

CHEMISTRY AND BIOCHEMISTRY NEWS

WINTER 2025

Your Gifts Truly Make a Difference

Chemistry graduate's \$8.5 million in gifts honors mentor



Chemistry professor Mike Haley, left, with John and Sue Keana, taken when Mike visited in September 2024.

Dennis Beetham was a graduate student of UO chemistry professor **John Keana**. As often happens with former students and professors, the two lost touch after Beetham graduated with his chemistry master's in 1967—but Keana clearly had an impact. After a long and successful career in chemistry and chemical engineering, Beetham was named a Department of Chemistry Alumni Achievement Award winner in 2005. Beetham in return honored his former mentor with a donation of \$1 million to the UO to launch the John Keana Graduate Student Fellowship Fund. The gift began providing one-year fellowships for chemistry graduate students in fall 2018.

In 2022 Dennis and his wife, Janet, created the Beetham Family Fund with a \$2.5 million gift to support Beetham Fellowships in organic materials chemistry and a research professor in industry engagement. The Beetham Family Fund also supports industry-facing research and collaboration. The Beethams pledged an

additional \$5 million to support the Beetham Family Fund and name the Knight Campus Skybridge in honor of two key mentors in Dennis's life: UO's very own Professor John Keana, and Dennis's high school math teacher, Paul Tschache. The name, Tschache-Keana Skybridge, will appear on the metal transom over the entrances to the skybridge, along with an interior plaque.

In July 2022 Alex Rosen, a PhD student set to earn his degree in 2025, was named the inaugural Beetham Fellow. Rosen is creating a hydrophobic coating that does not contain perfluoroalkyl and polyfluoroalkyl substances, known as PFAS, or "forever chemicals," that are damaging to human health and the environment. "The Beetham fellowship has been immensely beneficial in giving me the opportunity to build skills that will help me spin out my research into a small business," says

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Your Gifts Truly Make a Difference

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“Janet and I had to work to pay for our education, and we strongly believe in helping deserving and committed students along their educational career paths.”

Dennis Beetham, MS '67

Rosen. “I have not only been able to spend time developing skills that are not normally encompassed within a chemistry PhD, but I have also been able to make connections with amazing UO (and external) resources that act as mentors and provide career guidance.”

“The Beetham’s generosity never ceases to amaze me,” says Professor Darren Johnson, the primary faculty facilitator of the Beetham Fellowships and co-PI of the new NSF Center for Aqueous Supramolecular Chemistry. “Dennis is incredibly kind and generous with his time and advice for us in elevating our programs. Dennis and Janet are two of our department’s biggest cheerleaders.”

Building on their support of chemistry and materials science at UO and emphasizing the importance of application to Dennis, in November 2020, Dennis and Janet gifted UO with another \$2 million. In recognition of that gift, the primary convening space for the larger community with bioengineering and applied

science emerging from the Knight Campus was named the Beetham Family Seminar Room.

Beetham founded DB Western in North Bend, Oregon, and began manufacturing glues and resins for the wood products industry along with other chemical compounds. The company grew with Janet managing human resources, along with the couple’s children and grandchildren—who earned science degrees themselves—working for the company.

Beetham recalled that he appreciated Keana taking a young graduate student under his wing. When he had success to share, Beetham said that he felt the best way to show his gratitude was to contribute financially so that other students could complete higher levels of education.

“Janet and I had to work to pay for our education, and we strongly believe in helping deserving and committed students along their educational career paths,” Dennis Beetham said in 2017. ■

Appreciation for the Beethams from John Keana

“Shortly after beginning my teaching/research career at the UO in September, 1965, Dennis, as a new graduate student, wanted to undertake his graduate research training under my direction,” remembers Keana. “He was my first graduate student. Dennis coauthored my first two publications as an independent faculty investigator. The first, and one of the most influential scientifically, appeared in the *Journal of the American Chemical Society (JACS)* and the other in the *Journal of Organic Chemistry (JOC)*. Dennis quickly became proficient in the relatively new and powerful organic compound separation technique known as high pressure liquid chromatography (HPLC). His HPLC work was central to our JACS publication which received

international recognition. When Dennis graduated with his master’s degree, given his impressive work ethic and enthusiasm, I was pretty sure he would be a successful scientist. I had no idea at the time, however, that Dennis had entrepreneurial ambitions. He would go on to be the founder and CEO of a thriving company, DB Western. As the company prospered, Dennis and his wife Janet became multimillion-dollar donors to his alma mater, the UO! And not only that, they also wanted to pay tribute to my mentorship of Dennis’s graduate work as part of their generous donations. Dennis and Janet, I feel so honored by your recognition and am humbled by your appreciation. A very warm THANK YOU!” ■

Department Head's Perspective



Season's Greetings! As I write, the department is preparing for the annual holiday party in Willamette Atrium, and also completing a large Decennial Review report which will be reviewed with a site visit this coming February. Former department leaders will fondly recall the work summarizing the department's research and education activities every decade or so.

More than half of our department research and instructional faculty are new since 2012! Our core strengths however remain constant: cutting-edge research, quality education, innovation, and terrific students. This newsletter showcases our alumni's continued support, recent departmental achievements, and emerging research initiatives.

The unique mix of research and personalities in science can create long-lasting inspiration, and in this issue we highlight two examples. Longtime organic chemistry faculty and Emeritus Professor John Keana inspired many former lab members, including undergraduate

researcher Friedhelm Baitis. It was a pleasure to recently visit with Friedhelm and Anita, who now live in Bend, Oregon. They are generous founders of the Friedhelm and Anita Baitis Undergraduate Research scholarship that supports undergraduate students for summer research internships.

Dennis Beetham, John Keana's former graduate student, continues to honor his mentor's legacy. Building upon his previous endowments of the Keana Lectureship and Graduate Fellowship, Dennis and Janet Beetham have now established the Beetham Family Fund for graduate fellowships and innovation. Additionally, the Franklin Boulevard skybridge to Knight Campus will be named after John Keana.

This newsletter also highlights the 2024 winner of the Department of Chemistry and Biochemistry Alumni Achievement Award, Jeremiah Marsden. A successful builder of local Cascade Chemistry and early retiree before a new career as brewmaster, Jeremiah's story over the short 20 years since his PhD is inspirational.

Our 130-year department history is fascinating. First department head Edgar McClure (1894) was also a mountaineer who died on Mt. Rainier. Posthumous McClure Hall, built in 1900, housed chemistry research; a 1950 *Daily Emerald* headline "Explosion in Lab" perhaps prefaces the 1953 move of chemistry into Science I (Pacific). Science II (Klamath Hall), built in 1967, continues to evolve, including a new roof this year. A pivotal moment came in 1957 when Terrence Hill joined, recruiting renowned scientists including Boekelheide, Novick, Schellman, Noyes, Bernhard, and others, who in turn established the Institutes and built the department's strong research foundation that persists today.

Feel free to send us your own updates and memories, and accept our very best wishes for the holidays and new year. ■

"The unique mix of research and personalities in science can create long-lasting inspiration, and in this issue we highlight two examples."

*Department Head
Vickie DeRose*

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Alumni Achievement Award

“Your career path is often about who you know and whether they trust your experience and backgrounds. Personal connection is very important.”

Jeremiah Marsden

Right: Marsden (with his pint), with the three employees he brought on when he purchased Claim 52 (l to r): sales manager Eddie Conway, general manager Jeremy Zollman, head brewer Aaron Brussat



Jeremiah Marsden, PhD '04, first joined Organic Consultants as their sixth chemist in 2004. He would eventually transform the small contract research firm into a 75-person powerhouse before selling it to a global chemical distribution company in 2021. That's just one success that earned Marsden this year's Alumni Achievement Award.

Nominated by his former advisor, Professor Mike Haley, Marsden's journey from bench chemist to successful entrepreneur exemplifies how a chemistry degree can lead to unexpected opportunities. "I think it helps to figure out what you like and what you want to do, whether you want to stay in the lab, or you want to manage people, or go into business," says Marsden, 47. "There are so many pathways you can take with a chemistry degree."

Marsden's path began in the UO Department of Chemistry, where he conducted research on phenylacetylene macrocycles under Haley's guidance. While the specific chemistry differed from his later pharmaceutical work, Marsden credits his doctoral training for developing crucial skills. "The program definitely taught me how to think critically, how to do scientific research," he reflects. "The technical writing

skills were very useful. Much of what I did toward the end, when I was focused on growing the business, included proposal writing and sales. A potential client's team of chemists appreciates when thought and care are put into providing scientific and chemistry details in a proposal, and you are more likely to be awarded a project when you take the time to show your experience."

After completing his PhD in December 2004 Marsden joined Organic Consultants, a small contract research and development firm founded in 1980 by Lloyd Dolby, a former professor of chemistry at the UO. The company specialized in pharmaceutical development, from discovery to manufacturing. After eight years as a bench chemist, an opportunity arose for Marsden when Dolby began considering retirement.

"It was either he shut the company down, and I look for a new job, or I could purchase it from him and lead it into the future," Marsden explains. "So I took the risk, looking at the potential and the opportunities that were there to grow it."

Under Marsden's leadership, the company (which he rebranded as Cascade Chemistry)

grew from six employees to 75, continuously expanding its lab space, manufacturing capabilities, and client base. Key to this growth was Marsden's recognition of the equal importance of employing experienced chemists and a scientific sales team. He brought on these critical personnel who helped shape the company's direction and attract new customers.

In May 2021 Marsden sold the company to Actylis, a global chemical distribution company that was adding R&D and manufacturing sites. He stayed on for two years as part of the global executive team, overseeing R&D sites across India, the UK, and North America. However, after years of being his own boss, the transition to corporate leadership proved less satisfying. "While the experience was rewarding, losing the control and decision-making power I had as the sole owner of the company was challenging, and I decided I needed to focus on spending time with my family and relaxing," he admits.

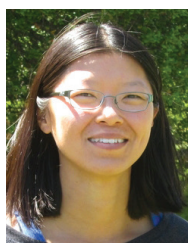
But retirement didn't last long. Early in

2024 Marsden purchased Claim 52 Brewing, a Eugene brewery known for its smoothie-style fruited sour beers and IPAs. While most things about the popular brewery and restaurant won't change, Marsden has stayed true to his scientific roots—one of his first actions was installing a pilot system for experimental batches. "We recognize the importance of innovation, whether it's creating new styles, or using new hops or brewing methods," he explains. "That's one of the things I'm most excited about."

For current students and recent graduates, Marsden emphasizes the importance of networking and relationship-building. "Your career path is often about who you know and whether they trust your experience and backgrounds. Personal connection is very important," he advises. "Don't be afraid to take some calculated risks in business. They're not always going to work, but having a good background and a good network of support definitely helps." ■



Jeremiah Marsden
Chemistry PhD '04



CATHY
WONG



DAVE
JOHNSON



CHRIS
HENDON



CARL
BROZEK



RAMESH
JASTI



MATTIAS
AGNE



PAUL
KEMPLER

UO and Intel Strengthen Collaboration

The UO is strengthening its ties with the semiconductor industry. A gathering of UO and Intel Corp. representatives at Intel's Hillsboro facility, organized by Launch Oregon Board Trustee Bryan Wolf and UO's Vice President for Research and Innovation AR Razdan, explored ways to enhance collaboration and workforce development in this rapidly growing field. Presentations showcased research of several UO chemistry and biochemistry faculty (**Darren Johnson, Cathy Wong, Dave Johnson, Chris Hendon, Carl Brozek, Ramesh Jasti, Matthias Agne, Paul Kempler**) as well as

Materials Science Institute members from physics, and showcased UO investments in engineering and applied sciences, aiming to meet the increasing demand for semiconductor professionals. Intel's Senior VP Sanjay Natarajan highlighted Oregon's significance in their operations, calling it their "R&D crown jewel" and detailing massive investments in the state. With the semiconductor industry projected to add more than 100,000 jobs by 2030, UO is positioning itself as a center of excellence, focused on nurturing the next generation of semiconductor experts. ■

Student Awards

MELANIE KASCOUTAS



WILLOW DAVIS



KEYAN LI



JUSTIN SVENDSEN



ASHLEY MAPILE



HARRISON REID



Three Students Receive Doctoral Fellowships

Melanie Kascoutas, **Willow Davis**, and **Keyan Li** received this year's UO Chemistry and Biochemistry Department doctoral fellowships. Kascoutas received the Haugland Fellowship. Davis and Li received the Keana Fellowship.

Kascoutas grew up in San Marcos, California, and discovered her love for STEM subjects in high school. She went on to earn a BS in chemistry from California Polytechnic State University in San Luis Obispo, where her favorite courses were the organic and physical chemistry series. She says solving organic mechanisms felt like solving her favorite puzzles. Working with her mentors led her to apply for graduate school and pursue a PhD in chemistry, something she never imagined she would have done when she was younger. Kascoutas is a fourth-year PhD candidate in the lab of Amanda Cook, where she designs simple and efficient nickel and palladium catalysts to transform organic molecules into more desirable products.

Davis grew up in Union, Kentucky, and earned undergraduate degrees in chemistry and theater. She is currently a fifth-year graduate student who is active in mentorship and community building within the department and STEM in general. While working towards her PhD, Davis was president of UO's Women in Graduate Science (WGS) organization. Her research in the lab of Darren Johnson seeks to better understand the assembly of large, cyclic, sulfur-bearing molecules using pnictogen-assisted self-assembly methods developed in their lab. Applications for these molecules include targeted drug release, biological sensors, and environmental sensors.

Li grew up in Chengdu, China, and moved to Sacramento, California, in 2013 to study abroad. He earned his bachelor's degree in chemistry at the University of California, Davis, then started PhD studies in chemistry at the UO in 2017. As a fourth-year graduate student in the lab of Mike Pluth, Li's research focuses on understanding the critical roles that reactive sulfur and selenium species, such as hydrogen sulfide and hydrogen selenide, play in human health. He is developing small molecular models of these biologically relevant reactive species to study their interactions with metal ions central to life and other important biological targets.

Justin Svendsen Awarded NIH Fellowship

Biochemistry PhD candidate **Justin Svendsen** has been awarded an F31 NRSA fellowship from the National Institutes of Health (NIH) National Heart Lung and Blood Institute for his project, "Development of Affinity-Based Delivery Systems for Angiogenic Growth Factors." The three-year \$145,000 award supports a mentored research experience for promising graduate student researchers. Svendsen works in the bioengineering lab of Professor Marian Hettiaratchi, studying the development of an affinity-based biomaterial for amplifying angiogenesis, the formation of new blood vessels. The F31 fellowship will fully fund Svendsen's research for three years.

Ashley Mapile and Harrison Reid Receive Graduate Student Community Builder Award

Ashley Mapile and **Harrison Reid** have been awarded this year's Graduate Student Community Builder Award. Mapile is a member of the Richmond/Scatena and Brozek labs who is being honored for her work with the department DEI committee and REU program. Reid, a member of the Jasti lab, is being honored for organizing community participation in UO SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science, <https://uosacnas.uoregon.edu>) and the Catalyst mentoring programs. The Graduate Student Community Builder Award recognizes graduate students who strive to create an inclusive and welcoming environment within the department.

Undergraduate Awards

The Department of Chemistry and Biochemistry offers five annual scholarships for undergraduate majors, with the application and selection process taking place each spring. The 2024 recipients are Helen Davis, Lilliana Granados, Amelia Kotamarti, Hannah Novak, Logan Russo, Cherish Sparling, and Waverly Wilson.

Helen Davis: Anita and Friedhelm Baitis Scholarship

The Anita and Friedhelm Baitis Scholarship provides funding for two undergraduate students to conduct research during the summer in a chemistry or biochemistry laboratory at the University of Oregon, under the mentorship of a chemistry and biochemistry department faculty member.

Helen Davis grew up in Washington and joined the University of Oregon in 2021. She is now a senior set to graduate in spring 2025 with a chemistry degree. She has worked with Darren Johnson under the mentorship of Willow Davis, conducting research to create supramolecular tools to study host-guest relationships, self-assembly methods, and environmentally friendly coatings. Davis has been working primarily with a series of halogen-substituted macrocycles to optimize conditions in coupling reactions which will be used to eventually append water solubilizing groups. These macrocycles, once soluble in water, can be used in host-guest interactions for detecting heavy metals or anions in water. In the future, Davis will add water-solubilizing groups to a methyl benzoate macrocycle derivative to better understand self-assembly methods within the system.

Lilliana Granados: Percy Julian Scholarship

The Percy Julian Scholarship seeks to support talented undergraduate scientists in their pursuit of a career in chemistry and recognizes their contributions to promoting diversity, equity, and inclusion in STEM and their potential for further academic achievement.

Lilliana Granados was born and raised in Sonoma County, California, and moved to Oregon at the age of 16. In 2024, she entered her fourth year at the UO as a biochemistry major and Spanish minor. Initially, Granados wanted to pursue a career in medicine. However, after exploring countless opportunities at the UO and working in labs, she discovered that her passion is research. In the lab of Amanda Cook, Granados does primarily organometallic chemistry, with a focus on homogeneous and heterogeneous catalysis. Last year, Granados worked under the mentorship of graduate student and recipient of the doctoral fellowship Melanie Kascoutas, using a previously synthesized nickel catalytic system for alkene isomerization reactions. In fall 2024 Granados plans to apply to several chemical biology PhD programs with the long-term goal of working in industry developing and synthesizing chemical tools that can be used within biological systems.

Amelia Kotamarti: Kuntz-Swinehart Memorial Scholarship

The Kuntz-Swinehart Memorial Scholarship recognizes academic excellence in our majors, and was established by former UO Chemistry students in honor of two professors whose instruction, influence and inspiration had a significant impact on their career paths.

Amelia Kotamarti is originally from Portland, Oregon, and is entering her third year at the UO as a biochemistry major and Clark Honors College student. Kotamarti is pursuing minors in global health, science communication, and music. After working for two summers in the Schultz lab at OHSU's Department of Chemical Physiology and Biochemistry, she joined the lab of Mike Harms at the UO, which studies the biophysical evolution of innate immune proteins. Her independent project is attempting to elucidate the molecular interaction between the TLR4, an immune system receptor, and an inflammatory molecule called S100A9.



HELEN DAVIS



LILLIANA GRANADOS



AMELIA KOTAMARTI

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Student Awards

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HANNAH NOVAK



Hannah Novak: Anita and Friedhelm Baitis Scholarship

Hannah Novak grew up in Danville, California, where her interest in science began. Novak is now a senior at the University of Oregon. Initially unsure of what she was interested in, she says her grandfather gave her some *National Geographic* magazines and told her to choose which articles interested her the most. She found the stories about novel drug remedies and medical research breakthroughs to be inspiring, which led her to choose biochemistry as her field of study. Novak has been working in the lab of Teresa Rapp for a year on research involving developing a self-illuminating drug delivery mechanism. Adding a small molecule to the system achieves highly targeted and on-demand drug delivery from this self-illuminating material. Novak plans to pursue a PhD and hopes to be a part of a mission that will serve the greater good of the world.

LOGAN RUSSO



Logan Russo: P-Chem Summer Research Fellowship

The P-Chem Undergraduate Fellowship provides funding for students to conduct research during the summer in a physical chemistry lab at the University of Oregon, under the mentorship of a physical chemistry faculty member.

Logan Russo is a senior from Salem, Oregon, majoring in chemistry. Since high school Russo has been fascinated with medical imaging and the instrumentation used by radiologists. Russo hopes to eventually study the intersection of physical chemistry and the human body, potentially through medical research. In the lab of Cathy Wong under the mentorship of Laila Nawab, Russo began studying perovskite nanocrystals, which are a promising class of materials for light emitting devices. The goal of this work is to understand halide migration with hopes of optimizing perovskite nanocrystals for LEDs. Russo plans to continue his education with either a PhD or medical school.

CHERISH SPARLING



Cherish Sparling: P-Chem Summer Research Fellowship

Cherish Sparling came to the UO after finishing high school in Lebanon, Oregon. Now in her fourth year at the UO, she is working in the lab of Marina Guenza. Her research delves into polymers, which make up many plastics and other common materials. Specifically, Sparling is examining how polymers interact and how they move at different time intervals. This is done computationally through simulations of these polymers and subsequent analysis of the movement during these simulations, including quantitative methods. Sparling wants to work in an industrial setting to bring forward solutions for climate change, and also has interests in the field of optics.

WAVERLY WILSON



Waverly Wilson: Faith Van Nice Scholarship

The Faith Van Nice Scholarship is dedicated to the legacy of alumna Faith Van Nice, and recognizes exceptional UO undergraduate students majoring in chemistry or biochemistry.

Waverly Wilson is a fourth-year UO and Clark Honors College student from Pleasanton, California, studying chemistry with a minor in bioengineering. She has always loved science because it allows for the exploration of the unknown. Wilson has been conducting protein engineering research in the lab of Professor Parisa Hosseinzadeh on the Knight Campus since the beginning of her second year. In the summer after her second year, Wilson participated in UO's iGEM team (iGEM is a non-profit organization dedicated to the advancement of synthetic biology, education, and competition). She is exploring the creation of de novo protein inhibitors to gain a deeper understanding of protein-protein interactions in a cell. In summer 2024 Wilson participated in the Vienna BioCenter Summer School program where she explored key players in the chloroplast unfolded protein response. Wilson will write and defend her honors college thesis in 2025, after which she will pursue a PhD. ■

New Faculty

Dhiman Ray

Dhiman Ray has joined the faculty as an assistant professor. Ray completed his PhD at the University of California, Irvine, working with Professor Ioan Andricioaei. Subsequently he held a postdoctoral position in the group of Professor Michele Parrinello at the Italian Institute of Technology, Genoa, Italy. At the University of Oregon he will continue his work on molecular dynamics (MD) simulation of biological systems like proteins and RNA. The Ray group will develop enhanced sampling and machine-learning algorithms to make MD simulations more accurate and efficient. These computational methods will facilitate the study of the thermodynamics, kinetics, and mechanistic details of complex biomolecular processes. Apart from gaining fundamental knowledge about biological systems, this research will have potential applications in computer-aided drug discovery. Welcome, Dhiman!

Paul Kempler

Paul Kempler has taken the position of a tenure-track assistant professor. He has been a research assistant professor in the Oregon Center for Electrochemistry since 2020. In his research Kempler studies the electrochemistry of low-cost aqueous batteries and processes for industrial decarbonization. Deep decarbonization is the process of eliminating human-caused emissions of carbon dioxide. Kempler's group also researches electrochemical interfaces used for long-duration energy storage, devices for zero-emissions iron making, and advanced cell designs for green hydrogen production. As current director of the Oregon Center for Electrochemistry Kempler leads industry partnerships and sponsored projects for the master's internship in electrochemical technology. Welcome, Paul!

Fuding Lin

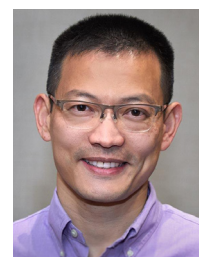
Fuding Lin is a senior lecturer and an associate director of the Oregon Center for Electrochemistry. In January 2025 Fuding will be the director of the electrochemistry master's internship program. Fuding enjoys helping students launch rewarding careers as scientists and engineers through experiential graduate programs that are robustly connected with the industry. Before joining OCE in September 2024 he was the director of the semiconductor graduate internship program at the UO Knight Campus and has mentored hundreds of graduate students who became highly valued talents in the semiconductor industry since 2010. Fuding grew up in Fujian, China, and decided to move to Eugene for his graduate study. He loved Eugene as soon as he arrived and made it his second hometown. Fuding earned his doctoral degree in physics from the UO through his research in semiconducting polyelectrolyte under the guidance of Professor Mark Lonergan, and then expanded his research interest into photoelectrochemistry during his postdoc experience with Professor Shannon Boettcher. He later discovered his strong interest in designing and delivering industry-informed, integrated curricula that not only help students learn foundational concepts in science more effectively and immediately apply them to solve real problems in both industry and research settings, but also help students become better collaborators and community builders. His technical interests include electrochemistry, semiconductor, optics, and statistical design of experiments. Besides making science more productive by training scientists and connecting them to career opportunities in the industry, Fuding also enjoys playing badminton and spending time with family and friends over a good cup of tea or coffee; he has cultivated a small tea garden in his backyard to play with the art and science of tea processing. Welcome, Fuding! ■



DHIMAN RAY



PAUL KEMPLER



FUDING LIN

Faculty Awards and Honors



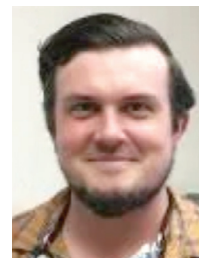
**MIKE
KOSCHO**



**AMBER
MCCONNELL**



**TANYA
GUPTA**



**ADAM
GLASS**



**DON
CLAYTON**

Five Faculty Members Awarded Williams Fellowships

The Williams Council awarded Michael Koscho, Amber McConnell, Tanya Gupta, Adam Glass, and Don Clayton with an instructional grant for \$21,900. The proposal “Undergraduate Seminar Series for Chemistry and Biochemistry Majors,” aims to introduce a series of four one-credit courses. The courses are designed to bridge traditional coursework with professional skills, ethical conduct, and community building for chemistry and biochemistry majors. Each year, students will take a course that progressively focuses on academic success, community, professional development, and a capstone presentation. The courses aim to increase student retention, improve graduation rates, and foster an inclusive academic community. Key objectives include enhancing students’ study skills, connecting coursework to careers, and mitigating feelings of isolation. The project proposes a collaborative teaching approach, integrating upper-level students as mentors, and linking courses to various campus resources.

The Williams Fund was created by Tom Williams, a former University of Oregon Foundation trustee, and Carol Williams in 1996. The Williams Council has funded more than 100 instructional proposals to support professors and instructors who are seeking to develop more effective ways of learning. Koscho is chemistry and biochemistry associate department head, senior instructor II, and faculty advisor. McConnell, Gupta, Glass, and Clayton are chemistry and biochemistry instructors.

Darren Johnson and Amanda Cook Receive CCI Phase I Award

Professor Darren Johnson and Assistant Professor Amanda Cook are senior personnel for the new NSF Center for Aqueous Supramolecular Chemistry (CASC), which is supported by the Centers for Chemical Innovation (CCI) Program of the Division of Chemistry. The center is a collaborative project between the UO, the University of Utah, the University of Minnesota, the University of Texas at Austin, and the University of California, Riverside. The UO is a key partner in this new CCI, and the only institution with two investigators in Phase 1. The center will provide researchers with the tools to create custom molecules to target two anions of particular importance to society: bicarbonate and perfluorooctanoic acid. The researchers will be creating molecules that can selectively recognize and bind to negatively charged molecules (anions) and then transport these anions across membranes and/or enable chemical transformations to new products. The center will train students in the commercialization of technology, and CASC will establish a summer undergraduate program that trains students to continue projects at their home institution, and will engage the public in hands-on activities at museums and science centers. Funds from Johnson’s SEED Award, mentioned below, will also help support these efforts. Learn more at www.nsfasc.com

**DARREN
JOHNSON**



**AMANDA
COOK**



Julia Widom Wins CAREER Award

Julia Widom, an assistant professor of chemistry and biochemistry, is among four University of Oregon researchers who received the National Science Foundation's most prestigious honor for early-career faculty members in 2024. Through its Faculty Early Career Development Program, known as the CAREER Awards, the NSF funds innovative research being done by rising stars early in their careers. The five-year grants are meant to help emerging leaders establish a solid foundation for success. Widom studies the dynamic structures of large biological molecules such as DNA and RNA.



JULIA WIDOM

Teresa Rapp Awarded Grant

The lab of Teresa Rapp, who joined the department in September 2023, received its first external funding. The \$100,000 grant from the Donald E. and Deliah B. Baxter Foundation will provide support for a new project modeling late-stage fibrosis with light-responsive biomaterials.



TERESA RAPP

Darren Johnson Receives Cottrell SEED Award

The Research Corporation for Science Advancement announced the recipients of its Cottrell Plus SEED (Singular Exceptional Endeavors of Discovery) Awards for 2024. This year RCSA expanded SEED Awards to include two categories: New Research Directions, and Exceptional Opportunities. Darren Johnson, who works in supramolecular and materials chemistry and is a Cottrell Scholar from 2006, received a \$60,000 New Research Directions award for his work on supramolecular capture and release of PFAS. New Research Directions awards recognize innovative research projects with potential to lead to a transformative line of inquiry. The awards were open to Cottrell Scholars and Holland Award recipients from research universities. This year, chemistry proposals were accepted.



MIKE HALEY

Mike Haley in *Chemistry World*

Mike Haley, the Richard M. & Patricia H. Noyes Professor working in organic, organometallic, and materials chemistry, was featured in an article in *Chemistry World* called "Illuminating Antiaromaticity." Antiaromatic compounds are unusually unstable cyclic molecules. In the article, Haley was named a "pioneer" of antiaromatic molecules. He has been studying the unique molecule for more than 15 years, and started his research at a time when there was not much interest in the field. Haley believed that molecules with antiaromatic character would have properties worth studying within the field of organic molecules with conductive or semiconductive properties. Read the *Chemistry World* article: www.chemistryworld.com/features/illuminating-antiaromaticity/4019362.article



VICKIE DEROSE

Vickie DeRose and Mike Pluth Receive NSF Creativity Awards

Professors Vickie DeRose, current department head, and Mike Pluth have been awarded creativity extensions by the National Science Foundation. Creativity extensions by the NSF are rare, and only given to "the most creative investigators" to offer them "an extended opportunity to attack adventurous, high-risk opportunities in the same general research area, but not necessarily covered by the original/current award." DeRose's extension is for research into the structure and function of ribonucleic acid through its interactions with metal ions, research which has been supported by the NSF Chemistry of Life Processes division for many years. The DeRose lab is investigating how platinum anticancer compounds interact with and affect the nucleolus, a crucial cellular component responsible for ribosome production. They aim to understand why small changes in



MIKE PLUTH

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Chemistry and Biochemistry News

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platinum molecules can cause significant cellular disruptions, particularly in nucleolar function. This research combines synthesis, biochemistry, and cell biology methods, providing insights into nucleolar interactions with small molecules and their effects on cellular processes. The project also supports interdisciplinary training for underrepresented groups in STEM fields and plans to explore new imaging techniques for nucleolar research.

Mike Pluth received a creativity extension in late 2023 for his work on the chemistry of small sulfur-based molecules. Such compounds play major roles in biological processes, such as in early evolution and current cellular functions. His lab investigates how these molecules interact with metals and their potential applications in cellular delivery systems. Additionally, Pluth studies selenium chemistry, exploring its role in protecting against cellular oxidation.

Ramesh Jasti Research Featured

Professor Ramesh Jasti, in collaboration with Associate Professor Paul Dalton in the UO bioengineering department, have mixed fluorescent ring-shaped molecules into a novel 3D printing process. Their work has created intricate glowing structures that support the development of new kinds of

biomedical implants. The researchers described their findings in a paper published this summer in the journal *Small* (onlinelibrary.wiley.com/doi/10.1002/sml.202400882). The pair were also featured in the UO's Oregon News blog (news.uoregon.edu/glowing-implants-created-serendipitously).

Dalton's lab specializes in intricate, novel forms of 3D printing which can print relatively large objects at high resolution. Jasti's lab works on nanohoops, ring-shaped carbon-based molecules with interesting properties. The ring-shaped nanohoops they have created emit different colors of light depending on their structure/size of the hoop.

More recently, the Jasti lab reported the trimerization of strained, alkyne-containing nanohoops that afforded pinwheel-like structures, now published in the *Journal of the American Chemical Society*. Curved aromatics, such as carbon nanotubes, are difficult to selectively synthesize and modify precisely. The bent alkynes are highly fluorescent. Jasti's lab anticipates that this work will have broader impacts on the study of reactivity in strained-alkyne-containing hydrocarbons, leading to new research and applications. ■



RAMESH JASTI