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http://www.wooster.edu/Academics/Areas-of-Study/chemistry
http://www.wooster.edu/Academics/Areas-of-Study/bcmb

Editors: Diane Rossey and Mary Cornelius
Greetings from the Chairperson

Dear Friends and Alumni of Wooster Chemistry:

This entry marks the third and final year of my tenure as Chairperson of the Department of Chemistry. It has been a very busy three years with many changes for the Department. I express sincere thanks to my students who graciously accepted my lack of focus on their mentoring during these past three years as I attempted to balance my duties as a teacher, researcher, scholar, building shepherd, and department chair. I also sincerely appreciate my colleagues, both faculty and staff, who are dependently generous with their time, energy and creativity in supporting the many functions of our excellent program. I doubt there is another department with individuals who have the same dedication to its students and mission as we do here at Wooster; Wooster Chemistry is a truly a wonderful place to work and learn. As you read through this annual report for the 2015-16 academic year, I hope you continue to greatly appreciate and respect, as I do, the many successes and accomplishments of the students, faculty, staff, and alumni of our great Department.

As has continued from my first year as chairperson, our number of graduates has continued to increase. In 2016, we had 24 chemistry graduates, 16 of whom achieved the A.C.S.-certified chemistry degree. Seven of the chemistry graduates immediately entered graduate school and at least three more plan to pursue graduate school after taking a year to pursue other interests. Likewise, for Biochemistry & Molecular Biology, 22 seniors graduated, plus 2 in Neuroscience-BCMB. Six of the BCMB graduates entered graduate school immediately and five have plans to do so in the near future. In addition to pursuing a Ph.D., many of our graduates are choosing science careers including many forms of health care, industry research, and teaching. For the upcoming year, we are anticipating approximately 30 Chemistry and 30 BCMB seniors in the graduating class. Thus, over the past decade our total number of graduates from the Department of Chemistry has more than doubled.

Although every graduate has an opportunity to complete a significant research project through our Senior I.S. program, a greater number of students are seeking additional research experiences during the summers leading up to their senior year. We highly encourage these experiences as they help students prepare for the I.S. process and enable them to identify and focus their post-Wooster and career aspirations. We greatly appreciate the support that we’ve received from alumni for the Theodore Williams Summer Research Endowment. This endowed fund is a great way to help support student summer research experiences. In addition, I would like to thank the alumni who have also supported our call for funds to enhance our instrument acquisition endowments. Those generous donations will allow us to acquire important state-of-the-art chemical instrumentation for supporting student research projects in both Senior I.S. and the labs within our curriculum. Moreover, I write to share the exciting news that the National Science Foundation has recently awarded the Department of Chemistry a grant for $343,697 to acquire a new 400 MHz NMR spectrometer. That grant will replace our now obsolete NMR that directly supported some 120 student research projects and 1,100 organic chemistry students over the past 15 years. I sincerely thank Dr. Paul Bonvallet for coordinating the writing of this important and successful proposal on behalf of the Department.

Preparation for the construction of the Ruth W. Williams Hall of Life Sciences has ramped up this year. In fact, Mateer Hall was demolished this summer and construction will begin in early fall. Williams Hall will connect to Severance Hall on three floors; integration with Severance will enable more collaboration between Chemistry and Biology and provide important support for the Interdepartmental Programs in Biochemistry & Molecular Biology as well as Neuroscience and Environmental Studies. The design of Williams and its integration with Severance necessitates some redesigning of the classrooms and laboratories in Severance, predominantly along the main corridor that runs north and south through Severance. The main concourse through Williams Hall will extend from that corridor and will enable a seamless connection of the two teaching/research facilities. A major change for Severance will be the moving of our main office from Severance to Williams as a new interdepartmental office is created. The space currently occupied by the main office in Severance will then need to be renovated to become a new learning space that continues to promote a vibrant and scholarly community for the Department of Chemistry. We are currently working with architects to determine what new ideas for classroom, student study spaces, and meeting spaces this area of Severance can support. If you have interest and resources to help us renovate the office into a dynamic space to support our learning communities, please contact us!

In other news, I extend my deep appreciation to our visiting colleagues who taught and mentored students and have new plans for next year. Dr. Chris Durr has accepted a postdoctoral research position at the Oxford University, England; Dr. Elana Stennet has taken a tenure-track faculty position at Hobart and William Smith College in Geneva, NY; and Dr. Benjamin Williamson has taken a tenure-track faculty position at Utica College in Utica, NY. We wish each of them success and happiness in their new positions.

In January 2016, Diane Rossey, Administrative Coordinator of the Department, retired after 37 years with the College. Her many contributions to the department will be long-lasting. We wish her good health and happiness in retirement. I am delighted to share that Mary Cornelius, who was our part-time secretary, has taken the Administrative Coordinator position; we will continue to be in good hands. I sincerely thank the efforts of both Diane and Mary for creating, assembling, and editing this annual report. To close, I thank you for your continued interest and support of our department. And, as always, if you have ideas to share or become inspired to get involved in some element of our programs, please contact us.

Best,
Mark J. Snider,
Robert E. Wilson Professor of Chemistry and Chairperson
Department of Chemistry Faculty

Judy Amburgey-Peters, Mark Snider (Chair), Karl Feierabend, James West, Sarah Sobeck, Chris Durr, Elana Stennett, Ben Williamson, Paul Edmiston, Mike Peterson

Paul Bonvallet — On Leave
Faculty

Judith C. Amburgey-Peters
Organic Chemistry

Judy hosted the Helen Murray Free Lecture series welcoming Ned Heindel, H. S. Bunn Chair, and Professor of Chemistry at Lehigh University. A major event for the Department, the Free Lecture celebrated its 10th Lecture, hosting several events with faculty and students in addition to the two seminars (one technical and one public). We were honored once again to have Helen Free join us. Her visits continue to inspire us and her personal support is appreciated.

For the second year, Judy continues to chair the STEM Advisory Board, coordinating numerous faculty and staff to create an inclusive community of students, staff, and faculty engaged in introductory STEM courses. From this collaborative effort, The Zone continues as the STEM learning community with its home in Kittredge Dining Hall. Members of the advisory board include representatives from the biology, chemistry, and math faculty, CDGE, Learning Center, and APEX in collaboration with the Dean of Students, Director of Educational Assessment and the Provost. Central to the day-to-day coordination of the growing program, Kara Melrose was hired as the STEM Zone Coordinator. The College of Wooster’s MLK celebration included a Justice Dialogue workshop on Diversity and Inclusivity in STEM coordinated by the STEM Advisory Board. Participation by students and faculty was outstanding and is helping to guide the STEM Advisory Board in addressing the inclusivity concerns and needs of our students.

The tradition of the organic faculty’s “Chemistry of Thanksgiving” presentation caught the attention of the campus radio station WCWS-FM. Judy and Paul Bonvallet (with contributions from Mike Peterson) were interviewed for a story in The Akron Beacon Journal published online November 25, 2015 entitled “Don’t blame the turkey if you feel snoozy; the bread and the basket share molecular formula and other Turkey Day science.”

Judy helped coordinate the Junior I.S. alignments for the Department and chaired the staff search committee for the academic administrative coordinator vacated through the retirement of Diane Rossey. She assisted with the grant proposal for the NMR.

A co-authored book chapter by Judy and Paul Bonvallet regarding the use of NMR in undergraduate curriculum was accepted for publication; “Spectroscopy First’ for Interweaving and Scaffolded Learning in Organic Chemistry” in the ACS Symposium Series on NMR in the Undergraduate Curriculum.
Paul was on research leave during the 2015-2016 academic year. He collaborated with Paul Edmiston to investigate the formulation, processing, and properties of Osorb® at ABS Materials in Wooster. This swellable organosilicate material absorbs many times its own weight in organic solvents and other petrochemicals. As a follow-up to his research leave, in the summer of 2016, Paul contributed to the Research Experiences for Undergraduates (REU) program administered by the Department of Physics. This award from the National Science Foundation supports a broad range of collaborative research projects in materials science, physics, and chemistry. Paul advised two students, Zane Thornburg ’18 (chemistry-physics double major) and Tyler Branscum (Ohio University student), who explored the mechanical, physical, and spectroscopic properties of Osorb®. They measured the force that is generated when Osorb® swells.

While on leave, Paul was invited to present at two ACS Meetings, one in Boston and another in Covington, Kentucky. The tradition of the organic faculty’s “Chemistry of Thanksgiving” presentation caught the attention of the campus radio station WCWS-FM. Paul and Judy Amburgey-Peters (with contributions from Mike Peterson) were interviewed for a story in The Akron Beacon Journal on November 25, 2015 entitled “Don’t blame the turkey if you feel snoozy; the bread and the basket share molecular formula and other Turkey Day science.”

Paul continued his involvement with the Advanced Placement Chemistry program, serving as an Exam Leader for the 2016 reading in Salt Lake City. Nearly 150,000 exams were scored (thankfully with lots of help). Paul was responsible for the several thousand “alternate” exams administered after the primary examination date. At the end of the reading he was named Chief Reader Designate and will lead the writing and scoring of the main operational exam starting in 2017.

The NMR was a key focus for Paul this past year. As our nuclear magnetic resonance (NMR) spectrometer celebrated 15 years of service, we estimate that 15 permanent, visiting, and emeritus faculty; 120 undergraduate laboratory assistants; 120 undergraduate researchers; and 1,100 organic chemistry laboratory students have used it. Researchers have generated nearly 250,000 files on the workstation, corresponding to about 12,000 spectra. An additional 5,000 spectra have been acquired in several of our research-modeled undergraduate laboratory courses. While the NMR continues to perform well, the instrument has become obsolete and the manufacturer no longer makes replacement parts. Paul was the principal investigator, in collaboration with many other faculty within the Department, on a $340,000 grant proposal for a new instrument from the Major Research Instrumentation program at the National Science Foundation. A co-authored book chapter by Judy and Paul Bonvallet regarding the use of NMR in undergraduate curriculum was accepted for publication; “Spectroscopy First’ for Interweaving and Scaffolded Learning in Organic Chemistry” in the ACS Symposium Series on NMR in the Undergraduate Curriculum.

Upon returning to Wooster from leave, Paul will assume the duties of Department of Chemistry Chairperson.
Christopher Durr joined the faculty as a one-year visiting inorganic assistant professor. He completed his Ph.D. in Chemistry and Biochemistry at The Ohio State University in May 2015. While at OSU, he was named a Presidential Fellow, an award given to only 20 students. He earned his Bachelor of Science in Chemistry from Kent State University in 2010.

While at Wooster, Chris involved four students, Kirstin Holm (‘17, CHEM), Kate Longo (‘18, BCMB), Kevin Wokosin (‘18, CHEM), and Austin Khara (‘18, CHEM) in his research, which focused on fine-tuning organometallic catalysts by forming bonds between a metal containing ligand and the catalytic metal center. By changing the electronics of the catalyst through metal bonding one can maintain better control and selectivity over reactions such as the ring-opening polymerization of lactide and nitrogen reduction. He and his students were able to produce several promising aluminum, copper and zinc catalysts this year.

Chris became involved with the Introductory Science Faculty Learning Community (ISFLC), working with other introductory faculty on issues such as retention of underrepresented minorities in STEM.

We wish Chris all the best as he transitions into the next phase of his career. He will be joining the University of Oxford, England, as a Post-Doctoral Research Associate.

COURSES TAUGHT

**Fall Semester**
- Organic Chemistry I Lab
- Inorganic Chemistry
- Inorganic Chemistry Lab (two sections)

**Spring Semester**
- Principles of Chemistry
- Advanced Inorganic Chemistry
- Introduction to Independent Study (co-taught with Judy Amburgey-Peters, Paul Edmiston, and Elana Stennett)

**Independent Study**
- Joseph Whiston – Chemistry
Paul L. Edmiston

Analytical Chemistry

A new addition to the Department of Chemistry’s webpage features a video with Paul and several of his advisees and their perspective on Independent Study, the mentored undergraduate research, and their involvement in Osorb®. This was developed as part of Paul’s work as the admissions liaison for the Department. The goal of this relationship is to showcase student projects, specifically those that involve translational research such as Taylor Bowen’s (‘16, CHEM) research with Plant Booster.

Three of Paul’s advisees received APEX fellowships working in industry and government organizations. Kimberly Carter (‘16, CHEM) and Jonathan Nutt (‘16, BCMB) presented in primary divisional sections at the National American Chemical Society Meeting. Kim and Jon’s posters were selected by organizers for the notable and highly attended SciMix session. Kim participated as a scribe for the NSF food and energy workshop Paul co-chaired.

A forensic trial was held again this year in the CHEM 215 course. Paul and Elana Stennett devised a fictitious plot for the case of a terrorist bombing. The case became topical due to the bombing in Brussels. The students did excellent work. Local attorney and COW alumnus, Mike Buytendyk (’76) was the judge for the mock trial.

In the Department, Paul collaborated with Judy Amburgey-Peters and Paul Bonvallet on a significant course revision for Junior I.S. (CHEM 401) to better reach the educational goals set by the Department, incorporating a greater emphasis on higher order skills such as analysis and critical thinking. In addition to being the admissions liaison, Paul oversaw the upkeep of the instruments. He chaired the search committee for the tenure track analytical chemist. For the College, he served on the Faculty Leave Committee.

Off campus Paul co-chaired the ACS Division of Analytical Chemistry Graduate Fellowship Committee. Most significantly, he co-chaired the influential NSF workshop: “Food Energy-Water Systems Challenging Chemists and Chemical Engineers in the 21st Century.” His work with the NSF workshop has led to new areas of research funding to address grand challenges in food and energy production.

Paul attended a symposium on methods to teach analytical chemistry at the PITTCOn conference, and was invited to review papers for Analytica Chimica Acta and proposals for the National Science Foundation. He continues to collaborate with sabbatical host Dr. Umit Ozkan, Department of Chemical Engineering, The Ohio State University, on catalytic versions of Osorb® media.

Through his work with students and colleagues at ABS Materials, six granted patents and six patent applications have been produced. To date he has received 9 granted patents that have led to a number of commercial products.

This summer Paul began a project studying treatment methods at the City of Chicago wastewater treatment plants, as initiated by Melissa Schultz and funded by the NSF.
In the fall semester, Karl taught two sections of Introductory Chemistry (each with 40 students), which afforded him the opportunity to perform a pedagogical experiment. He taught one section the way he normally would, which involves some interactive lecture and group problem solving, and utilized interteaching exclusively in the other section. Interteaching is an inverted classroom technique that emphasizes student-led learning. Each class begins with a brief clarifying lecture from the instructor, followed by student-paired discussion of homework questions, and finally student feedback to inform the next class’s clarifying lecture. Interteaching significantly reduced the amount of passive lecture time over the course of the semester. Results from the study, which was performed in collaboration with Bryan Karazsia (Psychology) are in the process of being analyzed and summarized for publication in the coming year.

In the spring, Karl was excited to join Brett Baker in teaching one section of Principles of Chemistry Laboratory for approximately half of the semester. Karl and Brett had previously worked to develop a guided inquiry module for the course involving spectrophotometry and chemical kinetics. This was the first time Karl experienced teaching the module first-hand, and he learned a great deal about how it seems to be helping students think about experimental design, troubleshooting, and interpretation of results. Brett plans to develop additional modules in other areas in collaboration with Karl and Sarah Sobeck in the coming summers.

Understanding a special class of hydrogen bonds via pi-electrons continues to be a research focus for Karl. His research student from the previous summer, Bailey Bowers (‘17, CHEM), presented her work on this project involving the benzene-phenol complex at the Spring ACS meeting. Karl also had a Sophomore Research Project student, Liza Backman (‘17, CHEM), help complete some work on the project this year, and he plans to wrap up the benzene-phenol complexation project this summer for publication. Another I.S. student is planning to continue work on a different part of this project in the coming year.

Nathan Gimble (‘16, CHEM) completed his I.S. this year on the photooxidation mechanism of aqueous malonic acid, a dicarboxylic acid found in significant quantities in atmospheric aerosols. His work helped move Karl’s research forward in this area, which entails photooxidation of atmospherically relevant aqueous organic acids. Three I.S. students will be working with Karl next year in a similar project that marks a new direction: photochemistry of aqueous pollutants in natural water and wastewater.

During the 2015-16 academic year, Karl was elected to the College’s Committee on Committees, which he chaired. He also served on the STEM Advisory Board and Classroom Stewards Committee.
COURSES TAUGHT

Fall Semester
- Techniques in Biochemistry & Molecular Biology
- Principles of Biochemistry
- Gateway to Molecular and Cellular Biology Lab

Spring Semester
- Principles of Chemistry
- Biochemistry of Metabolism
- Techniques in Biochemistry & Molecular Biology (co-taught with Stephanie Strand, Biology)

Independent Study
- Michael Andes – BCMB
- Ellyn Evans – BCMB
- Oluwadamilola Onakomaiya (Biology, fall semester only)

Melissa Mullen Davis
Biochemistry & Molecular Biology

Melissa completed her second year as a Visiting Assistant Professor of Biochemistry and Molecular Biology and taught courses in the Biology, Biochemistry, and Chemistry programs. In the fall semester, Melissa developed a new research project for students in the Techniques in Biochemistry and Molecular Biology laboratory focusing on a bacterial transcription factor and its DNA and small molecule binding partners. Students worked on a new project and performed techniques not commonly used in this lab, including binding assays such as gel shifts and fluorescence. In the spring semester, Melissa taught Principles of Chemistry as a Tuesday-Thursday course and took advantage of the longer class format to incorporate group problem solving sessions and minimize traditional lecture.

In the laboratory, Melissa worked with three independent study students and two Sophomore Research assistants on new projects investigating the role of non-coding transcripts in response to stress in the model plant species *Arabidopsis thaliana*. While research started slowly because of laboratory protocol development, the IS students collected high quality preliminary data suggesting that long non-coding RNAs play a role in the salinity stress response.

On campus, Melissa was the interim advisor for the Pre-Dental Club while Paul Bonvallet was on leave and was also an advisor for one of the 4 Paws for Ability program houses. In the summer of 2016, Melissa attended the OH-PKAL Evidence-Based Practices in Undergraduate STEM Education Conference in Columbus and worked with The College of Wooster’s B-WISER Alumnae Camp, leading the forensic chemistry sessions.

This year, Melissa extended her three-year visiting term, adding an additional two years, for a total of five years. Melissa will be on leave for the fall 2016 semester, as she and her husband prepare to welcome the birth of their first child.
The Peterson family grew this year with the birth of Mike’s second son, Archer, who was born on March 29, 2016.

In the classroom, Mike had his first exposure to teaching his first true chemistry love, under the guidance of a master (Judy Amburgey-Peters), as part of the team that taught both semesters of organic lecture and lab. An exciting part of the laboratory portion was the inclusion of a reaction from his lab’s research, generating some interesting results while teaching about important C–C bond formations and producing 20 grams of starting material for the Peterson lab.

The first three IS students graduated from the Peterson lab this year and were each accepted to multiple graduate programs. Along with IS research, Mike welcomed 3 sophomore researchers into his laboratory during the fall and spring semesters: Michaela Lawrence (‘18, CHEM), Lindsay Robinson (‘17, CHEM), and Lango Sichizya (‘18, NEURO/BIO). Michaela received a Hollings scholarship through the National Oceanic and Atmospheric Administration to fund research during the summer of 2017, and Lango was awarded an APEX fellowship that funded his medical internship at the University Teaching Hospital in Zambia. Mike is proud of his student’s accomplishments and is honored to have been a part of their intellectual growth and research training.

In the realm of collaborative research, Mike oversaw the synthetic research efforts of two of Dr. Snider’s advisees, Morgan Dasovich (‘16, BCMB) and Nick Lesner (‘16, CHEM), to complement their biochemistry work on the nicotinic acid degradation pathway. From these efforts, a new nicotinic acid analog suspected to be a biosynthetic intermediate was generated for the first time, and was applied as a tool to study the pathway with isolated enzymes. Both students presented papers at the annual ASBMB meeting based on this work. Ben Williamson collaborated on the Peterson lab research by pushing forward synthesis of critical project intermediates, and remains a collaborator in his new assistant professor position at Utica College. Elana Stennett worked with Mike to initiate her work on synthesis of peptides associated with biofouling, work that she is continuing at her current assistant professor position at Hobart and Williams Smith Colleges.

During the summer 2016 suspension of research in Severance Hall, Mike traveled back to the University of Minnesota to prepare his graduate work for publication to follow up on patent applications based on the molecules he discovered. During this time, Mike, his wife Sarah, and boys Dexter (4 years) and Archer were able to travel around and see family in their home state of Minnesota. At the end of the summer, Mike participated in the Cottrell New Faculty Workshop through the ACS where he was exposed to improved methods of teaching based on active learning techniques, and was able to make connections to other new faculty from around the country.
This year Mark spent much of his time working with Dean Fraga (Biology) and the architects (EYP) on the Ruth W. Williams Hall of Life Sciences Facility. This entailed organizing the visits of the architects to campus to meet with faculty and staff to finalize the building designs, reviewing details of schematics and construction drawings, working with Wooster’s excellent facilities team with mechanical engineering design, presenting project updates to various campus community groups, and assisting with fundraising efforts by traveling to meet with alumni to discuss elements of the project and vision for changes to our program.

Mark enjoyed teaching a new topic in FYS centered around the topic of Choices – the seminar studied the psychology of decision making using the text Thinking Fast and Slow (by Daniel Kahneman), learned some history of how groups make decisions using the text Collapse: How Societies Choose to Fall or Succeed (by Jared Diamond) and explored choices in science and athletics by discussing David Epstein’s book The Sports Gene. Overall he found it to be an exciting and rewarding class, especially since it was team-taught with Dean Fraga (Biology).

Mark continued collaboration with Katherine Hicks (SUNY -Cortland) on the structure and mechanism of NicC – a flavin-dependent monooxygenase that catalyzes a relatively novel decarboxylative hydroxylation reaction involved in nicotinate catabolism. Their work on this enzyme with students was published in Biochemistry this year. All six of his I.S. students focused their I.S. projects on an element of nicotinate degradation – from exploring whether nicotinate can be degraded by Bordetella pertussis, to synthesizing the novel intermediates hypothesized to be part of the nicotinate degradation pathway in Bacillus niaicini, to mechanistic studies of specific enzymes in the pathway. In addition to these I.S. students, Mark mentored Laura Sherer (’17, BCMB) and Kent Nakamoto (’18, CHEM) in research this past year.

Mark served as an external curriculum reviewer for the Department of Chemistry at Elon University in North Carolina. In May, Mark gave an invited research talk at the Regional A.C.S. meeting in Covington, KY. Matt Henke (’11, BCMB) also presented a research lecture in the same symposium.

This summer, Mark is helping the Department navigate the construction process as well as an extensive upgrade to Severance’s chemical fume hood system. In July, Mark and his family [Mindi, Ellie (13), Eric (11), Katie (8) and David (6)] are taking a 25-day camping trip in the Northwest. They will be kayaking on Lake Superior, around Pictured Rocks (MI), and the Apostle Islands (WI), and hiking the trails in Glacier (MT), Yellowstone (WY), Theodore Roosevelt (ND), Black Hills (SD), and the Badlands (SD) National Parks.

Mark received released time for his role as Shepherd for the new Ruth Williams Hall of Life Science facility.
Sarah J. Sobeck  
Physical Chemistry

Sarah returned from her research leave this year with a greater focus on photochemistry and cultural heritage examining the degradation of organic dyes and pigments. Her group also continues its studies of charge transfer processes in para-aminobenzoic acid (PABA) derivatives. For both systems, primary goals are to assess the impact of the environment upon the photostability of the compounds and evaluate the degradation kinetics as a function of solvent and ambient environment. A secondary aim is the synthesis of novel PABA derivatives to tune the physicochemical properties.

Sarah accepted a new role on campus serving as The College of Wooster’s Alliance Liaison for the GLCA Global Crossroads Grant. “Global Crossroads is a grant supported initiative to advance internationalization of the programs of learning that define our undergraduates’ experience of the liberal arts.” The grant supports programming for both institutional and individual (faculty/student) work to support its goals. She traveled to GLAA (Global Liberal Arts Alliance) partner institutions John Cabot University in Rome for a meeting in January and to Ashesi University in Ghana in June to co-lead a faculty development workshop.

In the Department of Chemistry, Sarah served as the assessment coordinator and chaired the inorganic chemistry professor search committee. On campus Sarah began her term on the Teaching, Staff, and Tenure Committee and continues to serve as an ARCH advisor. In her outreach efforts, she continues to work with the B-WISER Science Camp and Expanding Your Horizons. Both programs encourage girls to explore science and consider science-based careers. Her professional outreach includes serving as an external reviewer for several papers and grant proposals during this past year, and as an outside reviewer for John Carroll University’s chemistry department. She continues her role as the chair for the ACS local section.

This summer Sarah attended the Gordon Research Conference on Scientific Methods in Cultural Heritage Research in Newry, ME. She presented her group’s work on the photodegradation of cochineal. This included work of two I.S. students, Erin Drake (’16, CHEM) evaluating paint stability on different surfaces and Amanda Carmichael (’16, CHEM, RELS) measuring pH effects. Two students, Madeline Thomas (’17, CHEM) and Gabriela Jocas ’19, worked with Sarah this summer; supported through her continuing ACS – Petroleum Research Fund grant.

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This summer Sarah attended the Gordon Research Conference on Scientific Methods in Cultural Heritage Research in Newry, ME. She presented her group’s work on the photodegradation of cochineal. This included work of two I.S. students, Erin Drake (’16, CHEM) evaluating paint stability on different surfaces and Amanda Carmichael (’16, CHEM, RELS) measuring pH effects. Two students, Madeline Thomas (’17, CHEM) and Gabriela Jocas ’19, worked with Sarah this summer; supported through her continuing ACS – Petroleum Research Fund grant.
Elana Stennett was thrilled to have the opportunity to come back to Wooster to serve as a Visiting Assistant Professor of Chemistry during the 2015-2016 school year. After graduating from Wooster in May 2010, she attended graduate school at Arizona State University. Upon completion of her Ph.D., she came back to fill in for the analytical track because “when Wooster comes calling, you must say yes.”

Due to her background, Elana taught a variety of different courses for the Department starting with Introductory Chemistry, Instrumental Analysis, and a Physical Chemistry lab in the fall while her spring courses included Analytical Chemistry, Biophysical Chemistry, and Introduction to Independent Study. As a part of her role as a teacher of Introductory Chemistry, she participated in Introductory Science Faculty Learning Community (ISFLC) in the fall and worked with other introductory faculty on issues such as retention of underrepresented minorities in STEM. Throughout the year, she enjoyed the opportunity to team teach a variety of labs including Junior I.S. in the spring. Being on the other side of the desk was a very insightful learning opportunity. In fact, she enjoyed it so much, she will be moving to Hobart and William Smith Colleges in Geneva, New York, to begin a tenure track position in the chemistry department in the fall of 2016.

During the spring, she also advised a sophomore researcher, Emily Walker ('19). Emily assisted in helping Elana start her research lab. Elana’s research focuses on investigating and understanding interactions that lead to biofouling of membranes particularly as it relates to water purification. Elana plans to use fluorescence spectroscopy to study these interactions, and Emily’s work helped to build a foundation of knowledge from initial investigative photochemical studies.

Elana also had the opportunity to attend a number of workshops focused on pedagogies and active learning including Cleveland State University’s 2016 Annual Chemistry Teaching Symposium and Education Exhibition and the Ohio Project Kaleidoscope (PKAL) Second Annual Conference at Capital University in Columbus, OH. In addition, she won funding to attend the Southwestern University Inquiry Initiative in Georgetown, Texas, in June 2016.
Ben joined the Department in July of 2015 as a one-year Visiting Assistant Professor of Chemistry, temporarily assuming the teaching duties of Professor Paul Bonvallet who was taking a year of research leave.

Ben’s research interests include the design and synthesis of antibiotics to combat emergence of resistant bacteria as well as novel synthetic methodology. He received his B.S. in chemistry in May of 2009 from LaGrange College in LaGrange, Georgia, a small liberal arts college near the border of his native state of Alabama. Following his undergraduate studies, he travelled from the hilly forests of Georgia to the open fields of Iowa. He completed his Ph.D. in Pharmacy/ Medicinal Chemistry at the University of Iowa in May of 2015. After deciding that six years of insane Midwest weather just wasn’t quite enough, Ben (and his trademark collection of vests) travelled to Ohio to begin a new adventure in college-level teaching, a passion he had discovered during his own college experience.

This year proved to be a fantastic learning experience for Ben as he took his first steps into the world of college-level education. He was also able to join colleague Michael Peterson, another visiting professor, in his efforts to synthesize a novel auxiliary for use in peptide synthesis.

Following the completion of his one-year professorship at The College of Wooster, Ben is moving into the tenure-track position of Assistant Professor of Chemistry at Utica College in Utica, New York.
James D. West

Biochemistry & Molecular Biology

During the 2015-2016 academic year, James taught Principles of Biochemistry, Techniques in Biochemistry & Molecular Biology, Gateway to Molecular & Cellular Biology, Chemical Biology, and Introduction to Independent Study.

He mentored five I.S. students in the BCMB and Biology programs and worked with five sophomore research assistants, Brianna Bauer (’17, BCMB), Nathan Browstein (’18, BCMB), Min Goo Kang (’18, BCMB), Matthew Pleshinger (’18, BCMB), and Afton Widdershins (’19). Over the summer of 2015, he presented a poster at the Gordon Conference on Stress Proteins in Growth, Development, and Disease (held in Tuscany, Italy).

In January, James attended the Midwest Stress Response and Molecular Chaperone meeting in Evanston, IL, where five of his research students, Kristin Allan (’16, CHEM), Brianna Bauer (’17), Matthew Loberg (’16, BCMB), Joseph (Ned) Kelly (’16, BCMB), and Matthew Pleshinger (’18) presented posters on their work.

James received a $9,000 research grant from the Mindlin Foundation during the year to support his work with students over the next two summers. He recently moved to Houston, Texas, to begin part of his sabbatical work in the laboratory of Kevin Morano at University of Texas-Houston McGovern School of Medicine. Over the summer of 2016, James worked with three Wooster students on research projects focused in two areas: (1) using protein cross-linkers to trap redox centers in proteins, and (2) exploring the mechanism a peroxidase uses to suppress genetic mutations in baker’s yeast.

COURSES TAUGHT

Fall Semester
Techniques in Biochemistry and Molecular Biology
Principles of Biochemistry

Spring Semester
Gateway to Molecular & Cellular Biology
Introduction to Independent Study (BCMB)
Chemical Biology

Independent Study
Kristin Allan – BCMB
Joseph (Ned) Kelly – BCMB
Matthew Loberg – BCMB
Ian Martin – Biology
Colleen Sells – BCMB

James West’s lab folks, fall 2015

Front row, left to right –
Min Goo Kang (’18, BCMB), Nathan Brownstein (’18, BCMB), Brianna Bauer (’17, BCMB), James West

Back row, left to right –
Matt Pleshinger (’18, BCMB), Ian Martin (’16, BIOL), Kristin Allan (’16, BCMB), Matt Loberg (’16, BCMB), Ned Kelly (’16, BCMB)
Scientists attending the 36th Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC) North America paid special tribute to Dr. Melissa Schultz. A special symposium titled “Antidepressants and Perfluorochemicals: Divergent Chemistries, Convergent Environmental Persistence and Effects” was organized in Melissa’s honor where her former advisors, colleagues, and those inspired by her work gave technical talks that included tributes to Melissa groundbreaking measurements in environmental chemistry. Held on November 4th, the symposium focused on how Melissa Schultz’s research opened the world’s eyes to pharmaceuticals and fluorinated compounds in natural waters. Speakers also retold how Melissa was a wonderful mentor to undergraduate students and routinely brought students to the SETAC conference.

A wonderful surprise occurred. At the meeting, it was announced that $10,000 was being raised to endow the Melissa Schultz Undergraduate Travel Award which would provide travel funding to undergraduate students to attend the SETAC conference in the future. At the time of the announcement, more than 90% of the money had been raised from SETAC members and from proceeds from the Fun Run held at the conference. Dr. Paul Edmiston, who represented The College of Wooster at the conference, thanked the SETAC members and expressed how well suited the award would be in remembering Dr. Schultz.

Donations for the Melissa Schultz Undergraduate Travel Award are still being accepted. To donate on-line, access the SETAC endowment page (http://www.setac.org/?page=SNAEndowmentCom) and click “Donate Online.” Simply add “in memory of Melissa Schultz” under “Donor Comments.” Additional donations can help the fund cross the goal-line.
Faculty Publications

Published

Chris B. Durr

Mark J. Snider

Sarah J. Sobeck

Accepted for Publication


*Wooster undergraduate student

Faculty Presentations

Paul A. Bonvallet


Paul L. Edmiston


Strategic Environmental Research and Development Sediments Conference, “Multipurpose Sediment Passive Sampler with Improved Tissue Mimicry to Measure the Bioavailable Fraction” U.S. Army Engineer Research and Development Center, Vicksburg, April 2016.

Invited Seminars:
“Combining Forces: Enhancing Function Through Chemomechanical Hybrid Materials” Indiana University-Purdue, Fort Wayne, IN, March 2016.

Mark J. Snider
Structures and mechanisms of nicotinate catabolizing enzymes: A model system for investigating bacterial N-heterocyclic aromatic compound degradation and for undergraduate education. Central Eastern Regional Meeting of the American Chemical Society; Covington, KY; May 2016.
New Grants and Awards

Paul A. Bonvallet

“REU Site: Cutting-Edge Science in a Close-Knit Community,” (John Lindner, Susan Lehman, PIs; Paul Bonvallet, Niklas Manz, and Cody Leary, Senior Personnel) National Science Foundation – Research Experiences for Undergraduate; $287,892; April 2016-March 2019.

Paul L. Edmiston


James D. West

Mindlin Foundation research grant: “Redox Signaling as a Mechanism of Mutation Suppression by a Conserved Peroxiredoxin” to support work with students over the next two years; $9,005; 2016-2018.

Continuing Grants and Awards

Paul L. Edmiston


COLL, RUI: Assessing Load Reduction and Biological Recovery After 500 MGD Treatment Upgrades in an Effluent-Dominated Aquatic Ecosystem; H. L. Schoenfuss (PI), D. Martinovic (PI), M. M. Schultz (PI); National Science Foundation; $74,099; January 2014 – December 2016.

Mark J. Snider and Stephanie S. Strand (Co-PI)

Influence of Wastewater Treatment on Fate, Transport, and Bioaccumulation of Antidepressant Pharmaceuticals in Terrestrial Environments. National Science Foundation; $99,376; May 2015 – May 2016.

Sarah J. Sobeck

Impact of Solvent-Solute Interactions on Photochemistry of p-Aminobenzoic Acid Derivatives; American Chemical Society, Petroleum Research Fund; $65,000; September 2013 – August 2017.

Proposed Grants and Awards

Paul Bonvallet, PI; Judith Amburgey-Peters, Spring Knapp, Mark Snider, Sarah Sobeck co-PIs; Michael Peterson, Senior Personnel

Patents

Patents Granted/Paul Edmiston

US patent 8,217,131 “Method for extracting a metal particulate from an aqueous solution using a sol-gel derived sorbent.” 17 claims surround the extraction of chelated metals by specialized sorbents.

US patent 8,563,649 “Method of treating a material using a sol-gel derived composition of matter” Filing concerning the use of organosilica to be loaded with and deliver an active ingredient. Use for delivering drugs, pesticides, and other bioactive ingredients.

US patent 8,703,895 “In-situ Method and System for Controlling the Flow of an Organic Liquid” Using swelling media to control flow pipes. Uses in a variety of industries where plugging flow may be useful from a material that can sense hydrocarbons.

US patent 8,754,182 “Sol-gel derived sorbent material containing a sorbate interactive material and method for using the same” Application of specialized media for catalytic hydrodechlorination of chlorinated solvents.

EU patent 2,601,127. “Method and system for applying force against a solid object using a swellable sol-gel derived material”. Describes use of force generating organosilica for chemomechanical systems.

US patent 9,144,784. “Sorbent material and method for using the same.” Composition of matter patent for polymer modified organosilica with functional groups including any nitrogen and sulfur.

Patents Pending/Paul Edmiston


Remembering Melissa Schultz

Students, faculty, staff, friends, and family gathered on Friday, February 5th outside Severance Hall to remember Melissa. Sarah Sobeck shared a reading. All those who gathered made bird feeders from pinecones, peanut butter, and birdseed. Yarn was used to string the cones to tree branches. Careful thought went into this activity to ensure it was environmentally friendly. All materials were biodegradable and the yarn was chosen for birds to use for their nests.
Staff

Summer 2016

The staff took advantage of “props” used to warn visitors of the construction going on in and around Severance Hall. The chemistry building is being prepared for its connection to the Ruth W. Williams Life Science facility. Over winter break, 009 began its transformation into the new mechanical space. The room was gutted and a new floor was installed. In the spring, the day after final exams, the connector lounge between Mateer and Severance was demolished (front cover photo), and the upgrade to the new air handling system for the hoods began. Throughout the buzzing activity of the demolition of Mateer and the removal of its rubble, the staff, faculty, and student researchers, have had front row seats to all the action.

Brett Baker, General Chemistry II Laboratory Coordinator and Adjunct Instructor, duties include teaching, designing curriculum, and preparing materials for the Chemistry 112 lab course. The 2015-2016 was his fourth academic year with the College, and so in May of 2016, the first-year students that started with him graduated. It made this year’s commencement very enjoyable. Brett enjoys theatre, fishing, hunting, and the outdoors. He lives in Doylestown, Ohio with his wife Lara.

Mary Cornelius, Administrative Coordinator, completed seven years of service as the part-time secretary for the Department of Chemistry and began her eighth year transitioning into the role of administrative coordinator upon the retirement of Diane Rossey. Mary worked on developing an online application for the B-WISER Science camp in an attempt to reduce administration time in processing applications. It was a learning year with the system and plans are underway to improve it. In transitioning into her new role, Mary was very grateful that Diane was a wonderful mentor and extremely organized individual. Behind the scenes, Mary spent many hours planning Diane’s retirement celebration. Kristin Feierabend was a great source of support and creativity, helping to make the events a success.

The department was very happy that approval was given to hire a new part-time secretary and was able to hire Michelle Tennant before students returned from spring break. It was helpful to have Michelle arrive in time to help support our seniors and student employees during the busiest time of the year.

Transition is the keyword in the department for this year and the next several. Mary and Beth Snyder, the administrative coordinator for the biology department began planning the physical and logistical changes that will take place when the administrative offices for biology, chemistry, and BCMB merge under one roof in the Ruth W. Williams Hall of Life Sciences. There is still more to be done in this area and collaborative efforts will continue.

Kristin Feierabend, Stockroom Manager, has viewed this past year as one of planning in anticipation of the changes to the Stockroom in the coming years. With the completion of the building of the new Ruth W. Williams Hall of Life Science slated for 2018, it was decided that the Chemistry Stockroom would become a combined Stockroom for the chemistry and biology departments. There will be lots of work to join the policies and practices of the two departments in the coming years, but it is a great opportunity at Wooster for collaboration and interdisciplinary learning.

Kristin spent this year doing all of her normal lab support duties in addition to preparing the Severance Hall Stockroom to accommodate incoming chemicals and supplies from the Mateer Hall Stockroom and labs prior to the demolition of Mateer in May 2016. She also had a large chemical disposal project in March 2016 that focused on old/redundant chemicals in the Organic Storage room and the refrigerators and freezers of the Stockroom. This project removed over 400 unneeded chemicals from Severance.
Diane Rossey began her 37.4-year career at The College of Wooster on September 1, 1978, replacing Esther Smith, as the part-time secretary and working with Betty Hider, Executive Secretary. After Betty retired in June 1983, Diana White was hired but left after four months. Diane Rossey accepted the full-time position, effective October 17, 1983. On July 1, 1999, the position changed from hourly to salary with a title change to Administrative Assistant. On September 1, 2006, she was given the title of Administrative Coordinator, a position she held until her retirement on January 31, 2016.

Prior to coming to Wooster, Diane worked at Bell & Howell Publication Systems Company from January 1972 to May 1978 where her first connections to campus took place. While at Bell & Howell, Diane worked in the Indexing Department in two positions: first as a graphic arts technician preparing copy and printing the newspaper indexes using an offset press, and second as a clerk typist. Also, working in the department was Joan Schilling, Professor Hayden Schilling’s wife. Diane worked with Margaret Powell, later Documents/Reference Librarian at Andrews Library and wife of Dr. David Powell, to produce a printed catalog for the Bell & Howell Black Culture microfilm collection. (Today, the Bell & Howell property is the home of ABS Materials.)

Diane was involved in many interesting projects outside the walls of Severance Hall. In 1985, she worked again with Margaret Powell as production staff for the Government Printing Office’s first Federal Depository Library Manual. She received a congratulatory letter from Donald E. Fossedal, Acting Superintendent of Documents, United State Government Printing Office, Washington, DC, for her “considerable skills” in producing the document. In 1990, Diane worked with Barbara Bell and Margaret Powell to produce The College of Wooster Libraries Building Program Document, a detailed 25-year library building planning and program document. The 150-page document, in a complex outline style with appendices and workflow diagrams, served not only as a basis for informing the Trustees of the
College, but was also an instrument used by the Office of Development in securing funds for the library building project. Because Diane was free to disagree or make constructive suggestions, the document was a better product than it might have been without her insights. Diane also worked part-time in the Physical Education Center office for a short time, and was part-time front desk clerk at The Wooster Inn on second shift from 2001 to 2002.

Diane took an active part on campus committees and organizations. She was elected to the Staff Committee for a three-year term (1993-96), serving as chair her last year. She was a member of the GLCA Support Staff campus group and helped to organize the GLCA Support Staff Conference held at Wooster in October 1993. She attended many Ohio College Personnel Association (OCPA) Conferences and helped to organize both the OCPA 2000 and 2012 conferences when Wooster was host. In 1995 President Hales appointed Diane to the Resources Committee of the Strategic Planning Process for the period 1998-2003. In 1999-2001 Diane was a member of the Advisory Board for The College of Wooster Learning Initiative, participating in the yearlong Professional Development Academy, then moving to an advisory capacity for an additional year. She served on two student Grievance Committees and in 2006 was a member of the Committee to Evaluate the Vice President for Academic Affairs. Diane worked in Arena Registration 1990-99. She shared her love of crafting with the campus community through workshops for the GLCA staff group and with the Student Affairs staff at several of their holiday carry-ins.

Diane became involved in The Wayne Center for the Arts because of campus ties. For many years, she produced the programs for the Wooster Chamber Music Series that Dr. Theodore Williams organized in conjunction with the Wayne Center for the Arts and on occasion, provided secretarial support in the Center’s office. A side benefit was taking pottery classes with Carli Moorefield.

Within the walls of Severance Hall, Diane’s involvement was far reaching. At the beginning of her career, she typed Independent Study theses for chemistry majors. Those that she can recall were for Kim Lance (1982) and Pek Lee Choo (1985). In 1986, she worked with Dr. Paul Gaus on a major publishing project for John Wiley and Sons, Inc., Publishers. She produced camera-ready copy of a 440-page paperback book that contained answers to exercises in the text Basic Inorganic Chemistry, Second Edition by Cotton, Wilkinson, and Gaus, Wiley, New York, 1987. The work required the most detailed and exacting scientific word processing that was possible at that time. It took 12 months to complete the project, requiring accurate work throughout. Diane’s commitment to excellence was critical in this work and her understanding of chemical symbols, equations, and formulæ were quite valuable. In 1990, Diane worked with Dr. David Powell inputting portions for the Research in Chemistry at Undergraduate Institutions, Fourth Edition. It was noted that the 15 department entries that they worked on made a substantial difference in completing the directory. Brian Andreen, Grants Program Coordinator for Research Corporation, commented that “the quality of the work was excellent, probably the best of all the lot.” Diane had an artistic hand in the preparation of announcements for campus groups: COSEN Women in Science, PSI, Science Roundtable, and Chemistry Club.

In her role as secretary to the Department of Chemistry, Diane provided complete secretarial support for chemistry faculty and staff. In 1978, she used an electric typewriter without a correction ribbon and a ditto machine for multiple copying. There were only two phone lines into Severance Hall, a buzzer system was used to let faculty know they had a phone call. Diane typed purchase orders in duplicate, placed orders by phone, and departmental ledgers were handwritten. Notices to students were sent by campus mail through the College Post Office. As could be expected, Diane saw many changes in technology. The introduction of computers in the early 1980’s brought the most significant of these changes. The one thing Diane truly missed was typing course materials, specifically organic chemistry exams. The current position, that of Administrative Coordinator, is more administrative then secretarial.

Diane came into contact with over 1,030 Chemistry, Chemical Physics, Biochemistry, and Biochemistry & Molecular Biology Majors. She worked for 49 faculty members. Diane’s organizational skills and attention to detail were put to use in the planning of the James T. McFarland Memorial Lectures (1992-2002); the symposium, The Role of Science in Society, to mark the completion of the renovation and expansion of Severance Hall (April 14-15, 2000); the Premier Lecture Series (2002-04); the Paul L. Gaus Alumni Symposium in celebration of Dr. Gaus’ career (March 28, 2009); and the annual Helen Murray Free Endowment Lectures (2007-present).

While excited about retirement, Diane was sad to be leaving the Department of Chemistry. She genuinely enjoyed her employment in the Department. Her years in the Department were the best of her working life, and she is proud of her contributions. She will miss the many personal and professional relationships that she has developed over the years. The halls of Severance and those who have passed through them made a huge impact on her life.

Diane plans to spend more time with family, redesign her flower gardens, master her new sewing machine, knit, and learn to crochet. She is looking forward to having more time to spend on preparing entries for the Wayne County Fair — competitors beware!!!
Emeriti Faculty

Roy Haynes
At this year’s alumni reunion, Roy Haynes had the pleasure of talking with several chemistry majors, including two of his I.S. students, from the 50-year class, 1966. At the request of the Class of 1966 reunion committee, the Alumni Office scheduled a tea on Friday afternoon for faculty who were active then. Roy said it was a great way to meet and greet. The ice cream social was an opportunity to meet chemistry and biochemistry majors from other graduating classes.

Because of the demolition of Mateer (the rubble is still being cleared as this is typed), over spring break, biology staff moved glassware and other equipment into Severance 122, where he has been carrying out research. That necessitated considerable downsizing. He does have two cabinets where he can keep glassware and chemicals for some projects that he hopes to complete. His research efforts will come to a halt when Severance and Williams Hall are physically connected, as the hallway will go right through where he works. However, he is grateful that he’s had the opportunity to do research since he retired in 1999.

On the personal side, he again managed to bike 1,000+ miles in 2015 and is approaching 600 miles for this season. Over the second weekend in July he and his son, Keith, participated in a regatta, sailing in a total of five races. His boat is built for stability, not speed, so sailing in the open fleet (not enough boats of the same class for a separate start) with really quick boats, even though a correction factor (sort of like a golfer’s handicap) is applied, they usually finished last or next to last.

At 82 years, he is still active by walking routes around Wooster, biking, using the Scot Center, and sailboarding.

Virginia Pett
While Dick Bromund and Virginia Pett were in New Hampshire last summer they met with several former students, Tamutenda Chidawanyika (’08), Melisa Kundracik Osborne (’05) and Adam Osborne (’05).

After graduation Tamu was a researcher at Weill Cornell University in New York City in a lab devoted to developing anti-tuberculosis drugs. She is now part-way through her MD/Ph.D. degree at Dartmouth College. She has finished the medical coursework and is now doing research for the Ph.D. She commented, "I am working on protein misfolding – it all started with that Senior I.S. at Wooster with protein oligomerization in small heat shock proteins in maize – thank you for that experience. I was a little worried when I started on my project because the lab I joined was moving in a new direction and so I had to start everything from scratch, but it has been a really rewarding experience so far."

Both Melisa and Adam completed Ph.D. degrees at Brandeis University. Melisa was a Visiting Assistant Professor at Wooster in 2014-15. After a postdoctoral research year at Harvard she is now at Boston University studying the microbiome. Adam is completing his postdoctoral research and looking for a teaching position in the Boston area.

Back in Wooster, it was especially meaningful to talk with many Wooster graduates during the 2016 Reunion Weekend — too many to list by name, but you know who you are!

Melisa Kundracik Osborne (’05) with appropriate Avogadro mug and the apple pie she baked.

Virginia Pett pictured with Tamutenda Chidawanyika (’08)
The Department of Chemistry has been featured in campus and local media for a variety of stories. Follow the links for the full story.

11 February, 2016, Wooster Receives National Science Foundation Grant for Summer Research: Three-year, $300,000 grant will facilitate faculty-student collaborations in physics and chemistry, John Finn, [http://www.wooster.edu/news/releases/2016/february/physics-reu/index.php](http://www.wooster.edu/news/releases/2016/february/physics-reu/index.php). The Research Experience for Undergraduates (REU) provides opportunities for undergraduates and faculty to work together on original, publishable research involving a broad range of materials science, physics and chemistry projects. With matching funds from The College of Wooster, nine students will work 10 weeks each summer. The Department of Physics has been an REU site since 1994. The renewal of the grant will help faculty offer beginning students, especially those with limited research opportunities and those from underrepresented groups, an innovative and accessible research experience. The Department of Chemistry is collaborating with this REU, as Paul Bonvallet received funding to advise two undergraduates students this summer.


15 April, 2016, Nature Preserve to Honor the Memory of Late Scientist John Finn, [http://www.wooster.edu/news/releases/2016/april/nature-preserve/index.php](http://www.wooster.edu/news/releases/2016/april/nature-preserve/index.php). The Melissa Schultz Nature Preserve spans over five acres of woods and meadows nestled along the Montessori School property line. The College of Wooster owns this land that connects to the City of Wooster’s Gerstenslager Park, located on the northern edge of the preserve. Wooster’s Board of Trustees agreed to a six-year easement. The dedication of the Preserve honors Melissa's energy, enthusiasm, and love of nature. She was committed to teaching and protecting the environment. The Preserve is available to all students and educators in Wayne County.

The Melissa Schultz Nature Preserve on Akron Road was dedicated April 22, 2016.
Don’t blame the turkey if you feel snoozy; the bread and the basket share molecular formula and other Turkey Day science, Katie Byard, Akron Beacon Journal/Ohio.com, http://www.ohio.com/lifestyle/food/don-t-blame-the-turkey-if-you-feel-snoozy-the-bread-and-the-basket-share-molecular-formula-and-other-turkey-day-science-1.643058. Paul Bonvallet and Judy Amburgey-Peters explain the chemistry involved in digesting the foods commonly consumed at a Thanksgiving dinner. They dispel the myth that tryptophan from turkey is the cause of Thanksgiving sleepiness and explain how the more colorful foods we consume are beneficial to our health.


Advocate for Diversity in the Sciences to Deliver Phi Beta Kappa Lectures, John Finn, http://www.wooster.edu/news/releases/2015/september/lecture-hernandez/index.php. Rigoberto Hernandez, professor of chemistry and biochemistry at Georgia Institute of Technology and a leading proponent of diversity in the sciences presented two lectures sponsored by Phi Beta Kappa, BCMB program, Department of Chemistry, and the Center for Diversity and Inclusion. Hernandez is the co-director for the Center for Computational Molecular Science and Technology and the director of the Open Chemistry Collaborative in Diversity Equity (OXIDE).


Faculty at Large Lectures Explores Chemistry of Photo-Induced Degradation, John Finn, http://www.wooster.edu/news/releases/2015/september/fal-sobeck/index.php. Sarah Sobeck’s research from her sabbatical, 2014-2015, was presented to the campus community. She shared her research of cochineal (carmine), a red dye extracted from South American scale insects. As the art world looks to preserve paintings by preventing the fading of the artistic colorant, Sarah seeks to understand the rate of fading and identify the chemical processes that lead to the fading.

Wooster Graduates Continue to Make Their Mark, John Finn, http://www.wooster.edu/news/releases/2015/august/career-outcomes/index.php. A recent report by the College’s Office of Career Planning that surveyed the Class of 2014 shared the success rates of these Wooster graduates. Austin Oberlin (’14, BCMB), who enrolled at Virginia Commonwealth University School of Medicine, said, “My Wooster education prepared me for medical school in many ways. Independent Study taught me so much about learning on my own. I found that my study skills were far ahead of my classmates.”
Construction of The Ruth W. Williams Hall of Life Sciences began May 2016

The day after graduation, Bogner Construction Company began tearing down Mateer Hall to make way for the construction of Ruth W. Williams Hall of Life Sciences. Compared to the months of planning and removing items from Mateer Hall its demolition was fast, furious and fun to watch. Each day the spectators, drawn by the reverberating sounds of heavy machinery and massive chunks of concrete hitting the ground, gathered along the campus mall to witness the rapid and radical transformation of once solid Mateer to a pile of rubble. It was quite a visceral experience to behold – from the pounding of the excavators, and the billowing of concrete dust clouds, to the vibrations felt in neighboring Severance; the summer-long spectacle will be a memorable experience. Perhaps the most fascinating was the versatility of the excavators’ pincers – these dinosaursque-jaws had both the power to cut through concrete/steel beams and the dexterity to sort the rubble into discrete piles for recycling the various components. By the end of Summer 2016 the site formally occupied by Mateer Hall had been cleared out and the footers to support the new Williams were beginning to form. The construction of Williams Hall will happen over the next two years with opening expected in August 2018. The Department of Biology faculty have set up offices in Rubbermaid Center, and Biology students will take courses, labs and conduct I.S. research in Severance, Scovel, Morgan and Taylor Halls. We welcome you to visit during this time, but be prepared to navigate the large construction zone south of Severance, and please excuse our mess.

Ariel view in May ’16

Mateer half-gone in June’16

Only rubble remains in July ’16

Williams Hall gets its footing in August ’16
What Will The Ruth W. Williams Hall of Life Science Enable?

Wooster’s Mission Statement for the Life Sciences

The life sciences at The College of Wooster provide an exemplary education for every student. Our primary goal is that every graduate can adapt as new knowledge emerges and harness the knowledge to the betterment of society or to enrich our understanding of the world. To accomplish this our curricula should be versatile and responsive to a continuously emerging world so that students we have yet to mentor have the skills to meet challenges and seize opportunities we have yet to define. Among those opportunities will be a deeper understanding about how life works; an understanding that organizes knowledge into ever evolving and intersecting conceptual networks that range in scope from fields including the molecular sciences, environmental sciences, integrative and conservation biology and bioinformatics, to better identify and solve complex problems. Our graduates will have the tools, confidence, and ambition to apply their understanding in the life sciences to identify and solve a host of complex challenges, from energy development and environmental issues to the threat of worldwide pandemics and the emergence of new diseases; the solution to which are increasingly being sought through collaborative and interdisciplinary research at the intersection of disciplines in the life sciences, physical sciences, social sciences and the humanities.

The ranks of America’s scientists and physicians are filled with generations of Wooster alumni, and the best graduate and professional programs eagerly welcome our graduates. Our successes have been due, in part, to the fact that our programs in the life sciences develop a highly personal approach to education that connects students with the faculty at many levels and in different areas of expertise to stretch their conception of what is possible. Wooster students and their faculty mentors will continue to develop the Wooster ethos of using research as a forum for the synthesis of learning and knowledge creation by enhancing each student’s motivation, confidence, and intellectual flexibility needed to become leaders who can use scientific information to recognize novel opportunities and confront problems of global concern in our rapidly changing world. Our curriculum for the future, grounded in the liberal arts, will continue this personal education and deliberately guide students through their intellectual journey, from an introduction to critical thinking, through sophisticated and increasingly challenging material, including hands-on use of modern instrumentation, all while fostering collaborations with peers and faculty members. With our senior-level Independent Study as the culmination of the student’s education at the College of Wooster, we aspire to provide the nation’s premiere mentored undergraduate research experience for every student throughout their educational program and inspire independent minds that can work together to create a better tomorrow for all of us.

Wooster’s Vision for The Ruth W. Williams Hall of Life Science

We endeavor to become the nation’s premiere college for mentored undergraduate research. To achieve this goal our curricula require that a modern teaching and research facility in the life sciences be created as a means to enhance our ability to adapt to multiple ways of learning, facilitate and enhance existing collaborations as well as provide venues for promoting and developing new ones, support that changes growth in our undergraduate research programs including our exemplary Senior Independent Study Program, promote the value of life science work to the broader community in a manner that is engaging, and model how we should conduct ourselves in a way that is environmentally sustainable and mindful of our environment. A new facility that would more holistically unite the Departments of Biology and Chemistry with the interdisciplinary programs in Biochemistry & Molecular Biology, Neuroscience and Environmental Studies, as well as provide new engaging spaces to promote interactions between these life sciences with the other physical sciences, mathematics and computer science, and social sciences and humanities, would enable all of these communities to thrive with frequent and meaningful informal interactions at which new ideas may be explored. A facility that enables a strong community in the life sciences will be better positioned to work collaboratively to deliver a rigorous and dynamic liberal arts education as a means of creatively meeting new challenges that arise in a changing world.
Alumni News

R. Philip Eaton (CHEM '57) was honored as a School of Medicine Living Legend by the University of New Mexico Sciences Center.  [https://vimeo.com/145335419](https://vimeo.com/145335419), November 2015.

Charles Ruch (CHEM '59) is serving as the Interim Dean of the College of Education at Armstrong State University in Savannah, GA.

Dave Morse (CHEM '67), a certified master naturalist, was instrumental in establishing a 30,000-acre conservation area in Colorado.

William Andrew, Ph.D. (CHEM '85) recently co-founded Ocean Blue Entertainment, a creative content company focused on making compelling independent films.

Cindy Burns Weeks (CHEM '86) began a new job with UNC Wakebrook dovetailing primary care with psychiatric care for patients suffering from severe mental illness.

Charles Ryan (CHEM '86) became the Vice President and General Counsel for Cold Spring Harbor Laboratory. He received the Distinguished Alumni Award from Stony Brook University where he received his Ph.D. in Oral Biology and Pathology.

Eric Bodle (CHEM '01) became the Director of Chemistry & Arian Toxicology at Evans Analytical Group, May 2016.

Melisa Osborne (BCMB '05) took a job as a Research Associate at Boston University, July 2016.

Forrest Etheridge (CHEM '11) earned his Ph.D. in Chemistry from Case Western Reserve University, June 2016, and began a postdoctoral fellow at the University of Chicago.

Mary Nappi (CHEM '13) earned an M.S. in Chemistry in 2015 from The Ohio State University and is now working as a Clinical Research Associate at Medpace, Cincinnati, OH, January 2016.

Leah Bowers (CHEM '14) began graduate school in Chemistry at University of North Carolina at Chapel Hill, August 2015.

Jenna Gnotek (CHEM '14) began work as an R & D Technologist for Covaron Advanced Materials in Highland, MI, August 2015.

Jonathan Allotey (BCMB '15) now works as a Data Scientist at Nourish Technology, Inc., June 2016.

Derrick Marshall (CHEM '15) became a master’s candidate in Polymer Science at the University of Oregon, June 2016.

Eric Painting (CHEM '16) began as Technical Service Chemist at Lubrizol Corporation, Brecksville, OH, June 2016.

Paul Edmiston and Karl Feierabend
Severance 009, December 2015

Introductory Chemistry (CHEM 111) was the last class taught in Severance 009 in the fall of 2015.

Paul taught the 8 a.m. section and Karl taught the 9 and 10 a.m. sections. The last class was the 11 a.m. section taught by Elana Stennett ('10).
Ned D. Heindel is the H. S. Bunn Chair Professor of Chemistry at Lehigh University and a consultant on drug development for Azevan Pharmaceuticals. Ned has graduated 40 doctoral students most of whom have entered academia or the health care industry. He has engaged in contract R&D for Astra-Zeneca, Air Products and Chemicals, Bristol-Myers Squibb, Merck, Johnson & Johnson, and DuPont as well as for eight venture capital start-up firms. At Lehigh, Ned teaches general chemistry, organic, med chemistry, and organic mechanisms along with three web-mounted graduate courses in a Distance Education program. Ned is a graduate of Lebanon Valley College (BS-1959), the University of Delaware (PhD-1963), and Princeton University (postdoc-1964). He taught at the University of Delaware, Marshall University, and Ohio University before joining the faculty of Lehigh University. He served as the President of the American Chemical Society in 1994.

Helen Murray Free graduated with a B.A. in chemistry from The College of Wooster in 1945. Her research in clinical chemistry revolutionized diagnostic testing (for instance “dip-and-read” glucose tests for diabetics), and she was awarded seven patents for her clinical diagnostic test inventions. Helen and her husband Alfred were inducted into the National Inventor’s Hall of Fame in 2000. From 1987 to 1992, Helen chaired the American Chemical Society’s (ACS) National Chemistry Week Task Force, and in 1993 she was elected president of the ACS. In 2010, the ACS designated development of diagnostic test strips as a National Historic Chemical Landmark. In 2010 Helen was also awarded the National Medal of Technology & Innovation by President Obama.

The Helen Murray Free Endowed Lecture Series was established by Helen’s children and endowed through the Al and Helen Free Foundation. Each year, this endowed fund brings to campus a renowned chemical scientist, who interacts with chemistry students at a technical level and present an all-college convocation on the contributions of science to the quality of life.

- 2007 Mary Lowe Good
- 2008 Richard N. Zare
- 2009 Jacqueline K. Barton
- 2010 Harry B. Gray
- 2011 Sara Risch
- Spring 2012 Catherine T. Hunt
- Fall 2012 Sam Niedbala
- 2013 Susan Solomon
- 2014 Paul Anderson
Chemistry faculty participate in the organization of a vibrant seminar series that brings to campus scientists and alumni, from both academia and industry, who share their science and career stories.

**CHEMISTRY SEMINARS**

**Luke Thompson**
(‘03)
Assistant Professor of Chemistry, Gettysburg College

*Using Polymers to Control the Chemistry of Gold Surfaces*

**Daniel Soltis** (‘76)
Biotechnology Professional

*Career Opportunities & Adventures of a Chemistry Major*

**Malcolm Forbes**
Professor of Chemistry and Director of the Center for Photochemical Sciences, Bowling Green State University, OH

*Photodynamic Therapy, Toils and Troubles: Problems Solved with Tiny Bubbles, Free Radical Structure, Dynamics and Reactivity Using a Variety of Magnetic Resonance Techniques*

**INTERDEPARTMENTAL SEMINARS**

**Biology, Biochemistry & Molecular Biology, Chemistry and Neuroscience**

**Gábor Balásvi**
Associate Professor of Physical & Quantitative Biology, Stony Brook University, NY

*Synthetic gene circuits: Novel tools for biological discovery*

**Donald C. Dearborn**
Professor of Biology, Bates College, ME

*Evolution, Behavior, and Conservation Biology*

**Jason Gestwicki**
Associate Professor, Department of Pharmaceutical Chemistry, University of California, San Francisco, CA

*Chemistry meets Biology: Using Physical Principles to Develop a New Treatment for Cataracts*

**Daniel Marenda**
Associate Professor; Director of the Biology Graduate Program; Co-Director of the Cell Imagining Center, Drexel University, Philadelphia, PA

*Flying in the face of disease: Rapid in vivo drug screening for Alzheimer’s disease*

**Ignacio Moore**
Professor of Biological Sciences, Virginia Tech, College of Sciences, VA

*Individual variation, evolution, and hormone-behavior relationships*

**Phi Beta Kappa Society**

The Phi Beta Kappa Society brought to campus Rigoberto Hernandez, a professor in the School of Chemistry and Biochemistry at Georgia Tech, co-director of the Center for Computational Molecular Science and Technology, and director of the Open Chemistry Collaborative in Diversity Equity. While on campus, Hernandez gave two lectures:

- **Technical Lecture:** Controlling Chemical Reactions by Kicking Their Environments
- **Public Lecture:** Advancing Science Through Diversity

The BCMB Program, the Department of Chemistry, and the Center for Diversity and Inclusion at The College of Wooster also supported the visit.
Seven students ventured to San Diego, California for the 251st ACS National Meeting & Exposition and presented posters. Kimberly Carter ('16, CHEM) and Jonathan Nutt ('16, BCMB) presented in primary divisional sections at the Meeting. Kim and Jon’s posters were selected by organizers for the notable and highly attended SciMix session.

Haley Rossiter ('17, CHEM) reported that the ACS meeting was a fantastic way to make connections with graduate schools. She said that sophomores and juniors should take advantage of this opportunity. She gained excellent experience creating a poster and presenting it to fellow scientists. The seminar topics scheduled throughout the week provide varied topics, so there will be at least one seminar that meets each attendee’s interests. The exposition has many demonstrations and opportunities to view new instruments that Wooster does not have. Since the meeting was in San Diego this year, many students took the opportunity to tour the area. Haley and Bailey Bowers explored the San Diego Zoo.


Pictured with the moles are Bailey Bowers ('17, CHEM) and Haley Rossiter ('17, CHEM)
2016 National American Society of Biochemistry & Molecular Biology Meeting

Five students, Morgan Dasovich (‘16, BCMB), Nicholas Lesner (‘16, CHEM), Jess Meek (‘16, BCMB), Peter Rohweder (‘16, CHEM), Laura Sherer (‘17, BCMB), and Katie Stock (‘17, BCMB) travelled with two faculty members, Dean Fraga and Mark Snider, to the National ASBMB Meeting as part of experimental biology program.

Peter Rohweder presented work that he did at Scripps (FL) during his summer research program:

**P. Rohweder**, T. Kodadek, M. Sarkar, C. Dreyer, and H. Park; The synthesis and characterization of potential covalent probes for chronic lymphocytic leukemic B-cell receptors using sulfonyl fluoride *FASEB J* April 2016 30:1089.5

The following students presented posters:

**Nicholas P. Lesner**, Michael T. Peterson, and Mark J. Snider; Characterization and Identification of Metabolites in the Oxidation of Nicotinic Acid by *Bacillus niacini*. *FASEB J* 30:834.9

**Morgan A. Dasovich**, Mark J Snider, and Michael T Peterson; Characterization of a Novel Flavin-dependent Monooxygenase in *Bacillus niacini*. *FASEB J* 30:834.8

**Jessica A Meek, Laura A Sherer**, and Mark J Snider; Deciphering the Metal Dependency of Novel Nicotinate Hydroxylase from *Bacillus niacini*. *FASEB J* 30:1083.13

**K. Stock, M. Aryal** and D. Fraga; Understanding the Phylogenetic Relationship of Bacterial Arginine Kinases *FASEB J* April 2016 30:856.

### Poster Session:

Pictured left to right:
Morgan Dasovich (‘16), Nick Lesner (‘16), Peter Rohweder (‘16), and Dean Fraga

Group shot at the top of Cowles Mountain in San Diego, CA. Dr. Snider took the group on a hike one afternoon to get out of downtown. It was a sunny day, and turned out to be hotter here than downtown near the ocean.

Picture includes (left to right): Nick Lesner (‘16), Peter Rohweder (‘16), Morgan Dasovich (‘16), Katie Stock (‘17), Laura Sherer (‘17) and Jess Meek (‘16).
The Annual Midwest Stress Response and Molecular Chaperone Meeting provides an opportunity for those interested in the areas of stress response, heat-shock proteins, and molecular chaperones to present their work and learn from others working in the field. The meeting featured talks by graduate students, postdoctoral fellows, and new investigators.

The meeting was organized by D. Allan Drummond (The University of Chicago) and Brian Freeman (University of Illinois, Urbana-Champaign).

Students attending the meeting and presenting posters included Brianna Bauer (’16, BCMB), Kristin Allan (’16, BCMB), Matt Loberg (’16, BCMB), and Matt Pleshinger (’18, BCMB).

**Student Poster Session Participants**


*Wooster undergraduate student
Chemistry Club

In the fall semester, Chemistry Club participated in Scot Spirit Day, an all-campus event where clubs share information and recruit new members. Additionally, four chemistry students presented their off-campus summer research at Chemistry Club’s first annual Off-Campus Research Seminar. The seminar was a professional presentation setting and allowed for chemistry students to practice research presentation skills as well as show other chemistry majors the potential off-campus research opportunities available to Wooster students.

In September, club members took a field trip to the Cleveland Museum of Art to tour the Art Conservation Department. The tour provided club members an opportunity to see chemistry in cultural applications and get a behind the scenes look at art preservation.

Club members performed science outreach events at Edgewood Middle School. Demonstration events included elephant toothpaste, fluorescent water bottle, and ocean acidification. In addition, Chemistry Club members performed demonstrations in the Eighth Annual Community Science Day on Saturday, April 16th, 2016. Demonstrations included ocean acidification, tie-dye milk, flubber, elephant toothpaste, and liquid nitrogen ice cream. Also, Chemistry Club members volunteered their time at Earthfest on Friday, April 22nd, 2016. Club members performed an ocean acidification demonstration as well as handed out environmental chemistry packets to Wooster students. Club members also volunteered for Expanding Your Horizons, a daylong STEM program for 5th and 6th grade girls. The girls learned from women in academia and STEM-related fields by taking part in age-appropriate activities, which engaged them in math and science. Club volunteers lead activities as well as shared their enthusiasm for science.

Chemistry Club members assisted in organizing and directing The Dr. Melissa Schultz Memorial 5K/1 Mile Run/Walk. Club members helped with event setup and cleanup, chalked the course, and cheered on runners. Signs were posted throughout the course with various environmental chemistry facts, ways to limit exposure to toxins and chemicals released in the environment, and facts about Dr. Schultz’s research.

Chemistry Club continues to sell laboratory aprons and coats as a source of fundraising for the club.
Science Awards and Scholarships

Departmental: 1st, 2nd, and 3rd Year Students

Adam Chalek (‘19) CRC Freshman Chemistry Achievement Award
Clayton Geib (‘18) American Chemical Society Polymer Education Committee Award
Christopher Good (‘19) Wooster Section of the American Chemical Society First-Year Award
Julia Higgins (‘19) CRC Freshman Chemistry Achievement Award
Iona Howe (‘19) Herrick L. Johnston Scholarship in Chemistry
Gabriela Jocas (‘19) Wooster Section of the American Chemical Society First-Year Award
Kent Nakamoto (‘18) John W. Chittum Prize in Chemistry
Lindsay Robinson (‘17) Robert E. Wilson Scholarship
Haley Rossiter (‘17) Cary R. Wagner Prize in Chemistry
Rose Taylor (‘19) CRC Freshman Chemistry Achievement Award
Todd Ulmer (‘17) American Chemical Society Undergraduate Award in Analytical Chemistry
Emily Walker (‘19) CRC Freshman Chemistry Achievement Award
Afton Widdershins (‘19) CRC Freshman Chemistry Achievement Award
Kevin Wokosin (‘18) John W. Chittum Scholarship

Herrick L. Johnston Scholarship in Chemistry

The Herrick L. Johnston Scholarship in Chemistry honors the memory of Herrick L. Johnston, Class of 1922, Sc.D. 1943, and was established by Margaret Vanderbilt Johnston Dittmers in 1982. The scholarship is awarded to an incoming first-year student on the basis of merit and a strong interest in chemistry. The 2016-2017 Johnston Scholarship recipient is Kevin Miller of Tiffin, OH. Kevin graduated from Columbian High School and has a strong passion for math and science and plans to pursue a career in laboratory research with the goal of obtaining his Ph.D. He is currently interested in the field of biochemistry because it combines his interests in biology, chemistry and mathematics. Kevin’s passion is evident, as a sophomore he participated in the dual enrollment program at his local hometown colleges for coursework in anatomy and physiology and environmental science. He participated in a science fair his sophomore year studying how oils interact with water compared to soaps. He was an active member of his high school’s biology club.

Science Awards

The following scholarships and prizes were awarded to Departmental majors at the annual Recognition Celebration held February 18, 2016.

Vivian Chan (CHEM ’89) Prize in Interdisciplinary Sciences* Andrew Hamel (BCMB ’16)
Theron L. Peterson & Dorothy R. Peterson Award for Outstanding Academic Achievement* Angelo Melari (CHEM ’16)
Francis & Elizabeth Twinem Scholarship for a pre-med student Leslie Doone (BCMB ’16)
John M. Robinson, M.D. Scholarship Elizabeth McInturf (CHEM ’16)

* The Dean for Curriculum and Academic Engagement determined these awards based on faculty nominations.
Chemistry Majors

Back Row: Joseph Whiston, Nicholas Lesner, Jackson Fielder
Fourth Row: Trevor Horst, Jacob Brotman¹, Peter Rohweder, Nathan Gimble, Preetom Borah
Third Row: Joshua Houtz, Dylan McCreary, Erin Drake, Catherine Christian, Kevin Smith², Taylor Bowen
Second Row: Michael Schlueter, Albert Darling, Briana Marlatt, Abby Szlachta, Andrea DeMarsh, Ellen Hudson-Heck
First Row: Kimberly Carter, Amanda Carmichael, Traci Scott, Elizabeth McInturf
Missing: Brenna Coolbaugh*

*Attending Case Western University School of Dental Medicine
¹Completing degree at University of Nebraska-Reno
²Special major featuring chemistry courses with a chemistry advisor, graduating December 2016
24 students graduated with a major in Chemistry.

Two students graduated with a double major:
- Preetom Borah – Chemistry and Music
- Amanda Carmichael – Chemistry and Religious Studies

During her senior year, Brenna Coolbaugh attended Case Western Reserve University School of Dental Medicine in the dual-degree program.

Chemistry majors who graduated with minors were:
- Kimberly Carter – Biology
- Nathan Gimble – Music
- Joshua Houtz – Mathematics and French

1 student graduated with a special major combining Chemistry and Human Health
- Shikha Dharia

Senior Prizes, Awards, and Scholarships

Amanda Carmichael  William Byron Ross Memorial Prize
Kimberly Carter  Department of Chemistry Citizen Award
Andrea DeMarsh  ACS Wooster Section Senior Award
Trevor Horst  Department of Chemistry Citizen Award
Brianna Marlatt  American Institute of Chemists Award
Elizabeth McInturf  Joseph E. Weber Premedical Award
Peter Rohweder  ACS Wooster Section Senior Award
William Z. Bennett Prize

Chemistry Majors

Departmental Honors were awarded to:
- Catherine Christian
- Albert Darling
- Andrea DeMarsh
- Trevor Horst
- Briana Marlatt
- Dylan McCreary
- Peter Rohweder

Elected to Beta Beta Beta:
- Kimberly Carter
- Briana Marlatt
- Peter Rohweder

Majors who received American Chemical Society Certification in Chemistry:
- Preetom Borah
- Kimberly Carter
- Catherine Christian
- Albert Darling
- Andrea DeMarsh
- Erin Drake
- Nathan Gimble
- Trevor Horst
- Nicholas Lesner
- Briana Marlatt
- Dylan McCreary
- Elizabeth McInturf
- Peter Rohweder
- Traci Scott
- Abby Szlachta
- Joseph Whiston

24 students graduated with a major in Chemistry.
# Chemistry Majors

## Post-Graduation Plans

### Entering graduate school:
- **Preetom (Ruku) Borah**  Boston College (Materials Science & Engineering)
- **Kimberly Carter**  The Ohio State University (Analytical Chemistry)
- **Albert Darling**  Pennsylvania State University (Chemistry)
- **Nathan Gimble**  Colorado State University
- **Trevor Horst**  University of Pittsburgh (Organic Chemistry)
- **Ellen Hudson Heck**  University of South Florida (Ocean Chemistry)
- **Nicholas Lesner**  University of Texas Southwestern Medical Center (Molecular Biophysics)
- **Peter Rohweder**  University of California, San Francisco (Chemistry and Chemical Biology)

### Entering health professional school:
- **Brenna Coolbaugh**  Case Western Reserve University School of Dental Medicine
- **Elizabeth McInturf**  Ohio University Heritage College of Osteopathic Medicine
- **Abby Szlachta**  University of Colorado School of Dental Medicine
- **Shikha Dharia**  Case Western Reserve University School of Dental Medicine

### Employed:
- **Taylor Bowen**  Quality Control Chemist at Dow Chemical, Marietta, GA
- **Catherine Christian**  Certified Nursing Assistant, Beaumont Health (plans to enroll in a physician assistant program)
- **Andrea DeMarsh**  Clinical Research Assistant, Children’s National Health System, Washington, D.C.
- **Jackson Fielder**  Technical Service Chemist, Ross Environmental Services, Inc.
- **Brianna Marlatt**  Product Development Technician, Kao Corporation, Cincinnati, OH
- **Dylan McCreary**  Member of the Orthopedic Research Team, Regions Hospital, St. Paul, MN. Plans to apply to medical school.
- **Michael Schlueter**  Route Sales Representative, Aramark, New Springfield, OH
- **Joseph Whiston**  Chemistry Technician, Battelle Memorial Institute
- **Amanda Carmichael**  District Leader, Primerica, Pittsburgh, PA
- **Erin Drake**  Working in a hospital lab, Akron, OH

### City Year Participants:
- **Joshua Houtz**  New Orleans, LA. Plans to either join the Peace Corps or attend graduate school.
- **Traci Scott**  Little Rock, AK. Plans to pursue a career in a health-related field in medicine or public health.
Preetom Borah
Sarah J. Sobeck
Solvent Effects on the Efficiencies Quantum Yields and UV-induced Photodegradation of PABA and Padimate-O

Taylor Bowen
Paul L. Edmiston
Evaluation of Organosilica-Iron Composites as a Soil Amendment to Protect Against Pesticide Drift

Amanda Carmichael
Sarah J. Sobeck
Cochineal: Connecting Chemistry and Religious Studies through the World of Art

Kimberly Carter
Paul L. Edmiston
Biomimetic Adsorbents for the Removal of Microcystins from Water

Catherine Christian
Paul L. Edmiston
License and Registration Please: The Development of an In-Field THC Detection Test Using a Hybrid-Bio-Inorganic Stationary Phase

Albert Darling
Judith C. Amburgey-Peters
An Investigation of Effective Methods to Form and Hydrolyze H-Phosphonate Diester Bonds for a Nucleophilic Acyl Substitution Reaction

Andrea DeMarsh
Paul L. Edmiston
Stimulating Encapsulated Fragrance Release by Malodor Absorption

Shikha Dharia (special major: Chemistry and Human Health)
Karl J. Feierabend & Stephanie Strand (biology)
Got milk? An in-depth analysis of community water fluoridation and a chemical investigation of fluoridated milk as an alternative to fluoridated water.

Erin Drake
Sarah J. Sobeck
Impact of medium, ambient environment, and surface on the UV-induced degradation of Carmine Lake

Jackson Fielder
Paul L. Edmiston
Evaluation of Polysilsesquioxane Materials as a Solid-State Electrolyte Matrix in Lithium-Ion Batteries

Nathan Gimble
Karl J. Feierabend
The Elucidation of a Mechanism for Malonic Acid Photooxidation in Aqueous Solution

Trevor Horst
Michael T. Peterson
Progress Towards a Total Synthesis of Grandilodine C

Joshua Houtz
Judith C. Amburgey-Peters
Examination of Introductory Chemistry Education via Correlational Analysis of Student Performance and Psychological/Demographical Factors
Chemistry Majors

Ellen Hudson-Heck  
Paul L. Edmiston and Karl J. Feierabend  
Development and Testing of the Sentinel Passive Samplers Designed for Integrative and Rapid Adsorption of Environmental Water Contaminants

Nicholas Lesner  
Mark J. Snider  
Attempted Synthesis of 2,3,6-Trihydroxypyridine and Characterization of the Putative Ring-Cleavage Enzyme in Bacillus niacini Nicotinate Catabolism

Briana Marlatt  
Sarah J. Sobeck  
Photodegradation of p-aminobenzoic acid in different ambient and pH environments and stabilization by antioxidants

Dylan McCreary  
Mark J. Snider  
Investigation of the Functionality of the Nicotinic Acid Degradation Pathway of Bordetella pertussis as a Potential Treatment for Whooping Cough

Elizabeth McInturf  
Paul L. Edmiston  
Transdermal Drug Delivery Using Organosilica Ensapsulants

Peter Rohweder  
Michael T. Peterson  
Mechanistic Investigation of the Ugi Reaction and Evaluation of Diastereomeric Control via Chiral Isocyanides

Michael Schlueter  
Karl J. Feierabend  
The Effect of Solvent and Acceptor on Hydrogen Bonds Between Benzyl Alcohol - Aromatic Systems

Traci Scott  
Judith C. Amburgey-Peters  
Synthesis of a Potential Phosphatidylserine Analog: cis-1,4-Cyclohexydiphosphoserine

Abby Szczahta  
Judith C. Amburgey-Peters  
Synthesis of a Potential Phospholipid Analog: trans-1,4-cyclohexane-diphosphoserine

Joseph Whiston  
Christopher B. Durr  
Theory and Synthesis of Heterobimetallic Catalysts Towards Nitrogen Fixation

*These students’ Independent Study projects were generously supported with funds from the Henry J. Copeland Fund for Independent Study.*
Biochemistry & Molecular Biology Majors

Class of 2016

Back Row: Joseph Kelly, Conner Hoelzel
Sixth Row: Andrew Hamel, Matthew Loberg, Jonathan Nutt
Fifth Row: Gwendolyn Kuzmishin, Ellyn Evans, Morgan Dasovich
Fourth Row: Rachael Davis, Heather Skinner, Kathryn Timar, Melia Kovach
Third Row: Leslie Doone, Jennifer Pilat, Kristin Allan
Second Row: Kate Redding†, Fatima Rodriguez Martinez‡, Oluwadamilola Onakomaiya‡, Colleen Sells
Front Row: Brian Ng*, Huyen Nguyen, Alvi Sakib, Michael Andes

Missing: Andrew Greene, Jessica Meek

†Neuroscience major with a BCMB track
*Attending Case Western University School of Dental Medicine
‡Changed majors
During his senior year, Brian Ng attended Case Western Reserve University School of Dental Medicine in the dual-degree program.

BCMB majors who graduated with minors were:
- Kristin Allan – Art
- Morgan Dasovich – Physics
- Andrew Green – Environmental Science
- Andrew Hamel – Mathematics
- Ned Kelly – Religious Studies
- Jessica Meek – History
- Jennifer Pilat – Spanish
- Colleen Sells – Sociology
- Heather Skinner – Religious Studies

### Senior Prizes, Awards, and Scholarships

<table>
<thead>
<tr>
<th>Name</th>
<th>Award</th>
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<tbody>
<tr>
<td>Kristin Allan</td>
<td>American Institute of Chemists Award</td>
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<tr>
<td>Morgan Dasovich</td>
<td>Department of Chemistry Citizen Award</td>
</tr>
<tr>
<td>Rachael Davis</td>
<td>Karen Diane Cross Memorial Award</td>
</tr>
<tr>
<td>Conner Hoelzel</td>
<td>American Chemical Society Undergraduate Award in Organic Chemistry</td>
</tr>
<tr>
<td>Gwendolyn Kuzmishin</td>
<td>Department of Chemistry Citizen Award</td>
</tr>
<tr>
<td>Jennifer Pilat</td>
<td>Sisodia-Williams Prize</td>
</tr>
</tbody>
</table>

### Departmental Honors were awarded to:
- Kristin Allan
- Michael Andes
- Matthew Loberg
- Jessica Meek
- Jonathan Nutt
- Jennifer Pilat

### Elected to Phi Beta Kappa:
- Kristin Allan
- Matthew Loberg
- Jonathan Nutt
- Jennifer Pilat

### Elected to Beta Beta Beta:
- Kristin Allan
- Michael Andes
- Morgan Dasovich
- Rachael Davis
- Leslie Doone
- Ellyn Evans
- Andrew Green
- Andrew Hamel
- Joseph Kelly
- Gwendolyn Kuzmishin
- Huyen Nguyen
- Jonathan Nutt
- Jennifer Pilat
- Kate Redding (NEURO)
- Colleen Sells
Biochemistry & Molecular Biology Majors

Post-Graduation Plans

**Entering graduate school:**
- **Kristin Allan**  
  Case Western Reserve University Molecular Medicine Ph.D. program at the Cleveland Clinic Lerner College of Medicine
- **Ellyn Evans**  
  Case Western Reserve University (Molecular Biology and Genetics)
- **Conner Hoelzel**  
  Pennsylvania State University (Chemistry)
- **Jennifer Pilat**  
  Vanderbilt University Interdisciplinary Graduate Program (Biomedical Science)
- **Heather Skinner**  
  Santa Clara University Law School (Patent Law)
- **Morgan Dasovich**  
  Johns Hopkins University (Chemistry)

**Entering health professional school:**
- **Michael Andes**  
  The Ohio State University College of Dentistry

**Employed:**
- **Andrew Greene**  
  Research Assistant, Boston’s Children’s Hospital in the Infections Diseases Department. Plans to pursue Ph.D. in materials chemistry, neuroscience, or immunology.
- **Melia Kovach**  
  Community Health Worker, UVA Health Systems, Charlottesville, VA. She plans to become a physician assistant
- **Gwendolyn Kuzmishin**  
  Research Student, Cleveland Clinic Taussig Cancer Center. Plans to apply to medical school.
- **Matthew Loberg**  
  Research Assistant, Jackson Laboratory, Bar Harbor, ME, studying acute myeloid leukemia and the epigenetics of hematopoiesis in the lab of Dr. Jen Trowbridge. Plans to apply to graduate school in two years.
- **Huyen Nguyen**  
  Research Assistant, University of Texas Southwestern Medical Center
- **Alvi Sakib**  
  Junior Business Development Executive, Square InformatiX Limited. Plans to attend graduate degree in business or technology.

**City Year Participants:**
- **Rachael Davis**  
  Columbus, OH. Plans to pursue a career in teaching science or attend graduate school to study science and the environment.
- **Andrew Hamel**  
  Boston, MA
- **Joseph (Ned) Kelly**  
  Chicago, IL. Plans to pursue a professional degree in life sciences.

**Gap Year:**
- **Leslie Doone**  
  Applying to medical school
- **Jessica Meek**  
  Applying to graduate schools
- **Jonathan Nutt**  
  Planning to enter medical school in the fall of 2017
- **Colleen Sells**  
  Applying to medical school
- **Kathryn Timar**  
  Exploring various medical fields
Kristin Allan
James D. West, BCMB
Stabilizing Redox-Responsive Protein Network Interactions with a Thiol-Reactive Cross-Linker

Michael Andes
Melissa Mullen Davis, BCMB
Differential Expression of a Novel IncRNA (Na2) Aids in Arabidopsis thaliana Survival Under High Salinity Stress

Morgan Dasovich
Mark J. Snider, Chemistry
The Partial Characterization of a Monooxygenase in Bacillus niacini

Rachael Davis
Stephanie S. Strand, Biology
Analysis of Bioaccumulation and Sublethal Toxic Effects in Eisenia fetida, Lactuca sativa, and Arabidopsis thaliana Following Antidepressant Exposure

Leslie Doone
Stephanie S. Strand and Julie Heck, Biology
Laying the Groundwork for Illuminating the Relationship Between Structure and Catalytic Efficiency in Phz O, a Phenazine Biosynthesis Enzyme

Ellyn Evans
Melissa Mullen Davis, BCMB
Characterization of Long Non-Coding RNA Expression During Low Temperature Stress in Arabidopsis thaliana: Exploring the Implications of Targeting lncRNA for Improved Plant Growth

Andrew Greene
Dean Fraga, Biology
Preliminary investigation of Caenorhabditis elegans arginine kinase phosphorylation by AMPK

Andrew Hamel
Erzsebet Regan, Biology
A Dynamical Systems Approach to Understanding Synergies between Thyroid Cancer Mutations

Conner Hoelzel
Michael T. Peterson, Chemistry
Synthetic Progress Towards the Production of Hydroxymethyl and Mercaptomethyl Salicylaldehyde Derivatives for use in Protein Chemical Synthesis

Joseph (Ned) Kelly
James D. West, BCMB
Investigating the Structural Features that Promote Peroxiredoxin-Sulfiredoxin Interactions in Yeast

Melia Kovach
Mark J. Snider, Chemistry
Generation of a ΔNicC Bordetella pertussis Mutant: Investigating the Relationship Between Nicotinic Acid Degradation and Virulence Modulation

Gwendolyn Kuzmishin
Dean Fraga, BCMB
Attempted Identification of the Calcium-Dependent Sodium Channel Gene in Paramecium tetraurelia using RNAi

Matthew Loberg
James D. West, BCMB
Molecular Basis for Suppression of Genomic Instability by a Conserved Peroxidase
Biochemistry & Molecular Biology Majors

Jessica Meek
Mark J. Snider, Chemistry
Deciphering the Metal Dependency of Novel Nicotinic Acid Dehydrogenase from Bacillus niacini

Huyen Nguyen
Dean Fraga, Biology
Examining Evolution of Substrate Specificity Using Taurocyamine Kinase

Jonathan Nutt
Paul L. Edmiston, Chemistry
Horseradish Peroxidase Entrapped in Organically Modified Silica for the Degradation of Endocrine Disrupting Compounds in Drinking Water

Jennifer Pilat
Stephanie S. Strand, Biology
Identification of Genes Involved in Exoprotease Activity in Pseudomonas chlororaphis (14B11)

Alvi Sakib
Mark J. Snider, Chemistry
Investigating the proposed acid-based catalysis mechanism for 6-hydroxynicotinate 3-monooxygenase (NicC)

Colleen Sells
James D. West, BCMB
Investigating the Targets of Plant Pathogen RXLR Effectors Through Hypersensitivity to Stress Conditions in Saccharomyces cerevisiae

Heather Skinner
Erzsebet Regan, Biology, and Christopher G. Taylor, OARDC
The putative regulatory role of hydrogen cyanide in ethylene signaling and biosynthesis in Arabidopsis seedlings and tomato fruit

Kathryn Timar
Dean Fraga, Biology
Effects of Arginine Kinase Gene Deletions on Muscle Physiology and Mitochondrial Volume in Caenorhabditis Elegans

These Independent Study projects were generously supported with funds from the Henry J. Copeland Fund for Independent Study.
Senior Research Symposium

On April 29th, The College of Wooster did not hold any conventional classes; instead the College itself became a classroom as the Class of 2016 demonstrated the projects they developed during the academic year. Students, faculty, staff, parents, and community members were encouraged to move around the campus and listen to presentations, view art exhibits, ask questions about research posters, and explore the work of the senior class.

All Chemistry Majors and BCMB Majors presented posters of their Independent Study projects. In addition, students had an opportunity to present their work digitally and orally.

**Oral Presentation: Pollution and the Environment**
- Rachael Davis *
- Ellen Hudson-Heck

**Oral Presentation: Science and Behavior**
- Shikha Dharia**

**Oral Presentation: Three Minute Thesis**
- Andrea DeMarsh

**Melissa Schultz I.S. Research Prize in Sustainability and the Environment**
- Adrian Rowan – (Studio Art Major) *Art Making as an Ecofeminist Exercise in Understanding Species Extinction and Animal Farming*
- Rachel Huxhold – (Political Science Major) *Who Gives a Dam? An Experimentation of Framing Techniques and Water Conservation*
- Taylor Bowen – (Chemistry) *Evaluation of Organosilica-Iron Composites as a Soil Amendment to Protect Against Pesticide Drift*

* Biochemistry & Molecular Biology Major
**Chemistry and Human Health Special Major

Sarah Sobeck served as a moderator for the “Pollution and the Environment” Oral Presentation Session II.

The Senior Research Symposium was supported by the Henry J. Copeland Fund for Independent Study
Department of Chemistry 2016 Summer Activities

Morgan Dasovich ('16)
Advisor: Mark Snider
Funding: Theodore Williams Chemistry Summer Research Fund
Project: Characterization of B.niacini NicC-like enzyme

Gabriela Jocas ('19)
Advisor: Sarah Sobeck
Funding: American Chemical Society – Petroleum Research Fund grant
Project: Photodegradation of Cochineal

Christopher Good ('19)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants

Mark Grady (BCMB '17)
Advisor: Dean Fraga
Funding: NSF Grant
Project: Agricultural Science Summer Workshop for High-school Students

Julia Higgins ('19)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants

Lance Metsger ('17)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants

Rachel Molé ('17)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants

Sarah Pitell ('19)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants

Katie Stock (BCMB ‘17)
Advisor: Dean Fraga
Funding: National Science Foundation Summer Research Program
Project: Classification of Bacterial Arginine Kinases

Madeline Thomas ('17)
Advisor: Sarah Sobeck
Funding: American Chemical Society – Petroleum Research Fund grant
Project: Photodegradation of Cochineal

Zane Thornburg ('18)
Advisor: Paul Bonvallet
Funding: REU Site Grant
Project: Characterizing the Swelling of a Crosslinked Organosilicon Polymer.

Arielle Welch ('18)
Advisor: Paul Edmiston
Funding: NSF Grant
Project: Chemical analysis of water from the Chicago wastewater treatment plants
2016 Summer Activities at Other Locations

Brianna Bauer (BCMB ’17)
Location: University of Cincinnati, Cincinnati, OH
Advisor: Andrew B. Norman, Professor of Pharmacology and Cell Biophysics
Funding: American Society for Pharmacology and Experimental Therapeutics (ASPET); National Institute on Drug Abuse (NIDA)
Program: ASPET SURF Program in Pharmacology, Toxicology, and Pharmaceutical Sciences
Project: Studying cocaine self-administration behavior in rats and presented a poster and gave an oral talk on her research.

Catherine Boyles (’17)
Location: Gordon Food Service, Grand Rapids, MI
Program: Product Quality Assurance Intern
Project: Catherine was able to learn how a chemistry degree can be applied both a professional and industrial level. The 12-week program allowed her to gain a strategic understanding of how food is developed, purchased, and distributed. In the kitchen, she measured analytical characteristics of canned vegetables and prepped smoked salmon samples for product evaluation. She prepared complaint and specification data for analysis as well as sat in on business negotiations with suppliers. This experience, overall, helped her to develop the mindset of a young professional, cultivate a growing interest in product development, and, most importantly, establish her passions in food science!

Bailey Bowers (’17)
Location: Department of Chemistry, University of Rochester, Rochester, NY
Advisor: David McCamant, Associate Professor of Chemistry
Funding: NSF/REU

Nathan Brownstein (BCMB ’18)
Location: Department of Cellular and Molecular Physiology, Yale University, New Haven, CT
Advisor: Carson Thoreen, Assistant Professor
Project: Volunteered as a visiting student working Dr. Thoreen and other professional researchers on mRNA stability and the MTOR pathway. Responsible for multiple research projects independently or with some supervision while learning new biochemical techniques.

Jack Buchan (BCMB ’17)
Location: University of Texas-Houston McGovern Medical School, Houston, TX
Advisor: James West
Funding: Mindlin Foundation Grant
Project: Mechanism used by a key yeast peroxidase to suppress mutations

Clayton Geib (’18)
Location: Department of Chemistry, University of North Dakota, Grand Forks, ND
Advisor: Irina P. Smoliakova, Ph.D.
Funding: NSF/REU
Program: Interdisciplinary Renewable and Environmental Chemistry REU

Sydney Fine (BCMB ’18)
Location: Harris Lab, University of Minnesota-Twin Cities, St. Paul, MN
Advisor: Dr. Reuben Harris, Ph.D., Mentor: Artur Serebrenik (current Ph.D. student)
Funding: National Institutes of Health
Program: Life Sciences Student Undergraduate Research Program
Project: Under the guidance of Artur Serebrenik we worked to determine the synthetic lethality of an endogenous source of mutation in cancer, an enzyme called APOBEC3B, and FDA-approved chemotherapy drugs. It is a 10-week research experience in a lab in addition to a number of workshops on building a professional network, writing personal statements, and interviewing.
2016 Summer Activities at Other Locations

Leandra Forte ('17)
Location: The School of Polymers and High Performance Materials, University of Southern Mississippi, Hattiesburg, MS
Advisor: Joseph R. Lott, Ph.D.
Funding: NSF
Program: NSF SUSChEM: REU Site: Polymer Innovation for a Sustainable Future
Project: ‘Stimuli Responsive β-Cyano-oligo(phenylene vinylene) Methylcellulose Hydrogels’. She synthesized new, water-soluble beta-cyano-OPVs and incorporated them into methylcellulose hydrogels to successfully create an aqueous temperature responsive fluorescent system that accessed the yellow-emissive aggregated state in solution and the blue-emissive monomer state in the gel.

Hannah Hicks ('17)
Location: Department of Chemistry, Appalachian State University, Boone, NC
Advisor: Nicholas Shaw, Assistant Professor
Funding: Copeland Funding
Program Title: Senior I.S. Research
Project: Synthesizing DNA bisintercalators using Osorb® as a synthetic media

Jennifer Hurtig ('17)
Location: University of Texas-Houston McGovern Medical School, Houston, TX
Advisor: James West
Funding: University of Texas-Houston Graduate School of Biomedical Sciences Summer Program
Project: Using protein cross-linkers to capture thiol-based redox partnerships in yeast cells

Min Goo Kang ('18)
Location: University of Michigan Dental School Summer Program, Ann Arbor, MI
Advisor: Yu Leo Lei, D.D.S., Ph.D.
Project: Undergraduate student volunteer researcher focused on transcription factor, Sox2 and its impact on autophagy within cancer cells

Michaela Lawrence ('18)
Location: Mt. Rainier National Park, Ashford, WA
Advisor: Paul Kennard, Regional Geomorphologist
Funding: APEX Fellowship
Program: Geochemistry technician for the Geochemical Detection of Stagnant Ice at Mr. Rainier National Park

Laura Leventhal ('18)
Location: Chicago Botanic Gardens, Kensington, MN
Advisor: Jennifer Ison
Funding: NSF Grant
Program: The Echinacea Project
Project: Conducted field research on the fragmented prairies in this Area of Minnesota. In addition to collecting data for the Echinacea Project's annual data sets and experiments. In addition, she is conducting her own research with Dr. Ison about infraspecific pollen diversity for the pollinators of Echinacea angustifolia.

Kent Nakamoto ('18)
Location: Children’s Hospital of Philadelphia Research Institute, Philadelphia, PA
Advisor: Harry Ischiropoulos, Research Professor of Pediatrics
Funding: NIH
Program: Summer Scholars (CRISSP)
Project: eNOS Derived NO Regulates Liver Lipid Metabolism

Kyle Nguyen ('18)
Location: Case Western Reserve University, Cleveland, OH
Advisor: Mark Snider
Funding: APEX
Project: Role of Acetyl CoA Carboxylase in Microtubule-Controlled Intracellular Transport in Cystic Fibrosis
# 2016 Summer Activities at Other Locations

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Advisor</th>
<th>Funding</th>
<th>Project</th>
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</thead>
<tbody>
<tr>
<td>Alexander Pearson</td>
<td>NALCO Champion, Sugarland, TX</td>
<td>Keith Gawrys</td>
<td>Internship with NALCO Champion</td>
<td>Oil production maximization, specifically with emulsion breaking polymers</td>
</tr>
<tr>
<td>Evon Petek</td>
<td>The Lubrizol Corporation, Cleveland, OH</td>
<td>Carole Lepilleur</td>
<td>Program: Summer Intern</td>
<td>“Film Properties of Merquat™ Polymers”. Conducted fundamental research on polymers used in the hair care department.</td>
</tr>
<tr>
<td>Matthew Pleshinger</td>
<td>Case Western Reserve University Pharmacology, Cleveland, OH</td>
<td>Michael Hoffmann, Ph.D.; Professor of Environmental Science</td>
<td>Program: Summer Undergraduate Research</td>
<td></td>
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<tr>
<td>Jake Polster</td>
<td>California Institute of Technology (Caltech), Pasadena, CA</td>
<td>Dr. Valeri Vasioukhin</td>
<td>Edison International, the Genentech Foundation, and Johnson &amp; Johnson</td>
<td>WAVE Fellows</td>
</tr>
<tr>
<td>Adrienne Reding</td>
<td>Department of Energy, Environmental, and Chemical Engineering at Washington University, St. Louis, MO</td>
<td>Yinjie Tang, Associate Professor</td>
<td>NSF, Department of Education, and Washington University</td>
<td>Using 13C-metabolic flux analysis and engineering to characterize metabolic pathways for bioproduction and bioremediation in non-model environmental microorganisms.</td>
</tr>
<tr>
<td>Haley Rossiter</td>
<td>University of Southern California, Los Angeles, CA</td>
<td>Valery V. Fokin</td>
<td>National Science Foundation</td>
<td>Kinetic Study of Reactivity of para-substituted Iodo-phenyl-alkynes in the Copper (I)-catalyzed Azide-Alkyne Cycloaddition Reaction</td>
</tr>
<tr>
<td>Laura Sherer</td>
<td>Fred Hutchinson Cancer Research Center, Seattle, WA</td>
<td>Dr. Valeri Vasioukhin</td>
<td>Program:REU at the University of Southern California</td>
<td></td>
</tr>
<tr>
<td>Herbert Sizek</td>
<td>University of Nebraska-Lincoln, Lincoln, NE</td>
<td>Xu Li, Associate Professor, Department of Civil Engineering</td>
<td>NSF and the National Pork Board</td>
<td>Investigation of antibiotic resistance genes in manure amended soil (we investigated the controls used in the lab, critiquing the PI's methodology for investigating the gene concentrations).</td>
</tr>
</tbody>
</table>
2016 Summer Activities at Other Locations

Benjamin Stromberg ('17)
Location: The Ohio State University, Wooster, OH
Program: USDA Summer Research (at OARDC with Lucy Stewart)

Jerrick To ('17)
Location: Mayo Clinic Nephrology and Urology, Rochester, MN
Mentor: Sanjay Mirsa, MD, Professor of Radiology
Funding: nuSURF-NIH grant, PI, Michael F. Romero, PhD
Program: Summer Undergraduate Research Fellowship (nuSURF)
Project: Investigating the cellular changes in the outflow veins of mouse arteriovenous fistula model

Afton Widdershins ('19)
Location: University of Texas-Houston McGovern Medical School, Houston, TX
Advisor: James West
Funding: Sophomore Research (The College of Wooster)
Project: Mechanism used by a key yeast peroxidase to suppress mutations

Samantha Wigley ('18)
Location: Log10, Ponca City, OK
Supervisor: Miriam Velasco
Program: Research assistant for a private company

Kevin Wokosin ('18)
Location: Materials Research Science and Engineering Center, University of Wisconsin-Madison, WI
Advisor: Clark Landis, Professor, Department of Chemistry
Funding: NSF/REU

Yaoyin (Harune) Xu ('17)
Location: National Institute of Advanced Industrial Science and Technology, Japan
Advisor: Hidenobu Arimoto, Optical Engineering
Program: Technical Trainee Program at Light Sensing Group in AIST Central Tsukuba Center
Project: Quantitative analysis of sebum content through diffuse reflectance Near Infrared Spectroscopy