



## CONTENTS

### Undergraduate Biology News -

Co-directors' letter	2
Anatomy	3
BIOL 152 & Career Night	4
Artnatomy & Honors	5
UGB Recognition Ceremony & Study Abroad	6

### Molecular Biosciences News -

Alumni Making an Impact	7&8
New Faculty	8
Noteworthy Milestones and Events	9
Grants	10
Mentor - Mentee Relationship	11&12
MB Emeritus Faculty	12
MB Students	13
Fellowships and Travel Awards	14&15
In Memory of Professor Stephen Benedict	16

### Ecology & Evolutionary Biology News -

New Faculty Appointments	17&18
Student News	19-22

Contributors	23
Giving	24

## Greetings Fellow BioHawks!

Welcome to the 2019 issue of the **BioHawk** – the KU Biology Newsletter! We hope you will find it interesting and informative. Our goal is to share updates about the three units that make up KU Biological Sciences – the [Ecology & Evolutionary Biology](#) and [Molecular Biosciences Departments](#) and the [Undergraduate Biology Program](#) – with news of our accomplishments, and progress reports from our faculty colleagues as well as our graduate and undergraduate students.

This year Ecology and Evolutionary Biology thanked **Chris Haufler** as he stepped down as chair of the department after 12 years of excellent guidance. His successor is **Maria E. Orive**, who previously served as Associate Chair for Faculty in EEB and as the University Faculty Ombuds. Professor Orive's research focuses on evolutionary theory (<http://www.orive.faculty.ku.edu/>); she is the current president of the American Genetic Association.

The Molecular Biosciences department was happy to welcome two new faculty members to the department: **Erik Holmstrom**, a biochemist who studies the assembly of virus particles; and Simon Atkinson, the new KU vice chancellor for research, who studies acute kidney injury. Sadly, we also lost an award-winning faculty member, **Stephen Benedict**, to illness. Professor Benedict will be missed by many whose lives he touched while at KU.

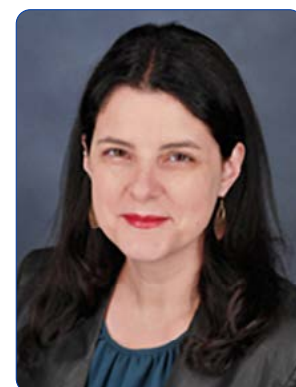
The graduate programs in the Ecology & Evolutionary Biology and Molecular Biosciences Departments remain strong, with award winning students forging new research directions and sharing their successes through peer-reviewed publications and presentations at national and international meetings. We take pride in the diversity and remarkable accomplishments of our protégés!

The accomplishments of our fellow faculty members are no less impressive. From studies to understand the neurotoxicity of environmental metal exposure to award-winning research on the evolutionary biology of parasites inhabiting sharks and stingrays across the seas, our colleagues continue to attract increasingly elusive federal funding for their research programs.

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 we can do to improve it for you.



**Dr. Susan Egan**  
Chair, Molecular Biosciences  
[sme@ku.edu](mailto:sme@ku.edu)



**Dr. Maria E. Orive**  
Chair, Ecology and Evolutionary Biology  
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**Rock Chalk!**  
--Susan and Maria

# Undergraduate Biology

University of Kansas

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## Co-directors' letter

### Advisory Board Members

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Diane Wyatt

Dr. Rob Weaver

It's been a great year for Undergraduate Biology. We continue to see growth in our program and now have over 1700 declared Biology majors! As noted last year, the continued growth in our program is not without its challenges (large class sizes, increased demand on our advisors and faculty); however [Undergraduate Biology](#) and the Departments of [Molecular Biosciences](#) and [Ecology and Evolutionary Biology](#) remain committed to providing positive academic experiences for all of our students. During the past year we were able to hire two additional Assistant Teaching Professors, [Drs Dyan Morgan](#) and [Victor Gonzalez](#), who add significant energy and expertise to our dedicated and innovative teaching team. As Dyan moved into her new role, we were able to promote [Lindsey Deaver](#) to Associate Director of Undergraduate Biology and [Lauren Spain](#) to Assistant Director – collective expertise and dedication of Lindsey and Lauren assures that as our program evolves, our students will continue to be given sound advice and guidance.

Biology has been a campus-wide leader in many education initiatives, such as transforming our large enrollment courses to be much more active than a typical lecture course. Funding from a small grant from the American Association of Universities (AAU) has allowed a team of Biology faculty to measure and document the positive impacts of the adoption of engaged-learning methods on student learning and retention. As we move forward, we continue to find ways to enhance the student learning experience in Biology and KU. A major project that was launched this fall semester aims to map the introduction and enhancement of research ideas, quantitative skills and scientific thinking (so called Core Competencies) across our curriculum. This is a large undertaking, but once complete faculty will know much more about the skills their students are bringing into their courses and promote building upon those skills in their lecture and lab courses.

*With best wishes,  
Drs. Mark Mort and Scott Hefty*



**Dr. Mark Mort**  
[memort@ku.edu](mailto:memort@ku.edu)



**Dr. Scott Hefty**  
[pshefty@ku.edu](mailto:pshefty@ku.edu)



**Editors**  
MB, EEB and UGB

**Graphic Design**  
Gil Ortiz

# Dead teach the living in human anatomy dissection class

kuub.ku.edu

printed in "The University Daily Kansan" by Katie Counts

For a lot of people, learning human anatomy means flash-cards filled with medical terminology and charts in textbooks, but for one group of KU students, learning human anatomy is much more hands on. They learn by dissecting human cadavers.

"Very few people are around a deceased individual for anything other than a funeral," said Jason Schad, a lab coordinator for the program.

The biology course, Human Anatomy Dissection Laboratory, includes anywhere from six to eight students, several teaching assistants and up to four cadavers. The nearly two-hour lab meets three times a week on the first floor of Haworth Hall.

Students wear scrubs and work in pairs to dissect the bodies. They learn about the human body bit by bit, examining muscles, bones and veins.

"There are moments where you're holding up the whole intestinal GI track, and you've got to hold that up while somebody's working and trying to either remove it or show a structure," said Aaron Carrillo, a pre-medical student and lab coordinator for the program.

Before they can even pick up a scalpel, students are required to take two prerequisite biology courses — Fundamentals of Human Anatomy and Human Anatomy Observation Laboratory — where they learn the fundamentals of human anatomy and observe the work dissection labs do on the human cadavers.

Students come from various health fields, such as pre-medical, physical therapy, occupational therapy and pre-nursing. While the lecture is required for many medical majors, the dissection class is not — students take it because they want to.

Programs like the KU anatomy and dissection class are relatively rare, especially for undergraduates, said **Victor Gonzalez Betancourt**, director of the program. Many programs at other universities dissect deceased animals or study plastic models of the human body.

"When you see it, you touch it, there's a higher level of learning — it's hard to put into words," Schad said.

Carrillo said one of the values of dissecting human cadavers is the variety each body offers. When people look at a plastic model, they see what's considered the average, but that's not always the reality, he said.

"Every human is so different," Carrillo said.

The curriculum is broken up into five units. Students start by dissecting the back because the larger muscles are easier to work with, Gonzalez Betancourt said. Then they dissect upper limbs, lower limbs, chest and abdomen, and then work on the head and face. Not only are the facial structures small and fragile, but for many students, dissecting the face can be an emotional experience.

It's in these moments students say a sense of humanity hits. It can be moments like seeing a donor's face or even seeing a cadaver with the same color nail polish.

"You see someone's hand, and you think of those moments," Carrillo said.

Many students said the program has helped them understand the human body immensely. Schad, who studies exercise science, took the class as a student, and he's been a teaching assistant for both the dissection observation and the lab. He said every day he learns something new about the human body.

"The human body will be your office," Schad said. "It's going to be your profession, and you got to know as much about it as you can in order to do your job well."

Bodies are donated through the KU Medical Center's Willed Body Program. Every year, the medical center staff hosts a tribute to honor the donors and their families. Each body is protected by HIPAA, which means it maintains privacy rights like a living patient. Gonzalez Betancourt said this also establishes a sense of respect for the cadavers.

"I always tell them, 'This is your first patient, so you have to treat them with dignity and respect,'" he said, "And they do."

**Kenidee Hatler** said working on the cadavers has made her feel grateful to the donors.

"It's really wholesome that people donate their bodies to science so we can learn," Hatler said.

She also said it makes her think of the words of doctoral candidate and graduate teaching assistant

**Daniel Romero-Alvarez**: "It's like the dead are teaching the living."





# BIOL 152



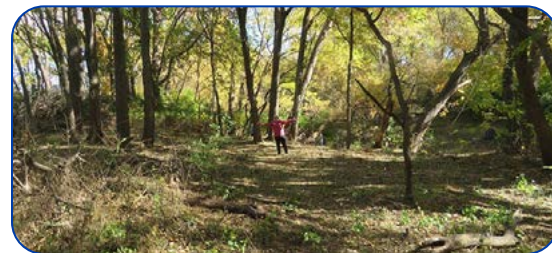
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## Fighting invasive honeysuckle

**Eastern Kansas forests**, including the patches of forest on campus and elsewhere in Lawrence, are being overrun by an invasive shrub. Amur honeysuckle (*Lonicera maackii*) is crowding out many native understory species, and the effects of honeysuckle are seen throughout forest communities in the eastern US. Research has demonstrated that the change in the structure of the forest, the types of fruits and flowers available, and even the chemicals resulting from decomposing leaves influence other species ranging from birds, butterflies, and frogs to soil microbes, aquatic macroinvertebrates, and human pathogens. Those pathogens may be more common in "honeysuckle forests" due to greater numbers of ticks and mosquitos.

Invasive species are a global problem without an easy solution, partly because there are simply so many individuals of the invading species. However, KU biology undergraduates have been helping push back invasive honeysuckle. As part of our Principals of Organismal Biology course (BIOL 152), we go out to the forest edging Baker Wetlands on the south side of town. This is our third semester working on the problem; we started these trips in Fall of 2018. So far, about 170 students have participated, and we have been assisted by the current and former directors of Baker Wetlands and other volunteers. Teams of students work to cut down and remove these invasive shrubs. They also have the opportunity to see the forest and wetland ecosystems firsthand, along with viewing the pervasive spread of honeysuckle. In some of these areas there was a near monoculture of honeysuckles in the forest understory. Each trip, we clear a section of forest to allow the return and spread of native plant species and the native animals that depend on them.

*A team of students work to cut down and remove these invasive shrubs*



## Career Night 2019

**Each year we host Career Night** – an event that connects undergraduate students with representatives from companies, government organizations, and graduate programs. The purpose of this event is to provide an opportunity for biology students to interact with professionals and explore career opportunities that are available. The 2019 University of Kansas Biological Sciences Career Night was on Tuesday, October 22nd in the Ballroom of the Kansas Union. The event was attended by nearly 70 biology students, ranging from freshmen who were just starting to explore to seniors looking for their next career step. Twenty employers or programs were present to answer questions and pique students' interests in careers in science. The event is sponsored by KU's Biological Sciences Advisory Board and the Undergraduate Biology Program.



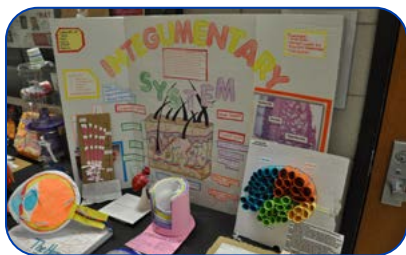
Undergraduate Biology News

4



# Artnatomy

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**College students** often experience high levels of stress related to changes in environment, lifestyle, and responsibilities. Some classes might be particularly challenging, as in the case of Fundamentals of Human Anatomy (Biol 240), a large enrollment, heavy content, and foundational course that serves diverse pre-professional health care majors. Thus, to reduce stress while reinforcing the class material, students have the opportunity to develop creative and scholarly projects either individually or in small groups (2–3 students per project). As part of their assignment, students create paintings, sculptures, scrapbooks, 3-D models, songs, video clips, or even baked goods related to any of the topics covered in the course. Each semester, between 250 and 300 students are involved in this assignment. The levels of engagement, creativity, and professionalism developed by the students in this simple exercise are outstanding. Nearly all projects are anatomically accurate and the various projects depict most body systems.

Every spring, students display their projects in an annual event, “**ARTnatomy**”, which is led by Anatomy Undergraduate Teaching Assistants (UTAs) and supported by the **Undergraduate Biology Program** and **BioGraphics**. This event not only engages students but also the UTAs of the course, who participate in its organization and have developed a rubric to evaluate the projects in terms of the information, aesthetics, and creativity. This has been a great experience for all of us, and it continues to evolve. Each semester, we try to add a new challenge to the assignment. For example, this fall semester students are required to use only recyclable materials in their art projects. We are all excited to see what projects students can create. Examples of students’ artwork from previous semesters are on permanent display on the first floor of Haworth.

## Biology Honors Recognition Ceremony

**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 2019:*



**Hannah Reynolds** (mentor Helen Alexander)  
Effects of mutualists and pathogens on the demography of annual prairie plants



**Sierra Mortimer** (mentor Erik Lundquist)  
Identification of novel transcription factors involved in neural migration



**Niall Whalen** (mentor Paul Selden)  
A novel species of ricinuleid from the Pennsylvanian of Illinois and notes on postembryonic ontogenetic trends in the order



**Emily Freeburne** (mentor Lisa Timmons)  
ABC transporter affecting RNAi in *C. elegans*



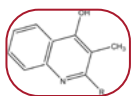
**Tracey Funk** (mentor James Thorp)  
Effect of hydrogeomorphology on food web structure in river invertebrate



**Angela Li** (mentor Justin Blumenstiel)  
Transposable elements and piRNA silencing in *Drosophila melanogaster*: The story of *ald*, *alt* et al.



**Reed Boohar** (mentor Pauly Cartwright)  
Detecting the homeobox gene TLX across Cnidaria



**Natalie Eppler** (mentor Josephine Chandler)  
Identifying novel antimicrobials produced by the soil bacterium *Burkholderia thailandensis*



**Tanner Myers** (mentor Richard Glor)  
Morphological assessment reveals candidate species of Anolis lizards to be truly cryptic



**Aubrie Stricker** (mentors Erik Lundquist & Mahekta Gujar)  
The roles of RHO-1 and RHGF-1 in growth cone dynamics in relation to the UNC-6/Netrin polarity and protrusion model



**Sarah Cluff** (mentor Deborah Smith)  
Phylogeography and population structure of giant honey bees



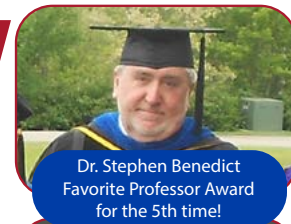
# Undergraduate Biology Graduation Recognition Ceremony

<http://kuub.ku.edu>

Every May, we recognize the accomplishments of our graduating seniors. This year 170 of the graduating seniors and their families joined the faculty and staff of Undergraduate Biology, Ecology & Evolutionary Biology, and Molecular Biosciences on Saturday May 18, 2019 to celebrate their hard work and send them off to their next endeavors. The 2019 graduating class selected two "Favorite Professors:" **Mizuki Azuma (associate professor)** and **Steve Benedict (professor)** in Molecular Biosciences. *Best wishes to the Class of 2019! And please keep in touch!*



This year's ceremony was well-attended by graduating seniors, their families, and KU faculty.



Dr. Stephen Benedict  
Favorite Professor Award  
for the 5th time!



Dr. Dyan Morgan (right) presents  
Dr. Mizuki Azuma (left) with  
Favorite Professor Award



Dr. Susan Egan, chair,  
Molecular Biosciences



Dr. Mark Mort,  
co-director,  
Undergraduate  
Biology Program

## Study Abroad for Summer 2020

### Microbiology in Western Europe and more!

In the summers of 2017 and 2019, 12-18 students have traveled to some of the leading infectious disease and biomedical research centers in France, Switzerland, Germany, and the Netherlands. Some of the sites include the Pasteur Institute in Paris, World Health Organization in Geneva, Hoffman LaRoche and Novartis in Basel, European Molecular Biology Laboratory in Heidelberg, and the Dutch National Health Center in Amsterdam. In addition to learning about innovative research within infectious diseases and biomedical sciences, students learn the similarities and differences between public health systems and approaches found within the United States. Students also have the opportunity to visit many historical and cultural sites within these exciting locations. In 2020, Biomedical Research and Public Health in Italy course is being offered over spring break. These students will visit many hospitals and public health institutions along with GlaxoSmithKline and European Molecular Biology Laboratory in Rome and Florence. Another study abroad course is expected to be offered for the summer of 2021 with new sites to be included!





## Alumni Making an Impact

For the Fall 2019 issue of the BioHawk Newsletter, two graduate students (Latavia Hill, Dr. Susan Egan's Lab and Shivani J. Murali, Dr. Mizuki Azuma's Lab) in the Department of Molecular Biosciences interviewed two University of Kansas (KU) alums who are completing ground breaking pediatric research in the greater Kansas City Area.



**Dr. Carol Saunders,**  
*Children's Mercy Hospital*

**Dr. Carol Saunders** completed her Bachelor's degree in Genetics and her doctoral degree with honors in Molecular Biology at the University of Kansas (KU). In the lab of Dr. Bob Cohen, she used the model organism, *Drosophila melanogaster*, to study pattern formation and RNA localization during oogenesis for her doctoral dissertation. After completing her doctoral studies, Dr. Saunders completed a Clinical Molecular Genetics postdoctoral fellowship at Emory School of Medicine, which provided the necessary training for her current position. She is a fellow of the American College of Medical Genetics and Genomics and is a diplomate of the American Board of Medical Genetics. Dr. Saunders has been the Director of the Clinical Molecular Genetics Laboratory at Children's Mercy Hospital (CMH) since 2002, and the Clinical Director of the Center for Pediatric Genomic Medicine since its inception in 2011.

Dr. Saunders's Laboratory offers clinical testing for rare pediatric genetic disorders, including exome and genome sequencing, as well as testing for more "common" disorders like cystic fibrosis and Fragile X syndrome. Although there is no cure for many genetic diseases; early detection often results in a change in medical management for the patient and provides the opportunity for appropriate counseling for

the family in terms of prognosis, recurrence risk, and reproductive options.

Dr. Saunders's Laboratory was the first to offer clinical whole genome sequencing (WGS). Recently, her lab published an article that describing clinical WGS in eighty pediatric patients, in whom a definitive molecular diagnosis was found in twenty patients. In addition, their laboratory has identified hundreds of new genes linked to human diseases, many waiting to be published.

In addition to her role at CMH, Dr. Saunders serves a full professor of **Pathology at the University of Missouri-Kansas City School of Medicine (UMKC Med)** where her focus is education, clinical service, and research. She trains pathology residents from UMKC's Medical School, KU undergraduates in Molecular Biotechnology, and Laboratory Genetics and Genomics Fellows at CMH. Carol also serves on two KU Advisory Boards: the **KU Biology Student Advisory Board** and a **KU Center of Biomedical Research Excellence (COBRE) External Advisory Board**. Furthermore, Dr. Saunders also inspects other clinical genetics laboratories for the College of **American Pathologists (CAP)**, including the labs of **St. Jude Children's Hospital** and **Seattle Children's Hospital**. Dr. Saunders' message to current KU students and alums is to "work hard but always make time for what makes you happy".



**Mr. Michael Beckloff,**  
*Azurity Pharmaceuticals*

**Mr. Michael Beckloff** completed his Bachelor's degree in Cell Biology and Biology at KU. He also did undergraduate research in the lab of Dr. Rob Weaver. He is currently the co-founder of **Silvergate Pharmaceuticals** and **Chief Development Officer for Azurity Pharmaceuticals**. Mr. Beckloff's interest in drug development was sparked by his father, who pursued a medical degree. Interestingly, his grandfather had lung cancer and used a drug that was developed by his father, which further propelled Michael's passion to discover drugs that benefit patients. He began his career in the pharmaceutical industry at Marion Laboratories and later worked with his father who

found a drug development consulting company. He grew the consulting business, which was eventually acquired by **Cardinal Health**, a Top 20 Fortune 500 company.

He partnered with **The University of Kansas, Children's Mercy Hospital**, and the **Kauffman Foundation**, to develop drug products for pediatric medicine, with the goal to change the way pediatric medicine is delivered in the United States. **Silvergate Pharmaceuticals** was founded in 2010 after Beckloff and others noticed there was a need for high-quality pediatric medications.



# Alumni Making an Impact

continued from page 7

[molecularbiosciences.ku.edu](http://molecularbiosciences.ku.edu)

Silvergate Pharmaceuticals eventually merged with **Cutis-Pharma Inc. to create Azurity Pharmaceuticals**. Azurity is comprised of 145 staffers that develop medications for children and the elderly. The supply chain and product distribution unit is located in Boston, MA, while the formulation and regulatory unit is located in Overland Park, KS. The company has five FDA approved drugs and is actively working to develop more.

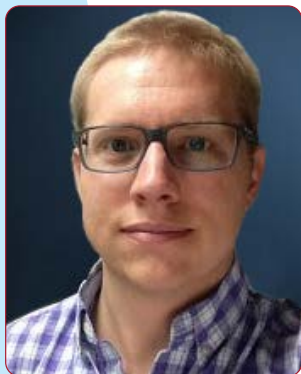
Mr. Beckloff feels an immense sense of achievement and purpose when he sees how many children's lives are positively impacted by their company's work. He attributes his success

to his wife's support and his employees dedication to their work. He and his wife Kathleen are passionate about supporting KU students and have established the **Michael C. and Kathleen A. Beckloff Endowment Fund**. This fund provides support for KU students in the Department of Molecular Biosciences doing research on rare and neglected diseases.

It was a pleasure to chat with Mr. Beckloff; he ended our conversation by stating that "a job can never be stressful if it is your true calling", and he encourages current KU students to seek a career that brings personal satisfaction.

## Faculty in Focus

### New Faculty



Dr. Erik D. Holmstrom

**Erik D. Holmstrom (assistant professor)** joins the Department of Molecular Biosciences faculty. Dr. Holmstrom received his Ph.D. in Biochemistry from the University of Colorado working in the Nesbitt lab where he studied the kinetics and thermodynamics of RNA folding. Afterwards, he traveled to the Schuler lab in Zurich, Switzerland for his postdoctoral training where he investigated interactions between intrinsically disordered proteins and nucleic acids. While there, he was awarded a Long-term Postdoctoral Fellowship from the European Molecular Biology Organization (EMBO). This allowed him to build a research program that aims to use state-of-the-art single-molecule fluorescence techniques to probe RNA-protein interactions that regulate viral nucleocapsid assembly. The Holmstrom lab will continue to develop this program at KU that aims to use state-of-the-art single-molecule fluorescence techniques to probe RNA-protein interactions that regulate viral nucleocapsid assembly.

*Welcome Dr. Holmstrom!*



Dr. Simon Atkinson

**Dr. Simon Atkinson (professor)** joins the faculty of the Department of Molecular Biosciences. Dr. Atkinson has been selected to lead the University of Kansas Office of Research as the new vice chancellor for research. Atkinson will advocate for research on and off campus, implement research integrity requirements, and, through the KU Center for Research (KUCR), oversee the administration of research grants and contracts at the Lawrence campus. Atkinson was the vice chancellor for research at Indiana University-Purdue University Indianapolis (IUPUI), and the associate vice president for research for Indiana University. Atkinson was a chancellor's professor at IUPUI as well as professor of biology in the School of Science and an adjunct professor of medicine and of biochemistry and molecular biology. He studies acute kidney injury with the goal of developing strategies to prevent or treat kidney injuries that can be caused by heart failure, cardiac surgery, and toxins. Dr. Atkinson obtained a bachelor's degree in cell and molecular biology from King's College London, from there he got his doctorate in molecular biology from the University of Cambridge, and then was a post-doctoral fellow at the Johns Hopkins University School of Medicine. *Welcome Dr. Atkinson to KU and to the Department of Molecular Biosciences!*



# Faculty in Focus

[molecularbiosciences.ku.edu](http://molecularbiosciences.ku.edu)

## Noteworthy Milestones and Events



**Erik Lundquist (professor)** is part of a collaborative research group with the Scripps Research Institute that has published their findings in *Science* entitled "Genetic behavioral screen identifies an orphan anti-opioid system". In this study, the research team used the nematode *C. elegans* to identify a gene encoding a negative regulator of the opioid response that is conserved in mice and humans and that has potential as a target for increased opioid safety.



**David Davido (professor)** has been promoted to full professor. Dr. Davido earned his Ph.D. from Washington University in St. Louis. Following postdoctoral fellowships at the University of Würzburg, University of Pennsylvania, and Harvard Medical School, he joined the faculty in the Department of Molecular Biosciences in 2005. The Davido Laboratory studies the roles that viral and host factors play in controlling the lytic and latent phases of the herpes simplex virus 1 (HSV-1) life cycle.



**Audrey Lamb (professor)** has been appointed Interim Dean of Graduate Studies. In this role, she will support the success of graduate students and the growth and quality of graduate programs at KU. Audrey will continue research and teaching activities as a faculty member in Molecular Biosciences.



**Brian Ackley (associate professor, left)** and **Scott Hefty (professor, right)** attended the Annual Biomedical Research Conference for Minority Students in Indianapolis November 14-17 where they served as mentors and poster judge.



.....  
**Mizuki Azuma (associate professor)** left and **Steve Benedict (professor)** right were recognized as "Favorite Professors" by the Biology Class of 2019 at the University of Kansas Undergraduate Biology Recognition Ceremony on May 18.  
 .....





**Josie Chandler** (assistant professor) received an R35 (MIRA) grant from the NIH/NIGMS entitled “The evolution and function of quorum sensing in mixed microbial communities.” This grant will fund research in the Chandler lab over the next five years. The work will investigate how bacterial communication systems regulate interactions among members of complex microbial communities such as those found in infections.



**Audrey Lamb** (professor) is the recipient of a Collaborative Research Grant entitled “The Chemistry of Riboflavin Biosynthesis” from the Chemistry of Life Processes program at the National Science Foundation. Riboflavin (Vitamin B2) is essential in all organisms, facilitating biological reactions that include cellular energy production, photosynthesis, DNA repair and response to oxidative stress. Working with Prof. Graham Moran at the Loyola University Chicago, the focus of this research is to define the enzymatic mechanisms of the unusual deformylation reactions of RibA and RibB and the unconventional multi-activity of RibD. This basic science knowledge may provide strategies for the development of antimicrobial drugs.



**Stuart Macdonald** (professor) was awarded a Research Project Grant (R01) from the National Institute of Environmental Health Sciences (NIEHS) entitled “Toxicogenomics of metal response in genetically-variable *Drosophila* populations”. The goal of this award is to use fruit flies to model the response to toxic levels of the metals cadmium, lead, manganese, and mercury. The Macdonald lab will use a combination of genetic mapping, high-throughput genomewide expression analysis, and epigenetic profiling to understand the neurotoxicity of environmental metal exposure, and isolate genes and genetic pathways mediating variable responses to metals in populations.



**Ilya Vakser** (professor) received a grant from the National Science Foundation entitled “Structural modeling of interactome to assess phenotypic effects of genetic variation.” The goal of the project is the development of high-throughput, structure-based methodologies and public resources for modeling of protein interaction networks and assessing the function of single amino acid variation. The project is a collaboration with Professor Michael Sternberg at the Imperial College London.



**Yinglong Miao** (assistant professor) is the recipient a National Institute of Health Project Grant (R01) for his project entitled “Enhanced Sampling of G-Protein-Coupled Receptor–G protein interactions”. The major goal of this project is to develop a novel computational approach to enhance sampling of protein-protein interactions and determine molecular mechanisms of selective coupling and allosteric modulation of G-Protein-Coupled Receptor–G protein interactions through complementary computer simulations and experiments.



**Susan Egan** (professor and chair, left), along with **David Benson** (associate professor, chemistry, center) and **Lynn Hancock** (associate professor, right) were awarded a 3 year grant from the Arnold and Mabel Beckman Foundation to support the Beckman Scholars Program at KU. This prestigious award supports mentored undergraduate research in participating faculty laboratories from the departments of Molecular Biosciences and Chemistry. More details about the program and eligibility requirements can be found at (<http://beckman.ku.edu/>).



# Mentor-Mentee Relationships: A Building Block for the Future

molecularbiosciences.ku.edu

Dr. Erik Lundquist received the McNair Mentor award. He is the mentor to KU undergraduates Angelica Lang and Aubrie Stricker, who received research awards from the Beckman and McNair Scholar programs, respectively. The BioHawk asked them questions about receiving these awards, roles of being a mentor or mentee, and the impact these awards have on their research and career plans.



## Erik Lundquist

*What did receiving the McNair Mentor award mean to you?*

I was very happily surprised to have received the McNair Mentor of the Year Award. It means a lot to me to be recognized by the McNair program, as I am truly supportive of the goals of the program. I have long been committed to providing research and educational opportunities

for traditionally underrepresented students and first-time students, and it is extremely gratifying to know that the work I have done has been recognized and, more importantly, has made a difference in the lives of students. I look forward to continued work with the bright, hard-working, and high-character students associated with the McNair Scholars program.

*Having received this award, what would you say is your mentoring philosophy for undergraduate and graduate students?*

As a mentor of both undergraduate and graduate students, my goal is to help the students develop skills of critical thought, scholarship, and inquiry. Initially, I generally put a

lot of effort into day-to-day interactions with the students to provide them with the skills they need. Eventually, I begin to let them take the lead on projects, both experimentally and intellectually, so that they can become independent thinkers and researchers with the skills required for any profession. As a mentor, I also provide advice and guidance on career goals and professional development. I listen to what the goals of the students are, and then tailor advice and opportunities around those goals. I certainly don't try to tell the students what careers or goals they should have, but rather help them develop their own goals. Finally, patience and personal respect are at the core of any effective mentor-mentee relationship.

*How have your interactions at KU and in the Department of Molecular Biosciences supported your research endeavors?*

In innumerable ways, from the terrific undergraduate research opportunities at KU to the opportunity to work closely with talented graduate students. Interactions with faculty colleagues in MB and across the university have also been invaluable.



## Aubrie Stricker

*What specific experiences at KU and in the Department of Molecular Biosciences were significant turning points for you in deciding your future plans?*

**Becoming** both a McNair scholar and K-INBRE trainee helped define my future to go to graduate school. Both programs

provided resources and opportunities that allowed me to dive deeper into my research and accomplish goals I would not have been able to achieve on my own. As the first in my family to go to college, the McNair Scholars program provided me with support and introduced me to people with a similar background who were successful in graduate school. Being involved in K-INBRE helped broaden my outlook on the different areas of research that are being conducted. The encouragement I received from these programs solidified my decision to further pursue my research and education.

*Can you briefly talk about your research project in the Lundquist lab and how Dr. Lundquist's mentorship helped you obtain the McNair Exceptional Research Award?*

My research was studying neuronal outgrowth and how different guidance molecules regulated the neuron's behavior during development. Dr. Lundquist's mentorship played an eminent role in helping me obtain the McNair Exceptional Research Award by always being there to answer my questions and providing me with advice that I still continue to carry today. From the start of my research experience with Dr. Lundquist, I could tell that he made a personal investment in making sure everyone in the lab succeeded in reaching their goals. He was always there to encourage me to present my work and take advantage of any opportunity that came my way. Without his mentorship, many of these accomplishments including my publications, graduating with honors, and numerous awards and scholarships would not have been possible.

# Mentor-Mentee Relationships: A Building Block for the Future

Mentor - Mentee continued from page 11



## Angelica Lang

*How has becoming a Beckman Scholar helped define your academic and career goals?*

**I already knew** I was interested in a research career before applying to the program but becoming a Beckman Scholar has really helped me grow as a scientist. The project I've been working on

has taught me a lot about the research process and how to approach scientific problems. The program has also allowed me to network with fellow researchers across the country. The experience and connections I've gained will be incredibly

beneficial as I go on to pursue a PhD in biology and ultimately a career in research.

*What advice would you give undergraduates interested in doing research?*

My advice would be to start early and don't be afraid to reach out to professors. Taking the first step to getting involved in a lab can seem really intimidating, but you don't have to know everything about biology to get started in research. Doing research as an undergraduate is ultimately a learning experience, and your mentor will be there to guide you through it. The sooner you start, the more you'll be able to gain from the experience.

## MB Emeritus Faculty



## Paul Kitos

**Paul** Kitos was a faculty member at KU from 1959 to 1996 when he retired, 23 years ago. Twelve years later he and his wife Gwyn moved to Burnaby on the west coast of Canada. In April of this year, after 67 happy years of married life, Gwyn passed away. Paul continues to live in a lovely retirement apartment in Burnaby, just a short distance from the home of his daughter Theresa and her husband Andy. Paul says that British Columbia has been a particularly good retirement venue for them – mild weather, nearby family,

marvelous scenery, friendly people, good health care and more. Though travel is no longer a priority for Paul, this summer he did spend several days with family in Yoho National Park, an unspeakably beautiful region of the Canadian Rocky Mountains. Paul says that Lawrence and KU occupy happy niches in his heart and many old friends and former students are still vivid in his memory.



## Peter Gegenheimer

**Peter** is an Emeritus Professor in the Department of Molecular Biosciences. One of Peter's claims to fame is that he discovered the all-protein enzyme that makes chloroplast tRNA and splits it into the 5' leader and mature tRNA. Although Peter suffered a minor stroke in 2014, he made a significant recovery and currently lives at Monterey Village in Lawrence, KS. When possible, he would look forward to having former students, staff, and colleagues visit him.



# New Graduate Students



1st row: Benjamin Bunnell, Kehinde Akinseye, Hana Mayfield, Samalee Banerjee, Katherine Hanson. 2nd row: Eldric Jonn Carreon, Bunu Lama, Maxim Rodzkin, Benjamin May, Vaishnavi Kulkarni. 3rd row: Hongping Hao, Joseph O'Connor

**Twelve** new graduate students joined the department in August. They are a diverse representation from all over the globe. New international students graduated from Nanjing Agricultural University (China), University of Ibadan (Nigeria), Heritage Institute of Technology (India), Amity University (India), University of Philippines (Philippines), Pokhara University (Nepal), and the National Academy of Sciences of Belarus (Belarus). New domestic students brought a regional feel to the program, hailing from Washburn University and KU in Kansas, Northwest Missouri State University, University of Missouri, and Nebraska Wesleyan University.

# Graduating Students

**Molecular Biosciences** graduate students participated in the University of Kansas Doctoral Hooding Ceremony on May 18, 2019.

From left to right: Jeff McFarlane and his mentor Audrey Lamb, Mark Richter, mentor to Jittasak Khowsathit, and Lisa Timmons, mentor to Vaishnavi Nagarajan



# Graduate Student Recognition



**Jenn Klaus** (graduate student, Chandler lab) has had a very busy year. She presented a poster entitled "The role of malleilactone, a *Burkholderia pseudomallei* cytotoxic polyketide, in bacterial iron acquisition" at the 2019 Annual Meeting

of the Society of Industrial Microbiology and Biotechnology conference in Washington DC on July 21 for which she won the Carol D. Litchfield Outstanding Student Poster Presentation Award. Jenn also received the 2019 Phillip and Marjorie Newmark Award for Excellence in Biochemistry Research for her project entitled, "Novel iron acquisition mechanisms in the pathogenic bacterium *Burkholderia pseudomallei*," the 2019 Hirata Summer Fellowship, which provided full summer support for research, manuscript writing, and thesis defense preparation, and finally a KU Robert H. Ammar Graduate Teaching Award (Microbiology), for excellence in teaching of the class BIOL507 (Bacterial Infectious Diseases Lab) in the spring of 2019. *Congratulations Jenn!*



**Rhea Abisado** (graduate student, Chandler lab) gave an invited talk at the American Society of Microbiology Microbe meeting in San Francisco on June 24 entitled "Quorum sensing control of tobramycin resistance in *Pseudomonas aeruginosa*."



**Cindy Ly** (graduate student, Davido Lab) received an Honorable Mention from the National Science Foundation (NSF) for her Graduate Research Fellowship application entitled "Identifying Ubiquitinome Profiles and Pathways Targets by HSV-1 ICP0."



**Haifa Alhadyian** (graduate student, Ward lab) moderated the Undergraduate Panel of the New Faculty Forum at the 60th Drosophila Research Conference in Dallas, TX on March 27, 2019. She also presented her work in a poster format.



**Nikola Kenjic and Jeff McFarlane** (graduate students, Lamb lab) were both recipients of the Graduate Scholarly Presentation Awards from KU Graduate Studies to attend the Enzyme Mechanisms Conference in New Orleans, January 6-9. Nikola presented a

poster entitled "3,4-dihydroxy-2-butanone 4-phosphate synthase (RibB) of riboflavin biosynthesis has a mononuclear magnesium active site." Jeff's poster was called "An opine on opines: the biosynthesis of opine metallophores in bacterial pathogens."



**Thelma Chiremba** (graduate student, Neufeld lab) was awarded a Graduate Student and Post-Doctoral Travel (GPT) grant within the 2019 Research Excellence Initiative. This fund will support Thelma's travel to attend The Gastrointestinal Tract XVIII Conference: Integrated Biology of the GI-Super Organ to be held in Steamboat Springs, Colorado from July 28 to August 2, 2019.

# Fellowships and Travel Awards

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## **Anuja Bhatta-Whitmire Summer Fellowship**

Over the summer, the Whitmire Fellowship allowed me to work on a project that investigated earliest events in the signaling process upon engagement of CD45 alone and in association with TCR/CD3 and TCR/CD3+ a co-stimulatory molecule: CD28. CD45 is a crucial transmembrane protein as it is the first step after antigen signal leading to T cell activation. Our lab has been developing the concept that co-stimulation of human naïve CD4+ T cells through different co-stimulatory molecules can tune differentiation to different phenotypes. An open question is where in the signaling pathways induced by the co-stimulation do differences occur that contribute to outcome of differentiation. So, we chose to investigate the earliest signaling events in T cell signaling, which is CD45. We hypothesized that during TCR recognition of cognate antigen, engagement of CD45 differentially guides signaling events in T cells, altering the early signaling events induced by TCR/CD3+ co-stimulatory molecule, CD28. I collected more n values to confirm this hypothesis.

I also worked on another project to study different signaling factors, transcription factors and gene expression profiles induced by different co-stimulatory molecules. We hypothesized that different signaling pathways are activated by each co-stimulatory molecule- CD28 and ICAM-1, and this is the reason for different co-stimulation to favor different biological outcomes. I have used transcription factor arrays, and phosphorylation arrays and the preliminary data suggest that two co-stimulatory molecules CD28 and ICAM-1 have some proteins activated during co-stimulation through one co-stimulatory molecule and not during the other co-stimulatory molecule. This work was funded by a University of Kansas Cancer Center Pilot Grant.



## **Zoe Dimond-Armstrong Summer Fellowship**

I would like to thank Molecular Biosciences for selecting me for the Armstrong Summer Fellowship. I was very appreciative to learn that I had been selected to receive this honor. The fellowship allowed me to have three months of devoted time to focus on my research, which has helped to advance my progress greatly. Throughout these months I was able to complete most of the work on an upcoming manuscript which is currently in the final stages of preparation. In addition to this new work, it allowed me to finish and submit a previous manuscript. Both of these manuscripts have helped to greatly advance my degree progress and will be a large part of my dissertation. In addition, the full-time focus on research has given me insight into what a future career in academic research would look like, which I now intend to pursue. Overall, I am grateful for the opportunity that this summer support has afforded me, and look forward to carrying this progress through the rest of the year.



## **Jennifer Klaus-Hirata Summer Fellowship**

With the generous financial assistance of a Hirata Summer Fellowship, I was able to make additional significant progress toward my dissertation projects. Because the GRA fellowship enabled me to stay full-time in the lab, I had more time to continue mentoring a senior-level undergraduate student researcher on a collaborative project which is now in manuscript draft form (and will be a chapter of my dissertation) thanks to the high level of attention we were able to give it this summer. I was able generate what will be at least two full figures in other projects that will compose my other dissertation chapters, and train a new junior-level undergraduate student researcher as well. I also generated a working dissertation outline and was well-prepared for an August committee discussion of its contents after a productive summer of bench work.



## **Anupama Kante-Travel Award**

The Candlin Travel Award which I received in spring of 2019 supported my registration, travel and stay for the 63rd annual Biophysical Society conference. It was a great opportunity to meet fellow Biophysicists and explore the different aspects of and novel findings in Biophysical research. I was able to present my research to a wide spectrum of audience and receive insightful inputs. Along with the oral and poster research presentations, the career development workshops provided me with vital information like - strategies for finding a post doc job, non-academic career options, preparing a job talk, etc. Most importantly, the conference gave me an opportunity to network with people working in research, science policy and industry. I am extremely grateful to the Department of Molecular Biosciences for awarding me the travel grant.



# Fellowships and Travel Awards

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## Taybor Parker-Travel Award

I received Bell Travel Award to attend and present a research poster at the FASEB: Gastrointestinal Tract XVIII Conference: Integrated Biology of the GI Super-Organ on July 28, 2019 in Steamboat Springs, Colorado. This conference occurs once every two years, and hosts many of the top researchers in the field of gastrointestinal biology. During the conference, I was able to listen to presentations relating to my own research as well as present a poster and receive critical feedback of my research. Further, I had the opportunity to interact and network with many Principal Investigators and their lab members, as well as network with attendees who worked for industry companies, such as Roche and Johnson & Johnson. In addition to the research-related topics, I also attended professional development seminars ranging from information for early-career scientists, to topics concerning what it is like to work in an industry setting. Attending this conference bolstered my own personal understanding of GI biology and how it relates to my project, but also provided fantastic opportunities for networking with those inside and outside of academia.



## Dianarys Hernandez Aquino-Travel Award

I was awarded the Carr Travel Award in April 2019. By receiving this travel award, I was able to attend the Evolution 2019 Conference in Providence, Rhode Island on June 21-25, 2019. During my time at the conference, I had the opportunity to explore new research topics while also deepening my understanding in population genetics and genome studies. Moreover, I was selected by the conference committee to share my research in the form of a talk; by doing so, I connected with scientists in my field and received great feedback on my work. This was my first time presenting my research in a talk during a conference. In general, I was surrounded by passionate scientists eager to share ideas as well as to support each other and foster an all-inclusive community.

## Former Students and Trainees

### Where are they now?



**Kara Evans (PhD, Chandler lab)** started a new position as a Genomics and Microbiome Scientist at DuPont Nutrition & Health in Madison, Wisconsin on October 15. She will be conducting research on bacteria in the human microbiome and probiotic product development.



**Sonia Hall (PhD, Ward lab)** was recently selected as President and CEO for BioKansas, the state's life science trade organization.



**Jeff McFarlane (PhD, Lamb lab)** successfully defended his dissertation entitled "The Biosynthesis of Opine Metallophores" on June 21, graduating in under four years with five publications. In August, Jeff became an Assistant Professor at Fort Lewis College in Durango, Colorado.



**Shaun Carlson (BS-Cell Biology, 2007)** started in the **Gamblin** lab enrolled in BIOL 424 Independent Study where he made significant

contributions and was the first author on a manuscript published in *Biochemistry* (*Biochemistry*. 2007 Jul 31;46(30):8838-49). Shaun graduated with a BS in Cell Biology in 2007 and went on to earn his PhD in physiology at the University of Kentucky where he studied the effects of traumatic brain injuries in animal models. He then trained as a postdoctoral fellow at the University of Pittsburgh in the Department of Neurological Surgery. In 2017 Shaun joined the faculty of the Department of Neurological Surgery at the University of Pittsburgh Medical Center Children's Hospital.



**Shane Stecklein (BS-Cell Biology, 2006)** worked in the **Neufeld** lab for two years. He was an honors biology student and has been remarkably successful – completed MD/PhD at KUMC and then internship, residency, and research fellowship at University of Texas MD Anderson Cancer Center. Shane recently accepted a faculty position at KUMC as Translational Physician Scientist Assistant Professor in Radiation Oncology.

# In Memory of Professor Stephen Benedict



**T**he Department of Molecular Biosciences is very sad to share that Professor Stephen Benedict passed away on December 2, 2019.

Steve grew up in Kentucky and earned bachelor's and master's degrees from the University of Kentucky. He next earned a PhD in Microbiology from Vanderbilt University and carried out post-doctoral research at the University of Southern California. He began his professional career at the Hospital for Sick Children in Toronto and then the National Jewish Center for Immunology and Respiratory Medicine in Denver. Steve came to the University of Kansas in 1990 as a member of the department of Pharmacology and Toxicology and then the department of Molecular Biosciences (formerly Microbiology). At KU, Steve excelled in all aspects of an academic career: research and scholarship; teaching and mentoring; and service and collegiality.

Steve's primary professional passion was his research, which focused on understanding and potentially controlling the function of T-cells of the human immune system. Among the potential applications of modulating T-cell activity are increasing immune function in cancer or in older adults and decreasing aberrant T-cell function in autoimmune diseases such as Type 1 diabetes, rheumatoid arthritis and multiple sclerosis. His research led to the publication of nearly 90 papers and the receipt of 6 US Patents. Steve mentored 12 doctoral students in their research – and impressively, 6 of these former mentees have quite successful academic faculty careers. Steve's mentorship continued through his illness,



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and his final student is expected to complete her doctoral degree in the next few months.

Steve was also an award-winning educator who touched the lives of many hundreds of undergraduate students at KU. He taught immunology to more than 100 students per year for 22 years. Among his teaching and mentoring accolades were the **Kemper Teaching award (2002)**, the **Robert Weaver Graduate Mentoring award (2014)**, the **J. Michael Young Academic Advisor Award (2014)**, and the **Mortar Board Outstanding Educator award (2016-2017)**. He also served as a **Chancellors Club Teaching Professor from 2014 to 2019**. This prestigious five-year professorship is awarded in honor of excellence in teaching over a number of years, and includes a substantial annual salary supplement. Perhaps Steve's crowning teaching achievement was the receipt of the **Favorite Biology Professor award five times in the last 15 years (2006, 2009, 2014, 2016 and 2019)** – despite a pool of ~50 biology faculty members). In honor of this remarkable student recognition of Steve as an educator and mentor, this award will be renamed the **Stephen Benedict Favorite Biology Professor award**.

Steve's intellect, compassion, and ever-present sense of humor will be greatly missed by countless current and former KU faculty, staff and students. We offer our sincerest condolences to Steve's family and all those mourning his loss. A celebration of life service is planned for Jan. 18, 2020, in Lawrence.





## New Faculty Appointments



### Maria E. Orive

After many years of service to the Department of Ecology and Evolutionary Biology, we said farewell to **Chris Haufler** as Chair and welcomed Maria E. Orive, Professor and Chair of the Department in 2019. Professor Orive earned her Ph.D. at the University of California, Berkeley, and came to the University of Kansas in 1997 from the University of Edinburgh, where she was an NSF-NATO Postdoctoral Fellow. Prior to her role as chair, she served as Faculty Ombuds for the University of Kansas for 12 years. Professor Orive's areas of research include evolutionary genetic models of organisms with complex life histories, the interaction of clonal reproduction and mutation, models of within- and between-host pathogen and symbiont population dynamics, and the use of genetic data in analyzing gene flow and hybrid zones.



### Sara Baer

After Ed Martinko retired in 2019, the Kansas Biological Survey welcomed Sara Baer as their new Director and State Biologist. In addition to her Directorship, she joined the faculty as Professor in the Department of Ecology and Evolutionary Biology. She received her Ph.D. in Biology at Kansas State University. Professor Baer is considered an expert in grassland, soil and restoration ecology. Her research includes multi-decadal studies of the effects of soil heterogeneity and inter-annual variability in climate on plant diversity, soil processes, and productivity of restored tallgrass prairie. Most of her research is conducted at the Konza Prairie Long Term Ecological Research site in Kansas.



### Brian Atkinson

**Brian Atkinson** joined the Department of Ecology and Evolutionary Biology and the Biodiversity Institute faculty as Assistant Professor and Assistant Curator in 2019. Dr. Atkinson received his Ph.D. at Oregon State University where he studied Botany and Plant Pathology and subsequently completed a Postdoctoral Research Fellowship at the University of Kansas. The Atkinson Lab uses data from the fossil record to reconstruct macroevolutionary patterns and relationships of seed plants. The typical focus is on Mesozoic and early Cenozoic conifers and flowering plants.



### Maggie Wagner

**Maggie Wagner** joined the Department of Ecology and Evolutionary Biology and the Kansas Biological Survey faculty as Assistant Professor and Assistant Scientist in 2019. Dr. Wagner received her Ph.D. at Duke University where she studied Genetics and Genomics. She subsequently completed an NSF Plant Genome Postdoctoral Research Fellowship with Drs. Peter Balint-Kurti, James Holland, and Posy Busby at North Carolina State University. The Wagner lab focuses on the genetic basis of plants' interactions with their environment—especially their microbial neighbors—in both natural and agricultural systems. Her work combines quantitative genetics and evolutionary ecology to study the relationships between plant genotypes, phenotypes, and microbiomes— all towards the broad goals of understanding plant evolution and improving the health of crops and wild plants facing environmental challenges.

# EEB Faculty News

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## Kirsten Jensen (Professor)

**Professor** of Ecology and Evolutionary Biology and Senior Curator of invertebrate zoology at the Biodiversity Institute received the University of Kansas Scholarly Achievement Award for her significant achievements in scholarly research in her field.

Professor Jensen is an internationally renowned scholar focusing on the evolutionary biology of tapeworms that inhabit and are intimately associated with sharks and stingrays across the world. This knowledge has helped to inform fisheries and food supply, and food web connections as related to ecosystem health. Her work on these parasites has been continuously funded by the National Science Foundation since 2001, with awards totaling about \$5 million. Her research, conducted through expeditions in the waters of Africa, India, Australia, Central America and Southeast Asia has resulted in the discovery of hundreds of species new to science. On the KU faculty since 2004, Jensen has published more than 59 research papers in high-impact journals and book chapters, as well as four books and monographs, and she has delivered more than 116 major research presentations.



## Helen Alexander (Professor)

**Professor** in the Department of Ecology and Evolutionary Biology, has been honored as the 2019 Eminent Ecologist by the Journal of Ecology, a publication of the British Ecological Society.

In recognition of her work, the editors of Journal of Ecology asked her to put together a special Virtual Issue of some of her past publications [https://besjournals.onlinelibrary.wiley.com/doi/toc/10.1111/\(ISSN\)1365-2745.Helen-Alexander-2019](https://besjournals.onlinelibrary.wiley.com/doi/toc/10.1111/(ISSN)1365-2745.Helen-Alexander-2019). At this website location, one can also access her blog post and an interview with Helen about her career.

Helen is a plant population ecologist and has contributed to research on the ecology and evolution of plant-pathogen interactions, seed ecology, and the biology and conservation of long-lived prairie plants.

Helen notes that much of her work has been conducted at the University of Kansas Field Station (KUFS). To her, field stations such as KUFS offer an abundance of opportunities: secure sites for research, outdoor areas and classrooms for teaching, and public trails for people of all ages to explore the natural world.



## Lena Hileman, (Professor)

**Professor** in Ecology and Evolutionary Biology focuses her research on understanding the evolution of plant development with a focus on floral diversification. Her recent publication with her postdoctoral researcher, Carrie Wessinger, relates to understanding the evolutionary forces that render Earth's blooms in a stunning array of shapes and colors.



## Carrie Wessinger,

**Associate Researcher** received her Ph.D. from Duke University. In Hileman's lab, Carrie works on the plant genus *Penstemon* by investigating the genetic basis for parallel pollination syndrome shifts across the genus. For more information on Drs. Hileman and Wessinger's recent publication see:

[\*Hileman and Wessinger's published research swaps pollinators from bees to birds!\*](#)





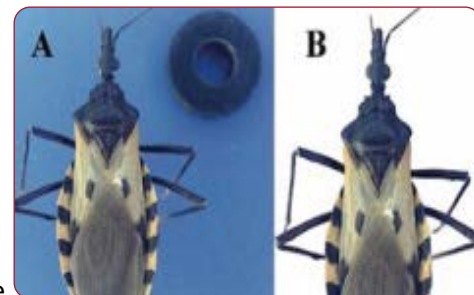
## New EEB graduate students Tim Burnette and Kathleen Rust awarded Self Graduate Fellowships [read more](#)

Tim Burnette and Kathleen Rust are 2 of the 13 students selected for 2019-2020 to receive the University of Kansas prestigious Madison and Lila Self Graduate Fellowship, a 4-year fellowship awarded to incoming first-year doctoral students.



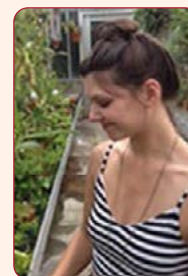
## EEB graduate student Ali Khalighifar uses AI to identify bugs that spread Chagas disease [read more](#)

Ali Khalighifar, a KU doctoral student at the Biodiversity Institute and the Department of Ecology and Evolutionary Biology, headed a team that just published findings in the Journal of Medical Entomology. Artificial Intelligence was used to identify triatomine bugs that transfer the parasite responsible for Chagas disease. The Virtual Vector Project, developed at KU under the leadership of Ali Khalighifar enables public health officials to identify triatomine bugs that carry Chagas with their smartphones, using a kind of portable photo studio for taking pictures of the bugs.



## Seven EEB students received KU Field Station Student Research Awards for 2019 [read more](#)

Students will fan out across the University of Kansas Field Station this summer, carrying out experiments for their own ecological research. Their work covers subjects such as prairie restoration, prescribed fire monitoring, soil structure and harmful algal blooms. Each year, the Kansas Biological Survey provides annual awards to help cover costs associated with these projects.



Congratulations to (left to right): Jacob Hopkins, Naomi Betson, Haley Burrill, Camille Delavaux, Janaye Hanschu, Laura Podzikowski and Ligia Souza for being awarded KU Field Station Student Research Awards



## Congratulations 2019 EEB PhD graduates and mentors

*Congratulations* to our 2019 EEB PhD graduates and their mentors.

*Front row, from left to right, students:* Chet Bhatta, Aniket Sengupta, Paula Roy, Sally Chang, Kathy Denning, Daphne Mayes.

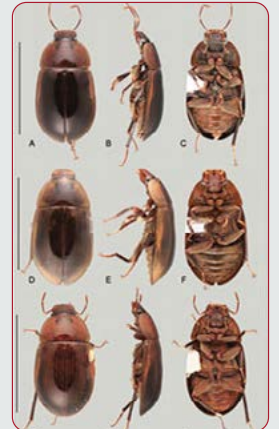
*Back row, from left to right, faculty mentors:* Jenny Gleason, Lena Hileman, Paulyn Cartwright, Bryan Foster, and Deborah Smith.

## Jennifer Girón *(mentored by Andrew Short)* discovers new species of water beetles in at-risk South American habitats [read more](#)



Researchers from the University of Kansas have described three genera and 17 new species of water scavenger beetles from the Guiana and Brazilian Shield regions of South America, areas seen as treasure houses of biodiversity. The beetles from the countries of French Guiana, Suriname, Brazil, Guyana and Venezuela were discovered through fieldwork and by combing through entomological collections at the Smithsonian Institution and KU. The beetles are described in a new paper in [ZooKeys](#), a peer-reviewed journal.

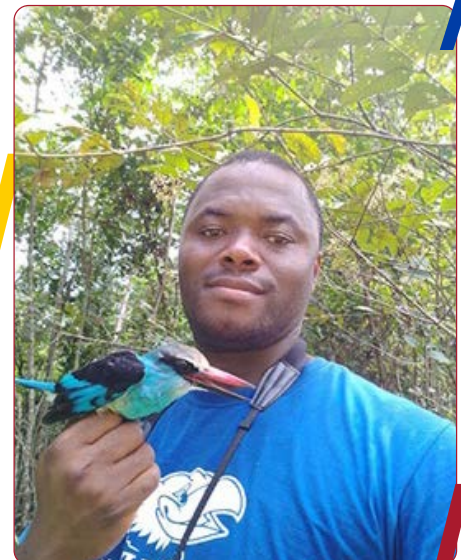
Lead author Jennifer Girón, a KU doctoral student in ecology & evolutionary biology and the Division of Entomology at KU's Biodiversity Institute, said the new species hint at vast biodiversity left to be described in regions where resource-extraction operations today are destroying huge swaths of natural habitat.



## Ben Freeman, Once war refugee in Liberia, now KU-EEB doctoral student trying to conserve the rain forest that saved his life [read more](#)

Growing up in Liberia during that country's brutal 14-year civil war, Benedictus Freeman and his family fled into the rain forest, where they survived for years eating bush meat and foraging. The rain forest provided Freeman sustenance and protection — but more than that, the experience ignited a passion in him for understanding and preserving nature.

The rain forests that once protected Freeman and his family host one of West Africa's flagship bird species — the White-breasted Guineafowl (*Agelastes meleagrides*). Now, Freeman is lead author of a new paper in the peer-reviewed journal *Avian Research* that projects the geographic distribution of the bird through 2050 as it shifts habitat due to climate change.







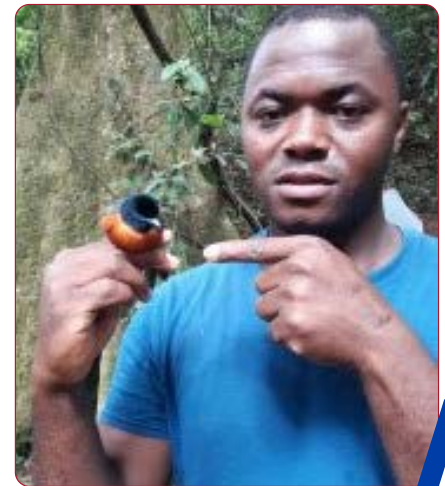
## Robin Abraham was awarded a National Geographic Explorer Grant

In January, 2019 Robin Abraham was awarded a \$9973 National Geographic Explorer Grant to explore amphibian communities in the Western Ghats mountain range of India. Robin and his study team will document traits of frogs beyond basic molecular and morphological aspects more commonly acquired with initial collections and descriptions of species. By learning more about the frogs' biological details such as reproductive mode and strategy, breeding behavior, bioacoustics, tadpole morphology, and development and life history, he hopes to gain evolutionary history insights about various frog groups as well as what kind of habitats to preserve to ensure conservation of all life stages of these biphasic vertebrates.

## Ben Freeman has been awarded a Technology for Conservation University Grant

Ben Freeman has been awarded a Technology for Conservation University Grant by Northrop Grumman in collaboration with Conservation International. He intends to use his one-year grant to test drone and remote-sensing technology to assess and quantify impacts of illegal mining, farming, and logging on forest cover and structure in the core area of Sapo National Park, Liberia, the second largest block of tropical rainforest in West Africa.

The results will guide management planning and decision-making in the park. The study will form the baseline for adopting drone-borne and remote sensing technology in biomonitoring at Sapo NP and across Liberia and West Africa, to biodiversity conservation and monitoring.



## Congratulations to Katie Taponjou

Congratulations to Katie Taponjou (mentors: Rafe Brown & Town Peterson), who was awarded the Lewis and Clark Award (\$4,800) by the American Philosophical Society to fund ongoing dissertation fieldwork and conservation studies in central Cameroon!

## Nature Magazine ranks "Best Science Images of the Year"

[read more](#)



Ichthyologist W. Leo Smith and his graduate student Matt Girard, University of Kansas in Lawrence, published a new imaging technique, used on this roosterfish (*Nematistius pectoralis*). The method involves stripping away an organism's muscles and staining its bones.

# EEB Students News

eeb.ku.edu

## Undergraduate student mentored by Emily Arsenault awarded Instars Fellowship

Rianon Wallace-Demby an undergraduate student mentored by EEB doctoral student Emily Arsenault (mentored by Jim Thorp), was awarded the Instars Fellowship to attend the Society for Freshwater Science annual meeting in Salt Lake City. Rianon's research focuses on the way microplastic particles move through aquatic food webs. [Read More](#)



## Camille Delavaux

(mentored by Jim Bever)

Published a paper in the prestigious journal of *Nature Ecology and Evolution*.

[Read More](#)

## Robin Abraham

(mentored by Rafe Brown)

## Awarded National Geographic Society grant

*Congratulations* to EEB/BI student Robin Abraham, whose proposal "Phylogenomics of community structure in paleoendemic night frog assemblages of the sky islands of India's Western Ghats" was awarded slightly less than \$10,000 by the *National Geographic Society!*



[read more](#)

## Anna Goddard

Daughter of Anne and Steve Goddard of Lincoln, Nebraska, and she is a graduate of Lincoln Southwest High School. She is a double major in biology and mathematics. Goddard is planning a career researching genetic diseases. She works in the lab of Professor Maria Orive in the Department of Ecology & Evolutionary Biology, using mathematical modeling in population and evolutionary biology. Goddard is also a member of the Initiative for Maximizing Student Diversity and has presented at the national Society for Advancement of Chicanos/Hispanics and Native Americans in Science.

## Jayhawks Breaking Barriers (JBB) Awarded for Efforts to Raise Awareness About Gender and Diversity Gap in STEMM

Jayhawks Breaking Barriers (JBB) a grassroots program created and organized by graduate students and postdoctoral researchers from KU STEMM Departments (Ecology and Evolutionary Biology, Molecular Biosciences, Mechanical Engineering, Chemistry, etc.), were honored with an award for their work to raise awareness about the gender and diversity gap in STEMM at the Sustainability Leadership Award Presentation, April 2019.







# Contributors to the Biological Sciences

Jan. 1, 2019 - Dec. 31, 2019

\* Deceased

James K. Adams, PhD & Katherine Parker-Adams  
 LaRon K. Adkins  
 Constance A. Adkisson, MD & Wayne O. Adkisson, MD  
 Thomas Agazzi & Patricia Agazzi  
 James M. Akagi  
 David A. Ammar & Karen B. King  
 Jill Anderson  
 Leonard O. Anderson  
 Anheuser-Busch Companies, Inc.  
 Katie Hart Armitage & Kenneth B. Armitage  
 Altus B. Aschen & Harlen E. Aschen  
 Paola Astorga Ochoa  
 Judy M. Austin  
 Jean M. Baliga  
 Elizabeth M. Barnes, PhD  
 Marion Barnes  
 Susan L. Baxter  
 Leona M. Beebe  
 Nicole Bianchi  
 Big Rapids Rotary Club  
 Ronald G. Bjork  
 Alice L. Blecha  
 Lee Ann Bloss  
 Laura Bond & Patrick Sewall  
 Karen Bowland  
 Brenda's Butterfly Habitat  
 Kate M. Brennan  
 Patricia L. Brennan  
 Ellen L. Brisch, PhD  
 Dr. John C. Brown & Dr. Mary Hise Brown  
 Marilyn J. Brune  
 Elizabeth Buck  
 Darlene Ann Burgess  
 Cade Capper  
 Dorothy Carney  
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