken Chahine, Ph.D. (1992, with Dan Goldman) received his JD from University of Utah S.J. Quinney College of Law in 1996. He is currently Professor of Law at University of Utah and Executive Vice President and General Manager of Ancestry DNA division of Ancestry.com. Ken was the invited alumni speaker at the annual Celebration of Graduate Education hosted by the Office of Graduate and Postdoctoral Studies in June 2015.

Ed Kravitz, Ph.D. completed his Ph.D. in Biological Chemistry in 1959. He is the George Packer Berry Professor of Neurobiology at Harvard Medical School and a member of the National Academy of Science. He visited the University of Michigan in October 2015, presenting seminars in the Department of Molecular, Cellular and Developmental Biology and Neuroscience Graduate Programs.

Student News

Student Achievements & Recognition

René Arvola, a candidate in Dr. Aaron Goldstrohm's laboratory, has been awarded an **NSF Graduate Research Fellowship**. René's proposal was entitled: "Analysis of the Role of Pumilio Repression Domains in mRNA Decay and Embryogenesis."

Brad Klemm, a candidate in Dr. Carol Fierke's laboratory, has been awarded the 2015 **EBS Endowment for the Development of Graduate Education (EDGE) Award**.

Erin Taylor, a candidate in Dr. Patrick O'Brien's laboratory, has been awarded a 2015-2016 **Rackham Predoctoral Fellowship.** One of Rackham's most prestigious fellowships, it is awarded to candidates with outstanding research and who have achieved academic excellence in their graduate career.

Michael Wolfe, a candidate in Dr. Peter Freddolino's laboratory, has also been awarded an **NSF Graduate Research Fellowship.** Michael's proposal was entitled: "Role for Long Non-coding RNA in Pumilio Mediated Post-transcriptional Regulation."

Rackham Graduate Student Research Grants

The following Biological Chemistry students received Rackham Graduate Student Research Grants between October 2014 and October 2015:

Elizabeth Abshire (Trievel/Goldstrohm Labs)
David Chen (Turner Lab)
Gregory Dodge (Smith Lab)
Rob Fick (Trievel Lab)
Manila Hada (Kwok Lab)
Jackson Han (Vojtek Lab)
Thomas Jurkiw (O'Brien Lab)
Grace Kroner (Freddolino Lab)
Paul Russell (Gafni Lab)
Samuel Slocum (Sherman/Smith Labs)
Erin Taylor (O'Brien Lab)
Jonathan Wagner (Uhler Lab)
Arthur Wolin (Kerppola Lab)
Arthur Yan (Dou Lab)

Rackham Graduate Student Travel Grants

The following Biological Chemistry graduate students received Rackham Travel Grants between October 2014 and October 2015:

Rene' Arvola (Goldstrohm Lab)
Jennifer Bohn (Goldstrohm Lab)
Wallace Chan (Zhang Lab)
Rob Fick (Trievel Lab)
Bradley Klemm (Fierke Lab)
Justin McNally (O'Brien Lab)
Meredith Skiba (Smith Lab)
Erin Taylor (O'Brien Lab)
Elia Wright (Fierke Lab)

Training Grant Awards

The following Biological Chemistry graduate students were awarded positions on the following NIH Training Grants:

Claire Cato (Tesmer Lab)
Chemical Biology Interface Training Program (CBI)

Grace Kroner (Freddolino Lab)
Cellular Biotechnology Training Program (CBTP)

The following Biological Chemistry graduate students were reappointed for a second year to the following NIH Training Grants:

Elizabeth Abshire (Trievel/Goldstrohm Lab)
Chemical Biology Interface Training Program (CBI)

Rene' Arvola (Goldstrohm Lab)
Genetics Training Program

Jennifer Bohn (Goldstrohm Lab)
Cellular Biotechnology Training Program (CBTP)

Thomas Jurkiw (O'Brien Lab)
Cellular Biotechnology Training Program (CBTP)

Annual Student Awards

The Halvor N. and Mary M. Christensen Award

Presented to a second-year student on the basis of academic record. This award is given in honor of Mary M. and Professor Emeritus Halvor N. Christensen who served as Chair of Biological Chemistry from 1955-1970, and who generously provided the gift that supports this annual award. Karen Gray, the Christensen's daughter, also continues to support this award.

2015 Awardee: **Elizabeth Abshire**
Mentors: Raymond C. Trievel Ph.D.
Aaron C. Goldstrohm, Ph.D.

Elizabeth Abshire with her Mentor Dr. Ray Trievel

The Adam A. and Mary J. Christman Award

Presented to a third-year student judged to be the most outstanding in that class. The Christman Award is named in memory of former long-time member Professor Adam Christman.

2015 Awardee: **Justin McNally**
Mentor: Patrick J. O'Brien, Ph.D.

Justin McNally with presenter Dr. David Engelke

The Anthony and Lillian Lu Award

Presented to a student on the basis of academic background, achievement in the graduate program, and potential as a scientist. This award is made possible by the Lu Family who generously provided the gift that supports this annual award.

2015 Awardee: **Meredith Skiba**
Mentor: Janet L. Smith, Ph.D.

Meredith Skiba with benefactor Dr. Anthony Lu

The Minor J. and Mary Lou Coon Award

Awarded annually to the student who exhibits overall excellence in research, teaching, and service to the department. This award honors Professor Coon, former Chair of the department, and Mary Lou Coon who have provided the gifts that support this award.

2015 Awardee: **Erin Taylor**
Mentor: Patrick J. O'Brien, Ph.D.

Erin Taylor with Ms. Linda Coon

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Annual Student Awards continued

The Dziewiatkowski Award

Dedicated to the memory of the late faculty member, Dominic D. (Jay) Dziewiatkowski, this award is offered to the student who has submitted the most outstanding Ph.D. dissertation during the last academic year.

2015 Awardee: **Curtis Powell, Ph.D.**
Mentor: Daniel J. Goldman, Ph.D.

Curtis Powell with his Mentor Dr. Dan Goldman

New Postdocs

Rebecca Hurto, Ph.D.
received her Ph.D. from the Pennsylvania State University College of Medicine in 2006.
Mentor: Dr. Uhn-Soo Cho

Taeho Jo, Ph.D.
received his Ph.D. from Tokyo Medical and Dental University in 2010.
Mentor: Dr. Tom Kerppola

Morteza Khabiri, Ph.D.
received his Ph.D. from University of South Bohemia and Institute of Nanobiology and Structural Biology, Academy of Science of the Czech Republic in 2011.
Mentor: Dr. Peter Freddolino

Aaron Landry, Ph.D.
received his Ph.D. from Louisiana State University in 2015.
Mentor: Dr. Ruma Banerjee

Johanna Mock, Ph.D.
received her Ph.D. from Philipps-Universität Marburg, Germany in 2013.
Mentor: Dr. Stephen Ragsdale

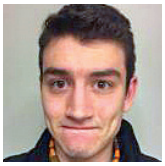
Anjali Patwardhan, Ph.D.
received her Ph.D. from Ohio State University in 2003.
Mentor: Dr. Stephen Ragsdale

In Memorium

Gordon L. Norby, former associate professor of Biological Chemistry, died in Ann Arbor on July 25, 2015 after a five month battle with cancer. Gordon received his B.S., M.S., and Ph.D. degrees in Chemistry, with a concentration in Biological Chemistry, from Stanford University. At Stanford, he was also involved in the emerging field of Computer Science. Gordon conducted his postdoctoral research with Dr. J. Lawrence Oncley, then of Harvard University. He then joined the faculty of the University of Michigan in 1962 as an Assistant Professor of Biological Chemistry and an Associate Research Biophysicist at the Institute of Science and Technology. In 1968, he was promoted to Associate Professor of Biological Chemistry.

Professor Nordby had research interests in the physical biochemistry of proteins and opiate receptor binding. He also worked on computer simulation of biological systems and database systems design and management. Gordon was also a dedicated health educator and significantly enhanced the biochemistry course for nursing students. He was an active and dedicated member of the University community and served on numerous committees over many years, in addition to serving as Assistant to the Chair of the Department from 1968-1975.

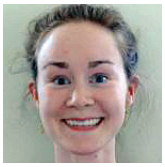
New Ph.D. Students



Brian Alzua received his Bachelor of Science in 2014 from the University of Michigan, Ann Arbor, MI.
Mentor: Aaron C. Goldstrohm, Ph.D.

Claire Cato received her Bachelor of Arts in 2014 from Vanderbilt University, Nashville, TN.
Mentor: John J.G. Tesmer, Ph.D.

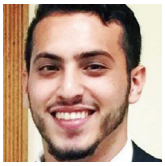
Kipchumba Kaitany received his Bachelor of Science in 2014 from Grand Valley State University, Allendale, MI.
Mentor: Carol A. Fierke, Ph.D.



Grace Kroner received her Bachelor of Arts in 2014 from Washington University, St. Louis, MO.
Mentor: Peter L. Freddolino, Ph.D.

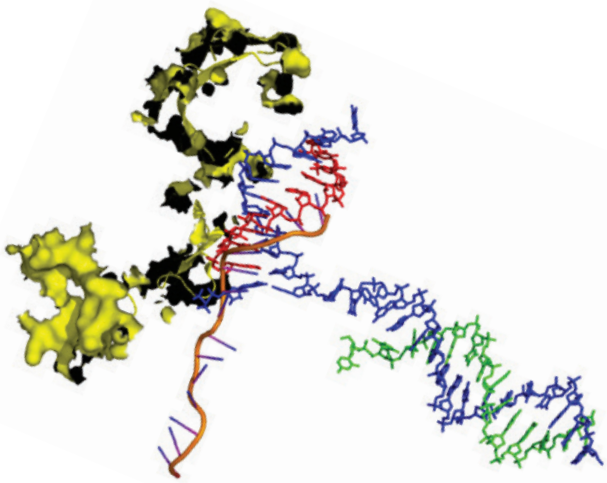
Michael Wolfe received his Bachelor of Science in 2014 from The Ohio State University, Columbus, OH.
Mentor: Peter L. Freddolino, Ph.D.

New M.S. Students



Mohamed Alrayyashi received his Bachelor of Science in 2015 from Wayne State University, Detroit, MI.
Mentor: Robert S. Fuller, Ph.D.

Michael Miller received his Bachelor of Science in 2013 from Western Michigan University, Kalamazoo, MI.
Mentor: Patrick J. O'Brien, Ph.D.



Ph.D. Degrees Granted

Amber M. Smith, Ph.D.
October 27, 2014
"Structural Investigation of the Mechanism and Regulation of the PLPS"
Mentor: Janet L. Smith, Ph.D.

Brittany M. Bowman, Ph.D.
November 20, 2014
"FADD and its Phosphorylation Mediate Mitogenic Signaling in Mutant Kras Tumors"
Mentor: Brian D. Ross, Ph.D.

Jennifer N. Rauch, Ph.D.
March 19, 2015
"Regulation of Human Hsp70 by its Nucleotide Exchange Factors (NEFs)"
Mentor: Jason E. Gestwicki, Ph.D.

Chase A. Weidmann, Ph.D.
April 27, 2015
"Mechanisms of mRNA Regulation by Pumilio and Nanos"
Mentor: Aaron C. Goldstrohm, Ph.D.

Michael J. Howard, Ph.D.
August 27, 2015
"Structure and Function of Protein-only RNase P"
Mentor: Carol A. Fierke, Ph.D.

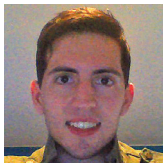
Manila Hada, Ph.D.
August 31, 2015
"Regulation of Ku70 Bax Complex Cells"
Mentor: Roland P. Kwok, Ph.D.

M.S. Degrees Granted

Youdinghuan (David) Chen, M.S.
August 21, 2015
"Exploring Gene Regulation Mediated by RNA N6-Methyladenosine Modification and MicroRNAs Using the CRISPR/Cas9 Genome-Engineering Technology"
Mentor: David L. Turner, Ph.D.

Xu (Jackson) Han, M.S.
August 21, 2015
"Biochemical Basis of the Interaction Between KRas4B and a Novel KRas4B Binding Partner"
Mentor: Anne B. Vojtek, Ph.D.

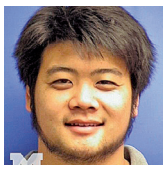
George R. Murphy III, M.S.
August 21, 2015
"Identifying Novel Histone Deacetylase 8 Inhibitors"
Mentor: Carol A. Fierke, Ph.D.



Paul J. Russell, M.S.
August 21, 2015
"Characterization of Synergistic Effects Between Islet Amyloid Polypeptide and Secreted Phospholipase A2 on Liposome Membranes and B Lymphocyte Cells"
Mentor: Ari Gafni, Ph.D.

Jonathan R. Wagner, M.S.
August 21, 2015
"Examining the Requirement of Mouse Ascl1 in GAPAergic Determination of P19 Neural Differentiation"
Mentor: Michael D. Uhler, Ph.D.

Arthur R. Wolin, M.S.
August 21, 2015
"The Role of Subcellular Cholesterol Accumulation in ATR-101 Toxicity"
Mentor: Tom K.W. Kerppola, Ph.D.



Arthur Z. Yan, M.S.
August 21, 2015
"Functional Analysis of hMLL1 (KMT2A) Utilizing Structural Constructs and Mutation Data"
Mentor: Yali Dou, Ph.D.

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Ann Arbor, Michigan 48109-0600
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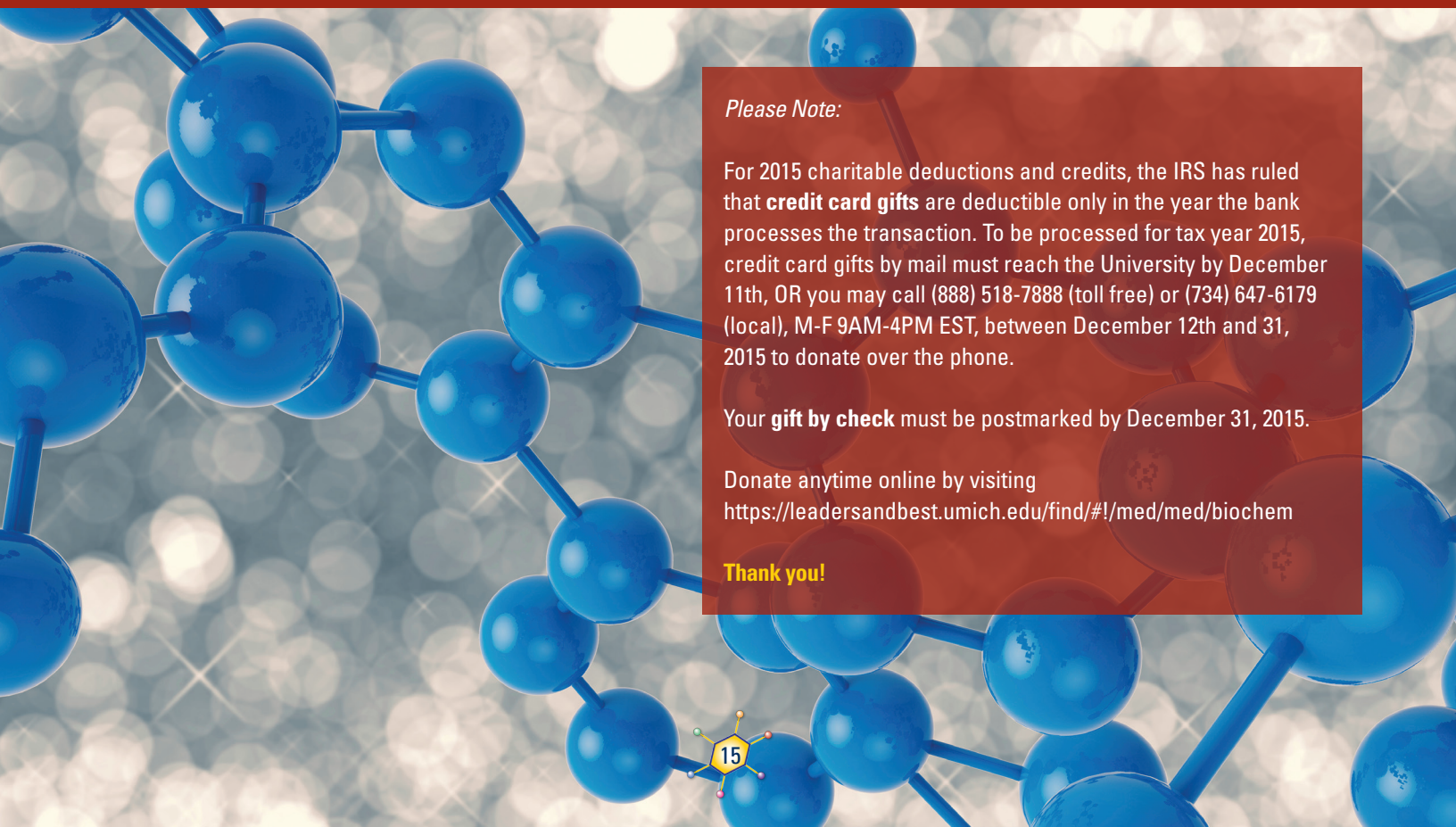
E: shercogs@umich.edu



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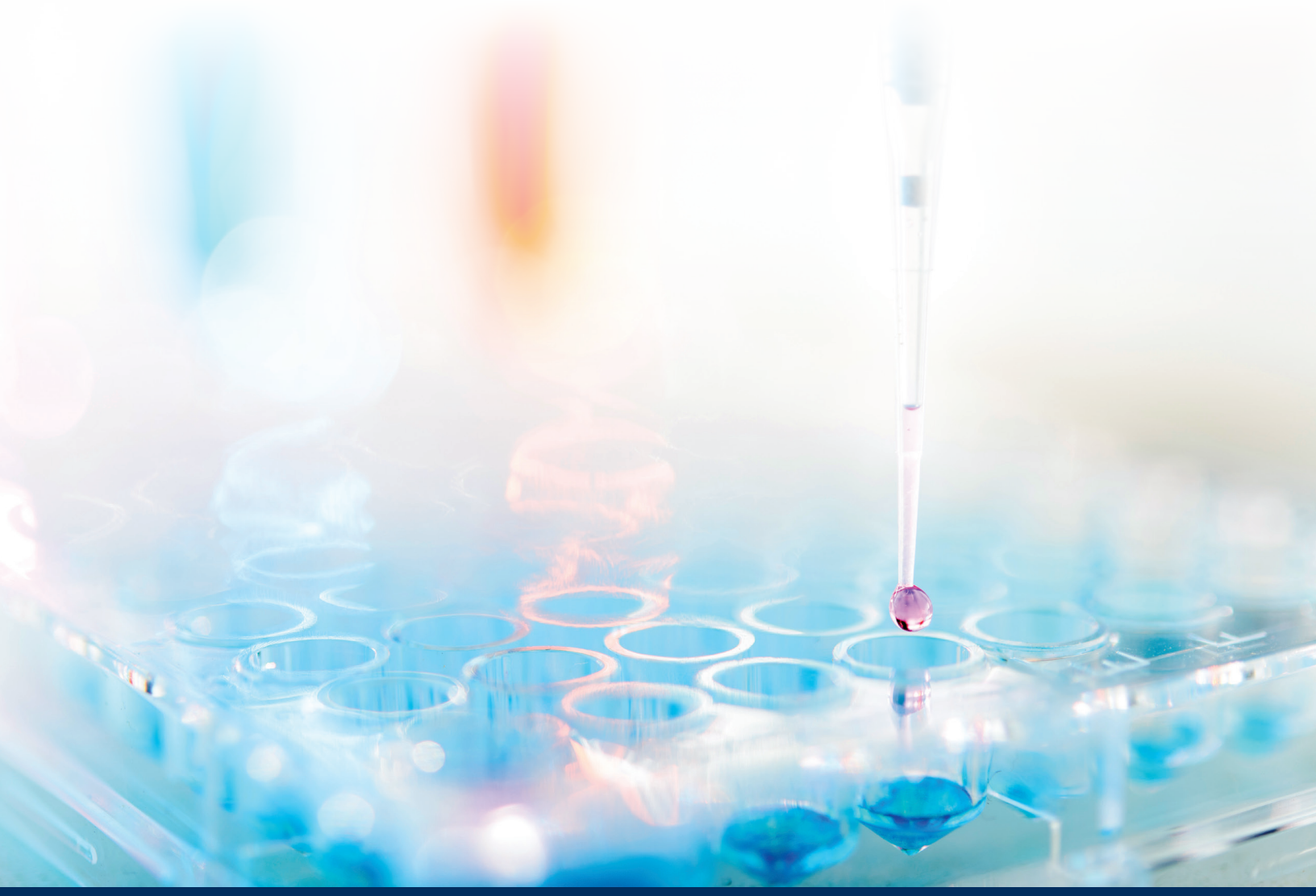

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