

BLUE HEN Chemist

DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY ALUMNI NEWSLETTER

#46, FALL 2019

Editor: John Burmeister





PICTURED ON THE COVER are the Graduation Convocation speaker Dr. Nicole Goodwin (BS01) and (the late) Prof. Burnaby Munson – picture taken in front of Brown Laboratory during the post-convocation reception on 6/1/19. In all probability, this was the last picture taken of Burnaby under the aegis of CHEM/BIOC.

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Greetings, Chemistry & Biochemistry
Alumni and Friends!

The Department continues to thrive and grow across all disciplines of Chemistry and Biochemistry. Our students have achieved top awards, as have many of our faculty. Through support from the UD administration and our friends and alumni, we have made significant improvements to our research infrastructure and our teaching mission. External grants of ~\$10 million/year have positioned our Department on an upward trajectory, and many of you reading this have been, and will continue to be, partly responsible for our sustained success.

Over the past year we have been fortunate to recruit new faculty and staff, and have wished others well as they move onto new positions. We have also experienced great sadness and loss in saying farewell to three Emeritus Professors, **Bob Wood**, **Burnaby Munson** and **Bobbie Colman**, who passed away this year. All will be remembered for their contributions to our Department and will be sorely missed. I encourage you to read the other articles in the **Blue Hen Chemist** featuring each one of their impacts on our students and the Department.



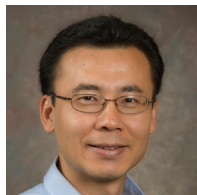
Jodie Hadden-Perilla



Jeff Mugridge



Catherine
Leimkuhler Grimes



Zhihao Zhuang

Our faculty continue to make us proud with many outstanding accomplishments, some noted below. I will note upfront that our Department is made exceptional by numerous day-by-day accomplishments of all our faculty, staff and students.

The hiring and promotion of our faculty has a tremendous impact on our teaching and research mission. **Jodi Hadden-Perilla** and **Jeff Mugridge** started as Assistant Professors in the summer of 2019 and are off to fast and productive starts. **Catherine Leimkuhler Grimes** and **Zhihao Zhuang** were each promoted to the rank of Full Professor. Their promotion is in recognition of achieving national excellence in research scholarship, teaching and service.

Many of our faculty have received national and international



Brian J. Bahnson

recognition for their scholarship and teaching. **Sue Groh** was this year's recipient of the University's Excellence in Advising Award. **Juan Perilla** was honored with a Scialog Collaborative Innovation award for work understanding the chemical machinery of the cell, funded by the Moore Foundation. **Tatyana Polenova** added to her recent accolades, being named a fellow of the International Society of Magnetic Resonance for her groundbreaking research in structural biology.



Sue Groh



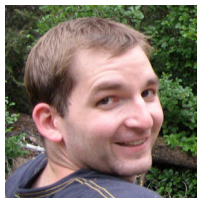
Juan Perilla

Our Department and UD are greatly strengthened by research and training programs that are led by our faculty. **Tatyana Polenova** and **Joe Fox** serve as Principal Investigators of Centers of Biomedical Research Excellence projects from NIH, to support the research of junior faculty members and strengthen the research infrastructure. The NIH Chemistry and Biology Interface (CBI) Predoctoral program, currently led by Co-Directors **Catherine Leimkuhler Grimes** and **Brian Bahnson**, was recently funded for an additional 5 years. The NSF Research Experiences for Undergraduates (REU) program, which is led by **Karl Booksh** and **Sharon Rozovsky** was recently recognized for their work by the American Chemical Society Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences.

The stewardship of the Department and administration of its undergraduate and graduate programs has been



Sandeep Patel



BJ Chain

greatly impacted by our Associate Chairs. **Sandeep Patel** recently completed his 3-year term as Associate Chair for Undergraduate Studies and Instruction, for which he is acknowledged for his service. I look forward to working with **BJ Chain** who recently began serving a 3-year term as our Associate Chair for Undergraduate Studies and Instruction. **Joel Rosenthal** is currently beginning his 2nd year serving as the Associate Chair for Graduate Studies and Research. I look forward to working with both BJ and Joel to further strengthen our Department.

Several of our faculty continue to serve the greater research and teaching mission at UD through administrative duties. **John Koh** continues to serve as the Director of the Delaware Biotechnology Institute (DBI) at a pivotal time of growth in biotechnology and biopharmaceutical sciences on the rapidly expanding Science, Technology and Advanced Research (STAR) campus. **Charlie Riordan**, the Vice President for Research, Scholarship and Innovation, continues to play a significant leadership role overseeing the UD research enterprise with rapid growth across the University. **Doug Doren** is serving as the Interim Vice Provost for Graduate and Professional Education and as the inaugural Dean of the newly formed Graduate College. Finally, **Murray Johnston**, in addition to running a vibrant research group, is serving as the Associate Dean of the College of Arts & Sciences.

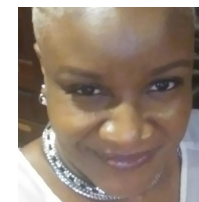
This past year has been particularly busy for our departmental staff. **Doug Nixon**, our Manager of Technical Services, directly supervises many of our technical staff, as well as ensures that our buildings and facilities are in prime working order. **Eileen Burns**, our Business Administrator, oversees departmental finances and contracts. All of our staff deserve our praise and acknowledgment for a job well done.

Our financials and administrative staff have had some changes with the departure of **Brenda Carboni** and recruitment of **Kris Farmer**, who has been hired as our new Sponsored Project Coordinator. Two of our administrative assistants, **Donna Alexander** and **Ann Manley** have left our Department to pursue other opportunities. We are fortunate to have recruited **Ayodele Johnson** and **Anne-Marie Nowak** to take over their roles in exceptional fashion. Our laboratory services staff has seen the departure of **Peggy**

Nagorski, and the addition of **Matthew Iverson** as our new Senior Laboratory Technician, joining the team to make sure our undergraduate teaching labs run smoothly. We successfully recruited a new Computing Support Specialist, **Justin Vitelli**, to work alongside our Manager of Computer Operations, **Pat McMahon**.

We thank **John Burmeister** for his many years of service, and specifically his leadership and efforts to pull together this 46th issue of the **Blue Hen Chemist**. It goes without saying that John has had a profound positive effect on our Department and students during his 55 years of service. We congratulate you John on an exemplary career and thank you for all that you have done to make our Department better.

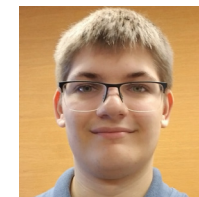
If you haven't visited the Department recently you should look for an opportunity to come back. I cannot stress enough how important our alumni and friends are in supporting our teaching and research mission, as well as serving as ambassadors of our Department. Do not forget that we are your academic home, and you are always welcome here, whether it be in person, via social media (tag us @ChemistryUD and follow us on Twitter and Facebook), or in spirit.



Ayodele Johnson



Anne-Marie Nowak



Matthew Iverson



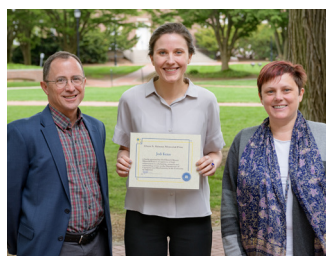
Justin Vitelli

– *Brian J. Bahnson*

The last twelve months has marked another excellent year for our Department's graduate program. As has been the case for the last many years, Chemistry and Biochemistry continues to be one of the most dynamic graduate programs on campus, and is the largest in terms of PhD studies, with over 180 doctoral students enrolled in our program. In the 2018-19 academic year, we awarded 28 PhD, 5 MS, and 8 MA degrees. We also excitedly welcomed 32 new students to our graduate program and CBC family this fall!

This year saw the implementation of significant changes to our graduate program requirements. In addition to placing an emphasis on more multi-disciplinary coursework, this marked the first year that 2nd year PhD students were not given cumulative exams and, instead, completed new written and oral PhD candidacy examinations. During this year of transition, our 2nd year students, along with our 3rd year students still operating under our prior degree requirements, completed research exams administered by PhD committees comprised of CBC faculty. *As a result, a full 51 of our students rose to PhD candidacy over the last year!* In future years, this number will return to a more typical level (~25–30 students) as we expect our incoming graduate classes to be operating under our newly implemented PhD requirements for the foreseeable future.

Numerous fellowships were bestowed on our graduate students this year. **Amanda Arnoff** (Rosenthal & Bloch Groups), **Stephen Hyland** (Grimes Group), **Marcus Jordan** (Lyman Group) **DeVonte Moore** (Kloxin Group, CHEG), and **Micaiah Murray** (Neal Group) were all supported by **University Graduate Scholars Fellowships**, and incoming students **Elorm Awuyah**, **Bria Garcia**, **Issak Proano**, **Daniel Rojas**, and **Brittany Shimanski** have been awarded these prestigious fellowships for the 2019-20 academic year. **Klare Lazor** (Grimes Group), and **Sina Rezazadeh** (D. Watson Group) were awarded **University of Delaware Doctoral Fellowships**, and **Dissertation Fellowships** were given to **Michael Apsokardu** (Johnston Group), **Kristen DeMeester** (Grimes Group), and **Marcie Wiggins** (Booksh Group). **Andrew Kuznicki** (Bloch Group), **Jodi Kraus** (Polenova Group), and **Sarah Krause** (D. Watson Group) continue to be supported by highly prestigious **NSF GRFP Pre-doctoral fellowships**.



Jodi Kraus (center)

It will come as no surprise that our graduate students were recognized with a variety of accolades and awards over the last year. These include the



Joel Rosenthal

2019 Glenn S. Skinner Memorial Prize, given to **Jodi Kraus** (Polenova Group), **2019 Brennie Hackley Award for Excellence in Research**

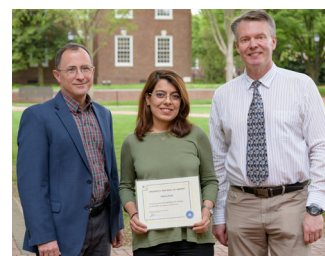
given to **Masha Kohn** (Teplyakov Group), and the **2019 Trofimenko Memorial Prize**

given to **Maxwell Martin** (Rosenthal Group). **Maxwell Martin** (Rosenthal Group) also placed first in this year's **Silver Symposium**, with the second and third place prizes going to **Walter Drake** (Bahnsen & Grimes Groups) and **Alex Bryer** (Perilla Group), respectively.

Our students research accomplishments were also on display at our inaugural **"CBC Research Review"**. **Jodi Kraus**, (Polenova Group), **Anthony Rice** (Rosenthal Group) and **Weijun Gui** (Zhuang Group), received prizes for giving outstanding poster presentations at



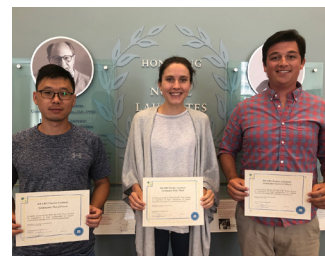
Maxwell Martin (left)



Masha Kohn (center)



Silver Symposium Awards



CBC Poster Presentation Awards



Elizabeth Dyer Awards

(Grimes Group), **Hayley Reed** (Chain Group), and **Yinan Zhang** (Neal Group) were all recognized with **Elizabeth Dyer Teaching Awards** for their outstanding service



Kristen DeMeester

as teaching assistants across a variety of CBC courses. **Kristen DeMeester** (Grimes Group) was also honored at the university level, as she was awarded the **Theodore Wolf Prize in Physical and Life Sciences** for her dissertation on the *Synthesis of Bioorthogonal Muramyl Glycans That Illuminate and Track Bacterial Peptidoglycan*. Each year, the Wolf Prize is awarded in recognition of the most outstanding UD dissertation submitted across all physical and life science disciplines. Kristen's award is a testimony to her insight and dedication, and represents one important highlight of the impactful science being pursued across our Department!

Many of our students received support to travel and present their research results at a variety of conferences and symposia, or to attend short courses. **Linh Tran** and **Andrea Potocny** (both of the Rosenthal Group) were selected to attend the **Telluride School on the Fundamental Science of Alternative Energy**, and received UD Professional Development Awards to help finance their trips. Other Professional Development Award recipients include **Alexander Bryer** (Perilla Group), **Megan Hoerner** (M. Watson Group), **Farzaneh Ahmadi Darani** (Theopold Group), **Katerina Korch** and **Sarah Krause** (both of D. Watson Group), **Amanda Childs** (Bobev Group), **Junhui Zhou** and **Ashley Brown** (both of Grimes Group), **Roman Zaddorozhnyi**, **Sucharita Sakar**, and **Chunting Zhang** (all of Polenova Group), **Prajwal Paudel** (Zhuang Group), **Casey Rowland** (Bloch Group), **Reetika Dutt** (Thorpe Group), **Christopher Goodwin** (Beebe Group), **Mahsa Konh** (Teplyakov Group), and **Meng Jia** (Gundlach Group). Finally, **Molly Wagner** (Dybowski Group) received a prestigious CAS Graduate Student Travel Grant to attend the **Ampere NMR School** in Poznan, Poland.

the event. Our students' dedication to teaching and instruction was also recognized, as **Christine Banos** (Zhuang Group), **Nicholas Costantini** (Zondlo Group), **Elizabeth D'Ambrosio**

(Grimes Group), **Hayley Reed** (Chain Group), and **Yinan Zhang** (Neal Group) were all recognized with **Elizabeth Dyer Teaching Awards** for their outstanding service as teaching assistants across a variety of CBC courses. **Kristen DeMeester** (Grimes Group) was also honored at the university level, as she was awarded the **Theodore Wolf Prize in Physical and Life Sciences** for her dissertation on the *Synthesis of Bioorthogonal Muramyl Glycans That Illuminate and Track Bacterial*

With tremendous help from **Lori Nesnow**, we have dedicated ourselves to further improve the size and diversity of our graduate program, while maintaining a dynamic and dedicated graduate student population. Faculty and students from across CBC participated in graduate recruiting events at national American Chemical Society (ACS) meetings, the Mid-Atlantic Regional Meeting of the ACS (MARM), the American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting, the annual Biomedical Research Conference For Minority Students (ABRCMS), the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE) Annual Meeting, and the Society for the Advancement of Chicano and Native American Scientists (SACNAS) National Meeting. The impact of these efforts was evident in the graduate applications we received this year and additional recruiting efforts are planned in the years to come.

The last academic year marked my first as our Associate Chair of Graduate Studies & Research. My transition to this position was greatly facilitated by the dedicated efforts of many colleagues within our Department, and I want to acknowledge those that have worked so hard to support our graduate program. I offer special thanks to those that served on our Graduate Admissions Committee, including **Profs. Eric Bloch, Karl Booksh, William Chain, Catherine Grimes, and Juan Perilla**. Thanks also go out to **Profs. Svilen Bobev, Lars Gundlach, Sharon Neal, Zhihao Zhuang, and Neal Zondlo**, who served on our Graduate Curriculum Committee and helped identify awards and funding opportunities for our PhD students, while periodically reviewing potential changes to our graduate program. I also want to thank the many additional CBC faculty and students who have contributed to the Department-wide recruiting efforts described above.

I also want to give special thanks to two additional members of our Department who have worked so hard to support CBC's graduate program. I am deeply indebted to **Mrs. Lori Nesnow**, for her support of our graduate admissions and recruiting efforts, and **Mrs. Susan Cheadle**, who maintains the graduate program on a day to day basis. Both of these talented and dedicated colleagues have worked tirelessly to help our graduate program grow in size and stature, while ensuring that our cadre of talented students have the information and resources that they need to succeed. I also want to thank my predecessor, **Prof. Donald Watson**, for his previous years of outstanding service as our Associate Chair, and for the significant help and guidance he has provided me over the last year. I could not have asked for better support than that which I have received from these amazing colleagues!

– Joel Rosenthal

IN MEMORIAM: Roberta F. Colman

(1938 – 2019)

Roberta (Bobbie) F. Colman passed away on August 15, 2019, at her home in Media, Pennsylvania. Professor Colman was a nationally recognized biochemist and a prominent member of the Department of Chemistry and Biochemistry for 36 years.

Roberta Colman, Willis F. Harrington Professor, joined what then was the Chemistry Department in 1973 as its fifth biochemist. Her distinguished career in research started in high school as a recipient of a Westinghouse Science Talent Search Award. She graduated from Radcliffe College summa cum laude and went on to graduate school at Harvard where she received a Ph.D. under the direction of the renowned physical organic chemist, Frank Westheimer. After postdoctoral fellowships at NIH and Washington University in St. Louis, Roberta joined the faculty in the Department of Biological Chemistry at Washington University in 1966. A year later she moved to the Department of Biological Chemistry at Harvard Medical School.

During her highly productive career, Prof. Colman published over 260 articles in premier biochemistry journals such as the *Journal of Biological Chemistry*, *Biochemistry*, *Archives of Biochemistry and Biophysics*, *Nature Genetics*, and *Protein Science*. Many of her publications dealt with the structure of the active sites of enzymes and the function of various amino acid side chains in enzyme catalysis. She pioneered the use of particular reactive nucleotide analogs as affinity labels to probe enzyme active sites. As a world authority on the structure and function of NAD- and NADP-linked isocitrate dehydrogenases and other enzymes such as glutamate dehydrogenase, pyruvate kinase, glutathione S-transferase, and adenylosuccinate synthase, she established numerous collaborations and received many honors.

Nationally, Prof. Colman was a fellow of the American Association for the Advancement of Science and a member of numerous professional societies. Among other positions, she was treasurer of the American Society for Biological Chemists from 1981-1985. She served on the Executive Council of the American Society for Biochemistry and Molecular Biology

(ASBMB) from 1993-1996, and in 1996 she received the Herbert A. Sober Award for scientific achievement from the ASBMB. She served as chair of the Division of Biological Chemistry of the American Chemical Society from 1998-2000. In 1985, she received the University of Delaware's highest faculty award, the Francis Allison Award, for "that faculty member who has made the most outstanding contributions to his/her field." Her research accomplishments led to being on the editorial board of *Archives of Biochemistry and Biophysics* for 27 years including 17 years as an Executive Editor. She was Associate Editor of *Protein Chemistry* for 6 years and served on the editorial boards of several other journals including the *Journal of Biological Chemistry* and *Protein Science*.



Throughout her career at Delaware, Roberta Colman maintained a well-funded research group of about 10 people including, research assistants, undergraduates, graduate students, postdoctoral fellows, and visiting faculty members. Nearly 30 graduate students completed their dissertations under her guidance. Many of these associates have gone on to distinguished careers elsewhere. In addition, she was the program director of the University of Delaware's NIH-funded Chemistry-Biology Interface graduate program from 1993 to 2009. Students in her laboratory received excellent training. In addition to her work with graduate students and postdoctoral fellows, a large proportion of the undergraduates who worked in her laboratory became coauthors on scientific publications.



Presentation of Honorary D.Sc. degree to Roberta Colman in 2014

Graduate students and undergraduates over the years will remember Roberta Colman as their teacher in the graduate-level biochemistry core courses, CHEM-641 and 642. She also has taught CHEM-214 Elementary Biochemistry for non-majors and CHEM-840, Mechanisms of Enzyme Regulation.

After being one of the only women in her college science classes and after discovering early in her career a large salary discrepancy between herself and similarly qualified male faculty members, Professor Colman took a special interest in nurturing and enabling the careers of women and minority scientists. She did this through mentoring students in her own laboratory and through service on national committees such as the Committee on Women in Biochemistry and the Educational Affairs Committee of the ASBMB.

Professor Colman enjoyed traveling. With her husband Robert, she used summer vacations to travel the world from the Antarctic to Asia and Africa. In each country, she took in the local culture and natural history of each and returned with photographs to share.

After retirement in 2009, Roberta regularly attended classes at the University's Osher Lifelong Learning Institute where she continued to cultivate her many interests.

Mayura Dange, a former graduate student reflected on Dr. Colman's influence. "She is the reason I am what I am. ...Not only a US graduated Scientist, but also a feminist, a travel lover, a hobbyist photographer. ... Her scientific excellence is all over the web, but her personality was far beyond science labs and books. ...She was a constant learner, who after her retirement at the age of 71, started taking music appreciation and architecture classes at the University. She would subtly emphasize how a woman has to take extra efforts to prove herself while strongly reminding us that being a woman does not entitle you to any freebies or sympathy. There are many life lessons I learned under her guidance, but more personal to

me was when I had tried and failed over and over in one part of my project. She was someone who would never give up, but she told me 'sometimes we have to let go of something that is not working out and focus on what is working. It's not giving up, it's being practical.'"

Anastasia Thévenin, another doctoral student of Roberta Colman writes, "Rest In Peace, dearest Dr. Colman - my Ph.D. adviser. I would not be where I am today without your help and guidance. You were the kindest, most caring person I knew and your positivity was my guiding light during my Ph.D. You will always be the kind of scientist and a woman I will aspire to be."

Mark Segall, a former postdoctoral researcher said, "Dr. Colman was an ideal mentor, extraordinarily knowledgeable, but also very willing to consider and discuss the ideas of scientists at earlier stages of their careers. She provided an environment that brought out the very best in her graduate students and postdocs. There was never a single day that I did not feel supported, encouraged, and eager to move ahead with my project and determine the outcome of the next experiment. Even years after I left her laboratory, Dr. Colman remained extremely supportive and an enduring role model to me."

Don Dennis, faculty colleague for many years, remembers a conversation with a visiting speaker who noted that Roberta was such a competent scientist and that she only talked about substantive issues. The visitor then wondered if she ever engaged in small talk. Dennis responded that she did, but she never initiated it because "she had more respect for other's time than they did for themselves." Dennis also noted that since the age of 17, Roberta routinely got and did not need more than 5 hours of sleep a night.

Roberta Colman is survived by her husband, Robert Colman M.D., and children, Sharon and David.

– Hal White

IN MEMORIAM: Burnaby Munson (1993–2019)

(As Published by UDaily)



Burnaby Munson, retired University of Delaware chemistry professor, award-winning researcher and venerated director of the Honors Program who taught tens of thousands of UD students over more than 50 years, passed away June 23. He was 86.

“Burnaby was a wonderful man who will always be fondly remembered by everyone who knew him,” said UD President Dennis Assanis. “I am so glad we were able to recognize him with an honorary degree at this year’s Commencement. He was so grateful for this honor, and yet we are the ones who will be eternally grateful for his contributions to our institution.”

Dr. Munson, who joined the UD faculty in 1967 as an associate professor of chemistry, retired in 2018 as the C. Eugene Bennett Chair of Chemistry and was awarded emeritus status.

Earlier this month, he received an honorary doctor of science degree at the University’s 170th Commencement ceremony. The citation in his honor noted, “During your five decades of teaching, you taught more than 46,000 students and oversaw some 8,000 class sessions. Your influence on generations of UD students is unparalleled. And, of course, we must also

mention your Wednesday night study breaks, an appetizing spread of snacks that you’ve been providing weekly to hard-working and grateful students since 1979.”

The citation concluded, “Dr. Munson, you were the rare teacher who combined brilliance and warmth. You expected much of your students, but you also knew how to instill in them both passion for the subject and belief in their abilities. You have been a gift to your students and to the greater University of Delaware community.”

The following week, Dr. Munson was saluted at Alumni Weekend during the Honors Program Alumni Reception, held June 7 at the Honors Program Building. Many honors alumni had an opportunity to chat with the man who was involved with the program for more than 40 years and played a major role in its development.

‘Revered educator, mentor, scientist and friend’

Some of Dr. Munson’s colleagues and former students shared their reflections about him with UDaily.

Robin Morgan, provost: “Losing Burnaby Munson feels like something fundamental to UD is missing. Burnaby was a superb teacher and mentor not only to innumerable students but also to faculty members, particularly in chemistry and biochemistry but also across many disciplines. May we all work together to follow the examples that Burnaby set for us -- examples based on excellence in everything he did, humility, dedication, selflessness and his own special brand of humor. The University of Delaware has indeed been blessed to have Professor Munson give us more than 50 years of his life.”

John Pelesko, dean, College of Arts and Sciences:

“Dr. Burnaby Munson was as close to a complete faculty member as one can imagine. He performed world-class research in chemical ionization mass spectrometry. He was an outstanding instructor, beloved by students, with a genuine passion and commitment to student success. He was tireless in his service to the University community, establishing UD’s Honors Program, constantly taking part in out-of-class activities with students, and also conducting significant service for his professional community. He will be sorely missed by all who had the pleasure of knowing him.”



Michael Chajes, incoming director of the University Honors Program:

“If there is one person who epitomizes UD’s Honors Program, it is, without question, Burnaby Munson. In my nearly 30 years at UD, I cannot think of another faculty member who has profoundly impacted more students than Burnaby. It is not too much to say that he has been to the Honors Program what Francis Alison was to the University of Delaware. Burnaby not only inspired generations of students to pursue their dreams, he also inspired faculty, like me, to be the very best that we could be. As the incoming honors director, I had the pleasure of spending time with Burnaby during our recent alumni reunion event. As always, he was the person that everyone wanted to see. While we will miss him greatly, his legacy will continue to grow stronger and stronger, and all of us in the Honors Program will strive to live up to the amazing example that he set.”

Brian Bahnson, chairperson of the Department of Chemistry and Biochemistry:

“Our Department was greatly saddened by the news of the passing of Dr. Munson. He was a revered educator, mentor, scientist and friend. He was groundbreaking in his contributions in research, service and teaching. He was cited in the press release of the 2002 Nobel Prize in Chemistry for establishing the field of Chemical Ionization Mass Spectrometry. He served as chair of the chemistry department, served as the UD Honors Program director and was awarded numerous University awards. His career spanned 52 years at UD, and his life was full of kindness, friendship and generosity.”

John Burmeister, Alumni Distinguished Professor of Chemistry and Biochemistry:

“Burnaby Munson was the embodiment of a modern-day Mr. Chips! During the 65 years that chemistry has served as the center point of my educational and professional life, I have never known anyone who exhibited the total commitment to the academic enterprise that Burnaby did. Whether it was cutting-edge research, visionary administration, inspired teaching or heartfelt advising/mentoring (and he excelled in all of these endeavors), Burnaby devoted virtually all of his waking moments to these tasks. Above all, service to students was at the core of his very being. The University and our department were blessed to have shared the last 52 years of his Wonderful Life. Our department will never be the same!”

Christopher Hadad, Class of 1987, Honors, professor of chemistry and biochemistry, Ohio State University:

“While Burnaby was a man of tremendous intelligence, work ethic and scientific success, he worked with only one mission — to further the success of all of those around him, whether they be undergraduate students, graduate students, research collaborators or staff. He worked tirelessly to make everyone better, often when they, especially students, did not even recognize what they were capable of doing... I have never met anyone like Burnaby. He gave of himself fully to everyone at the University of Delaware, and I have never met anyone more committed to an institution and to its students and faculty like Burnaby. It has been an honor to know him and to have been mentored by him. But the world is a sadder place with him being gone.”

Travis Longcore, Class of 1993, Honors, associate adjunct professor at the UCLA Institute of the Environment and Sustainability:

“May we all be so fortunate as to influence so many people in such a positive way as Burnaby Munson. He made a family of us UD Honors Program kids, and I have a feeling we were all his kids whether we knew it or not at the time. I’ll take a study break tonight in his honor; now we are all responsible for bringing the snacks for the next generation. He could never be replaced, but I hope he taught us all enough to carry on with good cheer, high standards, endless curiosity and warm hospitality.”

Heather Hartman, Class of 2010, Honors, surgery resident, Drexel University College of Medicine:

“Dr. Munson was an incredible professor who brought the magic of chemistry alive for so many students. Beyond that, he truly cared for his students on a personal level.”

ABOUT BURNABY MUNSON

An analytical and physical chemist, Dr. Munson’s research focused on mass spectrometry, a field where he had an important impact and for which he received numerous awards. His research was cited by the Nobel committee when it awarded the 2002 Nobel Prize to John Fenn and Koichi Tanaka. Dr. Munson’s work on chemical ionization mass spectrometry made it possible to obtain informative mass spectra of high-molecular weight and sensitive compounds.





At the University, he taught in the Honors Program from 1976 until his retirement in 2017 and also served on its advisory board in the 1970s and '80s. He was the program's acting director and then director for many years in the 1980s. He also initiated Wednesday Night Study Breaks in the Honors Living Learning Community. Upper-division students who live in first-year Honors housing and serve as mentors assisting with academic and social questions and problems are known as Munson Fellows in his honor.

Upon his retirement, the Department of Chemistry and Biochemistry held a special colloquium paying tribute to Dr. Munson. Writing in the **Blue Hen Chemist** newsletter, colleague Cecil Dybowski, professor of chemistry and biochemistry, said Dr. Munson "leaves behind a legacy of educational excellence and a cadre of students, both undergraduate and graduate, who have, through coaxing, cajoling, threatening and patience, developed an appreciation for chemistry and its place in the world."

In 2018, Dr. Munson was named a fellow of the American Chemical Society, an honor that recognizes outstanding achievements in and contributions to science, the profession and society.

His University recognitions also include the Excellence-in-Teaching Award in 1973, the Medal of Distinction in 2002, the Francis Alison Faculty Award in 1992 and Outstanding Faculty Member in the College of Arts and Sciences in 1994, among others.

Dr. Munson earned his doctorate in physical chemistry in 1959 from the University of Texas at Austin, after also studying at the University of Wisconsin. He worked for Esso (now Exxon) Research and Engineering as a research chemist until joining UD's chemistry department in 1967.

According to an oral history conducted by the Chemical Heritage Foundation, Dr. Munson was born on March 20, 1933, in Wharton, Texas, on the Gulf Coast to Milam Stephen Munson Jr. and Emily Elizabeth Burnaby. His father, paternal grandfather and paternal great-grandfather were all lawyers, and his mother was the librarian at the high school.

He was preceded in death by his parents, stepmother Sarah Estelle Hancock Munson and sister Bettie Munson Patton. He is survived by a niece, Joyce E. Kavanagh of Appleton, Wisconsin; and two nephews, Stephen Michael Patton of Rock Island, Illinois; and Ward C. Patton II, of Appleton; as well as one grandniece and two grandnephews.

He will be interred at the family cemetery in Angleton, Texas, at a future date. As the product of three generations of lawyers and with his trademark sense of humor, Dr. Munson chose this epitaph for his grave marker: "A Chemist, not a Lawyer."

Dr. Munson was a generous philanthropic contributor to the University supporting student enrichment experiences such as undergraduate research and faculty initiatives in the Honors Program. His philanthropy not only directly supported the University but also inspired countless students, faculty and alumni to give to the University in his honor. To celebrate his memory, the University invites the community to support two funds that Dr. Munson established through his estate at (https://www1.udel.edu/giving/henfunder/?cfpage=project&project_id=29440).


CELEBRATING
the rich and impactful life of
BURNABY
MUNSON

PLEASE JOIN THE UD
COMMUNITY IN REMEMBERING
DR. MUNSON AND SHARING BEST
MEMORIES AND MOMENTS FROM
HIS LEGACY.

Friday, October 4, 2019
4:00 PM | Mitchell Hall
University of Delaware

Reception to follow at the Honors Program
186 S. College Avenue | Newark, DE

Live Streaming / UD Capture available:
<https://sites.udel.edu/udlive>



March 20, 1933-June 23, 2019

Contributions in memory of Dr. Munson can be made to The Harward and Munson Fund for Honors Undergraduate Research at the University of Delaware. Please send contributions to: University of Delaware, Gifts Processing, 83 East Main St, 3rd Fl., Newark, DE 19716. Make checks payable to "University of Delaware" and include the name of the fund on the memo line.

Tributes can be left on Dr. Munson's Facebook page.

A memorial service for Dr. Munson will be held on Friday, October 4, 2019 in Mitchell Hall, starting at 4PM.

IN MEMORIAM: Donald Burton Wetlaufer

(1925 – 2014)

The Department of Chemistry and Biochemistry has received belated notice that **Don Wetlaufer**, Chair of the Department from 1975 to 1985 and DuPont Professor of Chemistry until his retirement in 1996, had passed away on March 8, 2014 at the age of 88. At the time of his death, he had been living in Naples, Florida, for some time.

Don, a physical biochemist, was recruited to our Department (before “Biochemistry” had been added to its name) from the University of Minnesota, where he had established himself as a leader in the field of protein structure and protein folding. His name is often associated with the widely-used term “domain” as applied to compact, often stable, independently folded substructures of proteins. In 1973 he authored a paper in *Proceedings of the National Academy of Science* on compact globular structures in proteins that referred to the “Domain Hypothesis” proposed for immunoglobulins by others in 1971. Although Don did not coin the term, this important paper provided significant support, refinement, and popularization to the concept. At the University of Delaware, Don continued his interest in protein structure and maintained a research program that increasingly focused on the behavior of proteins in reverse phase chromatography.

Don received his undergraduate degree in Chemistry with honors and membership in Phi Beta Kappa in 1946 from the University of Wisconsin. As an undergraduate, and for two years following graduation, he worked as a chemist at Argonne National Laboratory, after which he returned to the University of Wisconsin for a Master’s degree in Biochemistry (1952) and a Ph.D. in 1954. He had distinguished postdoctoral experiences at the Carlsberg Laboratory in Denmark with Nobelist Linderstrom Lang (1955-56) and at Harvard with John Edsall (1956-58) and Elkin Blout (1958-61). From Harvard he took an assistant professorship at the University of Indiana Medical School, a

position he soon left in 1962 for the University of Minnesota College of Medical Sciences as an associate professor, later becoming Professor of Physiological Chemistry.

He was a member of the American Association for the Advancement of Science and of the American Chemical

Society, where he was a councilor and alternate councilor in the Division of Biological Chemistry from 1975 to 1987. He also was a member of the American Society of Biochemistry and Molecular Biology, The Protein Society, and the Chromatography Forum.

The 1970’s were a time of rapid growth for the Department of Chemistry at the University of Delaware, stimulated in part by interest from the DuPont Company to strengthen the Department. In one year, 1971, the Department jumped from 15 to 21 faculty members, whose

new members included **Richard Heck**, a future Nobel Prize recipient, and **Luigi Venanzi**, a prominent inorganic chemist. Venanzi soon moved to the ETH in Switzerland. **Burnaby Munson** served as interim chair while a search committee that included a senior university administrator and Howard Simmons, a member of the National Academy of Science and head of Central Research at the DuPont Company, conducted a two-year search for a new external chair. Over 30 candidates were interviewed. The committee selected Don Wetlaufer, who served for the next 10 years.

During Don’s tenure, five new faculty members were hired (**Dybowski**, **Gierasch**, **Gold**, **Rechnitz**, and **Thorpe**). He was interested in supporting new research-active faculty and ensuring their success. His quiet and pragmatic approach to administration served to guide the Department through a period of transition to a research-oriented, academically strong force on campus and beyond.

– Hal White



IN MEMORIAM: Robert H. (Bob) Wood (1932–2019)

(As Published by UDaily)

Robert H. Wood, professor emeritus of chemistry and biochemistry at the University of Delaware, died Feb. 3, 2019, at Kendal at Longwood, a continuing care community. He was 86.

Dr. Wood spent his entire academic career at the University of Delaware, joining the faculty as an instructor in 1957, rising through the ranks to become a full professor in 1970, and retiring in 2002 after 45 years at UD. From 1969-71, he chaired the then-Department of Chemistry.

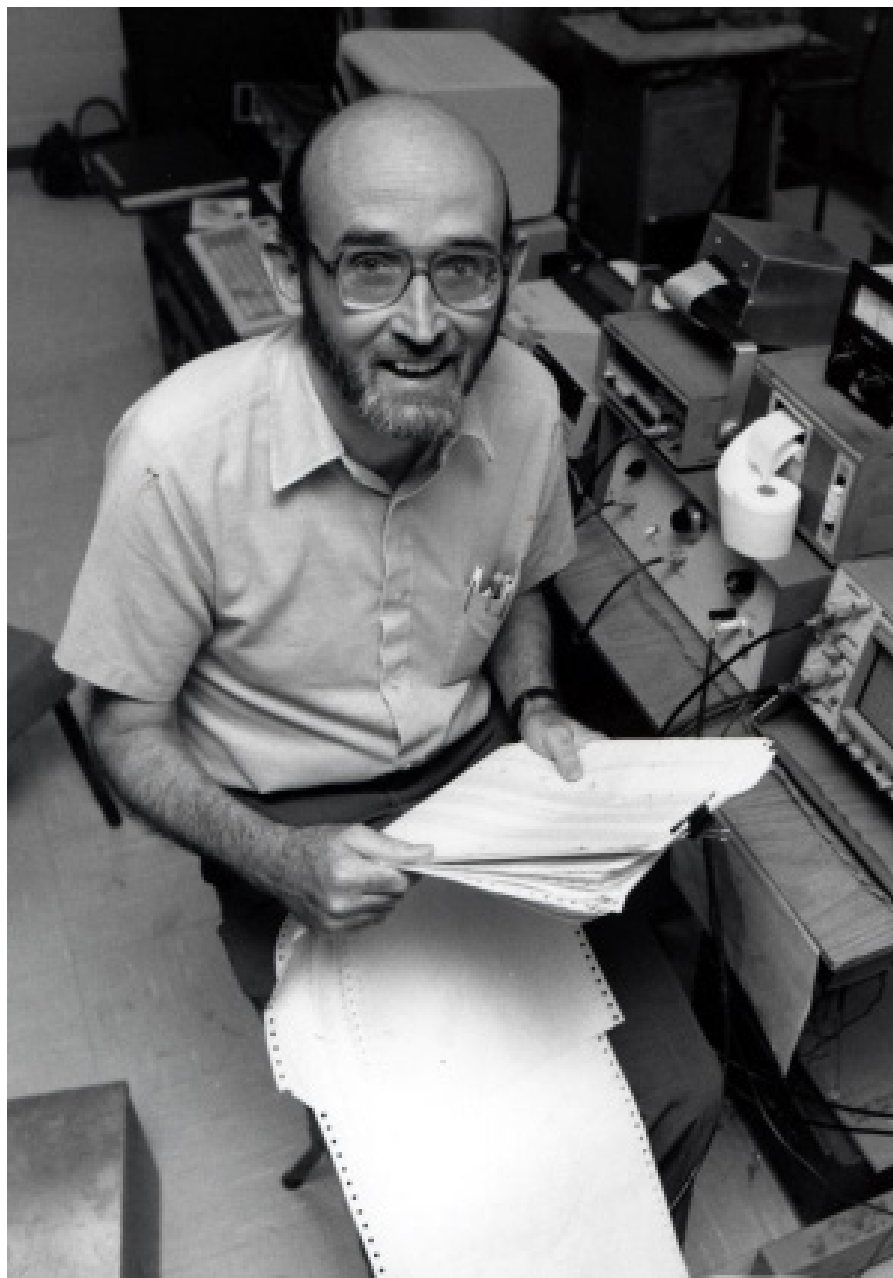
“On behalf of the entire University community, I extend our deepest condolences to the family, friends, colleagues and many alumni taught by Dr. Wood,” UD Provost Robin Morgan said. “Bob’s career spanned 45 years at the University of Delaware, and that remarkable tenure was marked by inspirational leadership, award-winning scholarship and devoted teaching, all accompanied by a passion for helping others.”

Several of Dr. Wood’s colleagues shared their memories.

John Burmeister, Alumni

Distinguished Professor of Chemistry and Biochemistry, said, “When I arrived at the University of Delaware in the fall of 1964, as a fresh-faced assistant professor, Bob was one of the dozen CHEM faculty who welcomed me to the

department. For the next 38 years, until he retired, I valued his wise counsel, admired his great intellect and, most importantly, cherished his friendship. He personified the Ideal Colleague.



Burnaby Munson, professor emeritus of chemistry and biochemistry, recalled Dr. Wood as “an excellent colleague, a great friend, a first-rate physical chemist and a dedicated teacher.” He added, “I appreciated his help and enjoyed his friendship particularly in my early years of teaching at UDEL.”

Cecil Dybowski, professor of chemistry and biochemistry, said, “Bob was a truly unique person. He was insightful about everything from chemistry to teaching to waxing of skis. What stands out for me was his ability to enjoy whatever he did. He was internationally recognized in chemical circles, but he could thoroughly enjoy a game of squash and a round of beer with gusto. As a young faculty member here, I quickly learned from him what was important in our profession, and for that I shall always be grateful.”

ABOUT ROBERT H. WOOD

After earning his bachelor’s degree from the California Institute of Technology in 1953, he received his doctorate in chemistry from the University of California at Berkeley. Before joining the Delaware faculty, he worked in the research and development department of Beckman Instruments.

Dr. Wood was recognized as a world-class expert for his contributions to the field of solution chemistry spanning many years, especially in the area of calorimetry. He recognized the great potential of flow densitometry and flow calorimetry. Together with his students, postdocs and colleagues, he developed the equipment and experimental techniques that greatly extended the experimental range to the very high temperatures and high pressures extending even into the supercritical region.

During his career, he mentored 36 graduate students (27 doctoral students and nine master’s students), published more than 200 scientific papers, was awarded two patents and served on the editorial or advisory boards of four prestigious journals: *Journal of Solution Chemistry*, *Journal of Physical Chemistry*, *Journal of Chemical and Engineering Data* and *Journal of Chemical Thermodynamics*.

Among Dr. Wood’s many honors were the first James Christensen Memorial Award for Innovations in Chemistry, the Huffman Award presented by the Calorimetry Conference and the R.A. Robinson Memorial Lectureship presented by the Royal Society of Chemistry. In 1997, he was awarded an honorary degree by the University of Blaise Pascal in Clermont-Ferrand, France, for his long-standing international collaboration with that university.

In 1992-92, he was named a fellow of the University’s Center for Advanced Studies, and he used the fellowship year to develop models of the forces between atoms in aqueous solutions.

Dr. Wood traveled extensively for both work-related meetings and for pleasure. He was an avid hiker, cross-country skier and windsurfer, and in his earlier years, he played intercollegiate soccer and also enjoyed tennis, volleyball and racquetball.

His family noted that he will be remembered for his hearty laugh, fun spirit, generosity and pleasure in having long and deep discussions with family and friends.

He is survived by his wife, Joanne; sons, Michael and Mark; brother, Guy; two stepsons, Todd and Bill; and three grandchildren.

An extremely well-attended memorial service was held at Kendal on May 11, 2019. One of the remembrances shared in print (from **Marian MacMillan**, your Editor’s long-serving administrative assistant) bears repeating:

“...he was always so upbeat and I loved his dry sense of humor. I loved Halloween in the Chemistry Dept. because Dr. Wood was a wonderful Count Dracula. I remember encountering him in the hallway and he went for my neck in a typical Dracula fashion – but I was ready for him. I had used red ink to draw two puncture wounds on the side of my neck and pointing there said, ‘I gave at the office’”.

Finally, I asked one of Bob’s doctoral students, **Greg Zimmerman** (PhD 94), Professor of Chemistry and Chair, Bloomsburg (PA) University, to share a personal vignette:

“That’s good experimental technique!” These words of affirmation were what you wanted to hear as a graduate student. There was, of course, the negative version of this phrase, “that’s poor experimental technique,” to describe failures or seriously deficient results. As you came to know Bob better, it became apparent he used this phrase to describe accomplishments (or failures) outside of lab experiences. I well remember the day that I told Bob that my wife Kathy and I were expecting our first child. His response was “That’s good experimental technique!” When considering Bob’s contributions to science, it is clear: Bob Wood was a scientist with GREAT experimental technique!”

SPOTLIGHT ON RESEARCH: The Rosenthal Group



Associate Professor Joel Rosenthal and his research team pursue a variety of multidisciplinary projects to develop sustainable strategies for the storage and conversion of energy resources, and for the improvement of human health. His highly motivated research team is currently comprised of nine graduate students, three undergraduate researchers and one postdoctoral fellow. Although a variety of distinct research projects are currently pursued in Rosenthal's group, the ability to control the electronic states of new compounds and materials using light and/or electricity, represents an important common thread that connects research within his lab. Rosenthal's team applies their expertise to enable the synthesis of compounds and materials that are challenging to access via traditional routes, to develop more efficient catalysts for a variety of transformations, and to discover new probes and sensing paradigms for biological applications.

One main area of focus for Rosenthal's team has been the development of new molecular and heterogeneous materials that can sustainably convert carbon dioxide from the air to fuels and other valuable commodity chemicals. This work is laying the foundation to new technologies that couple remediation of a major environmental threat (CO₂) to storage of solar and other renewable energy resources. Although the efficient capture and activation of CO₂ has been an historically difficult proposition, Joel's lab has been very successful in this arena, having developed a family of inexpensive post-transition metal based materials that generate fuels directly from CO₂ and sunlight.

Joel and his students have published extensively on this work and have also patented many of these advances. In addition to continuing to develop new catalyst platforms, Rosenthal's team leverages a network of collaborative partnerships with researchers from across UD, at other universities, and at the Department of Energy's Argonne, Brookhaven and Oak Ridge National Labs, to better understand how their CO₂ conversion architectures function. These multi-institutional efforts help to shape future catalyst design and refinement directions in the Rosenthal lab, and provide excellent opportunities for Joel's students to interact with and learn from interdisciplinary scientists from across the nation. Energy and catalysis research emanating from Professor Rosenthal's lab has been recognized through a number of awards from private foundations, industrial sponsors, and international organizations. These efforts have also been supported through grants from the NSF and DOE.

A second major research avenue within Rosenthal's lab is focused on the development of non-traditional tetrapyrrole architectures for photochemical applications. Members of Rosenthal's team engaged in this research area are developing light activated platforms for solar energy harvesting, small molecule activation, and catalysis. Significant emphasis has also been placed on the design, synthesis and testing of new light activated therapeutics for the treatment of cancer and other maladies in human and animal patients. In recent efforts, members of Joel's lab have developed photochemotherapeutic agents that can be activated with deep-tissue penetrating near infrared light to effect tandem

photothermal and photodynamic therapies of triple negative breast cancer in cell culture. Rosenthal's group has recently moved to patent these tandem photochemotherapy agents, which are currently being applied toward of a variety of hard to treat tumor types in animal models, with an eye toward translation to human and veterinary patients.

In addition to sustaining a dynamic research program that continues to evolve and attack new areas of science, Professor Rosenthal has been equally dedicated to educating students in the classroom and laboratory. He has worked with nearly 30 undergraduate students within his lab, the majority of whom have gone on to pursue doctoral, medical and other professional degrees. Four undergraduates that have pursued research in Professor Rosenthal's lab went on to receive prestigious NSF Graduate Research Fellowships to support their doctoral work. Joel has also hosted nearly ten high-schoolers in his lab, to give these younger students an authentic research experience and an appreciation for the scientific process. Joel is also extremely dedicated to graduate education, as nine PhD and three MS students have completed research dissertations under his advisement. Professor Rosenthal also serves as our Associate Chair for Graduate Studies and Research, where he works with the Department's faculty, staff and students to provide a rigorous and vibrant environment for research, scholarship and the training of the next generation of scientists and critical thinkers.

In addition to providing research opportunities for high school students, Joel has also committed himself to fostering an interest in science for K–12 teachers. He has been a very active player in the Delaware Teachers Institute (DTI), which links UD faculty members with K–12 teachers from underserved schools in Delaware. Professor Rosenthal has led two DTI seminar series in the areas of Energy and Environment (2016) and Chemistry of Materials (2017), and has worked with ~20 public school teachers from all grade levels as they develop new curriculum units for K–12 students related to these respective areas. He has also contributed to the Yale National Initiative (YNI) in 2018, which extends the teacher institute approach at the national level, and is currently engaged in his third stint as a DTI seminar leader in the area of Chemistry and Sustainability. Joel is very excited to continue working with ten new teachers that will be developing new curricula for their classrooms this Fall.

Professor Rosenthal's efforts are well supported by his family, and especially by his devoted wife Kristen and adoring daughter Alexandra (~1), who always enjoy visits to Joel's office, walks around the Green, and family meals on Main Street. Joel is always happy to welcome former students and group alumni when they visit campus to show them the latest advances from the lab, and newest developments around our continually growing and advancing Department. He hopes you will take some time to stop by and say hello the next time you are at UD!

BBB

In this case, "BBB" means "Burgeoning Benefits of Bequests" – think of a pebble being tossed into a pond, and the expanding circles produced thereby.

During the 24 years that I have edited the **Blue Hen Chemist**, our undergraduate and graduate programs have benefitted greatly from the support of our alumni and friends. Major gifts have made major impacts. Some have been of the "one time only" variety; others, like those from the **David W. Lipp** (MS72) Family Foundation, the **David Plastino** (BS78) Fellows Program, and the **David Hertzner** (BS/CHEG/81) Fellows Program, have involved continuing, yearly injections of major financial support.

Three names were added to the major donor list this past year:

- The Estate of **Jean C. Balling**: this gift was given in honor of Ms. Balling's late husband, **William (Bill) J. Balling** (BS48, MS53, working with (the late) **Prof. Harold Beachell**). Bill spent his entire career with Hercules.
- **Ronald W. Kreis** (PhD69): Ron received his Ph.D. working with (the late) **Prof. Robert Wood**. He was honored by the College of Arts & Sciences with one of its 2018 Alumni Achievement Awards for his outstanding entrepreneurship in creating Bimax, Inc., for which he still serves as President.
- **Marilyn A. Stadalius** (PhD84) and **Philip A. Branca** (BS79, MS82) – a Double Del Duo. Marilyn received her doctorate working with **Prof. Harvey Gold**, while Phil received his M.S. working in the laboratory of (the late) **Prof. Donald Wetlaufer**. Marilyn is a retired Critical Path Services Business Manager, while Phil is a Senior Research Associate with W. L. Gore.

The large chronological span represented by these alumni is especially noteworthy and heartwarming, and their generosity is greatly appreciated!

SPOTLIGHT ON RESEARCH: Prof. Jodi Hadden-Perilla

During the summer of 2019, a new biophysical chemistry research laboratory began operations at the University of Delaware. The Hadden Lab, led by **Assistant Professor Jodi Hadden-Perilla**, uses supercomputers as a “computational microscope” to study the inner-workings of biological machines, such as viruses. The “computational microscope” arises from running all-atom molecular dynamics simulations, which allows researchers to observe and characterize the behavior and interactions of macromolecules at atomic resolution. The Hadden Lab dissects biological machines into key protein components and employs molecular dynamics simulations to investigate their functions, as well as the mechanisms by which the components work together to drive the action of their parent machines.

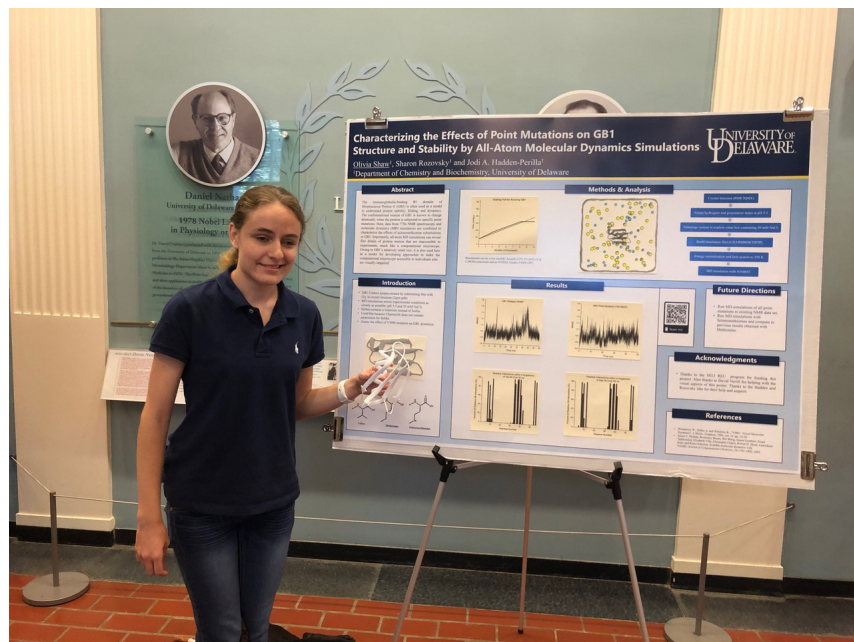
Currently, the Hadden Lab is focused on the capsid of the hepatitis B virus and the motor domain of cytoplasmic dynein. These projects are supported, respectively, by allocations to Dr. Hadden-Perilla on the Blue Waters and XSEDE supercomputers, funded by the National Science Foundation.

Hepatitis B virus is a major cause of liver disease. The capsid is a protein shell at the core of the virus that assembles to enclose the viral genome; during infection, the capsid drives the delivery of the viral genome to the host cell nucleus for replication. Cytoplasmic dynein is a molecular motor that transports cargo along microtubules from the cell

periphery toward the nucleus. The two motor domains of dynein undergo a cycle of alternately dissociating from and re-associating to microtubules, powered by ATP hydrolysis; this “stepping” action enables the molecule literally to walk, while physically towing cellular cargo. By deciphering the complex mechanisms by which these machines function, the Hadden Lab aims to identify strategies for inhibiting the virus capsid and preventing dynein dysfunction, ultimately to treat disease.

Dr. Hadden-Perilla spent the past two years at the University of Delaware developing her independent research program and applying for the necessary supercomputer access, supported by a postdoctoral fellowship for career development through the College of Arts and Sciences. Owing to the success of the fellowship program, Dr. Hadden-Perilla began a faculty position this summer and welcomed four students into her new laboratory.

A graduate student from the Department of Chemistry and Biochemistry, as well as two undergraduates from the University’s Latin American Summer Research Program, spent their summer in the Hadden Lab performing computational research on the hepatitis B virus capsid, with access to the Blue Waters supercomputer. Scientific results produced by the students were presented by Dr. Hadden-Perilla at the Biennial Conference on Phage/Virus Assembly, hosted this year by the University of Minnesota.



In addition, a visually-impaired student from the Science and Engineering Leadership Initiative REU program spent her summer working with Dr. Hadden-Perilla to develop tools for making the “computational microscope” accessible for blind researchers. The student presented her work at three separate poster sessions on campus using 3D-printed protein models and tactile-image plots of her scientific results, placing second in a poster competition held by the Department of Chemistry and Biochemistry.

More information on the Hadden Lab can be found on the web:
<https://sites.udel.edu/jhadden/>

SPOTLIGHT ON ALUMNI: Two Outstanding M.D.'s

Our impressive run of CHEM/BIOC alumni honorees continued apace in 2019, with two outstanding alumnae garnering well-deserved recognition.

On May 21, 2019, **Iris C. Gibbs, M.D.** (BS 90) became our 6th alumna in the past 7 years to receive the College of Arts & Sciences Outstanding Alumni Achievement Award. Quoting her citation:



“Iris C. Gibbs, M.D., FACR, FFAWR, FASTRO, is a professor of radiation oncology and associate dean for medical student admissions

at Stanford University of Medicine, where she is active in multiple educational committees and is the chair of the medical student admissions committee.

She was the founding co-director of the Stanford Cyberknife Radiosurgery Program for more than a decade and helped to build world-renowned clinical programs in innovative radiation treatments for patients with central nervous system tumors and in robotic radiosurgery.

She has given numerous invited lectures worldwide and published more than 100 peer-reviewed research articles on topics of radiosurgery of the brain and spine in children and adults.

A native Delawarean, Iris earned a bachelor’s degree in chemistry at the University of Delaware in 1990 and a Doctorate of Medicine degree from Stanford University in 1995. She received UD’s Presidential Citation for Outstanding Achievement Award in 2002.

She has earned professional recognition as a fellow of the American College of Radiology, the American Society for Radiation Oncology, and the American Association for Women Radiologists. In 2015, she was named a Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) Fellow.

Iris has served on the Board of Governors of the Stanford Medical Alumni Association, the American Board of

Radiology and the Radiosurgery Society, of which she is the newly elected president. Most recently, she was invited to serve on the University of Delaware College of Arts and Sciences Dean’s Advisory Council.

She is also the chief officer and founder of ICG Enterprises, Inc., a 501(c)3 nonprofit organization focused on improving health, empowering communities and growing leaders.”

Your Editor was privileged to present Iris at the testimonial dinner that followed the ceremony in the Gore Recital Hall.

On June 8, 2019, one of our previous College of Arts & Sciences Outstanding Alumni Achievement Awardees, **Carol Van Dyke Freer** (BS 68) was selected to be one of 3 UD alumni to be added in 2019 to the University’s Wall of Fame. Her citation read:

“Carol Van Dyke Freer earned her bachelor’s degree in chemistry in 1968 from the University of Delaware and went on to earn a Doctor of Medicine from George Washington University before serving an internal medicine residency at Penn State MS Hershey. Additionally, she served a fellowship in infectious disease at University of Virginia while concurrently receiving a Master of Science in Hospital Epidemiology and Infection Control. She has been a senior medical consultant for Saxton and Stump, Lawyers and Consultants since 2016, as well as an associate professor of medicine at Penn State Hershey Medical Center since 2008. Penn State recently awarded her emeritus status. She has held a variety of other roles throughout her career, including serving more than four years as chief medical officer at Penn State Hershey Medical Center. Carol served many years as Health Officer for her hometown of Hanover, PA, and currently on the board of Hanover’s Visiting Nurse Association after previously serving as the organization’s medical director.”



Carol was your Editor’s first undergraduate co-author of a research publication (*Inor. Chem.*, 8, 170 (1969)). At the ceremony in the Gore Recital Hall, President Assanis announced that the Alumni Wall of Fame, heretofore a virtual wall, will soon become a physical reality. An Alumni Circle is to be constructed in the area southwest of the Carpenter Sports Building, with the names of all 207 Wall of Fame inductees inscribed on the encircling wall.

Blue Hens & Friends Reunite



Prof Mary Watson (UD Chemistry & Biochemistry), Dr Zhenzhen Dong (UD PhD, now at Adesis), and Shonie Castle (UD Alumni Relations) prepare to welcome Blue Hens to the Alumni & Friends event

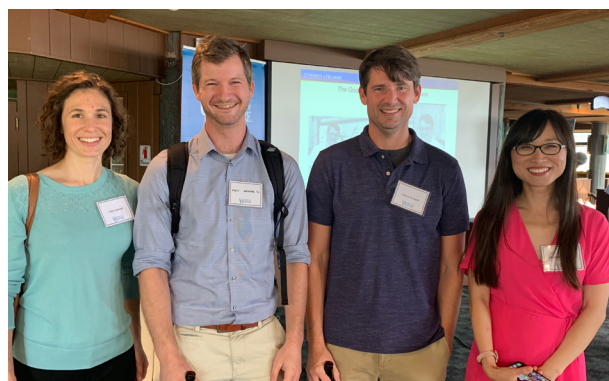
San Diego, CA – On Sunday, August 25, 2019, a beautiful Sunday afternoon, Blue Hens and friends enjoyed a UD Alumni & Friends Reception at the Harbor House.

The event coincided with the fall national meeting of the American Chemical Society at the San Diego Convention Center, and 55 Blue Hens and friends walked along the Harbor Walk to attend the event, overlooking the San Diego Bay. With sunshine streaming in the windows, alumni reconnected and reminisced about their days in Newark. They heard from numerous UD faculty and alumni on recent updates and advances at UD. **Prof. Charlie Riordan**, faculty member in Chemistry & Biochemistry (CBC) and Vice President for Research and Innovation, shared a grand

vision for advancing research on UD's campus, including President Assanis's goal to hire hundreds of new faculty across campus.

Dr. Andrew Cottone, Ph.D. alumnus from CBC and now President of Adesis, Inc., echoed Charlie's welcome and excitement about connecting with fellow alumni at this event. **Prof. Murray Johnston**, also from Chemistry & Biochemistry and recently appointed Associate Dean of the College of Arts & Sciences, reflected on the exceptional legacy that has been set both by prior faculty and by their students. Remembering **Prof. Burnaby Munson** and **Roberta Colman**, he pointed ahead to the new faculty that are now upholding the strong tradition of research and teaching excellence set by their predecessors.





SAVE THE DATE

University of Delaware Alumni & Friends Reception

Sunday, March 22, 2020, late afternoon

Join Blue Hens & Friends for networking
at the ACS National Meeting
In Philadelphia, PA

Watch the CBC website, Facebook, & Twitter for more information.

Prof. Joel Rosenthal, faculty in Chemistry & Biochemistry and Associate Chair for Graduate Studies & Research, reflected on the growth of the graduate program, along with the tremendous success of our graduate students in research.

Prof. Darrin Pochan, Chair and Professor in Materials Science and Engineering, generously described the close partnership of Materials Science and CBC, and looked

forward to our first joint faculty member, **Prof. Laure Kayser**, who joined UD this fall.

In addition to these updates, Blue Hens enjoyed a great assortment of hors d'oeuvres, desserts, and drinks, and had some fun at a Photo Booth. Adesis even sponsored a raffle with an OLED tablet as the grand prize! Although the event was only scheduled from 5:00 to 7:00pm, old friends – and some new ones – lingered well past 7:30, relishing a chance to relax and reconnect.

The success of this event would not have been possible without the generous support of Adesis, Inc. and the University of Delaware, as well as my co-organizers **Dr.**

Zhenzhen Dong (PhD alumna and now Group Leader at Adesis), and Doug Kleintop and Shonie Castle (UD Development and Alumni Relations). We look forward to seeing you at the next Alumni & Friends event at the American Chemical Society meeting in Philadelphia on Sunday, March 22, 2020!

– Mary Watson

ADDITIONAL Faculty/Staff Activities

Dr. Shi (Steve) Bai, Manager of our NMR Facility, and his colleague Z. Conrad Zhang, of the Dalian Institute of Chemical Physics, have discovered a highly active and chemically selective catalyst that combines the advantages of conventional solid-state and liquid-phase catalysts. By gently confining individual Pt atoms in a surfactant solution, they found that the Pt atoms exhibit high activity and resist clumping. Their work was highlighted in **C&E News**, 3/18/19, p.5.

In like manner, **Prof. Svilen Bobev's** discovery of RE₃Bi₂ compounds (RE=Nd, Sm) was highlighted by the U.S. Department of Energy's Office of Science.

Dr. Kathryn (Katie) Burke, General Chemistry Laboratory Manager, and her husband, Travis, were blessed with the birth of Joshua Steven on 10/22/18. Joshua weighed in at a robust 8 lb., 4 oz.

Victoria (formerly Orner) Celestin, the first Director of UD's NUCLEUS Program, has been named the Project Manager of a Veterans Cemetery project in Exeter, RI. Victoria is the Principal of Fullspectra Education Consulting – "A Class Act from Admitted to Alumni" (www.fullspectra.org).

Dr. Robert (Bob) Curry (FAC 74-76) is currently a Venture Consultant with Latterell Venture Partners, in Gilroy, CA.

Dr. James R. Damewood, Jr. (FAC 84-90) is a Research Manager for Corteva Agriscience at the Haskell Global Center for Health Sciences, as well as being a Principal Research Toxicologist.

Dr. Philip Kudish (PT FAC) is now the Associate Dean for Science, Engineering, and Mathematics at Cumberland County (NJ) College.

Prof. George W. Luther (JOINT FAC), Maxwell P. and Mildred H. Harrington Professor of Marine Chemistry &

Francis Alison Professor, has been named a Fellow of The Association of Sciences for Limnology and Oceanography.

Ann Manley (past staff) was the subject of a UDaily article on how UD's Professional and Continuing Studies Social Media Marketing Program benefits multi-career students.

At the invitation of **Dr. Justin Donato**, (BS CHEM/99) Associate Professor of Chemistry, **Dr. Burnaby Munson**, C. Eugene Bennett Professor Emeritus, gave the annual Larson Lectures at St. Thomas University in St. Paul, MN, September 27-28, 2018.

Dr. Arnold L. Rheingold (FAC 84-03), having retired as a Professor of Chemistry at the University of California, San Diego, is now enjoying his dual roles as a continuing X-ray crystallographer par-excellence, and a gentleman avocado farmer. His 300 avocado trees, atop a large hill 25 miles west of the Pacific Ocean, produced a bumper crop of 21 tons last year, leaving him "rolling in guacamole." As he put it in his usual non-PC manner, he spent a total of 50 years dealing with ungrateful pre-med students at SUNY-College at Plattsburgh, the University of Delaware, and UC-San Diego.

Prof. Charles G. Riordan, Vice-President for Research Scholarship and Innovation, presented a lecture on "What is a. Research University in the 21st Century?" in the Trabant Multipurpose Room on 9/20/18.

Prof. Joel Rosenthal, Associate Chair for Graduate Studies and Research, and his wife, Kristen, welcomed the birth of their first child, Alexandra Joan, on 11/23/18. Alexandra nudged the scale at 6lb., 1 oz.

Prof. Sharon Rozovsky described the work of the 2018 chemistry Nobel Laureates at UD's annual Nobel Symposium on 11/13/18 in the Harker ISE Laboratory.

Visiting Faculty

Dr. William R. Bushey (DuPont - retired)
CHEM-101/102 General Chemistry

Mr. Huy (Mike) Dao (MS11)
CHEM-103/104 General Chemistry
(Dover Associate-in-Arts Program)

Dr. Karen L. Hooper (PhD99)
CHEM-106 Elementary Bioorganic Chemistry
CHEM-214 Elementary Biochemistry

Dr. Michael Stemniski (McKean High School- retired)
CHEM-103/104 (Wilmington Associate-in-Arts Program)
CHEM-213 Elementary Organic Chemistry

Postdoctoral Researchers & Fellows

2018–2019

Abderrahman Atifi (Marquette University) [Rosenthal]

Sviatoslav Baranets (V.I. Vernadsky Institute of General and Inorganic Chemistry of the NAS of Ukraine, Ukraine) [Bobev]

Ian Chrisman (University of Montana) [Rozovsky]

Himal Ganguly (Bose Institute with University of Calcutta, India) [Zondlo]

Run-Duo Gao (Shanghai Institute of Organic Chemistry, China) [D. Watson]

Changmiao Guo (University of Delaware) [Polenova]

Jodi Hadden (University of Georgia, Athens) [Bahnsen]

Sruthi Murlidaran (Rutgers University) [Perilla]

Dickson Ojwang (Stockholms Universitet, Sweden) [Bobev]

Hussien Helmy Hassan Osman (Universidad de Oviedo, Spain) [Bobev]

Alexander Ovchinnikov (Max Planck Institute for Chemical Physics of Solids & Technical University of Dresden, Germany) [Bobev]

Shane Plunkett (University of Dublin, Trinity College, Ireland) [M. Watson]

Sarah Pound (University of Minnesota, Twin Cities) [M. Watson]

Michael Wisthoff (University of Delaware) [D. Watson]

Ziqing Zuo (Chinese Academy of Sciences, China) [D. Watson]

Visiting Scholars, 2018-19

Martin Forstner (Syracuse University) [Rozovsky]

Shuai Jiang (University of Science & Technology of China) [Johnston]

Chanhua Li (Xiangnan University, China) [Zhuang]

Yuanjie Li (Xi'an Jiatong University Health Science Center, China) [Zhuang]

Cintia Cecilia Santiago (Universidad Nacional de la Plata, Argentina) [Grimes]

Ornella Sathoud (University of Delaware) [Neal]

Shanshan Yu (Nanjing Xiaozhuang University, China) [Fajardo]

Colloquia & Symposia 2018–2019

The 39th East Coast Ion Chemistry Conference was held on Saturday, October 13, 2018 in the Department – an opportunity to discuss recent research in mass spectrometry. **Doug Ridge** presided and **Murray Johnston** supervised the projections. About 30 people attended, with presentations from the University of Delaware, University of Maryland School of Pharmacy, Drexel University, the Smithsonian Museum Conservation Institute, and Janssen R&D, Johnson & Johnson. The topics presented included accelerated chemistry in microdroplets, droplet assisted ionization, mass spectral characterization of 18th and 19th century heritage objects, EI characterization of sphingolipids, identification of protein

degradation products, quantitation of amino acids using LC/MS, techniques in MALDI TOF, and Lab View simulation for teaching principles of TOFSIMS.

The annual luncheon for UDEL mass spec alumni/ae was held on Tuesday, June 4, 2019 at the meeting of the American Society for Mass Spectrometry in Atlanta, GA. About 20 mass spectrometrists attended this year. This is an opportunity to keep in touch with colleagues from your time at UDEL and meet the newer group. If you are not on our mailing list, please send your E-mail address to **Dr. Murray Johnston**, mvj@udel.edu. Keep in touch.

DATE	SPEAKER/AFFILIATION	TOPIC
8/31/18	Prof. Zhihao Zhuang , University of Delaware	Chemical Approaches for Investigating Protein Deubiquitination
9/7/18	Prof. Catherine Grimes , University of Delaware	Breaking Down Bacterial Cell Walls to Understand Inflammation
3/1/19	Prof. Squire Booker, Penn State University (12th John C. Wriston, Jr. Memorial Lecture)	The Biosynthesis of Lipoic Acid: A Saga of Death, Destruction, and Rebirth
4/29/19	Prof. Andrew Teplyakov , University of Delaware	Novel Approaches to Form Organic – Inorganic Interfaces: Chemistry to Control Surface Morphology
10/14/19	Prof. Tamejiro Hiyama, Kyoto University (16th Richard F. Heck Lecture)	Invention of Metal-Catalyzed Synthetic Reactions

Undergraduate Awards

2018–2019

DEPARTMENT AWARDS	RECIPIENTS
American Chemical Society Award in Chemistry	Rohan Narayan (BS/BIOC/20)
ACS Division of Analytical Chemistry Undergraduate Award	Matthew Wittstein (BA/CHEM/19)
ACS Division of Inorganic Chemistry Undergraduate Award	Phoebe Hertler (BS/CHEM/19)
ACS Division of Organic Chemistry Undergraduate Award	Thomas Harmon (BS/BIOC/19)
ACS Division of Physical Chemistry Undergraduate Award	Ruth Mandel (BS/CHEM/19)
American Institute of Chemists Award in Chemistry	Rachel Dunscomb (BS/CHEM/19)
C. Frank Shaw III Undergraduate Award in Inorganic Chemistry	Krista Balto (BS/CHEM/19)
C. Frank Shaw III Undergraduate Inorganic Research Fellowship	Dominick Guida (BS/CHEG/19)
Elizabeth Dyer Awards for Excellence in Biochemistry and Chemistry	Earl Bampo (BS/BIOC/19) Ruth Mandel (BS/CHEM/19)
Carl A. von Frankenberg Undergraduate Award In Chemistry Education	Kimberly D. LaRosa (BS/XCE/19)
Frank W. Collins Undergraduate Awards in Biochemistry	Jedidiah Chung (BS/CHEM/19) Nicole Raniszewski (BS/BIOC/19) Tyler Reagle (BS/BIOC/19)
Gene J. and Frances E. Schiavelli Undergraduate Research Fellowship	Phoebe Hertler (BS/CHEM/19)
James A. Moore Undergraduate Award in Organic Chemistry	Clare Lipscombe (BS/BIOC/19)
Kevin Scott Beall Memorial Awards	Olivia Duke (BS/BIOC/22) Julia Simmons (BS/CHEM/22)
Joseph A. Noggle Undergraduate Award in Physical Chemistry	Rachel Dunscomb (BS/CHEM/19)
Merck Index Awards	Emma Heath (BS/CHEM/19) Tyler R. Reagle (BS/BIOC/19)
Quaesita Drake Scholarships	Alana Duke (BS/BIOC/20) Julianna Follmar (BS/BIOC/20) Emily Gallagher (BS/BIOC/20) Anna Wyckoff (BS/CHEM/20)
Royal Society of Chemistry Certificate of Excellence	Thomas Harmon (BS/BIOC/19)
Wallace H. Carothers Scholarships	Jeffrey Cragin (BS/CHEM/21) Katarina Pfeifer (BS/BIOC/21)
Wallace H. McCurdy, Jr. Undergraduate Award in Analytical Chemistry	Clare Lipscombe (BS/BIOC/19)

ASBMB/UAN Chapter Officers 2018–2019

Ed. Note: The list of ACS/SA Chapter Officers for 2018–2019 was published in BHC #45

ACS/SA

President:

John R. Vaile III (BS/BIOC/20)

Vice President:

Julianna L. Follmar (BS/BIOC/20)

Secretary:

D'Shon Foote (Health Sciences/21)

Treasurer:

Michelle Favichia (BS/BIOC/20)

Public Relations Officer:

Jevin Frazer-Wrobeh (BS/BIOC/20)

2019 Summer Science Research Scholars

For reasons that remain unclear, the list of 2019 Summer Science Research Scholars is significantly shorter than last year's high water mark of 30. On a more positive note, two new sources of support will be found in the following list: a Gore Fellow, funded by a bequest from **Bob** and **Genevieve Gore**, and a Harrison Fellow, funded by a gift from **Barbara** and **Bill Harrison**. Barbara (Shaw), (BS/CHEM/80), was an undergraduate research student in your Editor's laboratory.

RECIPIENTS	SOURCE OF SUPPORT	MENTOR
Jorden Berry (BS/BIOC/21)	Gore Fellow	Prof. Catherine Grimes
Jackson Burns (BS/CHEG/22)	Stakem Fellow	Prof. Don Watson
Jeffrey Cragin (BS/CHEM/21)	Hofmann Scholar	Prof. Joe Fox
Mitchell Daneker (BS/CHEM/21)	Bigelow Fellow	Prof. Mary Watson
Anna Evers (BS/CHEM/21)	UGRP ^a	Prof. Donald Sparks (Plant Science)
Jean Filo (BS/BISC/20)	Plastino Fellow	Prof. Zhihao Zhuang
Julianna Follmar (BS/BIOC/20)	NUCLEUS	Prof. Catherine Grimes
Elise Garner (BS/BIOC/21)	Plastino Fellow	Prof. Catherine Grimes
Dominick Guida (BS/CHEG/20)	Plastino Fellow	Prof. Klaus Theopold
Cole Lazarus (BS/BIOC/21)	Plastino Fellow	Prof. Zhihao Zhuang
Tatyana Nesterova (BS/CHEM/21)	Heitzer Fellow	Prof. Juan Perilla
Ryann Perez (BS/CHEM/20)	Harrison Fellow	Prof. Neal Zondlo
Jared Ramsey (BS/BIOC/21)	Plastino Fellow	Prof. Catherine Grimes
Juliana Serrano (BS/BIOC/19)	UGRP ^a	Prof. Sharon Rozovsky
Molly Warndorf (BS/CHEM/21)	Plastino Fellow	Prof. Joel Rosenthal
Winnie Wong (BS/CHEM/21)	NUCLEUS	Prof. B.J. Chain
Siyuan Xiang (BS/CHEM/20)	Plastino Fellow	Prof. Neal Zondlo

^a = Undergraduate Research Program

While the list may be shorter, the 17 Fellows shown certainly are not lacking in ability, performance and promise: **HEARTIEST CONGRATULATIONS** to all concerned!



Plastino Dinner 2019

JUNE 1, 2019

24th CHEM/BIOC Graduation Convocation



Twas a day to remember: superb speaker, excellent attendance, beautiful weather, and a moving recognition of a beloved professor.

This year, the Graduation Convocation program was MC'd by **Chair Brian Bahnson**, who instituted a new look by having the attending CHEM/BIOC faculty seated on the Pearson Hall auditorium stage.



Chair Brian Bahnson

Our alumni speaker, **Nicole (Nikki) Goodwin**, received her B.S. in Chemistry, cum laude, from the University of Delaware in 2001. Her senior thesis research was carried out in the laboratory of **Prof. Douglass Taber**. After earning her Ph.D. from CalTech in 2006 (mentor: Prof. David Macmillan), she began her research career in the pharmaceutical industry. Her progress thereafter would best be described as *meteoric*. Today, she is the Director of Medicinal Chemistry for GlaxoSmithKline's Medicinal Science and Technology Pharma R&D.

Nikki's lecture to the assembled graduates was spot-on. She used a delightful mixture of humor, disarming honesty, and wise encouragement in relating her post-UD scientific journey.

Prof. Joel Rosenthal,

Associate Chair for Graduate Studies and Research, introduced the remnant group of MA/MS/PhD candidates present. (The entire contingent of 5 M.A., 5 M.S., and 29 Ph.D. recipients were hooded by their mentors the preceding day, in a separate ceremony, as has now become traditional.)



Prof. Joel Rosenthal

Prof. Bahnson then announced the BA/CHEM, BA/XCE, BS/BIOC, and BS/CHEM degree recipients, led by

the group of this year's seniors who were Award recipients.

Finally, the assembled throng rose as one to recognize the manifold contributions of **Prof. Burnaby Munson**, who literally devoted his life to the University and the Department of Chemistry & Biochemistry for the past 52 years. Earlier that morning, at the commencement ceremonies in Delaware Stadium, President Dennis Assanis awarded a well-deserved Honorary D.Sc. to Burnaby. Herewith, his citation is reproduced in its entirety:

University of Delaware Honorary Degree

BURNABY MUNSON

DOCTOR OF SCIENCE

honoris causa



Burnaby Munson

NOTED ANALYTICAL AND PHYSICAL CHEMIST, you earned bachelor's and master's degrees in chemistry and a doctorate in physical chemistry from the University of Texas at Austin. After working for nearly a decade as a researcher at Esso, predecessor company to ExxonMobil, you left private industry to begin teaching at the University of Delaware.

Throughout your career, you have maintained an active schedule of research that has resulted in important contributions to the science of chemistry. Most noted was your research on mass spectrometry, which earned numerous awards. Your work on chemical ionization mass spectrometry was cited by the Nobel Committee in 2002 as

vital preliminary work that made possible the achievement of that year's chemistry prize winners John Fenn and Koichi Tanaka.

You have been honored for your contributions to chemistry by the American Society for Mass Spectrometry and the American Chemical Society, which named you a fellow of the society in 2018.

EFFECTIVE AND BELOVED PROFESSOR, you began your career at the University of Delaware in 1967 as an associate professor, and within five years you were named professor. You later were named C. Eugene Bennett Professor of Chemistry and Biochemistry. Upon your retirement, you were honored with the title of UD Professor Emeritus of Chemistry and Biochemistry.

During your five decades of teaching, you taught more than 46,000 students and oversaw some 8,000 class sessions. Your influence on generations of UD students is unparalleled. And, of course, we must also mention your Wednesday night study breaks, an appetizing spread of snacks that you've been providing weekly to hard-working and grateful students since 1979.

You have been honored several times throughout your career for excellence in teaching by Mortar Board, Alpha Lambda Delta, and the University of Delaware. In addition, you were named Outstanding Faculty Member in the College of Arts and Sciences in 1994 and listed in Outstanding Educators of America.

UD HONORS PROGRAM PIONEER, you were instrumental in starting the Honor Program at the University in the mid-1970s. You served twice on the program's advisory board and as director of the program four times. You taught in the Honors Program from 1976 until your retirement. In recognition of your commitment, the Munson Fellows—upper-division students who mentor first-year students in the Honors Program—were named after you.

Psychologist Carl Jung has noted the importance of the human connection in the learning environment. He said, "One looks back with appreciation to the brilliant teachers, but with gratitude to those who touched our human feelings. The curriculum is so much necessary raw material, but warmth is the vital element for the growing plant and for the soul of the child."

Dr. Munson, you were the rare teacher who combined brilliance and warmth. You expected much of your students, but you also knew how to instill in them both passion for

the subject and belief in their abilities. You have been a gift to your students and to the greater University of Delaware community.

Therefore, under the authority of the Board of Trustees of the University of Delaware, I have the pleasure and honor of conferring upon you, Burnaby Munson, the degree of Doctor of Science *honoris causa* and do declare you entitled to all the rights, honors, and privileges to that degree appertaining throughout the world. In testimony thereof, I am pleased to present to you this diploma.

John R. Cochran, Chair June 1, 2019

Of course, in retrospect, this turned out to be a bittersweet moment, for he died ca. three weeks later.

Once again, at the subsequent reception in Brown Lab, he defied authority, in his delightful curmudgeonly manner, by providing Segway rides to those who were willing to give it a try.

The trend toward uncertain futures noted in previous editions of the **BHC**, which reached a high water mark



last year, changed dramatically in 2019. Graduate school admissions and secured industrial positions rose markedly, while the “Undecided” category dropped by 44%.

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Graduate School	16	10	18	12	11	12	18	10	12	7
Medical School	2	1	3	3	1	1	4	1	7	3
Dental School	2	-	1	1	-	-	1	-	2	2
Pharmacy School	1	1	1	-	2	2	-	-	1	1
Law School	-	2	1	-	-	1	-	1	1	2
Nursing School	-	-	-	-	-	-	2	1	-	-
Industry	16	7	12	8	5	8	6	7	3	8
Government	1	-	-	1	2	-	-	1	1	1
Teaching	1	-	-	-	1	2	-	1	1	1
Other	1	-	1	-	1	1	2	2	1	3
Undetermined	25	45	37	33	34	34	18	29	26	22
=TOTAL	65	66	74	58	57	61	51	53	55	50

In like manner, the mix of baccalaureate degrees keeps changing:

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
BA/CHEM	13	8	15	11	14	7	5	12	18	11
BA/XCE	2	-	2	-	2	1	2	1	1	-
BS/CHEM	29	33	29	33	25	30	21	17	21	18
BS/BIOC	24	27	28	14	16	23	23	23	15	21

Note: : A few 2019 and 2018 graduates received both B.A. and B.S. degrees.

2019 Graduates

2019 B.A. Chemistry Graduates

Grayson S. Boehne
Tyler D. Bradley
Laura R. Cline^{b,c}
Sarah L. Janah
Taylor Matheson
Corey M. Perkins
Jessica R. Sirizzotti^d
Dasheng Sun
Travis A. Szypiotko
Matthew Wittstein^c

2019 B.A. Chemistry Education Graduates

Kathryn A. Chambers
Kimberly LaRosa^{b,d}

2019 B.S. Biochemistry Graduates

Earl M. O. Bampo^c
Javaun A. Campbell
Michael R. Cleary^c
Michelle A. Conlin
Brandon C. Corson
Rebecca DiBona^g
Aldona L. Disandro^g
Michael W. Dolan^c
Scott E. Downes
Ashlyn E. Doyle

Amelia E. Griffith
Thomas Harmon^c
Lexi A. Heon
William Johansen^g
Clare B. Lipscombe^{b,f}
Andrew Mitchell
Kaitlyn Neibert
Kali Panella^c
Nicole R. Raniszewski^d
Tyler R. Reagle^d
Kevin J. Selvaggi
Shervin Varughese
Joshua J.-H. Wang
Nur E. I. Yusri

2019 B.S. Chemistry Graduates

Christopher Absil^a
Lencho G. Amente
Krista P. Balto^b
Daniel Bodine
Mariah E. Bodine
Nicholas R. Bossert
Duncan Q. Bower^{b,c}
Wing Y. Cheung
Jedidiah S. Chung^c
Ryan M. Cox
Jacob Dickey
Konnor B. Drewen
Rachel Dunscomb^d

Zhaoyang Gu
Hunter J. Hastings
Phillip W. Hayward^b
Emma Heath^c
Phoebe R. Hertler^b
Emily K. Hockey
Matthew B. Jarrell
Andrew H. King
Spencer J. Lawson^{b,c}
Brian S. Lindner
Ruth M. Mandel^{b,d}
Mitchell R. Prokopis
Alexander M. Soloviev
Juliana R. Soreo
Brianna A. Struble
Jiale Zhao

^aEnvironmental Concentration

^bHonors Degree

^cSumma Cum Laude

^dMagna Cum Laude

^eCum Laude

^fDegree-with-Distinction

^gAlso B.A. Chemistry

Graduate or Professional School Bound

- **Christopher Absil**, Temple University (Ph.D. in Inorganic Chemistry)
- **Krista Balto**, University of California, San Diego (Ph.D. in Inorganic Chemistry)
- **Earl Bampo**, Thomas Jefferson University (Sidney Kimmel Medical School)
- **Daniel Bodine**, Georgia Tech (Ph.D. in Analytical Chemistry)
- **Duncan Bower**, Northeastern University (Ph.D. in Analytical Chemistry)
- **Jedidiah Chung**, University of Wisconsin, Madison (Ph.D. in Chemistry)
- **Ryan Cleary**, Temple University (Dental School)
- **Rachel Dunscomb**, University of Minnesota, Twin Cities (Ph.D. in Chemistry)
- **Amelia Griffith**, University of Missouri, Columbia (Ph.D. in Chemistry)
- **Thomas Harmon**, University of Pittsburgh (Ph.D. in Chemical Biology)
- **Emma Heath**, University College, London (M.Sc. in Archaeological Science)
- **Phoebe Hertler**, University of California, Santa Barbara (Ph.D. in Chemistry)
- **Emily Hockey**, University of Maryland, College Park (Ph.D. in Physical Chemistry)
- **Clare Lipscombe**, Drexel University (College of Medicine)
- **Ruth Mandel**, Cornell University (Ph.D. in Analytical Chemistry)
- **Andrew Mitchell**, University of Delaware (Ph.D. in Applied Physiology)
- **Corey Perkins**, University of Florida (Ph.D. in Pharmaceutics)
- **Nicole Raniszewski**, University of Pennsylvania (Ph.D. in Biochemistry and Molecular Biophysics)
- **Tyler Reagle**, University of Pennsylvania (Ph.D. in Chemistry)
- **Joshan Wang**, Temple University (School of Pharmacy)
- **Matthew Wittstein**, University of Connecticut (Dental School)

Headed for Industry, Etc.

- **Mariah Bodine**, Applications Chemist, Innospec Fuel Specialties
- **Laura Cline**, EMT
- **Ryan Cox**, Research Chemist, Charles River Laboratories
- **Rebecca DiBona**, Associate Scientist, QPS
- **Jacob Dickey**, Analytical Chemist, Innospec Fuel Specialties
- **Scott Downes**, Manager, Analytical Chemistry Department, Frontier Scientific
- **Ashlyn Doyle**, Research Biochemist, Siemens Biomedical
- **Hunter Hastings**, Inside Sales Engineer, Mettler-Toledo
- **Idaly Jaquez**, Research Assistant, Christiana Hospital
- **Andrew King**, Research Chemist, Macdermid Performance Solutions
- **Kimberly LaRosa**, High School Chemistry Teacher, Longwood School District, Long Island, NY
- **Spencer Lawson**, Associate Investigator, FMC Discovery Chemistry
- **Kali Panella**, Research Fellow, U.S. Department of Defense
- **Mitchell Prokopis**, Research Associate, Jana Care
- **Kevin Selvaggi**, Research Chemist, Charles River Laboratories
- **Alexander Soloviev**, Research Chemist, Agilent Technologies
- **Juliana Soreo**, Research Chemist, Chemours
- **Brianna Struble**, Laboratory Technician, Merck's Animal Health Department
- **Shervin Varughese**, Analytical Chemist, Eurofins (Lancaster)

Graduate School Placements, 1994-2019

Adelphi	1	Harvard	7	Purdue	4
Alaska-Fairbanks	1	Hawaii	2	Rhode Island.....	1
Arcadia	1	Illinois-Chicago	2	Rochester	4
Baylor.....	1	Illinois-Urbana.....	7	Rutgers.....	9
Boston College.....	3	Imperial College, London.....	1	St. John's.....	1
Boston University	3	Indiana	4	Scripps	2
Brigham Young.....	1	Iowa	1	Selznick School for Film	1
Brandeis	1	Johns Hopkins	7	Preservation	
Cabrini	1	Kansas	1	Shenandoah	1
California-Berkeley	2	KAUST	1	South	1
California-Irvine.....	7	Lehigh	2	Southern Mississippi	1
California-Los Angeles.....	1	Maryland-Baltimore	1	Stanford.....	1
California-San Diego.....	4	Maryland-Baltimore Co.....	4	Stevenson.....	2
California-San Francisco.....	4	Maryland-College Park.....	7	SUNY-Buffalo	2
California-Santa Barbara	2	Massachusetts	3	SUNY-Stony Brook.....	2
Cal Tech	5	Max Planck.....	1	Syracuse	1
Carnegie Mellon	1	Michigan	7	Temple	5
Case Western	4	Michigan State.....	1	Tennessee.....	1
Chicago	1	Minnesota-Twin Cities	3	Texas.....	4
Clemson.....	1	Missouri.....	1	Texas A&M	4
Colorado	2	MIT	10	Thomas Jefferson	5
Colorado State	2	Montana State.....	1	Toledo.....	1
Columbia.....	5	Montclair State	1	Toronto	1
Connecticut	3	New Castle (England).....	1	Towson	1
Cornell.....	11	New Hampshire.....	2	Tufts	3
CUNY	2	NYU.....	1	University College-London	1
Delaware.....	29	North Carolina-Chapel Hill ..	13	Vanderbilt	1
Drexel	1	North Carolina-Greensboro.....	1	Villanova.....	2
Duke.....	4	North Carolina State	1	Virginia.....	4
Emory.....	1	Northeastern.....	1	VPI & SU	4
Florida	1	Northwestern.....	2	Wake Forest	2
Florida International.....	1	Notre Dame.....	1	Washington	1
Florida State.....	2	Ohio State.....	5	Washington (St Louis)	1
George Mason.....	1	Oregon.....	1	West Chester.....	1
Georgetown	2	Pace.....	4	Wisconsin	2
George Washington	3	Penn.....	17	Wyoming.....	1
Georgia	1	Penn State.....	11	Yale	4
Georgia Tech	3	Pittsburgh.....	5	Yeshiva.....	1
Gordon Conwell	1	Princeton	8		

2019 M.A./M.S. Graduates

NAME	DEGREE	THESIS ADVISOR	THESIS TITLE	PLACEMENT
Amanda Arnoff	M.A.		Non-thesis degree	Seeking employment
Omar Barreda	M.A.		Non-thesis degree	Seeking employment
Nicholas Constantini	M.S.	Prof. Neal Zondlo	Application and Development of Solid-Phase Peptide Synthesis Techniques and the Unique Conformational Effects on 4S-Substituted Proline Derivatives	Seeking employment
James Hartman	M.S.	Prof. Sharon Neal	Towards Pathway Analysis of Oxygen Photosensitization by Polycyclic Aromatic Hydrocarbons in Microheterogeneous Media	Seeking employment
Ryan Huttemann	M.A.		Non-thesis degree	Seeking employment
Natasha Kowaleuski	M.A.		Non-thesis degree	Agilent Technologies
Melody Moy	M.A.		Non-thesis degree	
Esra Oktay	M.S.	Prof. Zhihao Zhuang	Ubiquitination of Alpha Synuclein Via In Vitro Chemical Ligation Approach	Pursuing a PhD at George Mason Univ. in Bioengineering
Matthew Phillips	M.S.	Prof. Lars Gundlach	Time Resolved and Steady State Experiments with Solvatochromatic Dyes	Seeking employment
William Trout	M.S.	Prof. Joseph Fox	Eletron Deficient Dihydropyridazines: Synthesis, Redox Properties and Applications in Biochemical Systems	Working in non-scientific field that sells outdoor equipment
Matthew von Barga	M.A.		Non-thesis degree	Seeking a position in industry
Brian Wilson	M.A.		Non-thesis degree	Applying to graduate schools in chemistry education
An Yu	M.A.		Non-thesis degree	

2019 Ph.D. Graduates

NAME	DISSERTATION CHAIR	DISSERTATION TITLE	PLACEMENT
Christopher Arble	Prof. John Newberg	Heterogeneous Chemistry Probed with Ambient Pressure X-Ray Photoelectron Spectroscopy	Seeking employment
Abraham Baxter	Prof. Lars Gundlach	Identified Molecular Vibrations Triggered by Electron Transfer and Identified Structural Reorganization Accompanying Light-Triggered Binding of Solvent	Seeking employment
Alicia Broderick	Prof. John Newberg	Interfacial Chemistry of Water at the Ionic Liquid-Vapor Interface Probed by Ambient Pressure X-ray Photoelectron Spectroscopy	Seeking employment
Jason Burch	Prof. Catherine Grimes	Bacterial Carbohydrates Trigger Candida Albicans Virulence	Seeking employment
Qingqing Chen	Prof. Sharon Rozovsky	Selenomethionine as a Probe of its Environment in Biological Macromolecules	Seeking employment
Lauren Cordeiro	Prof. Charles Riordan	Synthesis and Reactivity Studies of Nickel Arylchalcogenolate Complexes	Agilent Technologies
Kristen DeMeester	Prof. Catherine Grimes	Synthesis of Bioorthogonal Muramyl Glycans that Illuminate and Track Bacterial Peptidoglycan	
Yinzi Fang	Prof. Joseph Fox	Methods for the Syntheses of trans-Cycloheptene, Dihydropyridazine and Tetrazine Compounds and Their Applications to Bioorthogonal Chemistry and Drug Delivery	Pursuing a PhD at George Mason Univ. in Bioengineering
Celia Foster	Prof. Colin Thorpe	Thiol-Disulfide Oxidoreductases: Assays, Inhibitors, and Metabolic Roles	Seeking employment
Christopher Goodwin	Prof. Thomas Beebe	Multimodal Methods of Modifying Band Structure of Conductive Polymers	Working in non-scientific field that sells outdoor equipment
Lingxi Jiang	Prof. Colin Thorpe	Extracellular Redox Biochemistry: Quiescin Sulfhydryl Oxidase in Mammalian Serum and Probing the Thiol-Disulfide Status of the Cell Surface	Seeking a position in industry
Yehia Khalifa	Prof. John Newberg	Ionic Liquid Interface: An X-ray Photoemission Spectroscopy Perspective	Applying to graduate schools in chemistry education
Casey Kneale	Prof. Steven Brown	Chemometric Investigations with Minimal Suppositions	Data Scientist, CACI
Zhengxin Li	Prof. Lars Gundlach	Functionality-Driven Architecture of and Photovoltaic Conversion in Hierarchical Tree-Like Semiconductors	YE Engineer, IM Flash Technologies, LLC

Hai Liang	Prof. Catherine Grimes	Metabolic Labeling of the Carbohydrate Core in Bacterial Peptidoglycan via the Pseudomonas Putida Cell Wall Recycling Enzymes AMGK and MURU and its Applications	Postdoctoral position at NIH with Heidi Kong, M.D., MHSc
Jennie Liao	Prof. Mary Watson	Transition Metal Catalysis of Pyridinium and Iminium Ions	Senior Scientist, Merck & Co. (Discovery Process Chemistry)
Xi Lin	Prof. Svilen Bobev/ Prof. Robert Opila (Mat. Sci.)	Atomic Layer Etching of Transition metals for MRAM Applications	SMIC China
Alize Marangoz	Prof. Joel Rosenthal	Synthesis of Ruthenium and BODIPY Based Luminophores and Their Applications in Electrochemiluminescent Detection Platforms	Research Scientist, QPS
Christine Ott	Prof. Zhihao Zhuang	Expanding the Deubiquitinase Biochemical Toolbox with Assays, Activity-based Probes, and Small Molecule Inhibitors	Sparks Therapeutics
Andrea Potocny	Prof. Joel Rosenthal	BipyridylBODIPY and Linear Tetrapyrrole Metal Complexes as Photosensitizers of Singlet Oxygen	Argonne National Laboratory
Ornella Sathoud	Prof. Karl Booksh	Fabrication of Surface Plasmon Resonance Platform for the Development of an EKSPR Biosensor	Visiting Scholar, UD Chemistry & Biochemistry with Prof. Sharon Neal
Christopher Stangl	Prof. Murray Johnston	Laboratory Investigations of Atmospheric Nanoparticle Formation and Growth	Air Liquide, Newark, DE
Mingzhang Wang	Prof. Tatyana Polenova	Expanding the Deubiquitinase Biochemical Toolbox with Assays, Activity-based Probes, and Small Molecule Inhibitors	Scientist, Pfizer, St. Louis, MO
Marcie Wiggins	Prof. Karl Booksh	Spectroscopic Studies of Copper-Based Pigments	Post-doctoral, Yale University (Conservation Science)
Mackenzie Williams	Prof. Andrew Teplyakov	Formation and Under-standing of Highly-Controlled 2- and 3-Dimensional Nanoarchitectures	Engineer, Intel, Portland, OR
Pengcheng Wu	Prof. Klaus Theopold	Synthesis, Characterization and Reactivity of Imido Chromium(VI) Complexes	Shanghai University, China
Tiantian Yu	Prof. Colin Thorpe	Oxidative Protein Folding - Investigating New Enzymes, New Assays and New Locations	Frontage Laboratories
Jing Zhang	Prof. Lars Gundlach/ Prof. Joshua Zide (Mat. Sci)	Novel Upconversion Nanostructure for High Efficiency Photovoltaics: Theoretical Model and Material Study	Intel, Dalian, China

Alumni News

Fifty- and Sixty-Year ACS Members

Ed. Note: The list of 50-year ACS members that follows was extracted from the annual tabulation published by **C&E News** (3/18/19, pp. 37-45). Please let me know if I missed any Blue Hens.

CONGRATULATIONS to:

- **John S. Garavelli, Ph.D.** (Faculty 79-80)
- **Lila M. Gierasch, Ph.D.** (Faculty 79-87)
- **Isaac C. Sanchez** (PhD69)

Worthy of note is the over-all list's contraction in length - from 918 names in 2018 to 775 in 2019.

The Delaware Section of the ACS celebrated its 100th anniversary on 10/28/18, at the DuPont Country Club. Included in the program was a formal recognition of the Section's 50-, 60-, and 70-year ACS members. Four UD connections were to be found in the 60-year list:

- **John L. Burmeister, Ph.D.** (Faculty 64-19)
- **Allen A. Denio, Ph.D.** (Faculty 78-79, 98-99)
- **Amy S. Law** (MS63, PhD69)
- (the late) **M.S. Burnaby Munson** (Faculty 67-18)

A series of displays, organized by Norm Henry and Martha Holloman, depicting the history of the Delaware Section of the ACS is currently housed in the glass cases in the Lammot DuPont Laboratory hallways.

40's

The UD community lost a beloved member with the passing of **Dorothy (Dot) L. Munroe** (MS46) on 6/12/19, at the age of 96. Dot, with her late husband, John, a revered UD professor of history for 42 years, established the University's John A. and Dorothy L. Munroe Chair of History.

50's

Richard (Dick) E. Ludwig (MS54, PhD56) died on 2/7/19, in Newtown Square, PA, at the age of 89. Like many of his generation, Dick spent his entire 45-year career working for the DuPont Company.

60's

Douglas K. Taber (BS60) passed away suddenly at his home in Wilmington on 11/19/18, at the age of 80. Doug began his career with Hercules, eventually becoming the company's Manager of Worldwide Compensation. He moved to the ARCO Chemical Company in 1979 as Director of Compensation. He retired from ARCO in 1992.

Howard S. Bender (PhD62) was honored by the Washington (DC) Section of the ACS for achieving 60-year membership status. Howard, who lives in Reston, VA, retired from the BF Goodrich Company in 1998.

Ann Marie (Wells) Mackway-Girardi, Ph.D., D.O. (BS65) has retired from her family medicine practice in Bryn Mawr, PA. As one of only two female chemistry majors in her class, she notes that she is "delighted to see so many women earning awards and advanced degrees".

The wines of Neyers Vineyards, **Bruce** (BS68) and Barbara **Neyers**, Prop., in St. Helena, CA have proved to be a magnet for notable wine connoisseurs. The latest additions, described in Bruce's Neyers Vineyards Newsletter, include (the late) Tony Curtis, Supreme Court Justice Ruth Bader Ginsburg, (the late) Rusty Staub, Fran Tarkenton, and Ron Yary. It's all chemistry!

70's

Joseph W. Harding, Jr. (PhD70), Professor of Integrative Physiology and Neuroscience at Washington State University, presented the 2018 Lord Lecture at his alma mater, Allegheny College, in Meadville, PA.

Cdr. Thomas M. Hickey (PhD72) died on 3/11/19, in North Chesterfield, VA, at age 75. In 1974, Tom was commissioned as a Lieutenant (J.G.) in the U.S. Navy. He served his country for 21 years as a Medical Service Corps officer, retiring at the rank of Commander. He then managed the Newborn Screening Laboratory for the South Carolina Department of Health and Environmental Control. In 2008, he moved to the Richmond, VA area to become the Newborn Screening Group Manager for the Department of General Services' Division of Consolidated Laboratory Services, from which he retired in 2014.

Anthony A. Kossiakkoff (PhD73) the Sprague Distinguished Service Professor in the Department of Biochemistry and Molecular Biology at the University of Chicago, has received the 2019 Christian B. Anfinsen Award, sponsored by the Protein Society.

Jeffrey R. Lehman, Ph.D. (BS74) has been granted Emeritus Professor status at Slippery Rock (PA) University, following his retirement from a teaching career that spanned 44 years.

Stephen F. Palopoli (BS74, PhD90) directs the R & D Laboratory at Northrup Grumman's Elkton, MD site. (The site has changed company names 7 times in 31 years!) He is the project scientist for a future descent motor for a NASA Europa lander life-seeking mission and a two-stage ascent vehicle for a Mars sample return mission. Both missions involve solid propellant systems that must withstand some form of sterilization for planetary protection, high-energy electron radiation (from Jupiter) and/or extreme cold temperature dwell times.

80's

Siddhartha Roy (PhD81) is a JC Bose National Fellow at the Bose Institute, Kolkata, India.

Kenneth J. James (BS84, PhD98), President and Director of Technology for Supercritical Fluid Technologies, Inc.,

and **Prof. Joe Fox** are the co-PI's on a joint Delaware Bioscience for Advanced Technology grant entitled "Improving The Speed and Performance of Chromatography with Environmentally Friendly Supercritical Flash Chromatography". Lotus Separations is also cooperating in the research project.

Jacqueline A. Erickson (BS88), Senior Development Scientist with GlaxoSmithKline Consumer Healthcare, has been named a 2019 ACS Fellow, in recognition of her outstanding achievements in and contributions to science, the profession, and the ACS (**C&E News**, 7/15/19, p. 35).

90's

Christopher D. Krause, Ph.D. (BS93) is the author of a chapter in a recently published e-book on Lipid Rafts.

Jonathan T. Goodman, Ph.D., J.D. (BS94) is a Patent Attorney with Synthesis IP, in Evanston, IL. He is also the Vice-president of Intellectual Property for Advano, in New Orleans, LA.

In keeping with the times (2019 is the International Year of the Periodic Table), **Loyce (Ciano) Bergin** (BS95), chemistry teacher at the Harford (MD) Technical High School, reports that one of her students made a "Periodic Promposal" to his girlfriend. He created an invitational poster combining elements from the periodic table to invite her to the Pr-O-M. (**C&E News**, 5/27/19), p. 40)

Christopher L. Kulp (BS95) is now the Chief Commercial Officer for Richman Chemical, Inc. in Lower Gwynedd, PA.

Charles J. Bergquist (BS96) Director and Producer for National Public Radio's "Science Friday" made two visits to the U of D (9/25-26/18, 5/7/19) to present workshops to several groups of journalism students and faculty.

William J. Donovan, Ph.D. (BS96), Professor of Chemistry at the University of Akron, has been reappointed to the ACS Examinations Committee Board of Directors. Bill served on the Organizing Committee for the 2018 Biennial Conference on Chemical Education, held at Notre Dame University, and will do a repeat

performance for the 2020 BCCE.

Keith R. Hornberger, Ph.D. (BS97) is the Director of Chemistry for Arvinas, Inc., in New Haven, CT. In the "It's a Small World" Department, we just discovered that Keith's paternal grandparents were graduates of your Editor's high school – Butler Township H. S., in Fountain Springs, PA (which no longer exists!).

Justin J. Donato, Ph.D. (BS99) has been named the 2018-2019 Distinguished Educator at the University of St. Thomas, St. Paul, MN.

Shin Sakane (PhD99) is the Founder & CEO of Seven Dreamers Laboratories, Inc., in Tokyo, Japan.

00's

Arnold L. Rheingold, Ph.D. (FAC 84-03) and **Joshua S. Figueroa, Ph.D.** (BS00), along with co-workers at the University of California, San Diego and colleagues at the University of Rochester, have succeeded in synthesizing the first coordination complex of BF (isoelectronic with CO-**Science**, **363**, 1203-1205 (2019)).

Christopher D. Incarvito (MA00, PhD03), Director of Research Technology at Yale University, has been named a Fellow of the ACS Division of Chemical Health and Safety.

Michael S. Soles (BS02) was interviewed by **Prof. Thomas M. Apple** (PhD82, FAC05-12) at the University of Hawaii, Manoa – and had a job offer in 2 hours! Blue Hens flock together!

Frederick J. Cox (PhD03) has been selected to be the R & T Director for the U.S. Army's Combat Capabilities Development Command. He was also appointed to the Army's Senior Executive Service Corps – the civilian equivalent of a general or flag officer.

Three UD CHEM/BIOC alumni returned to campus this past academic year to present research seminars: **Christopher W. am Ende, Ph.D.** (BS05), Research Scientist with Pfizer, "The Design & Application of Gamma – Secretase Inhibitor and Modulator Photoaffinity Probes," 3/6/19; **Matthew T. Kieber-Emmons** (PhD08), Professor of Chemistry at the University

of Utah, "Bioinspired Water Oxidation with Copper", 4/24/19); **Bayrammurad I. Saporov** (PhD11), Professor of Chemistry at the University of Oklahoma, "Hybrid Organic – Inorganic Halides: Crystal Chemistry, Properties, and Applications", 9/19/18.

10's

Kenneth W. Hand (BS10) is a Forensic Chemist in the Cape May County (NJ) Prosecutor's office.

Amy (Styer) Greene, Ph.D. (BS10), Professor of Chemistry at Albright College, Reading, PA is the author of "New Thermodynamics Boxes Simulation", recently published in **CBE – Life Sciences Education**, **18**: le1, 1-2, Summer 2019.

Anastasia Thevenin (PhD10) is an Assistant Professor of Biological Sciences at Moravian College, Bethlehem, PA.

Keywan A. Johnson (BS13), now in graduate school at the University of Wisconsin, Madison, is the lead author of "When Two Metal Atoms are Better Than One" in **Science**, **363**, 819 (2019). Keywan moved to Madison with his mentor, Prof. Daniel Weix, after Keywan earned his M.S. at the University of Rochester.

Lauren A. Genova (BS15), in graduate school at Cornell University, has received an NIH F31 Predoctoral Fellowship, which will fund her through the remainder of her Ph.D. program. Earlier, she was selected to be a Teaching Fellow through Cornell's Center for Teaching Innovation.

Fahri Alkan (PhD16) has taken a position as a professor at Abdullah Gul University, in Kayseri, Turkey.

Cannon J. Giglio (BA16) has received an M.Sc. degree from Dalhousie University, in Halifax, Nova Scotia.

Rose D. Janvier (BS18) is an Associate Scientist in GlaxoSmithKline's Cell Process Development Department in Collegeville, PA.

Lucas W. Onisk (BS18) is in graduate school at Kent State University, working on applied mathematics.

Benjamin L. Prather (BS18) is enrolled in the doctoral program at Louisiana State University.

HONOR ROLL

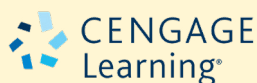
of Gifts to the Department

The Blue Hen Chemist is an annual magazine distributed by the Department of Chemistry and Biochemistry at the University of Delaware. Its purpose is to reach out to our extended CHEM/BIOC family members: current residents, alumni, friends, retirees and benefactors, both individual and corporate; to keep them abreast of the goings on in the Department, to put old family members and new ones in touch with one another, and to give credit and thanks to the contributions of all.

The individual contributions of all, past and present, is the foundation that has built and continues to grow the Department and advance the mission that maintains our tradition of excellence in teaching and research. The financial support of the benefactors of

the Department, whose generous contributions make it possible to recognize excellence among our students and faculty, gives the Department the opportunity to bring in world renowned speakers who further advance the knowledge base and skills of our faculty and students, and allow us to continue the mission of recruiting the best and brightest students and faculty to join our ever-growing family.

Please, on behalf of the Department, accept these sincere thanks for the generosity of all. So, without further ado, we would like to express our sincere appreciation to the following companies and foundations for their unrestricted financial support of the Department during 2018-2019



The Department would like to acknowledge, with extreme gratitude, financial support from the following alumni, parents, faculty members, staff members, and friends during 2018-2019. Your support has always been important to us; however, in these stressed financial times it is like manna from heaven!

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Giving to the Department

To our alumni and friends:

Each year, we receive a substantial amount of unrestricted funds through annual giving. These funds allow us to do many things that otherwise would be difficult to achieve. Here are several activities and funding levels that these donations facilitate. If you feel inspired, please consider making a donation. You could fund one of these activities on your own, or the Department can pull together many contributions to effectively group-fund one or more of these endeavors. Either way, your donation has a huge impact!

To those of you who have made contributions over the past year, thank you so very much. To make a gift this coming year, please visit www.udel.edu/giving/ where you will find more information. Be sure to specify the Department of Chemistry and Biochemistry in the “Other” tab of the online form or in the memo line of a mailed check.

\$300-1000

Supports scientific travel of one individual. Examples include supporting the travel of a student to a scientific conference to present research results, or bringing an eminent scholar to campus where they meet with students and faculty and discuss their latest scientific research.

\$4000-7000

Provides full support for summer research of one undergraduate student or one graduate student. Financial pressures associated with the cost of education require most of our undergraduate students to secure paid employment during the summer. These stipends provide financial support

needed for our undergraduates to become involved in research. At the graduate level, these stipends support students who have been teaching assistants during the academic year, allowing them to move forward in research at a faster pace during the summer. The alternative is support as a teaching assistant for the summer, which slows down the progress of these students toward their degree.

\$10,000-30,000

Supports special projects awaiting the opening of budget space, for example incorporating new forms of technology into teaching and research or performing minor renovation of space for a new or unusual purpose. For example, donations over the last few years have allowed us to complete the transformation of sophomore organic teaching labs to micro-scale experiments. By doing so, they have provided a safer environment for laboratory instruction and allowed us to more efficiently use teaching laboratory space to meet the acute rise in enrollment.

\$50,000 and up

Provides the opportunity to endow any of the above activities. The Heck Lectureship, discussed elsewhere in this issue, is an excellent example. In addition, funds at this level help us to secure sophisticated instrumentation, perform major renovations, and establish named chair positions to attract and retain top faculty.

— Brian Bahnsen

From the Editor

Since this issue of the **BLUE HEN CHEMIST** will be, in all probability, my last (24th) as Editor, I have decided to wax historical, beginning with my opening salvo in **BHC** #23 (August, 1996):

*“As many of you may recall, **Prof. Elizabeth Dyer** produced an annual Departmental Newsletter for our alumni from 1972 (following her retirement) thru 1991. **Prof. Wallace McCurdy**, following his retirement, picked up the baton and produced Newsletters in 1992 and 1993. Both earned considerable gratitude from our Department for their efforts. However, no Newsletters have gone out from our Department for the past two years.*

Recognizing the critical importance of maintaining contact with our burgeoning legion of alumni, I decided to resurrect the Newsletter this summer, and will continue to serve as its Editor for the foreseeable future. In this endeavor, I have utilized the CHEM/ BIOC database provided by the Development Office as my starting point. Since I have not been the primary contact person for the transmission of alumni news, this edition of the Newsletter will be heavily weighted toward Departmental activities for the past three academic years. We have a lot of catching up to do!

I would like to shift the balance toward alumni activities in future issues. This can only be accomplished with your active cooperation. I was rather chagrined to find that a large number of alumni have not provided the Alumni Office with an employment address. Please bring us up-to-date with your current status by completing and returning the forms provided on the last two pages of this Newsletter.

*I would be remiss if I did not thank **Jack Weikart**, a long-time friend and supporter of our Department (who is the Editor of the annual CHEG Newsletter) for his advice and encouragement in this regard. **John Clayton**, the Assistant Director of the University’s Development Office, and **Robert Davis**,*

the Director of Alumni and University Relations, have been most cooperative in helping me get the ball rolling again.

Your continuing assistance in providing me “all the alumni news that’s fit to print” will be most appreciated.”

Milestones reached along the way:

1996: Incorporation of first picture (B/W)

2003: Incorporation of first colored picture

2006: Conversion to magazine format

2009: Adoption of current format

What started out for me to be a (perceived) duty, rapidly became a true labor of love. It has enabled me to keep in touch with the many alumni who were taught by me in CHEM-111/112 and/or became known to me personally during my 55-year tenure in Beautiful Downtown Newark. In addition, many of you who preceded my arrival in 1964 have become much more than names in our >3700-person alumni database. All of you, individually and collectively, have served to make your alma mater proud of you. Your financial support has been both significant and heartwarming.

However, all good things must come to an end. As of 9/1/19, I will officially retire, at age 81, and traipse off into the sunset with my dear wife (Aileen) of 59 years. Obviously, some adjustments will be necessary, for chemistry has been the focal point of my academic and professional life for the past 65 years. Nonetheless, ‘tis time for me to say “So long, farewell, auf wiedersehen, good-bye!”

*Thanks for the memories!
John Burmeister*

Postscript

While I have been responsible for all of the non-attributed content in The **BLUE HEN CHEMIST** for the past 24 years (editions 23 through 46), its production has been a *team* effort. Batting lead-off has been a succession of remarkable women who, in addition to extending my right arm with their excellent word processing, became dear friends in the process (edition numbers in parentheses):

Marian Macmillan (23-32)

Linda Staib (33-43)

Donna Alexander & Gail Brittingham (44)

Anne Manley (45)

Dele Johnson (46)

The aforementioned formatted the yearly **BHC's** until the current magazine format was adopted in 2006, whence the formatting baton was passed to the able hands of:

Jen Durkin (33-39)

Carrie (Bonnett) Johns (40-41)

Heather Harwood (42-43)

Lukas Emory (44-46)

Jen and Carrie were in-house talents, while Heather and Lukas were/are art directors for the College of Arts and Sciences.

Two team members were constant contributors throughout: **Susan Cheadle** has served as the capable archivist for all of the pictures published in the last 24 **BHC's** and **University Printing** has done a superb job in printing and distributing the whole kit and kaboodle.

I would be remiss if I did not acknowledge the enthusiastic support and encouragement provided by the Office of Development, and the following CHEM/BIOC Department Chairs, each of whom gave me a *very* long leash:

Klaus Theopold (23)

Jean Futrell (24)

Steve Brown (25-29)

Charlie Riordan (30-34)

Klaus Theopold (35-39)

Murray Johnston (40-44)

Brian Bahnsen (45-46)

To all: my *sincere*, heartfelt thanks!

BLUE HEN Chemist

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EDITORIAL CONTENT

John Burmeister

WORD PROCESSING

Ayodele Johnson

PHOTOGRAPH ARCHIVING

Susan Cheadle

ART DIRECTION & DESIGN

Lukas Emory

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Department of Chemistry & Biochemistry
University of Delaware
Newark, DE 19716-2522

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Professor John L. Burmeister
Dept. of Chemistry & Biochemistry
University of Delaware
Newark, DE 19716-2522

To contact us:

Phone: (302) 831-1130
FAX: (302) 831-6335
Email: jlburm@udel.edu
www.chem.udel.edu



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