

Welcome New Staff Members

The Chemistry Department hired two new staff members in 2021. While their roles are very different, they both have already made their mark!



Alexandria Gallimore serves as the department's Academic Coordinator. Her duties range from pre-registering our majors for classes to making arrangements for seminar. Alex is the smiling face you will most likely encounter when you first enter Salem Hall. She interacts with everyone on "the team": faculty, staff, graduate students, chemistry majors, random students in the building, facilities... and as a result is a wealth of knowledge and resources concerning how Wake Forest functions. Prior to joining the Chemistry Department, Alex worked in the Women's, Gender, and Sexuality Studies Department.

Deacon Chemist

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CHM 223 was taught by Professor Amanda Jones in Cambridge, England Summer 2022. Support by the university and gifts to Chemistry help make this and other summer study abroad opportunities available to chemistry majors."

Letter from the Chair

Dear Alumni and Friends,

I hope this letter finds you well. I am excited to share an update on the activities of the students, faculty, and staff of the WFU Chemistry department over the past year.

During the past year, the chemistry department was able to offer its scheduled classes in an "in-person" modality. We did miss a week of teaching due to the Weaver fertilizer plant fire in the Spring of 2022 and found ourselves ready to switch teaching modalities as COVID-19 levels spiked more than once during the academic year. I must thank all the faculty, staff and students for their work, attitude, perseverance, and patience. We were thrilled to graduate 27 undergraduate and 3 graduate students who were able to participate in an in-person ceremony this past May. Our majors continue to excel academically with Renate Ma being awarded the prestigious William C. and Ruth N. Archie Award that recognizes scholarship and liberal learning. Renate follows Megan Pressimone and Dylan King (CHM minor) who won this award in 2021 and 2020! Can't wait to see what CHM student wins this year. We are proud of all our graduates and know they will go on to great things.



Patrick Martino serves as the Salem Hall lab manager and has crucial duties in the operation of teaching and research labs in Salem Hall. He supervises undergraduate workers, does ordering, communicates with the department, coordinates lab teaching and safety activities, and essentially does whatever it takes to make lab work go smoothly and safely in Salem Hall. He is most closely tied to CHM 111L and 122L, and this fall will serve as a primary instructor for CHM 111L. Patrick came to our department from Bucknell University and is famous around town for having an incredibly photogenic dog, Beaker.

Retirements

Please join the Chemistry Department in honoring two team members, and wishing them both the best as they transition into retirement.

The department welcomed Patrick Martino, Salem Hall lab manager and Alexandria Gallimore, academic coordinator, last year. This spring 29 new undergraduates declared chemistry as a major and 4 new graduate students joined the department last year. Long-time staff member, Cynthia Day, X-Ray Crystallography instrumentation manager, and teaching professor Al Rives, Harton Fellow for Chemical Industry, both retired and you can read more about them in this newsletter. We are beginning the exciting and challenging task of finding individuals to fill their shoes. The department has also initiated separate faculty searches for tenure track positions in organic chemistry and biochemistry as well as a search for an assistant teaching professor in biochemistry/general chemistry indicating our continued growth.

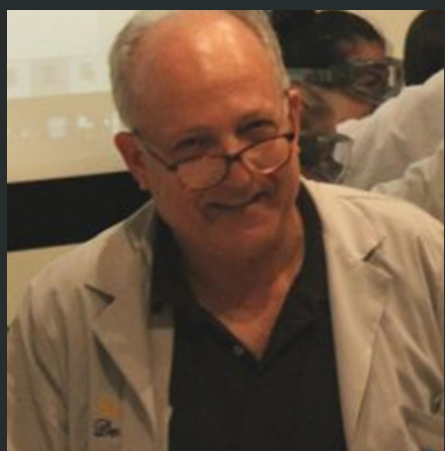
Faculty were also busy in research submitting 11 external proposals for funding, writing numerous peer-reviewed papers and book chapters, and giving presentations. Of these submitted proposals, 3 were funded (Welker, Stich and Lukesh). Both Troy and John's awards were their first external funding with John winning a prestigious NSF Career Award for his proposal "New Chemical Tools for Investigating the Biological Significance of Hydrogen Sulfide and Hydrogen Selenide". Marcus Wright was honored for his career accomplishments with the Board of Visitors Staff Leadership award.

Alumni remain active participants in chemistry at Wake Forest University both through participation in the Friends of Chemistry Group and with their [gifts](#). I'm excited to announce this Fall will be the inaugural Chitwood Lecture supported by the Dorothy and Charlie Chitwood Fund, brings an international chemist to Wake Forest to spend a week interacting with faculty and students. In addition to current scholarships supported by the (Black/Byrd and Harton families), new scholarships for students with financial need have been established by the Newhall and Fields Funds. Alumni gifts also directly contributed to the addition of new instrumentation for our upper-level teaching laboratories.



I remain optimistic about our future based on our current students, faculty, staff, and alumni and am excited to be able to add new faculty and staff over the next couple of years. We will continue our focus on undergraduate teaching, faculty research/scholarship, our graduate program and departmental diversity and inclusion. I encourage you to read the specific stories that will provide more detail and contact me or the department with questions or ideas. I hope that we will see you in person on campus sometime this year.

Sincerely,
Bruce King
Thurman D. Kitchin Professor of Chemistry and Chair



Albert B. Rives, Teaching Professor of Chemistry, taught at Wake Forest for 20 years. His dedication to the department, its students, and its alumni are noteworthy; for excellence in teaching a wide variety of courses across the department, including important contributions in several key teaching-laboratories; for the initiation of the events of the alumni group we now know as Friends of Chemistry; and for creating the iconic W-F element lapel pins that have been worn by Chemistry and other University dignitaries, including graduating Chemistry majors since 2012. Al has been instrumental in creating Homecoming demo shows that have featured celebrities ranging from the Demon Deacon to President Hatch and organized Trivia Night with graduating chemistry majors each May. His effectiveness in the classroom and teaching labs as well as his enthusiasm for all things Wake Forest Chemistry will be sorely missed, but we are hoping everyone can congratulate him in person at Homecoming.

Two New Scholarships for Chemistry Majors

The Chemistry Department is pleased to announce that the generosity of donors has resulted in the establishment of two new scholarships for chemistry majors.

Charles Fields has established the **Joe and Charles Fields Chemistry Scholarship** to support majors within our department annually. Such support may include, academic year tuition, summer research support or support for study-abroad.

Abby Davis and **Dylan Coffin** have been selected as the first recipients of this award.

Additionally, **Joe and Sue Newhall** have established an endowed fund to support the **Joe and Sue Newhall Scholarship** fund that will award a scholarship to chemistry majors who have demonstrated merit and financial need. **Stuart Lewis** has been named as the first recipient of this scholarship.

Both of these [funds](#) will offer increased opportunities to our talented majors. We are grateful for the support of donors we look forward to reporting on how students excel with this support in the future.

Dorothy and Charlie Chitwood Fund in Chemistry

Thanks to the kind generosity of Dorothy and Charlie Chitwood, a fund has been established to provide support to the Department of Chemistry. The funds will be used to enable a short-term visit to campus of a new or pre-existing scientific collaborator, preferably from overseas, to engage primarily in conducting research. It is also anticipated that the visitor will offer activities that will be open and advertised to the whole department, such as delivering a seminar or presentation, guest lecturing in a course, leading a group meeting, or networking with students. The collaborator may be a Principal Investigator, Staff Scientist, Postdoctoral Fellow or Graduate Student whose primary appointment is in a academic institution, national laboratory or industry.

It is a singular pleasure to announce the first scientist supported by the Dorothy and Charlie Chitwood Fund, Dr. Garth Jones, Associate Professor in the School of Chemistry at the University of East Anglia in Norwich, UK. Dr. Jones will be hosted by Professor Akbar Salam.



Dr. Cynthia Day, came to Wake Forest in 1997 as the NMR and X-ray Facility Manager and in 2001 became the exclusive X-ray Crystallography Facility Manager. As such, Cynthia was a real pioneer at Wake Forest in defining the roles of facility managers both in chemistry and other departments. We were lucky to have her choose WFU as a place to work and Abdou Lachgar said "being part of the process to hire Cynthia was one of my greatest accomplishments at WFU." Her work in the X-ray lab was always organized, meticulous and sometimes miraculous. She knew everyone in the field and her efforts raised WFU to another level in research as evidenced by the 16 publications she has co-authored in the last 5 years. She was also a leader in collaboration and an open door to showing folks how to do crystallography.

Cynthia contributed by teaching a number of courses at WFU at both the undergraduate and graduate level (CHM 111/L, 122L) as well as specialized courses in crystallography. Students who got to work one-on-one with her came to love her and came away with

Dr. Jones is a theoretical physical chemist whose research focuses on developing processes in which light-molecule interactions play a central role. Together he and Salam have been formulating theory of the main upstream route in photosynthesis known as fluorescence resonance energy transfer (FRET).



Understanding this process may help chemists in improving design principles for the synthesis of energy and other functional materials. During Dr. Jones' visit specific models will be developed to further ascertain how chemical and biological systems may be utilizing coherences to enhance the efficiency of energy transduction, which is <90% in many photosynthetic systems.

Dr. Jones is looking forward to interacting with students and faculty in the department during this week-long visit in early fall. He is excited to present a departmental seminar, as well as offer a more general talk targeted to students on one of the following topics: FRET, electron transfer or ultrafast spectroscopy. More information on Jones' research can be found at <https://research-portal.uea.ac.uk/en/persons/garth-jones>. Please consult the Chemistry Seminar Schedule for Fall 2022 for the date of his public seminar.

Archie Award

The William C and Ruth N. Archie Award is one of the most prestigious awards given by Wake Forest. The award is presented annually to the senior who has most demonstrated a commitment to liberal learning, scholarship, and the ideals of Wake Forest College. The Department of Chemistry is delighted to share that a chemistry major has received this award for two consecutive years.

Meghan Pressimone (BS, 2021) received the award in 2021. Her nomination materials left no doubt about Meghan's academic achievements. She had a nearly perfect GPA, and was inducted into Phi Beta Kappa as a junior. Meghan joined a research lab in her freshman year, and graduated with honors in Chemistry (Medicinal Chemistry concentration). Her research mentor Rebecca Alexander noted that her presentations were always thorough, clear, and understandable.

Not only was she a gifted student in the classroom and research laboratory, but Meghan has creative talents in dance, writing, visual arts, and is a Presidential Scholar in Art. Her visual art was exhibited at Winston-Salem's Southeastern Center of Contemporary Art (SECCA), the Wake Forest START gallery, and START.dt (student art at Wake Downtown). She published poetry in the Wake Forest Writing Moves journal and led Wake Forest Momentum Hip Hop Crew, including a collaboration with a local high school dance group. Meghan also exemplified Pro Humanitate. Through SAFAR, the Student Association for the Advancement of

real skills in the area. Because of this rapport with students she has long been a graduate student ombudsman.

Both Cindy and AI will be truly missed on personal and organizational levels.

Outside the Lab

Wake Forest University Chemistry faculty epitomize the teacher-scholar model, being dedicated to both helping students thrive as they learn chemistry and advancing the field of chemistry through research success. How do they relax to maintain health and happiness when not working? Let us show you!



Amanda Jones recently earned her black belt degree in Tae Kwon Do.



Paul Jones is a serious astronomer (seen here with WFU students in Chile).

Refugees, Meghan embarked on a relationship with a Syrian student she tutored in a community college chemistry class. This student is now a student at Wake Forest pursuing a biology major and undergraduate research.

After graduation, Meghan matriculated into the Molecular and Cell Biology PhD program at the University of California, Berkeley.

Renate Ma (BS, 2022) received the 2022 William C. and Ruth N. Archie Award. A double major in Classics and Chemistry, graduating with honors and a concentration in Medicinal Chemistry and Drug Discovery, Renate's time at Wake Forest clearly demonstrated her commitment to liberal learning. Her academic performance in these very different majors was outstanding and supported by her recent selection to Phi Beta Kappa. In chemistry, Renate worked as part of a research team making and studying new electronic materials where her long-time mentor, Prof. Mark Welker, praised the quality of her work at a level rarely seen for undergraduate researchers. Renate also worked in psychology and biomedical labs during her time at Wake Forest.

Renate's service and community contributions further strongly support her commitment to liberal learning. In addition to being a member of the WFU Dance team and an on-line tutor, Renate distinguished herself in the Campus Kitchen as part of the Student advisory leadership team and as a WFU EMT provider. She volunteered at the Forsyth County animal shelter, sanitizing the cat quarters, earned North Carolina certification as an EMT-B and trained doula. These various activities show her commitment to service and a willingness to tackle the hard things while applying her science to the service of health to the university and Winston-Salem community. Faculty used adjectives including hard-working, diligent, self-motivated, and prepared to describe her academic work but also added insightful, broad-minded, and humble, which describes her expansive view of learning and service. Her excellence in the classroom and in the lab, coupled with her commitment to service in both the Wake Forest and the greater Winston-Salem communities, demonstrate Renate Ma's commitment to liberal learning, and to the principles like that of our motto, Pro Humanitate. She will matriculate in Summer 2022 to the WFU School of Medicine as she continues to work to improve the lives of others.

In different ways, Meghan and Renate are exemplary models of the Wake Forest student-scholar. We are delighted that such talented students found a home in Salem Hall/Wake Downtown and trust they found inspiration in the chemistry curriculum. As the Class of 2026 moves onto campus in August, we will welcome new student-scholars of the highest caliber and hope they thrive in our care as well.

Recent Senior Award and Scholarship Winners

Each year, the department is able to recognize the success of graduates through several endowed awards due to the generous [gifts](#) from alumni and friends. *Please consider a gift to the department to help us continue this student recognition.*



Rebecca Alexander is an avid runner and had just finished a marathon when this photo was snapped.



Bruce King is often found chasing trout or tying flies.



Angela King raises Shetland sheep and loves all things fiber-arts.

The **John W. Nowell Award in Undergraduate Chemistry** is given in memory of the late beloved chemistry Professor, Jack Nowell, and is presented each year to a graduating student who has excelled in all aspects of our chemistry program (ranging from outstanding performance in the classroom to independent research in the laboratory). The 2022 recipient was **Jiayu Renate Ma**, who will attend medical school at WFSOM.

The **Grant Backerman American Institute of Chemists Foundation Undergraduate Student Award** is sponsored by the AIC as well as the Family of Grant Madison Backerman. Grant was an exceptional chemistry student, and scheduled to receive this AIC award in 2015 but passed away unexpectedly. The award is presented to recognize an outstanding chemistry student on the basis of demonstrated overall ability, leadership, scholastic achievement and who plans to pursue further chemical studies. The 2022 recipient was **Ikeer Yair Mancera-Ortiz**, who plans to get their PhD in Pharmaceutical Sciences at UNC.

The **Ron E. Nofle Honors Thesis Award** was presented to **Molly Elise Carter**. Her thesis adviser was Prof. John Lukesh and her thesis title was *The Development and Synthesis of Novel Hydrogen Selenide (H₂Se) Donor Libraries*.

Five 2022 graduates received **The Royal Society of Chemistry Certificate of Excellence Awards**: **Irene O. Huq**, **Malik L. McFarland**, **Lucas T. Minas**, **Taylor E. Wiggins**, and **Haoqing Wu**. Additionally, graduating chemistry majors included three 2022 Phi Beta Kappa inductees: **Stephen Jeffrey Sokolosky**, **Jiayu Renate Ma**, and **Sarah Grace Rice**.

Zhiyu Feng received the **ACS Division of Inorganic Chemistry Undergraduate Award** in Inorganic Chemistry.

Alan Richard Spicer received the **ACS Division of Organic Chemistry Undergraduate Award** in Organic Chemistry.

William Woods Kennedy received the **ACS Division of Physical Chemistry Undergraduate Award** in Physical Chemistry.

Sarah Grace Rice received the **ACS Division of Analytical Chemistry Undergraduate Award** in Analytical Chemistry.

Luke A. Humble (MS 2022) and **Callie Smith** (MS 2021) received the **American Institute of Chemists (AIC) Graduate Student Award** (for Master's Degree).

Santiago Israel Suarez (PhD 2022) received the **American Institute of Chemists (AIC) Graduate Student Award** (for Doctorate Degree).

Morenike Mo Oni received the **Blackbyrd Scholarship**.

Ikeer Y. Mancera-Ortiz received the **James & Courtenay Harton Scholarship for Chemical Industry**



David Wren is a Cub Scout Den Leader for Pack 934 and dedicated cyclist.



Mark Welker keeps bees and produces honey.



Alumni News

Katy Beshears finished her second year as a post-bac researcher at the National Cancer Institute, where she investigated the molecular mechanisms of neurodevelopmental disorders. She will be attending Cleveland Clinic Lerner College of Medicine beginning July 2022. It is a free, five-year MD program with a special emphasis on research.

Jeffrey Paul Hogg (BA, 1979) was recognized with the WVU School of Medicine Senior Distinguished Teacher Award in May 2021 at the WVU School of Medicine Honors Convocation, (<https://radiology.pitt.edu/alumni-news.html>). He is currently Professor Emeritus in the department of radiology at WVU.

Will Jones will begin as Assistant Professor of Chemistry at the University of North Florida in August.

Kasha Patel has left NASA after several years and now works in Washington DC for the Washington Post.

Daniel Patino (BS, 2021) works as a quality control specialist at Moderna.

Friends of Chemistry Updates

Alumni Awards

The 2021 Young Alumni Award was announced at Homecoming, and the recipient was Wes Farrell ('13). Wes is on an impressive career trajectory, which currently has him working as an Assistant Professorship at the Naval Academy. Read more about Wes at <https://chemistry.wfu.edu/alumni/dr-wesley-s-farrell-10-receives-the-2021-young-alumni-award/>.

The Pandemic slowed visits to campus for alumni award recipients. The 2020 recipients were finally able to return to campus during 21-22 academic year. Wendy Young ('88, MS'89), the 2020 Distinguished Alumni Award recipient, came to campus in April to receive her award and presented a seminar about the future of drug discovery. Wendy has made a big impact in the area of drug discovery with Genentech and is now helping develop more new products with MPM Capital, a world-leading biotechnology investment firm. You can read more about Wendy at <https://chemistry.wfu.edu/alumni/dr-wendy-young-ba88-ms89-distinguished-alumni-award-recipient/>.

Willie Hinze's love of cats is known around campus. Here he is with Shadow and her daughter Amber.

Professor Hinze and his fellow cat lovers have socialized over 80 cats to the point of adoption into loving homes and removal from campus.

Faculty and Staff Award Recognition

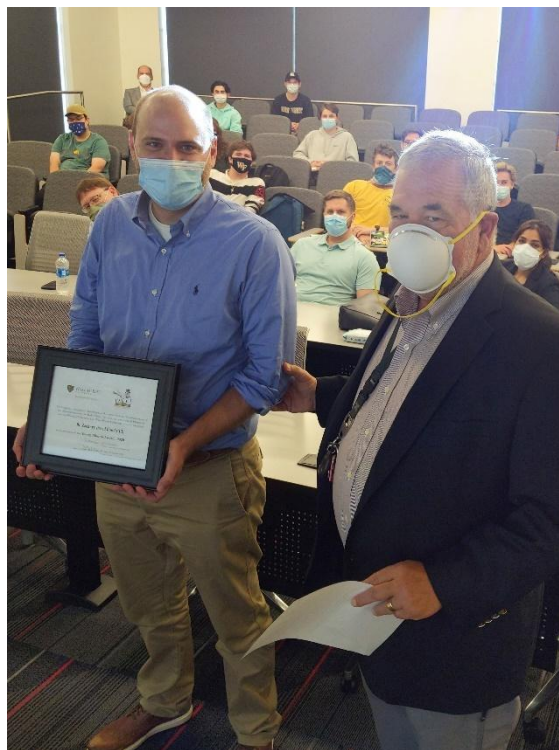
The College Board of Visitors established the **College Board of Visitors Staff Leadership Award** in 2020. This award recognizes that leadership is a valued practice and confirms that staff leaders can be effective agents of change on behalf of the institution, students, and colleagues. These leaders are committed to our institutional vision and an abiding commitment to academic excellence, diversity and inclusion, workplace innovation, and commitment to students and the Wake Forest community. We are pleased to share with you that **Marcus Wright** was the 2022 recipient of this award.

Marcus earned a PhD in chemistry at Wake Forest in 1995 under the guidance of Mark Welker and joined the chemistry department in July 2001 as Instrumentation Manager. Marcus' primary job responsibility is the maintenance and operation of nearly \$1 million worth of magnetic resonance (NMR) spectroscopy instrumentation. He has also taught a number of courses in chemistry and routinely teaches *Structure Identification in Organic Chemistry* to both graduate and undergraduate students. Marcus designed excellent exercises and



Wendy Young receiving her Distinguished Alumni Award before her seminar from FoC representative, Jim Harton.

The Young Alumni Award recipient from 2020, Zach Hood ('13), was able to visit campus in October, to present a seminar entitled "Riding the 'Wake' out of the Forest: The Impact of a WFU Education." Zach is becoming a leader in battery materials research, and is currently a scientist at Argonne National Labs. Read more about Zach at <https://chemistry.wfu.edu/alumni/dr-zachary-hood-13-receives-the-2020-young-alumni-award/>.



Zach Hood receiving his Young Alumni Award before his seminar from FoC representative, Jim Harton.

Festival on the Quad

Homecoming protocols this past year prevented visitors (i.e., alumni) from coming into the buildings, so our normal "Science Alumni Reception" and "Deacon Demo

labs and when students finish they have a real-world skill using our high end NMR instruments. During COVID-19 pandemic, Marcus developed a method for the students in his class to take over and run the NMR spectrometers remotely providing them with nearly the full experience of being there in person.

Marcus participates in research collaborations with researchers in chemistry and other departments and this has led to him being a co-author on 28 peer-reviewed. During the expansion to Wake Downtown he was responsible for the disassembly of the NMR lab at Salem, moving it to Wake Downtown and establishing a new lab there and then moving part of it back to Salem as well as installing a new instrument. Marcus is also interested in sustainable energy practices and has worked with Dr. Abdou Lachgar on the development of a natural catalyst to improve the efficiency of biodiesel production. He helped establish the WFU-Biofuels Co-op in 2004 in connection with WFU's Center for Energy, the Environment and Sustainability that pumped waste oil from the Dixie Classix Fair, Winston-Salem NC. This group then used their 300 gallon biodiesel reactor to produce ~4000 gallons of biodiesel over 3 years, some of which was used to fuel WFU vehicles (<https://news.wfu.edu/2013/10/16/from-waste-to-energy/>). This team has continued to work to improve the efficiency of the catalyst for which they received a US patent (US 2017034214 A1) in 2019 and was recognized by the American Chemical Society (ACS)

Show" were forced outside to the university's "Festival on the Quad." But the change brought some great new opportunities, and we are likely to keep going outside for the foreseeable future. We had the enviable location right in front of the chapel, and that allowed a lot of alumni to locate us and stop to catch-up. We also had several hands-on demonstrations for the kids, and that was a hit of more than just the Chemistry alumni.

We even were able to hold our alumni awards announcements.



Here, current FoC steering committee members, Carrie Henderson ('98), Jim Harton ('74), and Tim Lee ('16) applauding as Al Rives ('76) displays the Award plaque to Wes Farrell ('10) via Zoom.

FoC Career Events

The Friends of Chemistry Career Events are now being held twice each year. Being forced to depend almost entirely on ZOOM and moving the Events to the hour after Wednesday seminars have boosted both alumni and student participation. This past Spring, we had 20 alumni participating with 44 students. Small groups of alumni spoke for 20 minutes with rotating small groups of students in ZOOM breakout rooms over the course of an hour. While not all students got to talk with all the alumni, these group sizes seemed to allow for good discussions. The alumni represented classes from '70 (John Hyatt) to '13 (Ryan Daly and Zach Hood), and they connected from as close to Winston-Salem (Chris Junker (PhD'11)) to as far away as Germany (Noah Grade ('09)). There is always opportunity for more alumni participation, wherever you are in the world and what ever you do. So, please be on the lookout for email requests!

New Major Note Cards

Newly declared majors are now receiving note cards signed by Chemistry alumni. The key message is that you do almost anything with a Wake Forest Chemistry degree. The alumni signing the cards have represented a wide variety of career paths from business, research, and medicine to law, the military, and the ministry. An example is shown below.



If you come to campus and have some time to sign a few cards, let us know. We'll put you to work!

with the 2016 Industrial Innovation Award along with for the development of a carbon-based material acting as a solid acid catalyst towards biodiesel production.

We are confident that having read his varied efforts at Wake Forest, Marcus is very deserving of this recognition that the award signifies.



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If you would like to submit alumni news for the next edition of the Deacon Chemist, please email Angela King. (kingag@wfu.edu)

External Funding

Join us in congratulating the following faculty for obtaining external funding to support their research.

Lindsay Comstock-Ferguson, subcontract from The Ohio State University, NIH, *Mechanisms and Biological Functions of SPOUT methyltransferases*, \$25,587.00.

Lindsay Comstock-Ferguson, subcontract from Emory University, NIH, *RNA Modification and Antibiotic Resistance*, \$28,543.76.

Mark Welker, subcontract from WFU Health Sciences, Biologic Delivery Technologies LLC, *Chemically Modified Alginates for Hydrogel Microbead Testing*, \$58,788.00.

John Lukesh, National Science Foundation – NSF, *New Chemical Tools for Investigating the Biological Significance of Hydrogen Sulfide and Hydrogen Selenide*, \$375,000.26.

Troy Stich, National Institutes of Health – NIH, *Engineering O₂-Tolerant Adenosyl Radical Enzymes for Directed Evolution Applications*, \$213,160.00.

Giving

The Department of Chemistry strives to provide the best educational experience to our students. Your support helps us engage and inspire our students through teaching and service opportunities and research mentorship. Visit this [link](#) to become a part of our mission

The chemist in America has in general been content with that I have called a loafer electron theory. He has imagined the electrons sitting around on dry goods boxes at every corner [viz. the cubic atom], ready to shake hands with, or hold on to similar loafer electrons in other atoms.

– Robert Andrews Millikan

'Atomism in Modern Physics', *Journal of the Chemical Society* (1924), 1411.