

Biochemistry and Molecular Biology Program, Gettysburg College

Annual Newsletter, 2019

Welcome to the first annual newsletter from the Gettysburg College Biochemistry and Molecular Biology program. And what better time to start celebrating the growth of the BMB program than in the year that is both the 25th anniversary of the first BMB student graduating (see profile on Mariam Malik (BMB '94) below) and also marks the retirement of one of the founding members (see profile highlighting Koren Lipsett below). In the 28 years since the BMB program was established with a grant from the Howard Hughes Medical Institute, we have grown from 2-3 majors per graduating class to 15-20 students typically declaring during their first year. We have 11 BMB faculty spread across the Biology, Chemistry, and Physics departments – these are faculty who both teach courses within the BMB curriculum and also focus their research programs in BMB-related fields. Student-faculty research, performed during the academic year and through the X-SIG summer research program, ranges from studies of cellular stress response in *C. elegans* to the effect of antifreeze proteins on clathrate hydrates. This past May, we graduated 9 seniors, four of them with program and college Latin honors, who went on to graduate school and jobs in industrial, academic, and national labs.

As BMB continues to grow and evolve as its own program, we continue to increase the events, curricular offerings, and infrastructure for BMB students. If you are interested in supporting these initiatives, you can do so at www.gettysburg.edu/onlinegiving. On the form, please note the gift is for “BMB special gifts” which is funding to be used in direct support of programming, curricular innovation, and student-faculty research within the BMB program, or “BMB prize” to support the annual BMB award, established in 2004, given to a graduating senior who has excelled in both course work and laboratory research; this award is given on Spring Honors Day during Commencement Weekend.



Current BMB students: Melanie Hempel, Katie Watson, Peter Zhang, MaKayla Walker

BMB Award recipients

2004	Robert M. Clontz
2005	Walter E. Kowtoniuk
2006	Megan E. Campbell
2007	Jenna C. Stokes
2008	Jenna R. Keyser
2009	Tyler M. Kreitz
2010	Jaclyn M. D'Innocenzi Sara E. Fritz
2011	Christina M. Kelliher Amrit Khalsa Julie A. Kobie
2012	Brian M. Lauderback
2013	Avani T. Amin
2014	Devin J. Geiman Michael J. Rouse
2015	Warren A. Campbell
2016	Matthew R. Dunworth David R. Van Doren
2017	Andrew R. Mahoney
2018	Richard J. Gawel Madison S. Strine
2019	Cameron P. Thompson

Where are they now?

Dr. Robert Clontz (BMB '04)

Rob was the inaugural winner of the BMB award in 2004 and also served as banner carrier at the commencement ceremony. Following his time at Gettysburg, he pursued his medical school training after graduation from the Uniformed Services University of the Health Sciences at Fort Edward where he received his M.D. in 2008. After serving as an Emergency Medicine Physician in the United States Air Force, he joined WellSpan Health in York, PA as an Emergency Medicine Physician in 2019.

Dr. Walter Kowtoniuk (BMB, Philosophy '05)

Walt received his graduate training at Harvard University, where he earned his Ph.D. in Chemical Biology in 2010. He served as a Strategy Consultant at Clarion Healthcare in Boston, Massachusetts from 2010-13, after which he joined Third Rock Ventures in Cambridge, MA where he is currently a Principal in venture capital and company creation. During 2016-17, he founded a company, Fulcrum Therapeutics. Upon his reflection of his undergraduate years, he says, “Deep scientific training is crucial to biotech venture capital and company creation... The BMB curriculum instilled a mindset of experimentation... [which is] the most valuable aspect of my BMB training for the job that I do today.”

Dr. Sarah Fritz (BMB '10)

After graduation from Gettysburg College, Sarah received her Ph.D. in Biomedical Sciences from the Ohio State University (2015). She was a Visiting Assistant Professor of Biology at Antioch College and is currently a Postdoctoral Research Fellow at the National Institutes of Health in Bethesda, Maryland. She says, “I am forever grateful for my experiences at Gettysburg College. The BMB faculty, staff and my peers all provided me with the necessary foundation to excel in graduate school and beyond. Importantly, the skills I developed in critical thinking, problem solving, and communication were essential to my success... But most importantly of all, it was the enthusiasm and dedication of the faculty along with their continued support that inspired me to pursue a career as an academic professor and are helping to make this goal possible.”

First graduate from the BMB program

Our first BMB graduate, Dr. Mariam Malik, graduated 25 years ago in December 1994 (in just 3.5 years!). After working in industry in Seattle and then teaching in Pakistan, she began a Ph.D. program in 1998 at the University of Notre Dame with Paul Huber working on understanding mechanisms of transcriptional regulation. Following her Ph.D, Mariam went on to complete postdoctoral work with Stuart Yuspa at the Center for Cancer Research at the National Cancer Institute (CCR/NCI), where she focused on delineating signaling pathways that contribute to skin cancer. Upon completing her postdoc, she stayed on at CCR/NCI, where she took on a role as the assistant director for partnerships as part of the Office of Science and Technology Resources. In this position, she forges connections with biotech companies to bring together emerging technologies with the ongoing work at CCR/NCI. She credits the Gettysburg biology and chemistry departments, and particularly Founding BMB faculty Steve James and Koren Lipsett, for inspiring her passions for biomedical research and staying current with the literature, as well as teaching her to critically infer how new research and technology can advance our existing knowledge. We hope to continue this celebration of the BMB program by having Mariam back to campus to give a BMB seminar this spring – stay tuned!



Mariam Malik (BMB '94) with her family at the 2016 NIH Director's Award ceremony where she was honored

Founding BMB faculty member to retire

Koren Lipsett came to Gettysburg College in 1992 to establish, with Steve James, an interdisciplinary Biochemistry and Molecular Biology program. Her 28-year career has impacted hundreds of students in BMB and several other majors. Three required courses in the BMB major are regularly taught by Koren (Introductory Chemistry and Biochemistry I & II). Additionally, she designed the popular Introduction to Forensics course, and her expertise in this field has led to her repeatedly serving as a grant reviewer for the National Institute of Justice.

Koren is particularly known for her involvement in undergraduate research. She says, "It is a thrill to witness firsthand the intellectual evolution of each student."

Prasad Kambli (BMB '95), Prof. Koren Lipsett, and Mariam Malik (BMB '94) along with BMB classmates

During her career at Gettysburg, Koren has mentored over 100 students in independent research projects! Her research embodies the interdisciplinarity of BMB, with long-term projects on mitochondrial heteroplasmy, genetic blindness in cats, and deafness in horses. Her work has resulted in 11 publications during her Gettysburg career, several with student co-authors, and a first-author patent. In addition to these accomplishments, Koren says, "I have also gained so much from my students – endless stories, struggles, accomplishments during the pursuit of knowledge. This keeps me engaged and always learning alongside my students." Although Koren is retiring from Gettysburg, she is not quite ready to put away her pipets. She plans to relocate to New England to be closer to family, where she will continue to follow her passion for BMB research and mentoring in a second career.

Please consider celebrating Koren's nearly 3 decades of dedication to BMB and Gettysburg College by making a gift in her honor. Donations can be made to the Valerie A. Lipsett Memorial Scholarship, which supports under-represented and first generation students in any major in memory of Dr. Lipsett's mother, or to the BMB Special Gifts Fund.

BMB Seminars

We hosted a number of exciting seminars over the last year, starting with Dennis Bleile (Chem '72), who gave two seminars about his work at biotech company Abaxis on the development of diagnostics. In November, Fulbright visiting scientist at Penn State Hershey Medical School, Dr. Trupti Patel from the Vellore Institute of Technology, presented a seminar on "*In silico* analysis for exploring the relevance of therapeutic and diagnostic targets." We started off our spring semester with a seminar from Shelli Frey on her sabbatical work at the Max Planck Institute for Colloids and Interfaces titled "Interactions of huntingtin with model cell membranes." Our last seminar of the year was Dr. Greg Beutner, a process chemist from Bristol-Myers Squibb who gave a seminar on "Using physical organic chemistry to solve problems in the pharmaceutical industry."



Prof. Koren Lipsett with recent research students, Orange Li (Chem '18) and Celine Erkey (Chem '19)

BMB Student and Faculty News

Over the course of the last year, BMB students and faculty were quite successful. Claire Woodward and Erin Schroeder (BMB '20) were both awarded Goldwater Scholarships, national natural science and math scholarships awarded to support the next generation of research leaders in these fields. Shelli Frey (with Luke Thompson, Chemistry), was awarded a \$150,000 grant from the George I Alden Trust for the purchase of an atomic force microscope. She also published a paper in *Soft Matter* titled "Bending rigidity of charged bilayer membranes," with collaborators from her recent sabbatical at the Max Planck Institute for Colloids and Interfaces in Golm, Germany. Jen Powell was awarded a three-year \$266,000 NSF RUI grant "Integration of the Epithelial Innate Immune and Oxidative Stress Responses." She also published a paper, "Predicting the future: Parental progeny investment in response to environmental stress cues," in *Frontiers in Cell and Developmental Biology*, with Leah Gulyas (Bio '19). Ryan Kerney published "Co-cultures of *Oophila amblystomatis* between *Ambystoma maculatum* and *Ambystoma gracile* hosts show host-symbiont fidelity," in *Symbiosis* with Gettysburg students Jasper Leavitt (Bio '15), Elizabeth Hill (Bio '17), and Huanjia Zhang (Bio '17), and "Characterization of Pax3 and Sox10 transgenic *Xenopus laevis* embryos as tools to study neural crest development" in *Development*, with other collaborators.

BMB banner carriers

1997	Jennifer J. Becker
1998	Amy M. Dickerson
1999	Jared N. Kravitz
2000	James W. Gallagher
2001	Casey E. Connelly
2002	Evan C. Merkhofer
2003	Amanda J. Sheets
2004	Robert M. Clontz
2005	Walter E. Kowtoniuk
2006	Megan E. Campbell
2007	Jenna C. Stokes
2008	Monica S. Charpentier
2009	Tyler M. Kreitz
2010	Katharine E. Hickey
2011	Christina M. Kelliher
2012	Katerina J. Kauffman
2013	Cam T. Nguyen
2014	Miles Paszek
2015	Stacey L. Heaver
2016	Alecia M. Achimovich
2017	Cordell M. Boggs
2018	Jennifer A. Giannini
2019	Sarah F. DiDominico

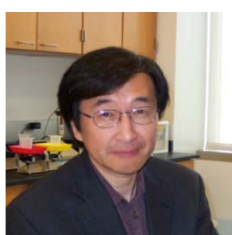
Current BMB faculty



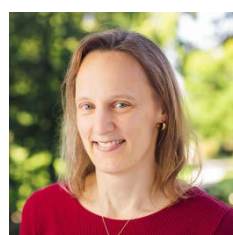
Shelli Frey, Chemistry
BMB Chair



Kate Buettner, Chemistry



Kazuo Hiraizumi, Biology



Jen Powell, Biology



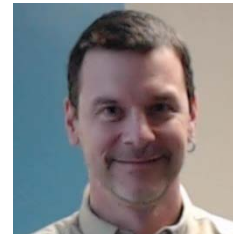
Steve James, Biology



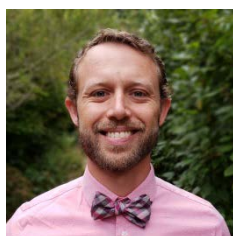
Koren Lipsett, Chemistry



Veronique Delesalle, Biology



Matt Kittelberger, Biology



Kurt Andresen, Physics



Ryan Kerney, Biology



Suv Sengupta, Chemistry

Keep us updated! If you have news you would like to share, e-mail one of the BMB faculty or one of our BMB administrative assistants, Lea Czar (lczar@gettysburg.edu) or Amanda Whitcomb (awhitcomb@gettysburg.edu). To keep up to date with BMB goings-on, our web page is: <https://www.gettysburg.edu/academic-programs/biochemistry-molecular-biology/programs/>