BIOHAWK

Magazine for Alumni & Friends // Fall 23
The University of Kansas

KU BIOLOGICAL SCIENCES

The BioHawk is published annually for alumni and friends of the University of Kansas Biological Sciences.

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BioHawk Newsletter \\ Fall 2023

CONTENTS

DEPARTMENTS

LETTER FROM THE CHAIRS

Dr. Lena Hileman
Chair, Ecology and Evolutionary Biology

Dr. Scott Hefty
Chair,
Molecular Biosciences

Dr. Brian Ackley
Co-Director, Undergraduate Biology Program

Greetings Fellow Biohawks!

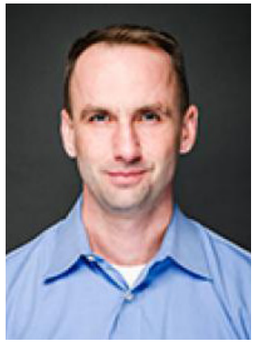
Welcome to the 2023 issue of the BioHawk – the KU Biology Newsletter! This is our first newsletter since 2019. As we are sure you can appreciate, the COVID-19 global pandemic was disruptive. Biology at KU took that opportunity to reflect on our work as educators and researchers. We focused on supporting our students, faculty, and staff, ensuring that they had all the tools and resources necessary for success in the most difficult of times. We are very proud of all that we accomplished. Our faculty, instructors, and graduate students showed the highest level of innovation and dedication to course redesign and delivered high-quality content and engaged with students in meaningful ways that ensured student success and strengthened our community. Our students persevered. They earned their degrees, engaged in community service and research, attended virtual and now back to in-person graduation ceremonies, and are taking the next bold steps in their careers. We couldn't be prouder!

Our goal with the resurrection of BioHawk is to provide you an update regarding the three units that make up KU Biological Sciences – the Ecology & Evolutionary Biology and Molecular Biosciences Departments and the Undergraduate Biology Program. With a focus on the changes from 2019-2023, we are sharing news of our accomplishments, and progress reports from our faculty colleagues as well as our graduate and undergraduate students.

Since 2019, Ecology and Evolutionary Biology has welcomed three new faculty members: Dr. Kelly Matsunaga who studies the evolution and developmental diversification of land plants using data from extinct and extant species; Dr. Jocelyn Colella who uses genomic tools to understand mammalian evolution, hybridization, and host-pathogen interactions; and Dr. Jae Choi who uses genomic tools to study plant adaptive radiations and the evolution of plant genomes. In 2023, we thanked Dr. Helen Alexander and Dr. James Thorp for their excellent contributions to teaching and research at KU. Both begin their next adventures in retirement.

The Molecular Biosciences department was happy to welcome four new faculty members to the department: Dr. Erik Holmstrom, a biochemist who studies the assembly of virus particles; Dr. Robin Orozco, an immunologist studying how genetic variation can provide protection versus susceptibility to viral infection and cancers; Dr. Rosana Ferreira and Dr. Caetano Antunes both of whom study competition between bacteria in various microbiomes. Sadly, we also lost Drs. Robert B. Sanders, Dean Stetler, and Mark Richter to illnesses. Each of those educators will be missed by their colleagues and the many students whose lives they touched while at KU.

The graduate programs in the Ecology & Evolutionary Biology and Molecular Biosciences Departments have remained strong and even grown over the last few years, with award winning students forging new research directions and sharing their successes through peer-reviewed publications and presentations at national and international meetings. We take pride in the diversity and remarkable accomplishments of our protégés! The accomplishments of our fellow faculty members are no less impressive. Dr. Tony Fehr in Molecular Biosciences, an expert in coronaviruses spent many hours during the pandemic discussing the current knowledge and progress on interventions for COVID-19, doing more than 50 national and international interviews. Other faculty pivoted their research towards pandemic-related questions including Dr. Fola Agusto in Ecology and Evolutionary Biology who applied her expertise in infectious disease modeling to gain a deeper understanding of how COVID-19 super spreader events affect transmission dynamics.



Dr. Robert Moyle
Co-Director, Undergraduate Biology Program

We hope you enjoy the information contained in this newsletter and we would be delighted to hear from and about you! We anticipate continuing to share our news with you through this digital format. Please let us know how you like our newsletter and what stories you would like to hear from us.

Rock Chalk!

Lena, Scott, Brian, Rob

Follow us on Social Media

@KUbiology @KU_EEB @KUMolBio

UNDERGRADUATE BIOLOGY PROGRAM

CHANGES IN THE UNDERGRADUATE BIOLOGY PROGRAM

This academic year, KU has a record-breaking class of 5,259 new Jayhawks, of which 463 have joined the Undergraduate Biology Program, bringing the total population of Biology students to 1,631. Of that number, 164 are participating in Undergraduate Research and 77 are taking part in Study Abroad programs. This large class of students has introduced new joys and challenges to our program, but we are striving to meet the needs of our students and to propel them to the great heights that only KU can offer.

The last few years brought major changes to Undergraduate Biology, with the promotion of previous co-directors Dr. Scott Hefty to Chair of Molecular Biosciences, and Dr. Mark Mort to Associate Director at the Center for Teaching Excellence. We are pleased to have two new co-directors, Dr. Brian Ackley, Associate Professor in Molecular Biosciences, and Dr. Rob Moyle, Professor in Ecology & Evolutionary Biology. Of our preexisting Faculty, Dr. Dyan Morgan and Dr. Victor H. Gonzalez received a well-deserved promotion to Associate Teaching Professor in the fall of 2023.

Student advising has shifted toward a new model, and our team has grown under Jayhawk Academic Advising's wing, we now have eight advisors who provide our students guidance throughout their college careers.

In the Fall of 2021, Undergraduate Biology hired Maria Losito in the role of Communications Coordinator, who has worked hard to promote student engagement and community involvement via active social media (@KUBiology on X (Twitter), Instagram, YouTube, and Facebook), creating artwork for the building and renovating spaces, such as the BioCenter for Collaborative Learning, in-progress project to expand seating throughout and outside of Haworth, and event planning to bolster Biology Jayhawks experience at KU.

The two Biology Departments and the Undergraduate Program have also hired seven new professors in the past 3 years, Dr. Caetano Antunes, Dr. Kristen Baum, Dr. Jae Choi, Dr. Jocelyn Colella, Dr. Rosana Ferreira, Dr. Patrick Lansdon, Dr. Kelly Matsunaga, Dr. Robin Orozco. All of whom are fantastic, innovative teachers and we are happy to welcome them as new faculty.

WONDROUS WELCOME

The 2022/2023 Academic year started on a high note on August 21, 2022, with the first annual Biology Welcome Event. This event, as part of KU's Hawk Week, was held on Academic Sunday, and helped introduce incoming freshmen to their Biology Faculty, Haworth classrooms & labs, and their fellow students by hosting a number of biology themed games and challenges.

Students were given a 'Lab Notes' booklet detailing instructions for the Scavenger Hunt based challenge and were sent to complete a number of stations where they could meet Faculty and Academic Advisors or learn about Study Abroad and their introductory Lab spaces. Each station gave out a stamp and the games promoted collaboration between students' attendees. One of the most popular stations was Biology Wordle – based on the popular game that had come to prominence a few months before-- Those who obtained all the stamps were rewarded with one of two KU Biology T-shirts that had been specially designed for the event!

The Biology Welcome Event was a huge success, with an immense turn out of well over 400 Freshman Biology students. Per one student, "I loved being able to meet with the professors! It made meeting my professors so much less intimidating and it was nice to see their personalities outside of a professional setting!"

BUILDING COMMUNITY

The Welcome Event was just the start of the community building events put on in Haworth. Last academic year, the Undergraduate Biology Program sponsored a total of nine in-building events, ranging from Bagels with Biology to kick off the spring semester, to Rock'em Chalk'em March Madness – a Rock'em Sock'em Robots tournament between faculty. We also had a grand opening for the BioCenter for Collaborative Learning where our students had a great time hanging out with their friends and faculty in an updated learning space.

A HAWORTH FACELIFT! THE BIOCENTER FOR COLLABORATIVE LEARNING

The creation of the BioCenter for Collaborative Learning (BCCL) in Haworth Hall was born from the desire to provide students with a versatile shared space that could act as a hub for individual studying, provide room for group study sessions, and become a centralized location for TA office hours, particularly catering to the needs of students enrolled in foundational biology courses like BIOL150 and 152.

As student needs evolved, the Biology Technology Resource Center (BTRC) in Haworth 1004 became less relevant due to a decreased demand for computer access and reduced requirements for printing coursework. This change in the landscape of student needs led to the establishment of the BCCL.

Dr. Eileen Hotze, an assistant teaching professor in the Biology department, spearheaded the effort to transform the idea into reality with the encouragement and support of then Director of Molecular Biosciences and now Current MB Chair, Dr. Scott Hefty. Supported by individuals like Communications Coordinator Maria Losito, Facility Manager Kandi White, graduate student Anika James, and numerous undergraduate workers, the BCCL evolved from a concept in the summer of 2021 to its grand opening in the spring semester of 2022. Support for funding the project included the use of funds from the The Dahl Fund for the Encouragement of Biology Faculty, as well as a course transformation grant from the Center for Teaching Excellence at KU.

Now a bustling hub of academic activity, the BCCL hosts TA-led student study sessions for BIO150 and 152. The modular design of its floor plan and furniture allows for the creation of group workstations, facilitating collaboration on projects. The surrounding whiteboards serve as canvases for students to visually map out biological concepts, reinforcing their understanding. Additionally, these whiteboards foster a sense of community through weekly anonymous polls, providing students with a fun and interactive platform.

Sharing his experience with the BCCL, James Bauer, a biology junior, expressed, "Before I started using the BCCL as a UTA, I attended weekly TA sessions on the other side of the table for numerous biology classes. I've always thought that it was a great space to interact with peers and session leaders. I like using the space as a UTA because we can project the PowerPoint and draw diagrams on the whiteboard. Oftentimes, I'll see students drawing on the board, and they'll have this 'aha' moment when a concept clicks. I also like to see all the art that students draw, and I will leave comments or advice on the polls they have up!"

Building renovation projects like the BCCL do wonders to update Haworth to the modern era. Since its introduction, students have benefited from the warm atmosphere of the shared community space and have expanded their learning opportunities through the collaborative method of group teaching. We know that this space and future projects will continue to foster student success!

DR. EILEEN HOTZE

DR. EILEEN HOTZE WITH STUDENTS IN THE NEW BIOCENTER FOR COLLABORATIVE LEARNING

COMPARATIVE ANIMAL BEHAVIOR ART EXHIBIT

In the spring of 2022, BIOL420, Comparative Animal Behaviors, had the opportunity to curate an exhibit at the Spencer Museum of Art. Each semester, Professor Jennifer Gleason, takes students in her Comparative Animal Behavior, Behavior Genetics, and Biology of Sleep classes to the Spencer to look at artwork that relates to those classes subjects. Prior to the visit, students go through the online collections and pick out works of art related to what they are learning. During the museum visit, Celka Straughn, a curator of the museum, shows the students their chosen works and teaches them about the art or artist who created it. During the spring of 2022, the student curated works were displayed in the Jack and Lavon Brosseau Center for Learning and were open to public visitation.

CREATING TIES:
(TOP) ARTWORK CHOSEN BY STUDENTS IN BIOL420 AND DISPLAYED AT THE SPENCER MUSEUM OF ART.

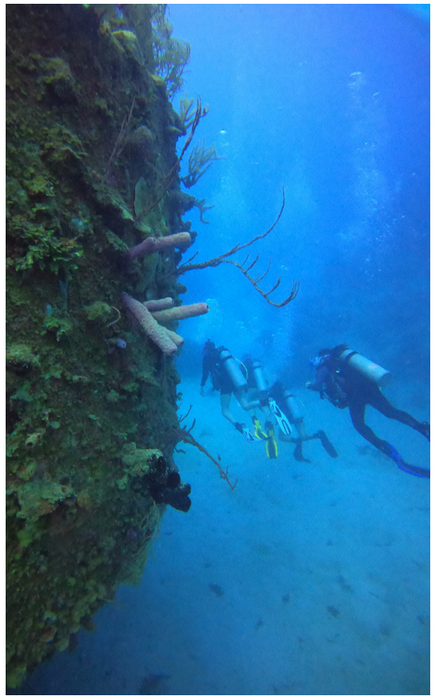
(MIDDLE) DRS. EILEEN HOTZE & SCOTT HEFTY SHOW OFF THE ROCK'EM CHALK'EM MARCH MADNESS CHAMPIONSHIP BELT AFTER THEIR LIVE EVENT SHOWDOWN.

(BOTTOM) STUDENTS AT THE COCOA AND COOKIES WITH BIOLOGY EVENT HELD TO PROVIDE STUDENTS A MENTAL BREAK FROM FINALS.

STUDY ABROAD

SCUBA DIVING & CORAL REEFS

We were pleased to have two different study abroad opportunities for our students last year. In the winter, Trevor Rivers led a Marine Biology Trip in Roatan, Honduras. Biology students Rob Gibbs, Alex Perez, Janie Lauberth, Nina Newman, & Madison Schicker were able to dive with hawksbill sea turtles, swim with dolphins, and participate in coral restoration while learning about reef biodiversity and ecology!



EUROPEAN TOUR IN MEDICINE

In the summer of 2022, Dr. Scott Hefty lead 14 Biology students through Switzerland, Germany, France, and England as part of a 3-week Biomedical Sciences & Public Health in Western Europe course. A primary goal of this experiences is to better understand fundamental aspects of public health systems in these countries and how they compare to the United States through visits to World Health Organization and UN-AIDS, along with regional hospitals and health-care institutes. The course also allows students to learn more about biomedical research activities through visits that included Novartis, Max Planck Institute for Medical Research (Heidelberg), and Nanobiotix. He led similar a study abroad course that was offered during spring break in Italy. Both abroad courses included many cultural experiences that included visits to the Louvre, Coliseum, and Haut Koenigsbourg Castle.

In 2024, Biology will be facilitating two study abroad trips, Marine Biology in Roatan over winter break and the 3-week Biomedical Research and Public Health in Western Europe course is offered in early summer.

STUDENT RESEARCH

JOHNNY DINH PHAN graduated in Spring 2023 with a B.S. in Biochemistry and a B.F.A. in Dance. He also minored in French and is currently pursuing a career in medicine.

"I've spent the past three summers under the mentorship of Dr. Sharma at The Kidney Institute of the KU Medical Center. We do research on Polycystic Kidney Disease (PKD) to assess the effects of potential treatments as well as researching the underlying pathobiology of the disease. In addition, I have done research here at KU Lawrence under the mentorship of Dr. De Guzman in the Department of Molecular Biosciences. I've been doing research on identifying the structure of Type 3 secretion systems in bacteria."

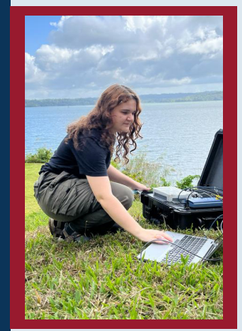
JEFF GOFF majored in Molecular, Cellular, and Developmental Biology and minored in Psychology. He graduated with Departmental Honors in Spring 2023.

"I'm in Dr. Adam Smith's lab in the Pharmacology and Toxicology department and we study stress in social environments. My research project has been about how having aversive or unpleasant social interaction changes how your brain reacts to future social interaction. The tie that put into it is social anxiety disorder, we study that in a rodent model, where they experience unpleasant social interaction, and then we can look at their brain and how it reacts to being present and near social reaction in the future."

ADELINE KELLY double majored in Ecology, Evolutionary and Organismal Biology & Environmental Studies and graduated in the Spring of 2023.

"I work for Dr. Ted Harris. He studies aquatic ecology, specifically cyanobacteria. I am currently leading a project under his guidance where I'm looking at the effects of fire on water quality. Project title is 'The Effects of Fire on Lake Phytoplankton Community Composition in Grassland Ecosystems'. Essentially, we're looking at how fire and the subsequent release of nutrients changes the water quality and therefore the composition of algae. We would expect to see that burning would release more nutrients and you would see more algal growth as a result of that."

RACHEL MANWEILER majored in Ecology, Evolution, & Organismal Biology with a minor in Physics. She is also being inducted into the Sigma Pi Sigma Physics Honors Society.



"I work with Dr. Jamie Walters on *Ophryocystis elektroscirrha*. I'm working on my honors thesis which involves the genomics of a parasite of the monarch butterfly. [...] What I've been doing is expanding upon what the lab has done in the past. The lab had previously tried to sequence the *Ophryocystis elektroscirrha* genome but its incredibly difficult. It took an hour and a half of manual labor to try to get the spores open so we could collect the DNA, and then after opening the spores they only got enough DNA for one sequence event.

I've been working for the past 2 to 3 years on an effective way to open the spores and then [finding] how we can improve the quality of the genome after it has already been assembled.

After that, I took the *Ophryocystis elektroscirrha* assembly we got previously from the lab and worked to improve it with RNA sequence data. I re-scaffolded it and made the genome more contiguous, which means it will be a better starting point for gene models and other research we want to do with the Ophryocystis elektroscirrha genome."

REU at KU

This spring, Peter Willadsen (EEB graduate student), Natalie Herbison (EEOB undergraduate student), and biology faculty member Victor H. Gonzalez traveled to Wichita and Olathe, Kansas, to survey bees from restored prairie habitats. These lands were formerly used as chemical brokerage and recycling facilities. Understanding which types of pollinating bees visit specific plants can provide valuable guidance for conservation efforts.

STRESSED LIFE OF CELLS

The University of Kansas Department of Molecular Biosciences successfully concluded its Research Experience for Undergraduates (REU) program this summer, spanning from May 22 to July 29, 2023. This initiative, funded by the National Science Foundation (NSF), was spearheaded by Program Director Dr. Lisa Timmons, and brought together 10 talented undergraduates from across the nation.

These students engaged in impactful research covering a range of scientific disciplines, including genetics, structural biology, biophysics, molecular biology, and microbiology. Guided by faculty members from the Departments of Molecular Biosciences and Ecology & Evolutionary Biology, participants gained practical research experience and collaborated across disciplines, preparing for future endeavors in academia and industry. Tours of local industries provided unique experiences for the participants, and the final awards banquet was a fantastic way to wrap up the summer!

The success of this NSF-funded program underscores the University of Kansas's commitment to fostering the next generation of scientific leaders. Looking forward, the department eagerly anticipates hosting a new cohort of ambitious students next summer. Interested students can find more details and apply on the REU program website at MB-reu.ku.edu.

INSPIRING THE NEXT GENERATION

This summer, a team of passionate biologists participated in the public events "Wonders of Discovery" and "Hasta Luego Monarchs" at the Pollinator Prairie in Olathe, Kansas. The team included EEOB undergraduate students Natalie Herbison and Alexandra Coveney, EEB graduate students Wyatt Zabinski, Andres Herrera, and Peter Willadsen, as well as biology faculty member Victor H. Gonzalez. These events were organized in conjunction with the National Pollinator Week and drew in nearly 1,000 attendees, mostly primary and secondary students.

(LEFT) PETER WILLADSEN AND NATALIE HERBISON COLLECTING SAMPLES IN THE FIELD.

(BOTTOM) STUDENTS FROM KU BIOLOGY AND KU'S NATURAL HISTORY MUSEUM PARTICIPATING IN HASTA LUEGO MONARCHS.

FACULTY IN FOCUS

NEW FACULTY

PATRICK LANSDON joined Undergraduate Biology as an assistant teaching professor in Spring 2023. Dr. Lansdon received his Ph.D. in Genetics from the University of Iowa working in the Kitamoto lab where he studied how gene-environment interactions impact neurological disorders using the fruit fly Drosophila melanogaster. Afterwards, he joined the Ackley lab at the University of Kansas for his postdoctoral training where he investigated how genomic variation influences the innate immune response to microbial infection using the nematode *Caenorhabditis elegans*. While there, he was awarded an IRACDA postdoctoral fellowship from the National Institute of Health (NIH). This opportunity provided him with academic and pedagogical training through mentored teaching assignments at Haskell Indian Nations University. Using this training Dr. Lansdon seeks to improve student learning and outcomes by implementing novel teaching approaches in the classroom and laboratory.

GRANTS

VICTOR H GONZALEZ (associate teaching professor) received a grant from the National Science Foundation entitled "Extending Anthophila research through image and trait digitization (Big-Bee)". Bees are the primary pollinators of both wild and cultivated plants, yet they face threats due to habitat loss and climate change. KU houses the world's largest and most comprehensive bee collection, and in collaboration with 12 other US institutions, this project aims to generate over one million high-resolution 2D and 3D images of bee specimens while gathering data on their distribution and morphology. This extensive image and trait dataset will serve as a free and invaluable open-access resource for ecologists, climate change scientists, and the public.

SENIOR DAY AWARD

The University of Kansas senior class has honored Josephine Chandler, associate professor of molecular biosciences, and Eileen Hotze, associate teaching professor of molecular biosciences, during the Senior Day football game between KU and Texas, with 2022 HOPE Awards — to Honor an Outstanding Progressive Educator.

2022-2023 STUDENT AWARDS & PRIZES

Last year, twenty-six students received more than $36,000 in awards and scholarships from the Undergraduate Biology Department, which was made possible from contributions from donors to the Undergraduate Biology Fund, Undergraduate Biology Scholarships fund, and the Awards listed below.

These scholarships are instrumental in helping to reduce the financial burden of obtaining a degree and ensuring that a diverse range of students have access to a world-class education and can share unique gifts and perspectives with the University community and the world.

ERMA REED PETERSON SCHOLARSHIP FOR PRE-MEDICINE SENIORS
Johnny Dinh Phan

LANCE FOSTER OUTSTANDING JUNIOR IN BIOLOGY AWARD
Cailin Kessen

HOWIESON BIOLOGICAL SCIENCES UNDERGRADUATE RESEARCH OPPORTUNITY
Lilly Cleveland
Marchella Djojopurnomo
Drew Honeycutt
Jeeshitha Pulukuri
Dexter Reilly
Nate Schemmel

IDA H. HYDE SCHOLARSHIP FOR WOMEN
Natalie Herbison
Jessica Jeannin
Bunu Lama
Vivian Marshall
Camila Meneses
Nina Newman
Makenna Orton
Blanca Rodriguez

THE SMILEY GILLIGAN FAMILY FUND FOR THE BIOSCIENCES
Sarea White

KIMBALL PAULINE KIMBALL PRIZE IN ZOOLOGY
Adeline Kelly

PAUL A. KITOS OPPORTUNITY IN MOLECULAR BIOSCIENCES RESEARCH AWARD
Jenna Barnes
Kamar Chahine
Daniel Cluff

KEN AND HELEN NELSON OPPORTUNITIES IN THE BIOSCIENCES AWARD
Candace Gomendoza

NATHAN B. PARKER PH.D. STUDENT AWARD IN BIOLOGY
Olivia Bauer

ROBERT H. AMMAR GRADUATE TEACHING AWARD
Evan Schulz

KENNETH B. ARMITAGE GRADUATE TEACHING AWARD
Ashley Wojciechowski

RICHARD H. HIMES GRADUATE TEACHING AWARD
Rayssa Teixeira

BIOSCHOLARSHIP RECIPIENTS

ROBERT AND LILLIAN BELL BIOSCHOLAR
Gavin Peterson

SMILEY GILLIGAN FAMILY BIOSCHOLAR
Destiny Batista
Kaitlyn Savoy

HALLER SILVA BIOSCIENCES MERIT SCHOLARSHIP
Muhammad Asif
Kilee Hale
Lloyd McLaughlin

HOWIESON BIOSCHOLAR
Jakelin Aldaco-De La O
Meghan Arias
Payton Elliott
Arnav Jain
Cailin Kessen
Alexa Magstadt
Vivian Marshall
Gabrielle Martell
Ocean Redmon
Bailey Reich
Nicholas Schemmel
Carlos Schwindt
Jaiden Taggart

JIM A ORR BIOSCHOLAR
John Colip

ELIO SCHAECHTER BIOSCHOLAR
Drew Meecham

DEPARTMENTAL HONORS

Graduates receiving Departmental Honors in Biology go above and beyond what is required for their degree. They complete additional coursework, conduct research with a faculty mentor, write a thesis, and present this thesis to a panel of faculty for review. The following students earned departmental honors in May 2023:

Aylar Atadurdyyeva (mentor Dr. Rob Unckless)
Kalea Chu (mentor Dr. Candan Tamerler)
Maximino Emerson (mentor Dr. Lisa Timmons)
Jeff Goff (mentor Dr. Adam Smith)
Adeline Kelly (mentor Dr. Ted Harris)
Griffin Schenk (mentor Dr. Brendan Mattingly)
Nathan Smith (mentor Dr. Josie Chandler)
Kade Townsend (mentor Dr. Josie Chandler)
Alice Wambua (mentor Dr. Navneet Dhillon)
Mia Willingham (mentor Dr. Justin Blumenstiel)
Christopher Kywe (mentor Dr. Brian Ackley)
Tanya Singh (mentor Dr. Fola Augusto)

UNDERGRADUATE BIOLOGY GRADUATION RECOGNITION CEREMONY

Every May, we recognize the accomplishments of our graduating seniors. This year 244 of the graduating seniors and their families joined the faculty and staff of Undergraduate Biology, Ecology & Evolutionary Biology, and Molecular Biosciences on Saturday May 13, 2023, to celebrate their hard work and send them off to their next endeavors.
The 2023 graduating class selected two “Favorite Professors:” Dr. Gerry de Boer (Associate Professor in Ecology & Evolutionary Biology) & Dr. Roberto N. De Guzman (Professor in Molecular Biosciences). Congratulations and best wishes to the Class of 2023!

BACTERIA ECONOMICS? WHY IT PAYS TO COOPERATE, FOR THEM AND US

What if every time you did not donate to your local NPR station's pledge drive, the police showed up at your door asking why? For bacteria, this is not a hypothetical question.

"NPR, in this analogy, is something that we call public goods, which is a freely available resource," said Josephine Chandler, associate professor of molecular biology at the University of Kansas. "And everybody in the population would benefit from that, whether or not they're making it."

For a bacterial group to provide resources for everyone, according to Chandler, a certain number of the population must contribute. And a bacterium's incentive to cheat the system will increase with the personal cost.

Chandler and her students are asking how and why are social behaviors like cooperation and cheating evolutionary beneficial to bacteria. If there are consistently freeloaders taking advantage of others' contributions, why does Chandler still always find bacteria in groups?

The short answer: Whether you're a bacterium or a person, it pays to cooperate and contribute to your community's public good.

One tactic bacterial communities deploy to control freeloaders is implementing various consequences to disincentivize cheating, Chandler said. Like what, you may ask?

"So you can actually police the cheaters by selectively hurting them. So with NPR, policing would be something like 'if you don't pay, then you're going to go to jail,'" Chandler said. "Maybe a toxin will be produced at the same time that the public good is produced. And the toxin will specifically target non-producing cheaters."

Other incentive pressures, Chandler said, include practices common in economics and business. The bacterial group can optimize a public good by making it as inexpensive as possible, thereby minimizing motivations to cheat. The community can also privatize a public good, like a streaming service, and provide exclusive and better goods to contributors.

However, these control mechanisms are resource-intensive, and do not guarantee the cheaters will not take over and cause population collapse, Chandler said. And bacteria are not the only microbes with such social relationships.

Benjamin Sikes, associate professor of the Department of Ecology and Evolutionary Biology at the University, said the partnership of fungi and plant roots have similar cheaters – and similar incentive mechanisms.

"If cheaters have higher fitness, how is the system maintained at all? Why doesn't it just collapse?" Sikes said.

From his research, Sikes said he has observed the symbiotic partners impose economic sanctions and benefits on each other depending on their degrees of cooperation.

"So one of them is a carrot," Sikes said. "Reciprocal rewards. 'Hey, you did something nice for me. Here's something nice for you.' And the other is a stick. 'You're not helping me. I'm going to cut you off. In the presence of good partners, partners that do good exchange, you can have cheaters. But if there's only cheaters, then they go extinct."

Both Chandler and Sikes borrowed terms from economics to explain the behavior of their microbial communities.

"You should, in fact, ask the economist about that," Sikes said.

Tarun Sabarwal, professor of economics at the University and director of the Center for Analytical Research in Economics, said the interactions between both bacteria and root/fungi communities reflect well-established economic models.

First, according to Sabarwal, bacteria shifting their focus from selfishness to cooperation once they are part of a large enough community mirrors a concept called the "best response dynamics."

Within the context of a bacterial population, the best response is an individual cell making the most favorable decision based on what everyone else is doing, Sabarwal said. From an economics perspective, a bacterium will "want" to cooperate more if many of its neighbors are also doing it.

Second, according to Sabarwal, the conflict between a microbe's choice to make an individual or a group decision aligns with the economic concept of "negative externality."

"Me not contributing to NPR is a negative externality to everyone because NPR cannot function as well as if I paid them," Sabarwal said. "So, it is actually not beneficial to me either, because the quality of what I receive from NPR has also decreased because of my behavior."

Third, Sabarwal said from an economic analysis, the evolutionary benefit of microbes cooperating as a group, comes from usually achieving better results together, even with some cheaters.

"When you repeat this process of imposing cost-reward structures as a group," Sabarwal said, "the group outcome achieved is something that an individual alone could not have reached."

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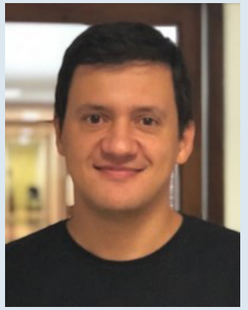
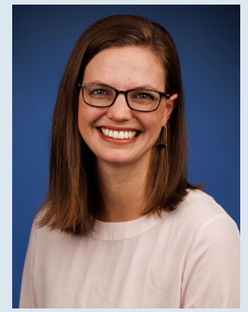
MOLECULAR BIOSCIENCES

NEW FACULTY



CAETANO ANTUNES (assistant professor) joins the Department of Molecular Biosciences faculty. Dr. Antunes majored in Microbiology at the Federal University of Rio de Janeiro, Brazil, where he also obtained his M.Sc. degree, working with anaerobic gut bacteria. He pursued his doctoral studies at the University of Iowa, where he investigated mechanisms of quorum sensing control of gene expression in the marine luminescent bacterium Vibrio fischeri, under the supervision of Peter Greenberg. Later, he pursued his postdoctoral studies in the laboratory of Brett Finlay, at the University of British Columbia, where he worked on the role of small molecules during host-microbe interactions using metabolomics. Dr. Antunes then started his independent career at the Oswaldo Cruz Foundation, a government research institution in Brazil, where he led his research group for over 10 years. His main interest is the role of small molecules in host-microbe interactions, with an emphasis on the impact of microbiome-derived small molecules on bacterial pathogens.

ROSANA B. FERREIRA (Assistant Professor) joined the Department of Molecular Biosciences faculty in January 2023. Dr. Ferreira received her Ph.D. in Microbiology from the University of Iowa where she studied the molecular mechanisms behind Vibrio parahaemolyticus switch between surface and liquid environments. Afterwards, she received a postdoctoral fellowship to work with Dr. Brett Finlay at University of British Columbia, Canada, where she worked in several projects including studying the role of the intestinal microbiome in Salmonella infections. Later, she moved back to Brazil where she started her independent career as an Assistant Professor at the Federal University of Rio de Janeiro. Her laboratory focused on understanding how commensal bacteria from the skin microbiome can protect us against pathogens. At KU, The Ferreira Lab will continue to investigate the skin microbiome members, their bioactive molecules and the mechanisms by which they can affect pathogen colonization and infection with a long-term goal to discover molecules that could be used as an alternative treatment against bacterial infections.



ROBIN C. OROZCO (Assistant Professor) joined the Department of Molecular Biosciences in July 2022. Dr. Orozco received her Ph.D. in Biomedical Science- Virology and Gene Therapy from Mayo Clinic Graduate School of Biomedical Sciences (Rochester, MN) working in Dr. Aaron Johnson's lab. During graduate school, Dr. Orozco studied the role of perforin during virus-associated, immune-mediated blood-brain barrier (BBB) disruption. After graduate school, Dr. Orozco completed postdoctoral training at Scripps Research, in San Diego, CA with Dr. Linda Sherman. As a postdoc, Dr. Orozco studied how the common, allelic variant of the gene PTPN22, which is associated with autoimmune diseases, enhances the immune response to cancer and virus infections. While a postdoc, Dr. Orozco was on the postdoctoral training grant which granted her a wide range of freedom to start thinking about building a future research program. Now, the Orozco Immunology lab is expanding on Dr. Orozco's postdoctoral work, and better defining the molecular and cellular mechanisms the common, autoimmunity-associated allele of PTPN22 changes the immune response to different virus infections and cancers. The long-term goal of the Orozco lab is to define how autoimmunity-associated allele impact the immune response to virus infection and cancer, and to harness these changes to improve anti-viral and anti-cancer therapies.

GRADUATE STUDENT NEWS

INTRODUCING THE NEW COHORT OF MOLECULAR BIOSCIENCE GRADUATE STUDENTS!
BACK ROW (LEFT TO RIGHT): ERYK YARKOSKY, CHUKWUMA GREAT UDENSI, ALFRED BUABENG, BREN DEN NG, TOLULOPE ADE, ASBIN CHAND
MIDDLE ROW (LEFT TO RIGHT): MACIE PROCTOR-ROSER, KIANA HAJIARBABI, TAIYE ADEWUMI, NGOC HUAN NGUYEN, TALITHA SHOSHANA
FRONT ROW (CENTER): VANESSA SCHMIDT

2022/23 GRADUATES

In the Spring and Summer of 2023, eight postgraduates finished their degrees with the department of Molecular Biosciences. Congratulations to Paul Ikujuni, Srishti Baid, Scott LaBrie, Pratik Koirala, Haeyoung Kim, Qi Zhang, Joan Klages, and Sudeep Shakya!

SRISHTI BAID

is currently working as Postdoctoral Research Fellow in Dr. David Ginsburg's lab at the University of Michigan, Ann Arbor. Srishti said "I am working on understanding mechanisms of blood coagulation as well as protein transport in cells. I am also involved with multiple organizations to promote science and science communication."

PAUL IKUJUNI

is currently working as a Senior Scientist, Analytical R&D at Merck and Co.

HAEYOUNG KIM

is currently working at Eli Lilly as a Postdoctoral Scientist in Molecular Pharmacology department

GRADUATE STUDENT RECOGNITION

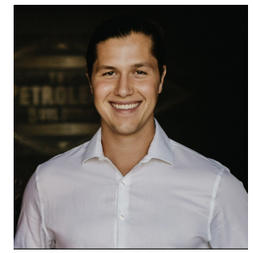
ALEC BEVIS (graduate student): was awarded 2nd Place for Trainee Talk at the KUMC Department of Microbiology, Molecular Genetics, and Immunology Retreat (Nov 2023), Oral and Poster Presentation at Autumn Immunology Conference in Chicago, IL (Nov 2023)
ANAM SHAIKH (graduate student): Oral and Poster Presentation at Autumn Immunology Conference in Chicago, IL (Nov 2023)
JENNA BARNES (Undergraduate): Poster presentation at Autumn Immunology Conference in Chicago, IL (Nov 2023)

FORMER STUDENTS & TRAINEES

ZOE DIMOND is a post-doctoral fellow at the National Institutes of Health (NIAID) Rocky Mountain Laboratory with Dr. Ted Hackstadt.
CHRISTIAN GOMEZ is a Assistant Professor at Baker University
THELMA CHIREMBA is a postdoctoral research associate at Stowers in Ron Yu's lab.

GRAD STUDENT CONFERENCES

PARKER SPERSTAD (graduate student, Holmstrom lab) presented his work entitled *Mechanistic insights into the 2-step dimerization process for the hepatitis C virus RNA genome* at the 2023 Biophysical Society Conference. He also had the opportunity to discuss a variety of biophysical, biochemical, and computational techniques that can answer biological questions. By attending this conference, Parker was able to attend presentations discussing the use of optical tweezers to determine how manganese-sensitive riboswitches impact gene expression, the impact of DMSO on the enzymatic activity of the SARS-CoV-2 protease, and how single molecule FRET can be used to understand the interaction between histone H1 and DNA.
NILANJAN ROY (graduate student, Unckless lab) and Jessie Perlmutter (postdoc, Unckless lab) presented posters at the Annual *Drosophila* Research Conference in Chicago, Illinois in March, 2023.



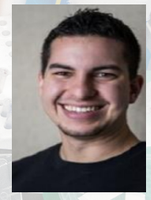
ALEC BEVIS

JENNA BARNES

THELMA CHIREMBA

JOAN KLAGES

"I started in August as an assistant faculty member at Washburn University in Topeka where I teach courses on introductory biology and forensic biology. I also am starting to mentor undergraduate researchers in projects focused on applied genetics and forensic biology."



SCOTT LABRIE

"I am about to begin a post-doctoral position at the Fred Hutchinson Cancer Center, where I will be actively involved in the Translational Research Program on Colorectal Cancer Disparities (TRPCD). This program focuses on understanding colorectal cancer across various populations, including Alaska Native, African American, Hispanic/Latinx, and non-Hispanic White groups. My work will contribute to the molecular and microbial characterization of colorectal cancer, the identification of high-mortality risk patients for improved interventions, and the discovery of novel molecular markers for lethal disease. The position is set to start tentatively by the end of this month."

QI ZHANG

"Following my graduation from the MB department in July, I have embarked on a postdoctoral research fellowship in Dr. Jean Zhao's laboratory at the Dana-Farber Cancer Institute & Harvard Medical School. In this role, I am actively engaged in advancing cancer research, with plans to broaden my focus to encompass a more diverse array of fields. My overarching objective is to cultivate both knowledge and skills, ultimately aspiring to become an independent researcher in the long run."

FELLOWSHIP & TRAVEL AWARDS

FALL MB TRAVEL AWARDEES:

BUNU LAMA from Yoshi Azuma's lab to give a presentation on her work at the Cell Bio 2023 joint meeting of the American Society for Cell Biology (ASCB) and European Molecular Biology Organization (EMBO) in Boston on Dec. 2-6, 2023

SAMALEE BANERJEE from Josie Chandlers lab to give a presentation of her work at the North American Cystic Fibrosis Conference on November 2-4, 2023 in Phoenix Arizona.

SPRING/SUMMER MB TRAVEL AWARDEES:

KELSEY HOOPER from Erik Lundquist's lab to give a presentation on her work with Erik Lundquist at the 24th International C. elegans Conference, in Glasgow, Scotland in June.

CATHERINE KERR from Tony Fehr's lab presented a poster at the International Nidovirus Symposium in Montreux, Switzerland in May.

MAXIM RODZKIN from David Davido's lab attended the American Society for Virology's 42nd annual meeting in June to give a presentation.

KERVENS ACCILIEN from Rob Unckless' lab attended an Advanced Bacterial Genetics course at the Cold Springs Harbor Laboratory in June.

ERIC MCCLOSKEY from David Davido's lab attended the American Society for Virology Annual Conference to give a talk in June.

QI ZHANG said "I am excited to share that I recently received the MB Travel Award to attend the American Association for Cancer Research (AACR) 2023 Annual Meeting from April 14th to April 19th in Orlando, Florida. At this conference, I had the opportunity to present a poster to introduce my research work on cancer immunotherapy. This award was extremely important to my study and career development, as it allowed me to connect with fellow researchers and gain exposure to the latest advancements in cancer research. I am grateful for this opportunity and look forward to applying the knowledge and connections I gained at the conference to my future work in this field."

IN MEMORIAM

MARK RICHTER

It is with deep sadness that the Department of Molecular Biosciences shares that Professor Mark Richter passed away on December 26, 2020 following an extended fight with COVID-19. Mark grew up in Australia and earned bachelor's and PhD degrees in Biochemistry from the University of New South Wales. He came to the US in 1981 and held post-doctoral positions at Florida State University and then Cornell University. Mark joined the University of Kansas faculty as an Assistant Professor in 1987 in the Department of Biochemistry (later Molecular Biosciences), and was promoted through the ranks to Professor. In his 33 years at KU, Mark was a colleague, friend, collaborator and mentor to many faculty members and students. He twice provided steadfast leadership to the department as Chair/ Acting Chair overseeing the departmental mergers that resulted in the current Molecular Biosciences department in the late 1990s, and later as Chair of Molecular Biosciences from 2010-2014. Mark received numerous awards for his teaching and student mentoring while at KU, including the Mortar Board Outstanding Educator award (1991), the Kemper Teaching Excellence award (2002), the Dean's Scholar's Mentor award (1999, 2000), the J. Michael Young Outstanding Graduate Advisor award (2005) and the Byron A. Alexander CLAS Graduate Mentor award (2005). Some joked his Australian accent helped him win these honors, but his deep sense of fairness and compassion were likely the primary factors. Mark mentored 26 graduate students, 10 postdoctoral associates and more than 70 undergraduate students in his research lab at KU, and taught many hundreds of students in the classroom. Three of his graduate students will complete their degrees in coming months. Mark's research applied his knowledge of enzymes, protein purification, spectroscopy, and evolving enhanced enzymatic capabilities to a range of topics. His research initially focused on the ATP synthase central to energy generation in chloroplasts and mitochondria, which led to an interest in the Parkin protein associated with an inherited form of Parkinson's disease, and recently focused on development of biosensors, including those for real-time detection of brain molecules relevant to diseases such as Alzheimer's and Parkinson's diseases. Through his kindness, easy humor and generosity, Mark developed and maintained deep and long-lasting friendships with his former students, collaborators, many other colleagues, and fellow soccer players. We miss him greatly, and offer our sincerest condolences to Mark's family and all who mourn his loss. The family will establish the Mark Richter Fund through the KU Endowment and a memorial service was held in Lawrence.

ROBERT B. SANDERS

Robert B. Sanders (Dec. 12, 1938 - June 17, 2022) KU associate vice chancellor emeritus and professor emeritus in molecular biosciences, died in Sanford, N.C recently. He came to KU in 1966 to teach biological chemistry. He served as associate dean of Research, Graduate Studies and Public Services (now the Office of Graduate Studies) from 1987 to 1996 and as associate vice chancellor from 1989 to 1996. His major research interests at KU were the biochemistry of hormone action, the biochemistry of reproduction, and uterine biochemistry.

He also wrote a book entitled "Contributions of African American Scientists to the Fields of Science, Medicine, and Inventions" and made important early contributions to diversity efforts at KU through his service as chair of the Minority Graduate Student Recruitment Advisory Committee. He retired in 2004 and is survived by his widow, Gladys, and a daughter and son.

Adapted from a tribute by Mary Jane Dunlap for the Endacott Society Newsletter

DEAN STETLER

The Department of Molecular Biosciences is very sad to share that emeritus faculty member Dr. Dean Stetler passed away on February 9, 2020. Dean earned bachelor's and doctorate degrees from KU and then pursued postdoctoral training at Penn State University. After an initial faculty position at Penn State, Dean returned to KU in 1985 as a faculty member. Dean's research focused on the autoimmune disease Systemic Lupus Erythematosus and later on a potential genetic contribution to human behavior. Among his most noteworthy accomplishments, Dean's research contributed to more accurate methods for diagnosing Lupus patients and led to three US patents related to diagnosis and severity-monitoring of autoimmune diseases. He also developed an important mouse model of Lupus used for research studies. Dean taught 17 different undergraduate and graduate courses in his years at KU and provided research training to many undergraduate students in his lab. He trained over a dozen graduate students and postdoctoral researchers who went on to successful careers. Dean established himself as an expert in DNA evidence for the legal system and contributed to nearly 300 legal cases and conducted frequent workshops for legal professionals. Dean's service to KU was also extensive, including his service as director of Graduate Studies for Molecular Biosciences, Director of the Genetics Program, and Director of Undergraduate Biology, during which time he founded the Undergraduate Biology Graduate Recognition Ceremony. Dean will be missed by the many current and former KU faculty, staff and students. Funeral services were held shortly after his passing. We offer our sincerest condolences to Dean's many family members and all those mourning his loss.

RESEARCHERS PLAN CENTER TO TRACK MAMMAL PATHOGENS IN THE WILD TO WARN OF COMING PANDEMICS

Researchers from the University of Kansas are helping build an international, multidisciplinary center to monitor pathogens in wild mammals and act as an early warning system for pandemic prediction and prevention.

The Pathogen Informatics Center for Analysis, Networking, Translation & Education (PICANTE) will link real-time monitoring of wildlife pathogens to permanent biodiversity archives, including KU's Biodiversity Institute and Natural History Museum.

PICANTE is supported by an initial $1 million planning grant from the National Science Foundation's Predictive Intelligence for Pandemic Prevention program. The new center's approach will be to "detect subtle shifts in pathogen-host-environment systems, to proactively identify threats and predict early signatures of pandemic emergence" through a combination of genomic sequencing, bioinformatics, geovisualization, mathematical modeling and machine learning.

"Traditionally, when a disease emerges in humans, suddenly we care about it — that makes us reactive in the way we sample animals, our environment and even people," said Jocelyn Colella, Robert W. and Geraldine Wilson Assistant Professor of Ecology & Evolutionary Biology at KU and assistant curator of mammals with KU's Biodiversity Institute, who will head up PICANTE efforts at KU. "That reactive approach is not only 'too late,' but it leads to biased sampling that limits our ability to apply cutting-edge computational methods, like machine learning and artificial intelligence, to biodiversity data."

One such scientist is PICANTE researcher Folashade Agusto, associate professor of ecology & evolutionary biology, who will apply mathematical modeling skills to different modeling approaches across fields.

"Here at KU, we are starting by integrating epidemiological and ecological niche modeling approaches to understand the propagation of a pathogen across spatial landscapes, and how that process might be influenced by environmental factors like temperature," Agusto said. "These models will be coupled with more intricate models of lung infections within a single organism, developed by our New Mexican collaborators, using museum specimens to produce a holistic view of a disease."

Colella, who will be sampling wild bats in Panama for PICANTE next month with KU doctoral student Ben Wiens, said the new center aims to identify pathogens with high pandemic potential, like hantavirus and other respiratory diseases, then forecast their transmission behavior, based on natural history as well as ongoing field sampling. Doctoral student Marlon Cobos also will work on PICANTE as a postdoc starting this summer.

"Hantaviruses have previously been a health concern in the U.S.," Colella said. "And through wildlife surveillance, it's showing up in more species than we previously thought. Information about where and when hanta-positive and negative animals were sampled can inform these new integrative modeling approaches and train artificial-intelligence applications. In theory, our models should only get better as we add specimens to museums. It's essentially a positive-feedback loop, where we learn about the biosphere and can anticipate what, when and where emergence might happen."

According to Collela, researchers need to first understand baseline conditions, then moni-tor changes in those over time.

"This is where including museums can really add to the wildlife component of 'One Health' — the idea that the health of humans, animals and their environments are all connected."

At the outset, PICANTE researchers will focus on hantaviruses in rodents to show the efficacy of their approach. According to the Centers for Disease Control and Prevention, 833 cases of hantavirus disease in people were reported in the U.S. between 1993 and 2020, following an outbreak in the Southwest in 1993. A larger hantavirus outbreak occurred in Panama around the year 2000 was caused by a different strain of the virus. Today, there are more than 20 recognized strains of hantaviruses found in diverse mammalian hosts from rodents to shrew and bats.

"Our engineering team is developing new technology to affordably and rapidly screen mammal tissues for a suite of different pathogens," Colella said. "In the meantime, our biologists and social scientists are building models based on tens of thousands of rodent records that have been screened for hantaviruses and human health data to examine how well the environmental space has been sampled and what we need to do better or differently to fill some of those sampling gaps."

While PICANTE is based at the University of New Mexico — known for expertise in fungal pathogens and a world-renowned collection of mammalian genomic resources at the Museum of Southwestern Biology — KU will play a key role in the work, providing expertise in mammalian genomics, biorepository capacity building, spatial and epidemiological analyses, as well as new samples from the field.

Both the pilot grant and full proposal, if funded, will support graduate students and postdoctoral researchers to work on zoonotic pathogens and help expand cryogenic infrastructure at KU's Biodiversity Institute and collaborating institutions.

"The BI has only three liquid nitrogen tanks, or 'dewars,' each of which can hold just under 100,000 tissue samples — but with new collaborations in wildlife health we hope to expand that as part of this project," Colella said.

Other collaborators in PICANTE are based at Los Alamos National Laboratory, New Mexico State University, Gorgas Memorial Institute for Health Studies in Panama and the Center for Research on Health in Latin America (CISeAL) in Ecuador.

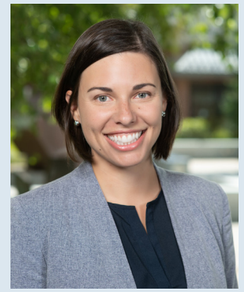
PRINTED IN "KU TODAY" BY BRENDAN M. LYNCH

ECOLOGY & EVOLUTIONARY BIOLOGY

NEW FACULTY

JAE YOUNG CHOI (Assistant Professor) is a faculty member of the Department of Ecology and Evolutionary Biology. He opened his lab in January 2023 and studies plants to understand the genetic and evolutionary basis of phenotypic variation. Why organisms look different between individuals and between species is a fundamental question of evolutionary biology with answers that can give insights on how populations have adapted to their surrounding and how populations diverge from each other to ultimately form different species. Dr. Choi's lab addresses this question using genome sequencing technology and phenotypic data collected from the field/lab with population genetic theory. Dr. Choi received his Ph.D. in population genetics from Cornell University studying the evolutionary biology of the model organism Drosophila (commonly known as fruitfly). He then started his postdoctoral position at New York University studying the evolutionary genomics of domesticated plants. At KU Dr. Choi is interested in applying emerging sequencing technology (e.g. nanopore sequencing and single-cell transcriptomics) and genome engineering (CRISPR-Cas9) in plants, and ultimately answer how do plants adapt to their surroundings and how do plants speciate and form "new" species.

PATTI BEEDLES joined the Department of Ecology and Evolutionary Biology as the Greenhouse Manager in June 2022, overseeing greenhouse operations at Haworth Hall and on West Campus. Patti previously worked at the Kansas Biological Survey, focusing on botanical data collection in long-term research plots as well as management of KU Field Station lands. Since graduating from KU in 2012, Patti has worked in ecological restoration, horticulture, and resource management in the private, non-profit, and public sectors. While the majority of her passion lies in plants native to the Great Plains and Grasslands of North America, Patti is motivated by getting people excited about anything in the botanical world.



JOCELYN P. COLELLA joined the Department of Ecology and Evolutionary Biology and the Biodiversity Institute as Assistant Professor and Assistant Curator of Mammals in Fall of 2021. Dr. Colella received her Ph.D. at the University of New Mexico where she worked at the Museum of Southwestern Biology to study the evolutionary consequences of hybridization in high-latitude mammals. She subsequently completed a Postdoctoral Research Fellowship in the Department of Molecular, Cellular, and Biomedical at the University of New Hampshire, where her research focused on mammalian adaptation to extreme arid environments. At the University of Kansas, the Colella Lab uses mammals as models to understand change through time, with a particular focus on linked evolutionary interactions (e.g., host-pathogen, predator-prey).

KRISTEN BAUM joined KU this fall as the new director of Monarch Watch, senior scientist at the Kansas Biological Survey & Center for Ecological Research and professor in the Department of Ecology and Evolutionary Biology. She earned a BS in Environmental Science from the College of William and Mary, a MS in Wildlife and Fisheries Sciences from Texas A&M University, a PhD in Entomology from Texas A&M University and completed a postdoc in Biological Sciences at Louisiana State University. Baum was previously the Associate Dean for Research for the College of Arts and Sciences at Oklahoma State University and a professor in the Department of Integrative Biology. Her research focuses on the effects of land use and management practices on pollinators, with an emphasis on native bees and monarch butterflies. Baum has served on numerous state, regional and national working groups to support conservation efforts for pollinators.

GRADUATE STUDENT NEWS

INTRODUCING THE NEW COHORT OF ECOLOGY & EVOLUTIONARY BIOLOGY GRADUATE STUDENTS!
JOANNA CORIMANYA, MARTEL ELLIS, MARCOS GIMENEZ, DILSHINI HERATH, ALEXANDER HEY, DANNY IBAÑEZ IV, LUIS MADRIGAL ROCA, ALEX MAILE, JAKE MCGEHEE, TAYLOR MICHAEL, EKTA MOHANTY, KEVIN MULCAHY, AUSTIN NGUYEN, SAYME PEREZ, ABBY PERKINS, ANAHI QUEZADA, JENNIFER RAMOS, LYDIA REGIER, ZENIA RUIZ, ASKHAN SHAMETOV, MARINA STOILOVA, DORI SUMMERS, LYDIA WESTBERG, WYATT ZABINSKI

FELLOWSHIPS & AWARDS

NSF Graduate Research Fellowship Program Participants:
Taylor Conway
Sarah Flynn
Annalise Gutherie
Ceyda Kural
Austin Nguyen
Kelly Pfeiler
Keana Tang

Fullbright Recipient:
Micah Unruh

University Graduate Fellowship:
Martel Ellis (2023-2024)

CLAS Graduate Scholarly Development Fund – Travel Award:
Sharif Tusuubira, *Evolution 2023, Albuquerque, NM*
Reb Bryant, Society for Ecological Restoration Midwest-Great Lakes Chapter's Annual Meeting (Baraboo, WI)
Ashley Wojciechowski, *MEEC – Midwest Ecology and Evolution Conference, University of Louisville (Louisville, KY)*

Other Awards:
Camila Meneses, *Best Poster Award at SAGE 2022*
Haylee Nedblake, *2023 Recipient of Kaplan Award from Botanical Society of America*
Vaishnavi Verma, *first place poser at Kansas Entomological Society Meeting (April 2023)*
Ashley Wojciechowski, *2023 Kenneth B. Armitage Graduate Teaching Award*

KELLY C. PFEILER

ANA MENDOZA

2022/23 GRADUATES

Congratulations to the graduate students who finished their degrees with the department of Ecology and Evolutionary Biology in Fall 2022 and Spring/Summer 2023!

MAS:
Liza Maria Gonzalez Rodriguez
Noelle Schlenk
Nathaniel Weicker

PHDS:
Abdelkafar Ab Alkishe
Haley Burrill
Marlon Emanuel Cobos
Kathryn Eckhoff
Ligia Faria Tavares de Souza
Anna Marie Louisa Klompen
Fernando Jose Machado Stredel
Emily N. Ostrow
Laura Yvonne Podzikowski

ANNA KLOMPEN

FORMER STUDENTS & TRAINEES

ROBERT J. RAMOS graduated with a PhD in 2022 and studied in the lab of Dr. Jim Bever, is now a Post-Doctoral Researcher at the University of Kansas
KAYLEE HERZOG studied in the lab of Dr. Kirsten Jensen, obtained their Masters – 2016 & Ph.D. – May 2022 (expected) will work as a Postdoctoral research associate (beginning June 2022) at the University of Nebraska Medical Center (beginning June 2022)
PIETRO LONGO HOLLANDA DE MELLO graduated with a PhD. In the summer of 2022, and studied in the lab of Dr. Rih Glor, is now a Post-doc University of Virginia
JIN-HO YUN received their M.A. in the Fall of 2014, and worked in the lab of Dr. Val Smith, is now a Research Scientist at the Korea Research Institute of Bioscience and Biotechnology.
EMMA HAUSER received a PhD, Ecology and Evolutionary Biology, in December 2021 and studied in Dr. Sharon Billings lab, is now am Ecological research & postdoc at The University of Montana.
JIMENA ARACENA received their B.S. Organismal Biology (1988) and Ph.D. in Biology (Entomology) 1996 and did research in the lab of Dr. William J. Bell. Jimena teaches biology (mostly physiology, general biology, and some behavior and entomology) in the Department of Biological and Biomedical Sciences at Southwestern Oklahoma State University.
KAREN GAINES graduated with a M.A. in 2022 and studied in Dr. James H. Thorp is now a Wildlife biologist at the New Mexico Department of Game & Fish, Ecological & Environmental Planning Division.

FULBRIGHT FELLOWSHIP GOES TO CHILE

The Fulbright-Hays Doctoral Dissertation Research Abroad Fellowship Program provides opportunities for doctoral candidates to engage in full-time dissertation research abroad in modern foreign languages and area studies. The program is designed to contribute to the development and improvement of the study of modern foreign languages and area studies in the United States.

"I grew up on a farm in western Kansas, located about 45 miles northeast of Dodge City. I earned a B.S. in Molecular Biology in 2019 from Rockhurst University in Kansas City, MO, and joined Sharon Billings' lab (EEB) at KU as a PhD student in 2020. My research interests center around understanding what factors regulate how long carbon is stored in the soil. As organic material enters the soil and decays, the carbon contained within it is transformed into planet-warming gases, including carbon dioxide, that can then diffuse into the atmosphere. Most fresh organic matter is decomposed within a decade or two of entering the soil, but a small portion persists for millennia. Over long stretches of time, this persistent carbon accumulates to form a sizeable segment of the soil carbon reservoir. The factors that regulate soil carbon persistence have not been fully elucidated, and improving our understanding of them is important for predicting future atmospheric composition and climate.

I was awarded a Fulbright-Hays Doctoral Dissertation award to investigate how soil development across time alters interactions between plant roots and soil structure – the arrangement of soil solids and voids -- in ways that influence the distribution and persistence of carbon in the deep subsurface. I will be working at a field site in Chile that offers an unusual opportunity to study soils of different ages that have formed from the same type of material under the same climatic conditions."

MICAH UNRUH

CONTRIBUTORS TO THE BIOLOGICAL SCIENCES

James K. Adams, PhD
Constance A. Adkisson, MD
Wayne O. Adkisson, MD
Kristine Martin Aldrich
Helen Miller Alexander
Jeff D. Amack
David A. Ammar
Jenny K. Archibald, PhD
Katie Hart Armitage
Rosetta D. Arrigo
Emily R. Arsenault,PhD
Maraci G. Aubel, PhD
Sara G. Baer, PhD
Ted A. Baer
Elizabeth M. Barnes, PhD
Andrzej Bartke, PhD
Charlotte Bell, MD
Andrew J. Bennet, PhD
James D. Bever
Sharon Billings
Justin P. Blumenstiel, PhD
Janice A. Bolinger
Laura L. Borchert
Vicki Broadie
J. Christopher Brown, PhD
Rafe M. Brown, PhD
Denise L. Brubaker
Matthew J. Buechner
Emily Flom Burns
Daniel O. Carr, PhD
Paulyn Cartwright, PhD
Kerry Bower Chapman
Stylianos Chatzimanolis, PhD
Prof. Ronald Christ
Braden J. Cielocha
Joanna Hays Cielocha, PhD
Melissa Coombs
Debra A. Corkhill
Evan Cortez
Heather Cox
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Shelly McCool Culea
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Renee DeSantis
Judith McReynolds Dishinger
David A. Doll, MD
Sarah Medcraft Doll
Susan M. Egan, PhD
Alyne Eiland
Howard D. Engleman, MD
Lorna Leticia Engleman,MD
Bryan Foster, PhD
Christopher Frazier
Craig C. Freeman
Jane A. Freeman
Marguerite K. Frongillo, PhD
Sam R. Funk, OD
Julia K. Gegenheimer
Peter A. Gegenheimer
Jon K. Gelhaus, PhD
Robert S. Gronke, PhD
Robert H. Hagen
Ashley K. Hamilton
Ann Weimer Hannah
Susan K. Harris
Marsha Smith Haufler, PhD
Christopher H. Haufler, PhD
Lena C. Hileman, PhD
Lynn A. Hill
Laura Rebecca Himes
Richard H. Himes, PhD
Susan V. Himes
Steven K. Holcomb
Susan T. Holcomb
Kristina Holder
Mark T. Holder
Lynne Weissmann Holt
Robert D. Holt
John Howieson, MD
H. Laird Ingham Jr.,MD
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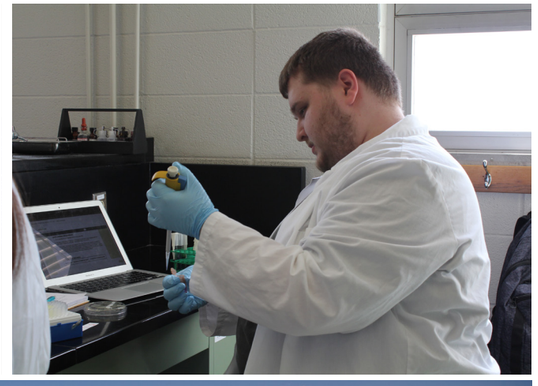

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