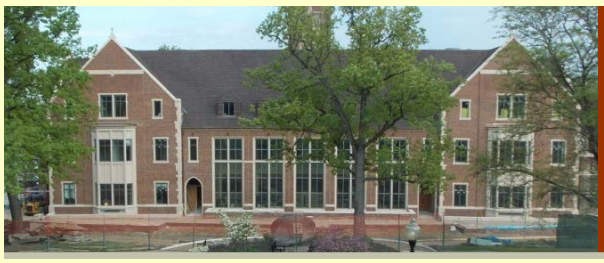


Grove City College
Chemistry eNewsLetter
Fall 2017

Departmental News

From Dr. Tim Homan, Chair

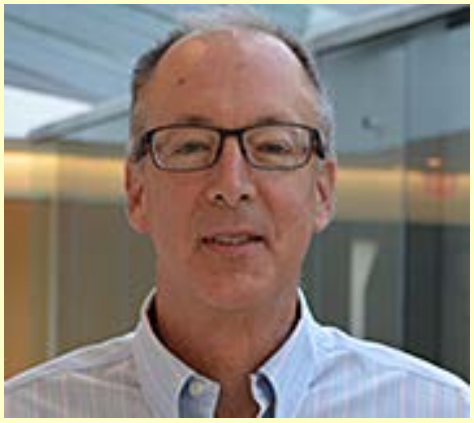
It seems like every time I write you, there are changes happening in the Chemistry department, and this semester is no different. We welcome Dr. Holly Guevara to our department, to fill the position which has been open since Dr. Harold Conder retired in 2016. You can read about her in full on the next page.

This will be my last newsletter as department chair. After thirteen years in the position, I will be stepping down at the end of the Fall semester. The department has nominated Dr. Joe Augspurger to take over the duties as department chair the next three years, and the Administration has endorsed the nomination.

It is gratifying to look back over the past thirteen years and reflect on the progress the department has made. A significant curriculum overhaul allowed us to successfully apply to the ACS to have our graduates be able to receive ACS certification. In the first three years, ten of our majors have received the ACS certification, and we anticipate several more this year. In those thirteen years, 215 students have graduated with either chemistry, biochemistry, or chemistry secondary education degrees.

In terms of instrumentation, we've added an x-ray diffractometer, fluorescence, Raman, and ESR spectrometers, and our new NMR, enabling the department to offer incoming students a wealth of instrumentation on which to gain experience in the preparation for their careers.

This Fall we added a new seminar component to our curriculum, which was spearheaded by Dr. Mike Falcetta, and it's described in full on page 4.



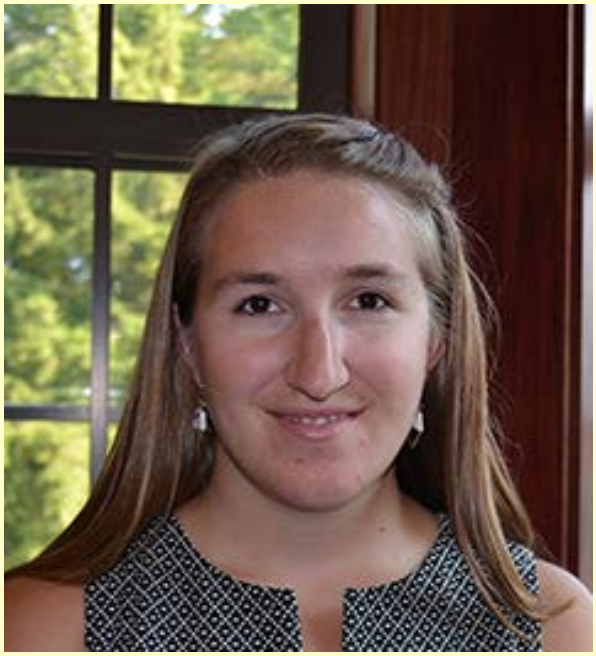
We graduated another large, strong class last year of 21 students, including five in chemistry, 15 in biochemistry, and one in chemistry secondary education. You can read about what they're going to be doing on page 5. We continue to be blessed with not just strong students, but great young men and women to help prepare for their future careers.

Finally, let me thank you, our alumni. We continue to benefit from your generous financial support. Your successes build our reputation so that we can continue to attract each new class of students.

Faculty Update

Holly Guevara, Ph.D.

Holly grew up in a small town in upstate New York near the Canadian border. After graduating from high school, she moved to Quincy, Massachusetts and attended Eastern Nazarene College (ENC) for undergraduate studies. At Eastern Nazarene, she was involved in organic chemistry research under the direction of Dr. Joseph Williams during the summer after her freshman year. She and her fellow students accomplished enough that summer, after a crash course in organic chemistry and using the NMR, to present their work at a regional ACS meeting and publish two papers. After this experience, she fell in love with organic chemistry. A couple years later, she had the opportunity to do interdisciplinary research in organic synthesis and biochemistry at the Pacific Northwest National Laboratory in Richland, Washington, which was a fantastic experience and resulted in another publication. She also served as a teaching assistant at ENC. This experience, along with excellent mentorship from her advisor, inspired her to pursue teaching as a career.



After graduating from ENC in 2012, she entered the Ph.D. program at the University of New Hampshire where she continued the trend of interdisciplinary organic/biochemistry research, working under Dr. Arthur Greenberg. She worked on synthesizing small chemical models for the human carcinogen benzene to investigate its metabolism in eukaryotic systems. We were able to observe the metabolism of these models in incubations with enzymes to elucidate a reactive metabolite, in part responsible for the carcinogenic nature of benzene. She was a teaching assistant for five years while working on her doctorate, teaching mostly labs and a few times running a lab course. She very much enjoyed working with the undergraduates and mentoring both lab students and undergraduate researchers in our group. While in New Hampshire, she married her husband Paul and they enjoyed exploring the natural landscapes of New Hampshire and working with their local church.

At GCC, she is interested in continuing to study the mechanism in which the metabolites of benzene cause cancer, which involves organic synthesis and biological evaluation of synthetic models. She's also interested in exploring the field of molecular machines – specifically, dendritic rotaxanes – and their potential applications in drug delivery and materials science.

She is teaching part of the General Chemistry and lab sequence at Grove City, and will teach Spectroscopy and Advanced Synthesis Lab in the spring.

Student Summer Research

Many of our students had great opportunities to work in industry or carry out research in academia in the summer of 2017.

Natalie Ziemer (BIOC, ’18) did synthetic boron chemistry under Dr. Brian Popp at WVU in an REU-sponsored position.

Ellen Upton (BIOC, ’18) characterized drug-resistant pancreatic cancer cell lines at Oregon Health and Science University.

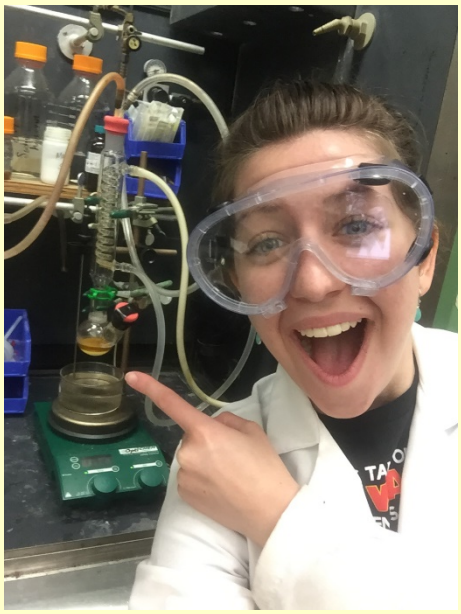
Matt Genzink (CHEM, ’18) was in process development of paint formulation for Lacks Enterprises.

Ethan Conto (BIOC, ’19) worked in quality control and process development for Sonneborn.

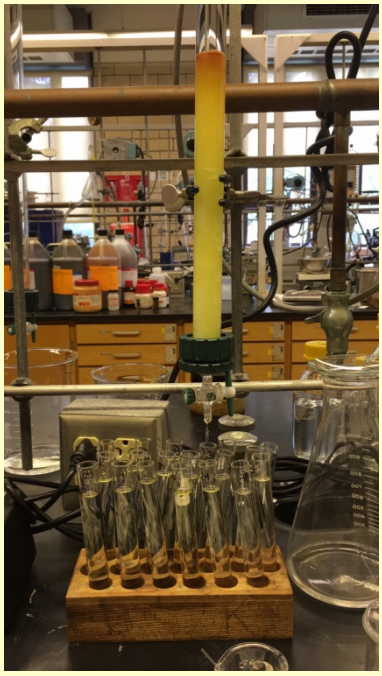
Adam Rish (BIOC, ’18) analyzed the dissolution of carbamazepine drug tablets at Duquesne University.

Kelsey Aldrich (CHEM, ’19) and **Isaac Williams** (CHEM, ’19) worked with Dr. Falcetta’s computational research into temporary anion stability on campus at GCC, supported by the school’s Swezey Fund.

Erin Logue (CSED, ’19) used gas chromatography to carry out quality control for International Waxes.



Natalie Ziemer excited about her boron reaction.

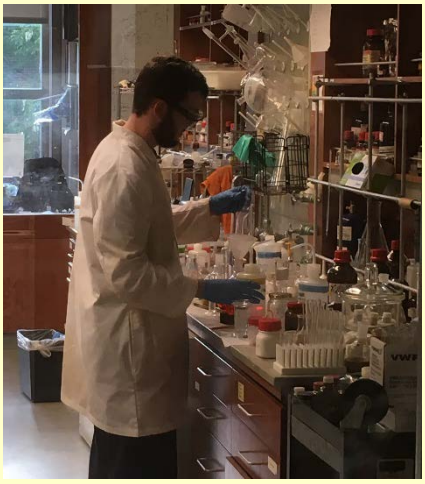


Jonathan Dabbs (BIOC, ’18), **Sam Henson** (BIOC, ’19), and **Katie Hammes** (BIOC, ’19) worked with Dr. Kriley’s research project on campus pursuing potential anticancer agents through synthesis of new derivatives of resveratrol and quercitin, supported by GCC’s Swezey Fund.

Brian Lee (BIOC, ’18), in preparation for a career in medicine, took vital signs and scribed for doctors at Mercy Health Clinic.

Jimmy Olsen (CHEM, ‘20) (pictured at right) was synthesizing chiral, dendronized perylene bisimide structures that self-assemble in the lab of Dr. Virgil Persec at the University of Pennsylvania.

Ben Dumm (BIOC, ’18) spent the summer at Duquesne University studying mechanisms of neurodegeneration due to Parkinson’s Disease.

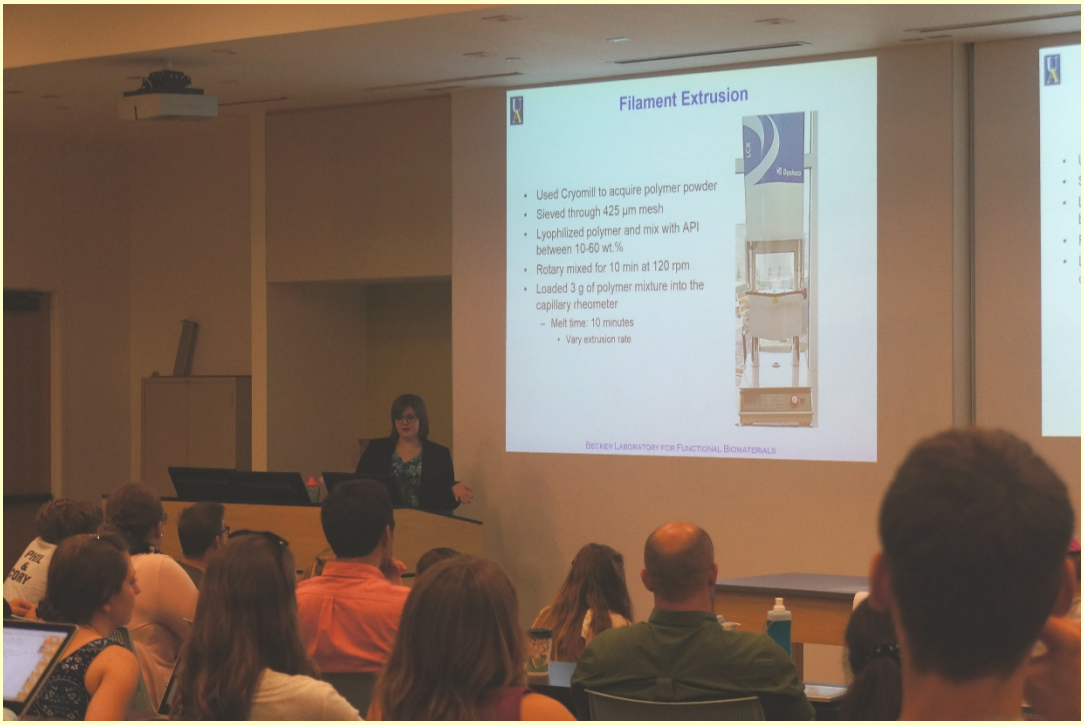


The picture above is of a product that Katie Hammes generated, that NMR showed to be a mixture. She ran it through a chromatography column to separate the product components before testing them on cancer cells.

Chemistry Department Adds Seminar Program

This Fall we added an additional seminar component to our curriculum, which was spearheaded by Dr. Mike Falcetta. Our majors in the sophomore course "Chemistry in Context", juniors in PChem, and seniors taking Inorganic were required to attend two seminars throughout the semester and submit a written summary of what they learned from the seminar as a part of their grades in these classes. We added this component to provide opportunities for them to develop their ability to comprehend scientific presentations, which is particularly important for those intending to go to graduate school.

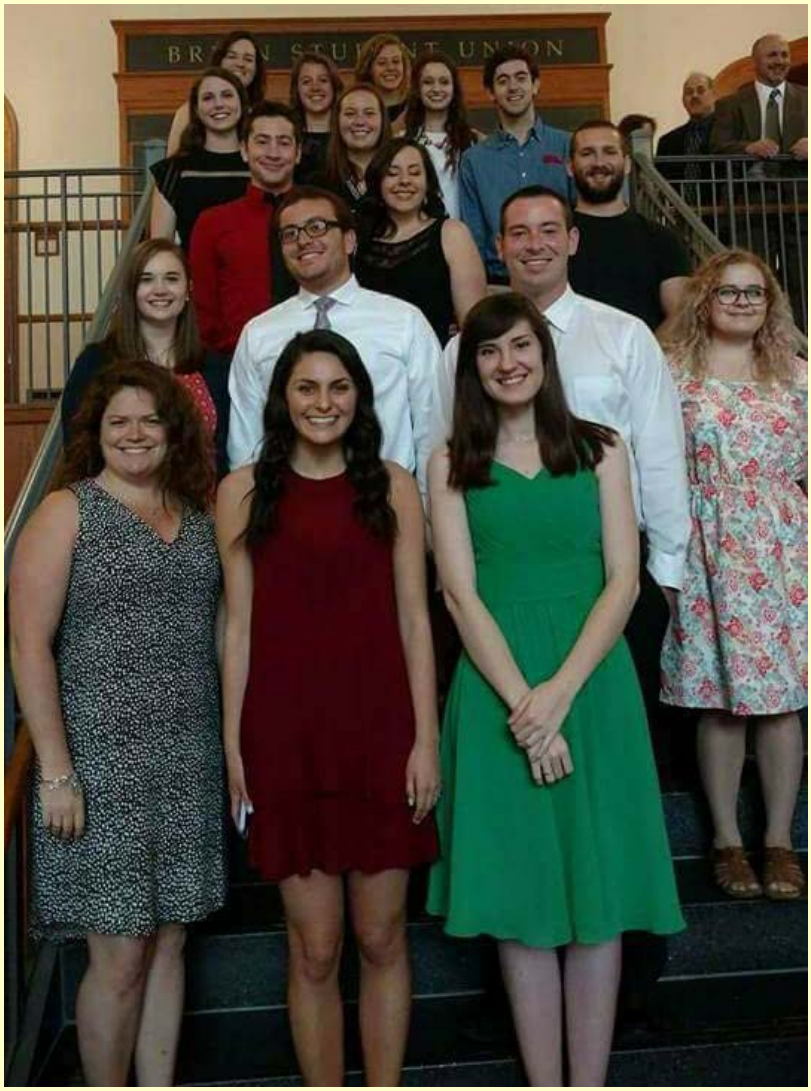
We brought in three speakers, the first being Alex Abel (CHEM, '16, pictured below), who is currently at the University of Akron pursuing her PhD. She spoke about her research into the development of new methods of drug delivery and shared about her experience during the first two years of grad school. Professor Seth Childers from the University of Pittsburgh spoke second about his research in engineering two-component signaling pathways in bacterial systems. Our final speaker was Mark Riggio, Senior Marketing Manager in charge of social media for Hyde Marine, a subsidiary of Calgon Carbon. He captivated our students with do's and don'ts of making scientific presentations, as well as helpful instructions for how to present themselves effectively during interviews.



A secondary goal of the program is to develop more connections. Hosting Dr. Childers was a great chance for our students to make a very favorable impression on him, as he sits on the graduate admissions committee at Pitt. The connection with Mark Riggio originated thorough the summer internship Danielle Hiener completed at Calgon Carbon in Pittsburgh, and we hope to build on this relationship in the years to come.

Graduation 2017

This year's Grove City graduation was very different, due to the presence on campus of Vice-President Mike Pence, who served as the graduation speaker. It meant that we had to move our annual Chemistry Department Graduation Breakfast for graduates and their families from the STEM Atrium to the Student Union building. STEM was used for lining up the graduates, and for security purposes had to be cleared before the lining up process began. Secondly, again for security, all attendees had to go through metal detectors, so the Quad was fenced off and could only be entered through a checkpoint between STEM and the PLC. While there was apprehension that the security screening could lead to long lines waiting to enter, the entire process went smoothly.



While we couldn't match the record number of graduates from the year before, the class of 2017 was still a very large one of 21 (only the second time we've graduated over 20 in a year since 1998, both in the last two years).

The graduates are going in many different directions. One is getting a PhD in chemistry at Notre Dame, one is going to medical school at Michigan, one is in dental school at Temple, two are in pharmacy school, one is in a master's degree program in biomedicine, one is pursuing an MBA at Pitt, one is in a Certified Assistant program in preparation for applying to DO/PA schools next year, two are working in the chemical industry, two are teaching high school, and one has joined the State Police Academy in Virginia. Several of them are planning to apply to medical school in the years ahead, and one is planning for law school. It's exciting to see the breadth of careers this class is pursuing hearing about what they accomplish.

We were gratified that four of our students, three chemistry majors and one biochemistry major, earned ACS-Certified degrees, making a total of ten in the first three years we could offer the certification.

Front row: Kristi Riesmeyer, Natalie Silk, and Emily Tharnish. Second row: Katie Prescott, Jim Covatto, CJ Hils, and Emily Horn. Third row: Nate Reilly, Lizzie Martin Reilly, and Jordan Herder. Fourth row: Briley Langehans, Hannah Derwick, and Gabe Imhof. Last row: Rebecca Holmes, Haley Nolf, Katie Baldwin, and Becca Caswell. Not pictured: Vanessa Hundley, Amanda Hutzelmann, Dan Wallace, and Kayla White.