ILLINOIS STATE UNIVERSITY
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SCHOOL OF BIOLOGICAL SCIENCES NEWS

SPRING 2026

New faculty begin their programs, expanding the school's research and training

The last three years have been a remarkable period of renewal and change for Biological Sciences. We have hired eight new tenure-track faculty in that period, about one third of our total faculty, bringing diverse new skills and perspectives to the school. We invited them to introduce themselves and outline the new research programs they bring.

Xosé Lopez Goldar explores environmental impacts on plant ecology and evolution

One of the long-standing challenges in ecology and evolutionary biology is uncovering and understanding the mechanisms that govern ecological interactions. These often involve multiple species, vary in their direction and intensity contingent on the environment, and depend on the scale at which they are evaluated (e.g., from individuals to species). Our research focuses on how plant traits shape–and are shaped by–the interaction with insect herbivores and pollinators, and how the abiotic environment modulates such interactions.

1. How does intra-plant variation in defense affect interactions with herbivore communities?
2. How do resources mediate plant defense adaptation to herbivory?
3. How do environmental clines influence plant organ-specific interactions with insects?
4. How resilient are plant-insect interactions to global change?

We answer these and related questions by combining chemical ecology, population genetics and genomics, and molecular approaches in both field and lab experiments. We aim to broaden our understanding of how plants and insects coevolve in the context of community ecology, and how their interactions may change along environmental gradients and due to global change.

Our most current work seeks to understand how whole plant phenotypes adapt to the environment. We plan to integrate organ-specific trait information, and how that information may explain interaction with mutualists and antagonists and shape plant adaptation along environmental gradients in the context of community ecology. Also, we seek to establish foundational knowledge of how plants, insects, and their interactions respond to the direct and indirect effects of multiple global change stresses, and how these may impose evolutionary constraints on their future adaptation.

Suzanne Nolan uses neuroscience to map adolescent dopamine pathways

Adolescence represents a precarious period of vulnerability wherein a variety of

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HERE ARE TWO GREAT WAYS TO KEEP UP WITH LATEST EVENTS:

Check out our Facebook page:
Facebook.com/ISUBiology

Visit our homepage:
Biology.IllinoisState.edu

Write to Kevin at kaedwar@IllinoisState.edu if you have any news to contribute for next year!

Director's message

Welcome to the School of Biological Sciences Alumni Newsletter! It has been some time since our last edition, and, as you will find, we have been busy with new faculty hires, continuing our stellar research programs, and providing our students with high-quality experiences in the classroom, laboratory, and in the field. If you follow the news about Illinois State University, you will undoubtedly be aware that we have now had two of our largest entering freshman classes in fall 2024 and 2025, and this has included a substantial number of new majors in our programs. While this can bring challenges with offering enough seats for students in our courses, it is great to have so much interest in Illinois State and in biology.

Director Rachel M. Bowden, Ph.D.

The school has been quite fortunate in recruiting eight new colleagues over the past three years. Drs. Javier delBarco-Trillo, Fernanda Duque, and Carlos Rodríguez-Saltos joined us in 2023; Drs. Kara Andres and Scott Clem in 2024; and Drs. Xosé Lopez Goldar, Suzanne Nolan, and Ryan Patrick in 2025. They introduce themselves in our lead article. For their decades of service, we thank Distinguished Professors Steven Juliano (retired 2022) and Paul Garris (retired 2023); Professor Bill Perry (retired 2025); and Associate Professors Vickie Borowicz (retired 2022), Diane Byers (retired 2023), and Joe Casto (retired 2025).

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Director's message, *continued from Page 1*

We remain committed to providing our undergraduate and graduate students with challenging and engaging opportunities to gain research experience through independent studies, summer research programs, and through our faculty-led study abroad course on Rainforest Ecology, which is highlighted in this edition. Through these opportunities, students learn new techniques, design research projects, and gain valuable critical thinking skills.

Our faculty continue to be recognized for their excellence through receipt of the University Research Initiative Award (Jan Dahl and Pirmin Nietlisbach), Outstanding College Researcher Award (Ben Sadd and Andres Vidal-Gadea), and Outstanding University Researcher Award (Wolfgang Stein and Ben Sadd). Jan Dahl was named the inaugural Dr. Fred Gletten Endowed Chair of Biological Sciences. We continue to be leaders in securing grant funding in support of our research programs ($4.19 million) and in disseminating our work in our fields with 27 papers (19 with student co-authors) in peer-reviewed journals in fiscal year 2024.

Finally, I'd like to take a moment to thank everyone who has donated to the school over this period, including those who donated during the Birds Give Back fund drive. Your generosity helps us provide support to students through scholarships, research funds, and travel.

You can follow us on social media, and, as always, we love to hear what our alumni are doing, so please reach out to us!

Rachel M. Bowden, Ph.D.
Director, School of Biological Sciences

School of Biological Sciences News

Issue 7

Editors: *Scott Clem, Fernanda Duque, Kevin Edwards*

Thanks to all members of Biological Sciences who submitted photos and stories.

Bio.IllinoisState.edu

New faculty*, continued from Page 1*

biological processes coalesce, during which behavioral and neurobiological traits are predictive of later neuropsychiatric diagnoses across a wide range of disease states.

Among these changes, the dopaminergic pathways undergo rapid and extensive changes in both structure and function. Given dopamine's well-known role in reward and motivational behaviors, consistently demonstrated as differentially expressed within this period (e.g., elevated risk taking or resistance to extinction), mapping dopamine dynamics and differential plasticity across the lifespan, as well as their relationship to decision-making processes within this window, is imperative for understanding both normal and disrupted development. Yet, few studies exist delineating how dopamine's relationship to behavior in adolescence may differ from adulthood and how these changes precipitate vulnerability to maladaptive decision-making during this period. Thus, to treat neuropsychiatric disease effectively across the lifespan, it is imperative that we expand the present scope of study to mechanisms of dopaminergic encoding and plasticity in adolescence and map their relationship to enduring vulnerability to dysfunction in adulthood.

Our newly established lab is dedicated to addressing this gap, combining in vivo and ex vivo electrochemical detection techniques, chemogenetic manipulations, optical imaging, and longitudinal behavioral paradigms to investigate how developmental changes in dopamine systems influence learning, motivation, and susceptibility to adulthood neuropsychiatric dysfunction.

As the Nolan lab opened in August 2025, we are excited to welcome motivated students and trainees at all stages who are eager to explore how developmental neuroscience can inform our understanding and treatment of psychiatric disease. Our lab offers the opportunity to work at the intersection of systems neuroscience, behavior, and translational relevance, using state-of-the-art tools to answer fundamental questions about the developing brain across the lifespan.

Ryan Patrick examines specialized plant metabolism through genomics

The Patrick lab applies functional genomics approaches to determine gene-to-trait relationships in plants, with a focus on specialized metabolism and interaction of plants with their environment. While plants produce hundreds of thousands of different molecular products which contribute to growth, defense, and resilience, only a small fraction of these specialized metabolic pathways have been described in detail.

Using large sets of gene expression or genomic data together with machine learning and other bioinformatics techniques, we form testable hypotheses about the molecular processes' underlying traits and identify the responsible genes. Initial research projects involve determining novel genes and transcriptional regulators contributing to floral color, investigating allelochemicals which are involved in interaction with the environment, and determining genes involved in producing natural plant defensive products. Future investigations may encompass natural plant products reported to have medicinal properties. We also hope to understand how specialized metabolic pathways arise, and will incorporate evolutionary and comparative genomics perspectives into these investigations.

Another research project in the lab will focus on profiling epitranscriptomic marks, which are dynamic chemical modifications occurring within mRNA transcripts that affect their processing and regulate the production of encoded proteins. Specifically, my lab will explore how divergences of epitranscriptomic modification patterns contribute to adaptation and the regulation of specialized metabolism, by surveying the epitranscriptomes of closely related species or cultivars with differing metabolic traits. We will seek to expand our understanding of epitranscriptomic language, including the mechanisms by which specific mRNA are targeted for modification and how that affects their downstream regulation.

Kara Andres uses molecular genetic tools to study ecology of freshwater habitats

I am Kara Andres, a new assistant professor of ecology of human-impacted systems. I received my Ph.D. in 2022 from Cornell University and completed a Biodiversity Postdoctoral Fellowship with the Living Earth Collaborative at Washington University in St. Louis before joining Illinois State in fall 2024. As a molecular ecologist, my research primarily uses molecular genetic tools to understand freshwater biodiversity and conservation.

Freshwater habitats support high biodiversity but face disproportionate and growing threats from habitat loss, invasive species, pollution, and climate change. Research in my lab seeks to understand how freshwater biodiversity is structured, how it responds to environmental changes, and how we can improve monitoring and conservation of these vulnerable systems. A major focus is the development and application of environmental DNA (eDNA) for biodiversity surveys. By analyzing the DNA contained within water samples, we can rapidly and efficiently detect a wide range of species across broad habitats without the need to capture or disturb organisms. This approach allows us to assess biodiversity at multiple levels, including genetic diversity within species, species composition of entire aquatic communities, and patterns of diversity across landscapes. This work also supports managers in tracking species distributions, prioritizing conservation efforts, and monitoring ecosystem change over space and time.

In addition to biodiversity monitoring, my lab uses molecular tools to investigate host-associated microbiomes in freshwater fishes. The gut microbiome plays a key role in digestion, health, and may influence how fishes respond to changing environments. We use DNA-based approaches to examine how diet, habitat, and evolutionary history shape microbiomes of native, invasive, and aquaculture fish species. By integrating eDNA surveys, microbiome research, and field-based studies, my lab aims to improve understanding of the ecological and evolutionary processes shaping freshwater biodiversity and inform effective conservation and management strategies.

Scott Clem researches insect ecology and biodiversity

My name is Dr. C. Scott Clem and I started as a new assistant professor of population and community ecology. I earned my Ph.D. from the University of Illinois at Urbana-Champaign in the Department of Entomology in 2020, followed by a three-year postdoc with the U.S. Department of Agriculture's National Institute of Food and Agriculture at the University of Georgia in Athens. I describe myself as a passionate naturalist and a multidisciplinary insect ecologist. Some of my areas of interest/expertise include movement ecology, insect conservation, taxonomy, science outreach, sustainable agriculture, and integrated pest and pollinator management (IPPM). I am especially interested in the ecology of hover flies (Diptera: Syrphidae) and other under-studied beneficial insects.

The new Clem Insect Ecology and Biodiversity Lab addresses questions at the intersection of agroecology, conservation, and biodiversity research, all under the umbrella of entomology. Within this broad topic, there are two major lines of research on which we are focused. One aspect explores the biology and ecology of long-distance insect migration, particularly that of Nearctic hover flies (Diptera: Syrphidae) and other beneficial insects. Using stable hydrogen isotopes, population genomics, and microbiome assessments, I have shown that some hover flies undergo annual migration from the upper Midwest and Canada to the southeastern United States. Given their crucial importance as both pollinators and biological control agents, my lab is interested in expanding upon this previous work to examine the ecological and economic ramifications of these behaviors.

The other aspect of my lab examines the impacts of biotic and abiotic agroecological processes on insect populations and communities, with intentions of improving insect conservation and sustainable agriculture. One major project explores the interactions between insects and pennycress, an up-and-coming winter cash cover crop which has the potential to greatly improve Midwestern sustainable agriculture. Another major project we are preparing to tackle examines the importance of fly pollination in Midwestern cropping systems, specifically apples. Flies are the second most important pollinators behind bees, yet they are heavily

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New Ph.D.s awarded (and mentor lab)

2025 Katherine Evans (Juliano)
Austin Calhoun (Sadd)
Barsanti (Liza) Gautam (Sedbrook)

2024 Shana Border (Dugas)
Sadia Sultana (Dahl)
Olivia Brooks (Dugas)

2023 Rachael DiSciullo (Sakaluk/Thomspon)
Nicholas Rhodes (Hammond)
Logan Sauers (Sadd)
Ashley Waring-Sparks (Mortimer)

2022 Anthony Breitenbach (Bowden/Paitz)
Rosario Marroquin-Flores (Bowden/Paitz)
Pooja Kadaba (Mortimer)
Kiley Hughes (Vidal-Gadea)

Congratulations to Aalimah Akinosho for publication in *eLife*

As a master's student, Akinosho's publication is titled "Independent validation of transgenerational inheritance of learned pathogen avoidance in Caenorhabditis elegans." Working in the Vidal-Gadea Molecular Neuroethology Lab, she also studied magnetic sensation. Akinosho is an international student from Nigeria, where she obtained her bachelor's degree in human anatomy. In the final year of her undergraduate studies, she was introduced to research in neuroscience and decided to pursue her degree at Illinois State University. A 2024 GradBird Scholar recipient, she balanced her graduate research with active service as president of SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science) at Illinois

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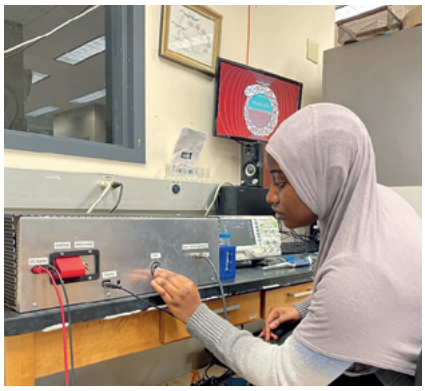

New P.h.D.'s awarded, *continued from Page 3*

State, organizing workshops and outreach activities to support underrepresented groups in STEM. She now studies cardiovascular disease at Loyola University Chicago.

Pirmin Nietlisbach received a National Science Foundation grant to investigate mate choice and its consequences in house wrens, together with Rachael DiSciullo, Charles Thompson, and Scott Sakaluk. Part of the research team pictured after finishing nestbox repairs at the house wren study site in the ParkLands Merwin Preserve in spring 2024.

Presenting a new wren wagon for the wren crew! This is Wren Wagon IV (a 2024 Ford Transit) that went into service in spring 2025. All Wren Wagons have had the Illinois State number 562. Wren Wagon I (a 1978 Ford Econoline, bought used) went into service in 1981, retiring from active duty in 2006 with between 200,000-400,000 miles on the odometer. Thompson drove it to his 2007 retirement party, which was its last road trip.

New faculty, *continued from Page 3*

understudied and highly underappreciated. Here, we are collaborating with Illinois apple growers to examine on-farm fly pollinator diversity, as well as local and landscape factors that influence their prevalence.

Javier delBarco-Trillo investigates urban mammal ecology and evolution

We are developing two different lines of research. First, we are investigating how mammals respond to urban environments, especially the impacts of urbanization on reproductive physiology, behavior, and communication, across different urban species and across different cities. One main goal is to explore which phenotypic traits in a given species evolve in the same manner across different cities. By comparing wild-caught animals and descendants raised in captivity, we will also be able to determine which urbanization-driven changes are mainly regulated by phenotypic plasticity. In ongoing projects, we are studying how urbanization affects ultrasonic vocalizations, spatial memory, and behavioral responses under different environmental temperatures.

The second focus of the lab is on evolutionary and ecological sperm physiology, investigating how sperm production and function in different vertebrate species is affected by social and environmental factors. We will continue investigating how sperm competition (a component of sexual selection that takes place when a female mates with two or more males and their spermatozoa compete to fertilize the female's eggs) drives the evolution of reproductive mechanisms. Using several closely related species that differ in their mating systems and thus in their levels of sperm competition, we will characterize the relationships between (i) levels of sperm competition; (ii) sperm velocity; (iii) ATP usage and reactive oxygen species production within spermatozoa; (iv) oxidative damage; and (v) the cellular mechanisms that minimize oxidative stress in spermatozoa.

In addition, we will launch a new research field (population sperm biology), in which we will (i) quantify variation in sperm traits along the whole distribution range of widely distributed rodent species (including populations at different latitudes and altitudes, across seasons, and in different habitats), (ii) compare wild males sampled in situ and counterparts raised in captivity, and (iii) implement artificial selection studies that maximize or minimize sperm function with lines derived from different populations.

Fernanda Duque studies neuroethology and sensory ecology in birds

Birds display complex behaviors that span the full social spectrum. Like humans, birds commonly use elaborate displays and songs to communicate and interact with others. Some species use multiple complex signals while others communicate using simple vocalizations and visual displays. This diversity makes birds great candidates to study the neural mechanisms driving multimodal communication and social behaviors.

In the Neuroethology and Sensory Ecology (NeuroSensE) Lab led by Dr. Fernanda G. Duque, we strive to build a comprehensive understanding of social behaviors and natural phenomena using multiple levels of analysis and approaches. We are interested in the evolution of communication signals and sensory systems in species living in challenging environments, as well as the neural basis of multimodal communication and social behaviors in birds. Using Andean hummingbirds, we investigate the evolution of high-pitched vocalizations in these birds and how they have adapted to communicate at such high frequencies. We conduct field and lab experiments to understand the function and mechanisms of high-frequency vocal production and hearing in hummingbirds.

In addition, using songbirds, we investigate the neural underpinnings of multimodal communication and social behavior. Our focus is to understand how the brain integrates sensory information and the internal state of the individual to make social decisions. We also investigate how the social behavior neural network modulates sensory processing based on previous experiences and the internal state. Altogether, we aim to increase our knowledge of

the different components of the communication loop where signalers and receivers exchange information and make decisions about fundamental social behaviors that are critical for the survival of each individual.

Carlos Rodríguez-Saltos researches evolution of animal communication

I am interested in understanding how the environment, morphology, and the nervous system interact to shape animal communication signals. Currently, I am studying the evolution of rhythm in birdsong. This work includes laboratory research in the United States and field work in the Neotropics.

In one research project, we are studying the function and evolution of rhythm in the song of Microcerculus wrens, which live in the rainforests of Central and South America. These birds time the rhythm of their songs with a precision comparable to that of professional musicians. Such precision may have evolved because of sexual selection and predator avoidance, which are two hypotheses we are currently testing. In the laboratory, we are studying zebra finches, with the aim of diving into the neural mechanisms of the timing of birdsong. To understand the effects of the environment on communication signals, we are studying how tropical rainforests shape the evolution of female and male vocalizations in the same species, resulting in songs that differ between the sexes in pitch and rhythm. Finally, we are using machine learning and crowdsourced videos of singing birds to study how the shape of the beak affects the structure and rhythm of birdsong in passerines.

By working in my laboratory, students get exposed to integrative and comparative approaches to studying animal behavior. Research in the laboratory is thus driven by both questions about physiological mechanisms and ecological function. Also important to us is the use of diverse species of birds, which enables us to leverage the unique adaptations of each species in our research.

Phi Sigma Biological Sciences Honor Society brings students together to support research

The Beta Lambda chapter of Phi Sigma Biological Sciences Honor Society was founded in 1966 to promote Biological Sciences research and education. Phi Sigma marked a major milestone, hosting its 25th Annual Research Symposium in spring 2025, with oral and poster sessions spanning all of biology. The keynote speaker was Dr. Stephen Brohawn from University of California, Berkeley, who spoke about his work to understand how cells sense touch.

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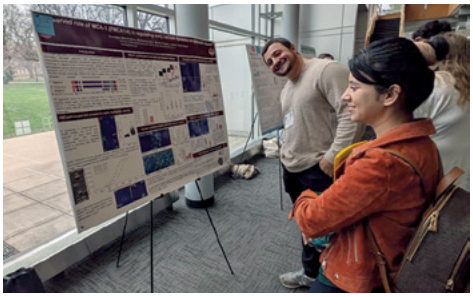

Wren Wagon II (a Chevrolet van) joined us in 2004, sold to Illinois State in 2013, and is now van 100 in the University fleet. Wren Wagon III (a Ford Econoline, best known for its infamous welcoming photo) was purchased in 2013 and dealt to the School of Biological Sciences in 2024, and is now van 561.

Patrick Ofori Tawiah shared his research at the Gordon Research Seminar on Thiol-Based Redox Regulation and Signaling in Castelldefels, Barcelona, Spain. Supported by a fellowship from the National Science Foundation, Patrick traveled to Spain to share his research as an oral presentation with peers from the redox field. The seminar provides a unique forum for young graduate and postdoctoral researchers to present their work, discuss new methods, cutting edge ideas, and prepublished data, as well as to build collaborative relationships with their peers. He is now a Ph.D. student at the Washington University in St. Louis.

Science IS-U Scholars Program

The first cohort of Science IS-U Scholars began in 2025, and there are several biology majors in this first cohort. This program, led by Ben Sadd and Bekky Darner, supports students who want to use their STEM disciplinary knowledge to work for the public good. The program includes a summer bridge, in which students complete the Level-Up Math Program (led by a colleague in our Mathematics Department, Oscar Chavez), and a general education course, IDS 119: The Civically Engaged Scientist, this year

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Science IS-U Scholars Program, *continued from Page 5*

taught by our own doctoral graduate, Kate Evans, Ph.D. The scholars then live in the science living-learning community in Hewett Hall and participate in a paid summer research internship. This program is just beginning, but we suspect we will be hearing from these scholars a lot over the next four years.

Two Biological Sciences emeritus faculty recognized in top two percent of cited research

New data from the 2023 calendar year, published by the Elsevier Data Repository in fall 2024, names Steven A. Juliano and Scott K. Sakaluk (distinguished emeritus faculty from Biological Sciences), as being in the top two percent (top 100,000) of cited researchers globally. The data are based on the August 1, 2024, snapshot from Scopus, updated to the end of citation year 2023. Scientists are classified into 22 scientific fields and 174 subfields and reviewed for single-year citations and career citations. Congratulations!

Gracious Donkor awarded a James L. Fisher 2024 Outstanding M.S. Thesis award from the College of Arts and Sciences. Gracious Donkor, originally from Ghana, joined the school as an M.S. student in January 2021. Under the supervision of Dr. Jan-Ulrik Dahl, Donkor discovered that a novel oxidative stress-producing antimicrobial potentiates the activity of aminoglycosides. These belong to a medically relevant class of antibiotics that are often prescribed to patients suffering from a variety of infectious diseases. Donkor also characterized the mechanism behind this synergy, which could have significant implications for attempts to limit side effects of antibiotics. His thesis work, which was supported by the undergraduate students Carl Orellano, Michael Stadler, and Greg Anderson from the Dahl lab, has been published in the American Society for Microbiology journal *mSphere*. Gracious is now a Ph.D. student at the University of Illinois Urbana-Champaign.

Phi Sigma, *continued from Page 5*

Students also took time from their busy schedules to have some fun, holding a Halloween trivia event, a paint night, and a winter potluck complete with gingerbread house competition.

For more info, visit the Phi Sigma website: Biology.IllinoisState.edu/Student-Life/Phi-Sigma.

Research profiles of Mockford-Thompson Summer Research Fellowship awardees

Tanisha Bhimwal – Ph.D. student with Dahl lab

I am Tanisha Bhimwal, a Ph.D. student in the Dahl lab, and I am incredibly honored to have been awarded the Mockford-Thompson Fellowship for 2025 at Illinois State University! This prestigious award will provide critical funding for my research during the summer months, allowing me to devote my full attention to my project.

Tanisha Bhimwal, with Dahl lab, conducting a priming experiment for her Ph.D. thesis.

My research explores how bacteria develop a "memory" of past stress events that help them prepare for improved survival during future challenges from this stressor, a process called "priming." While this memory-like response is well-documented in more complex organisms, its mechanisms in bacteria, particularly in response to physiological oxidants such as the reactive chlorine species (RCS) hypochlorous acid (HOCl), remain largely unknown. My Ph.D. thesis aims to uncover the epigenetic changes and/or adaptations that drive RCS resistance evolution of uropathogenic E. coli (UPEC), the major culprits of urinary tract infections. Currently, my preliminary findings support that pre-exposing UPEC to sub-lethal HOCl improves its ability to withstand subsequent lethal oxidant challenges. Specifically, during this dedicated summer period, I will a) expand my preliminary findings by further characterizing the priming response, b) uncover the transcriptional changes underlying UPEC's adaptation to RCS by global transcriptomics, and c) identify the role of HOCl-specific defense system RcrB in protein aggregation and DNA damage to UPEC's priming response to RCS stress.

The fellowship will play a pivotal role in helping me advance my thesis project, enabling me to present this work at national conferences and Illinois State seminars and leading to peer-reviewed publications. Additionally, the funding will allow me to mentor undergraduates, training them in scientific literacy and proficiency, a key step in building the next generation of scientists. Ultimately, understanding these bacterial defense mechanisms could offer crucial insights into developing new strategies to combat persistent bacterial infections, a significant public health challenge. This fellowship is not just financial support; it's an investment in the foundational research that will propel my academic and scientific career forward.

Alyssa Enevold – M.S. student with Duque lab

I am Alyssa Enevold, a master's student in the Duque lab. My research investigates how stress affects social decision-making and sensory processing in female zebra finches. Specifically, I examine whether acute and chronic stress alter female preference for socially relevant stimuli using conspecific vocalizations, compared to socially neutral stimuli.

Social interactions are critical to survival and reproduction in animals, but we know relatively little about how stress influences sensory processing and the downstream effects on social behavior. To address this, I expose female zebra finches to different levels of stress—none, acute, or chronic—then assess their preference for visual and acoustic signals of conspecifics compared to socially irrelevant stimuli. I measure how much time they spend near each

stimulus and analyze corresponding changes in the stress hormone corticosterone and in gene expression in visual and auditory brain regions.

This research will improve our understanding of how stress affects female perception and behavior, filling a critical gap in a field that has historically focused more on males. The findings may also shed light on how stress influences social communication across species, including in humans. The Mockford-Thompson Award has been very helpful in advancing my project by funding my summer salary. This support allowed me to dedicate my time fully to data collection and laboratory work. As a result, I was able to make significant progress toward completing my experiments and data analysis. I am excited to keep moving forward with my thesis, and this award has truly allowed me to focus on my research.

Alyssa Enevold receiving the Mockford-Thompson Award from Dr. Carlos A. Rodriguez-Saltos during the spring banquet in May 2025.

Sharanya Paul – M.S. student with Dahl and Wilkinson labs

I am Sharanya Paul, currently a master's student in the Dahl and Wilkinson labs. My research focuses on advancing our understanding of Staphylococcus aureus, a common notorious bacterial pathogen that utilizes host cell lipids such as cholesterol to adapt to changes in its environment. My data show that S. aureus is quite susceptible to several host-derived fatty acids but well-protected in the presence of cholesterol. Likewise, cholesteryl esters, which have cholesterol linked to these fatty acids, appear better tolerated compared to free fatty acids, and I am currently investigating the precise mechanism of this protection. Specifically, I am focusing on lipases, which may break the cholesteryl esters which release cholesterol that then becomes part of the bacterial membrane, improving bacterial survival. My research has the potential to improve the established paradigm of bacterial antibiotic susceptibility testing, which is commonly performed in the absence of cholesterol.

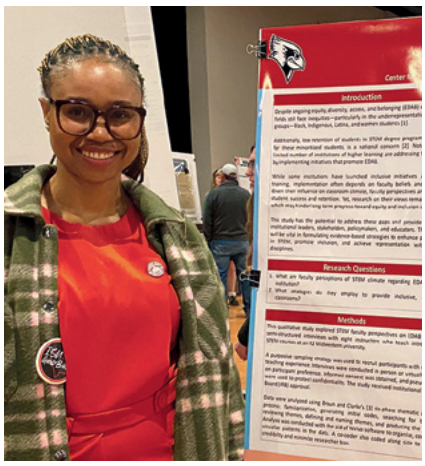
Sharanya Paul, master's student in Dahl and Wilkinson labs, performing microbial assays as a part for her research on bacterial physiology in the lab.

The Mockford-Thompson Award will support important questions in microbiology, by exploring an underappreciated aspect of bacterial membrane adaptation. My project has the potential to advance both fundamental microbiology and future antimicrobial strategies. This award will directly support this work by providing me with a summer stipend to focus entirely on my research during this critical phase of my thesis work. Additionally, I will mentor and collaborate with a team of undergraduate students, offering them valuable training in experimental microbiology and membrane physiology. This collaborative environment will help me to foster soft skills such as leadership, scientific communication, and teamwork that can be applied in both lab and public outreach settings.

I presented the results at the Midwest Microbial Pathogenesis Conference in September 2025 and will present at Illinois State's annual research symposium in 2026, communicating this work to both specialized and broader scientific audiences. I am deeply committed to translating this research into knowledge that serves both science and society, and this award brings me one step closer to that goal.

Blessing Soyebl presents at meeting for Society of the Advancement of Biology Education Research (SABER)

Soyebl, a Ph.D. student with Dr. Bekky Carner's group, presented at the 2025 SABER meeting in Minneapolis, Minnesota. Her presentation shared findings from a study conducted on STEM faculty's perceptions of institutional DEI initiatives. Her doctoral research will explore how STEM majors become civically engaged, particularly as it relates to their disciplinary knowledge and STEM career.



Austin Calhoun receives nationally competitive funding for his Ph.D. research on bumblebee health

Austin Calhoun, a senior Ph.D. student in the Sadd lab, received a highly competitive North American Pollinator Protection Campaign Imperiled Bombus Grant of $5,000. This was a particularly noteworthy achievement as the competitive awards are open to all levels from graduate students to professors, with only a handful awarded annually. The goal of Calhoun's funded proposal is to understand how spillover of viral disease from managed pollinators, such as honeybees, can affect important native pollinators, including threatened species of bumblebees. In addition to effects on survival, Calhoun's transformative work is investigating the effects of viral infection on the beneficial microbial community of the bumblebee gut and how this gut microbial community can determine how well the bumblebee immune system

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***Austin Calhoun**, continued from Page 7*

responds to parasites and pathogens. Calhoun presented his dissertation work at the Society for Integrative and Comparative Biology national meeting in Atlanta in January 2025.

Sydney Metternich provides outreach via the Fell Arboretum

The collection of woody trees at Illinois State University, known as the Fell Arboretum, engaged over 1,000 community members and K-12 and collegiate students in 2024. Throughout the year, there were nine tours given across campus, eight media appearances, six collegiate-level courses that made use of the arboretum, and many events. New this year were volunteering events for students and community members that aimed to improve tree tags on campus.

A walk on the wild side: Fall 2024 Rainforest Ecology course and study abroad trip to Costa Rica

At 5 a.m. on November 20, 2024, an intrepid group of 18 undergraduate students, teaching assistant Austin Calhoun, and faculty instructors Rachel Bowden and Ben Sadd gathered at Central Illinois Regional Airport at Bloomington-Normal. This was the inauspicious launch point for the study abroad component of the 2024 Rainforest Ecology course. Over the next 12 days, the group resided at the La Selva Biological Research Station, Costa Rica, immersed in the richly biodiverse lowland tropical rainforest, with students carrying out their own independent research projects.

A goal in the School of Biological Sciences is to engage our students in the scientific process and provide hands-on experiences. The Rainforest Ecology course, running since the 1990s, is the epitome of this goal. The class includes a background to tropical ecology and conservation, but the main course focus is experiencing the entire scientific process, including its ups and downs, as students develop and perform their independent projects.

Surrounded by lush green forest, brightly colored birds and insects, and the booming calls of howler monkeys, students embarked on their scientific journey. Human disturbance was a theme across several studies, including land use and management effects on orb-weaver spider and insect diversity, and the influence of noise and light pollution on leaf cutter ant foraging and katydid antipredator behavior, respectively. Another such study was on warming effects on the cyanide-based chemical defenses of tropical millipedes. Other projects asked more fundamental questions about foraging behavior and competition, working with termites, leaf cutter ants, dragonflies, spiders, and, bravely, bullet ants! One asked if neotropical butterflies from different habitats are better at sight or smell. Regardless of their project, students worked together to help each other as research is rarely a truly independent endeavor.

Rainforest Ecology participants

Recent graduate Amelie Mwilambwe expressed, "The trip helped me learn through experience how to be flexible and think on my feet," and "the class was an amazing and unique experience."

Brenna Long, an undergraduate in the class and now in our M.S. program, added, "The trip was so much more than an opportunity to travel internationally and experience a different biome, it was an opportunity to make friends, work collaboratively, and conduct research in the field." She further commented, "This experience is invaluable to anyone who intends to practice science in their career."

It is not unusual to hear from our students that the course experience is life-changing, igniting their biological sciences careers. Hugely appreciated is support that provides access to students who may otherwise not have the opportunity. In 2024, the Armstrong Costa Rican Rainforest Studies Scholarship Fund supported three students in realizing their rainforest experience.

Particularly symbolic in 2024 was the involvement of Austin Calhoun, at the time a Ph.D. student in the school, as teaching assistant. Austin, now graduated with his Ph.D., was a prior Illinois State undergraduate and M.S. student who was a Rainforest Ecology course student himself. This connection enriched the experience for the current students. During the course, we also received news that a publication based on Calhoun's own independent Rainforest Ecology research project had been accepted by the international journal *Behavioral Ecology* (1). This paper on evolved antipredator strategies of neotropical harvestmen represents the first publication in the history of the course that includes a course student and instructors. We hope for more in the future as the course further hones student research skills. Yet, irrespective of publications, the professional growth of the students as scientists and their acknowledgement of valuable ecosystems represents a reward for this long-running course.

Jan-Ulrik Dahl named the inaugural Dr. Fred Gletten Endowed Chair of Biological Sciences

Dr. Jan-Ulrik Dahl joined the faculty of the School of Biological Sciences in 2019 as an assistant professor to study bacterial responses to a variety of physiological stressors. The Dahl lab investigates the molecular differences in the resistance of various pathotypes of Escherichia coli to the host immune defense. The group also studies the role of bacterial stress defense system polyphosphate for bacterial virulence and collaborates with Largentec, a German start-up, on novel antimicrobial compounds.

The Dr. Fred Gletten Endowed Chair in Biological Sciences was established through an estate gift from Dr. Fred Gletten '71. Dr. Gletten's gift honors the foundation in science he received at Illinois State and will support the scholarly work of a distinguished biology faculty member. Gletten came to Illinois State in 1968 on a football scholarship. He majored in biology and initially aspired to become a high school biology teacher and football coach. After graduating with a degree in biological sciences, Gletten completed a master's degree in microbiology and a medical degree at Howard University. He later completed an internship, residency, and fellowship in gastroenterology at UCLA Wadsworth V.A. Hospital. After finishing comprehensive training, Gletten taught for more than 20 years as an assistant clinical professor of medicine at University of California, Los Angeles. He also established a successful medical practice in Los Angeles alongside two other gastroenterologists.

Alumni seminars: From Illinois State degrees to diverse career paths

The school's alumni career seminars continued to inform our students about possible pathways to move forward and grow in their careers using what they have learned at Illinois State University.

Ben Sadd and Kristin Duffield

Dr. Kristin Duffield presented "From theory to application: Improving the health of edible insects for sustainable animal production." Dr. Duffield completed her graduate and postdoctoral training under the supervision of Drs. Sadd and Sakaluk, and now works as a research entomologist at the U.S. Department of Agriculture in Peoria.

Naureen Javeed

Dr. Naureen Javeed presented "The long and winding road: An unconventional path to academia". She earned her Ph.D. from the Mayo Clinic College of Medicine, after completing her M.S. degree working on Drosophila molecular genetics in the Edwards lab at Illinois State. Now a faculty member at Mayo, she studies intracellular communication, focusing on the role of extracellular vesicles in the pathophysiology of Type 1 and Type 2 diabetes, with support from NIH and JDRF.

Kevin Eckerle

Most recently, **Kevin Eckerle**, Ph.D. '01 (Charles Thompson lab), shared his story, "Filling my toolbox, one strange step at a time." He currently serves as the head of environmental affairs for Bayer's Consumer Health division, where he is responsible for integrating Bayer's strategies for decarbonization, water conservation, and plastic waste reductions.

Mehdi Bennis named Bone Scholar and David W. Borst Scholar

Mehdi Bennis, a Moroccan native, was named one of the 14 Bone Scholars for 2024. Bone Scholars are undergraduate students who combine broad and excellent academic achievement with campus and community engagement. They are expected to have shown outstanding qualities of character and leadership. He was also named the 2024 David W. Borst Scholar. This scholarship provides funds for academically outstanding undergraduate students in the School of Biological Sciences, who are pursuing research projects supervised by faculty. Bennis joined the Dahl lab in his freshman year, where he conducts research on the bleach resistance of uropathogenic Escherichia coli. Parts of his undergraduate work were published in the *Journal of Bacteriology*.

2024-25 awards in Biological Sciences

Tak Cheung/Joni St. John General Education Teaching Assistant Awards

2024 Parham Jazireian, Maddie Koeplin, Sydney Szwed

2025 Mehdi Amirfazli, Josh Graunke, Sydney Szwed

Outstanding Biology Teaching Assistants

2024 Cassie McGinnis (M.S.); Danny Marchiafava (Ph.D.)

2025 Cassie McGinnis (M.S.); Debajjyoti Basu (Ph.D.)

Phi Sigma Awards

Phi Sigma Outstanding M.S. Award

2024 Gracious Donkor

2025 Patrick Tawiah

Phi Sigma Outstanding Ph.D. Award

2024 Sadia Sultana

2025 Austin Calhoun

Mockford/Thompson Summer Fellowship

2024 Sharanya Paul, Mackenzie Seymour (M.S.); Ravi Timsina (Ph.D.)

2025 Alyssa Enevold, Sharanya Paul (M.S.); Tanisha Bhimwal (Ph.D.)

School of Biological Sciences Awards

Charlena Wallen Award

2024 Amelie Mwilambwe

2025 Brenna Long

Jack Ward Service Award

2024 Olivia Brooks

2025 Liza Gautam, Mason Sanford

Cheung/Brown Publication Award

2024 Gracious Donkor, Shana Border

2025 Jack McKermitt, Ritika Shah

Robert Gray Ecology Scholarship

2024 Sydney Szwed

2025 Maddie Koeplin, Cassie McGinnis

Rilett Scholarship Awards

2024 Abu Habib Md Abdullah, Shana Border, Olivia Brooks, Liza Gautam, Sharanya Paul, Anindita Saha, Mackenzie Seymour, Sadia Sultana, Patrick Tawiah

2025 Tanisha Bhimwal, Liza Gautam, Maddie Koeplin, Shahriar Mahmud, Gabriela Mendoza-Rangel, Sydney Romps, Sharanya Paul

Biological Sciences Student Association returns in 2026

By Paul Emmert and Erin Cheeseman, co-presidents of BSSA

The Biological Sciences Student Association (BSSA) is back for the spring 2026 semester! We are so excited to return with new goals and fun meeting topics aimed at helping biology majors grow professionally and academically as students within the STEM community.

Through BSSA, we hope to offer students leadership and personal development opportunities. We are establishing a new committee system within BSSA that allows all members to contribute to the club's success and foster a tight-knit community of like-minded students, allowing all of us to build relationships that will last beyond college. We hope to provide students with many opportunities to connect with professors, earn community service hours, tour facilities related to their career interests, and receive mentorship while navigating the School of Biological Sciences. A big thank you to Dr. Fernanda Duque and Dr. Kyle Floyd for their help as advisors in bringing back the BSSA. We would love your help spreading the word so more students can hear about BSSA and get involved. We can't wait to see the future of this club and what we are able to achieve!

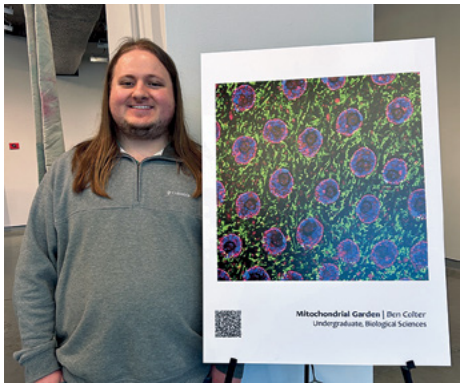
Biological Sciences students recognized in Illinois State Image of Research Competition

We congratulate the Biological Sciences honorees from Illinois State's Image of Research Competition featured in photos below. This contest invites students to submit a compelling image with a brief narrative explaining how the image relates to their research. Entries from across the University are displayed at StudentResearch.IllinoisState.edu and evaluated by a committee of jurors featuring professional artists. The committee evaluates the submissions for visual impact, originality, and the connection between the student's image, narrative, and research project. The public at-large votes for the People's Choice Award via the Office of Student Research website.

"We categorize things in majors and colleges, and that's helpful, but there really is science in art and art in science," said 2024 graduate winner Lauren Leischner.

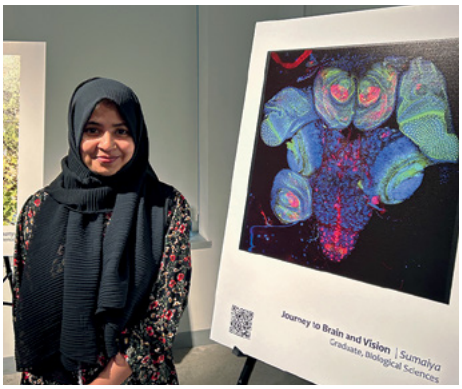
2025 honorees: Ben Colter, Madeline Koeplin, Makenna Klann, Adisyn Hopkins

2024 honorees: Lauren Leischner, Teni Shosanya, Sumaiya Hasan, Olivia Brooks, Adina Fazyl, Clinton Warren



Ben Colter

Teni Shosanya



Sumaiya Hasan

Adina Fazyl

Lauren Leischner

"Of Mice and Mutations," Madeline Koeplin

In memory of Herman E. Brockman 1934-2025

Dr. Herman E. Brockman, a beacon for a new Department of Biological Sciences in a new Illinois State University

By Dr. Brian J. Wilkinson, Emeritus, Research, and former Distinguished Professor of Microbiology

Dr. Herman E. Brockman, Distinguished Professor of Genetics and faculty member in the School of Biological Sciences from 1963-1998, passed away on April 8, 2025, at the age of 90. Information on various aspects of his multifaceted life, professional recognitions, and extensive family can be found at Online-tribute.com/herman-brockman.

The current School of Biological Sciences traces its origin to 1958 when Dr. R. Omar Rilett came to interview for the position of head of the department at Illinois State Normal University (ISNU), a position that he assumed later that year. ISNU was established in 1857 and was the only Normal School in the nation to be called a university. A Normal School trains teachers in the norms of pedagogy and curriculum. For a hundred years or so, ISNU operated as a Normal School and then a State Teachers College. However, by the conclusion of World War II, it became clear that the members of the Greatest Generation funded by the G.I. Bill, and their Baby Boomer offspring, would need multipurpose universities from which to obtain their education. The often-acrimonious transition in the mission of ISNU from a "single purpose university" (surely a blaringly obvious internal contradiction), i.e., the training of teachers, to a multi-purpose university occurred from 1946 to its symbolic conclusion in 1964 with the change of the name of the institution to Illinois State University.

When Rilett interviewed at ISNU in 1958, he found the Department of Biological Sciences to be in a parlous state. He was shocked to find a "please do not erase" sign dated 1932 on an evolutionary tree of the plant kingdom on a blackboard in one of the classrooms. However, Rilett was clearly a man of great energy and vision, such that, staggeringly, by 1962, with the help of his faculty, new M.S. and Ph.D. programs had been proposed and approved, although not without some misgivings.

Enter Dr. Herman E. Brockman. Herman graduated from Blackburn College in Carl-

Continued on Page 12

Undergraduate awards

Dr. David W. Borst, Jr., Memorial Endowed Scholarship

2024 Mehdi Bennis

2025 Grady Jacobson

Bohn Nielsen Healthcare Pre-Professional Scholarship

2024 Kieran Bukovsky, Jacob Rollins

2025 Grace Hohman, Hope Omoniyi, Ben Ross

Dr. John B. Colwell Scholarship

2024 Lily Whittington, Mehdi Bennis

2025 Grayson Mirabile, Kaitlyn Steinberg, Lily Whittington

Dahl lab facilitates international exchange

Two undergraduate research assistants from the Jan-Ulrik Dahl lab, Grady Jacobson and Charlie Jackson, were awarded competitive DAAD RISE Fellowships to conduct summer research at the Ruhr University Bochum in Germany. The Research Internships in Science and Engineering (RISE) Fellowship, provided by the German Academic Exchange Service (DAAD), offers undergraduate students from select English-speaking countries the opportunity to conduct summer research in Germany. This highly competitive program supports students pursuing careers in scientific research, providing them with immersive lab experiences abroad.

Grady Jacobson spent 10 weeks at Ruhr University Bochum studying how the bacterial pathogen Yersinia pseudotuberculosis adapts to various environmental conditions. Molecular and cellular biology major Charlie Jackson conducted research on how the plant pathogen Agrobacterium tumefaciens survives in acidic environments. His research explored the function of a gene regulator that manages pH balance inside the bacterium, enhancing its survival and reproduction. Outside the lab, the students also took advantage of their time in Germany by traveling to cities like Hamburg, Bremen, Nuremberg, and Heidelberg, where Jackson attended a scientific conference. These experiences enriched their cultural and academic perspectives.

Continued on Page 12

Dahl lab facilities, *continued from Page 11*

The Dahl lab returned the favor by hosting Magdalena Urlaub from the Technical University Munich in Germany as a DAAD RISE fellow, his fifth time hosting a German student in the program. Participation in RISE exemplifies how international research experiences can inspire and prepare undergraduates for advanced scientific careers.

Congratulations to Sedbrook lab graduates

Liza Gautam in the John Sedbrook laboratory made a breakthrough discovery domesticating pennycress into an oilseed crop grown in the offseason between corn and soybean throughout Illinois and the Midwest. Through hard work

Liza Gautam inspecting pennycress field plots that were genetically improved to make the seeds comparable in composition to that of canola.

and perseverance, Gautam used the new molecular genetic technique, CRISPR gene editing, to meticulously generate dozens of pennycress mutant combinations to find precise genetic changes conferring reduced seed glucosinolate content without impacting plant growth, thereby improving pennycress seed composition to match that of canola. This work has been submitted for publication and helped earn Gautam her Ph.D. this June. Congratulations to Dr. Gautam!

Arjuman Lima in the Sedbrook lab also successfully defended her master's thesis, during which she worked with Gautam on efforts to reduce sinapic acid levels in pennycress seed meal through genetic improvements. Their work also helped initiate new research in the

Brockman works in the lab at Illinois State in 1967.

Dr. Herman E. Brockman, *continued from Page 11*

inville with a bachelor's degree in biology, and one Marlene Castiglia who would become his wife of almost 70 years. Marlene "made it all work," according to Herman. Herman obtained his M.S. and Ph.D. with concentrations in genetics from Northwestern University and Florida State University, respectively. After three years of postdoctoral training at Oak Ridge National Laboratory, in 1963, at the age of 28, he was appointed as an associate professor of genetics at Illinois State. A 28-year-old associate professor is unheard of today, as aspiring academicians labor through endless years of postdoctoral fellowships. Clearly, Rilett had great expectations of his new hire, and Herman did indeed train several of the early Ph.D. students in the department's history. Amazing to think of nowadays, but Watson and Crick had only described the structure of DNA in their landmark paper in 1953 in *Nature*, a mere 10 years before Herman's appointment at Illinois State. This initiated the heroic golden age of molecular biology for which Herman was a strong advocate and supporter, and soon extended to related disciplines, including cell biology, biochemistry, and, importantly for me, microbiology. Thanks for the career opportunity, Herman! I like to think that HB thought I made good.

The responsibilities of a faculty member in the modern university are teaching, research, and service. Herman acted as a beacon and model for all these activities. Herman's main classes were a course in general genetics, Genetics BSC 319 (later BSC 219), and a graduate course, BSC 419 Molecular Biology of the Gene. Whenever a student asked Dr. Brockman for a letter of recommendation, his inevitable touchstone was: "How did they do in 319?" And he had all his grade books from the beginning to refer to. On BSC 419, alumni Dr. John E. Gustafson, chair of Biochemistry and Molecular Biology at Oklahoma State University, had the following to say: "Simply put, Dr. Brockman was inspirational. His depth of knowledge, passion for the subject, and ability to connect past discoveries to present understanding made this the best class I took at ISU."

Herman's research was in the fields of mutagenesis and antimutagenesis. He published extensively, obtained multiple grants and contracts, and trained many doctoral, master's, and undergraduate students. He inspired a devoted cadre of acolytes in whom he generated great loyalty. Several of his students became leading lights in the Environmental Mutagenesis Society. A faculty member and one of Herman's chairs, Dr. H. Tak Cheung, said this about him: "Over the many years I worked with him, I saw firsthand his dedication, his unwavering commitment, and his gift for inspiring everyone around him." To this I would add that he kept the parade of chairs post-Rilett on their toes, pointing out the i's that needed dotting and t's that needed crossing when conducting departmental business.

And what about Herman E. Brockman, the man? He had a legendary work ethic (facilitated by the cot he kept in his office for his noon farm-boy naps), which made a slacker such as myself want to sit down. This was not just at Illinois State. After he left the University, he went home to his other jobs: the farm and raising six children. I always felt that Herman had something of the church about him, although he was not a religious man. When he was dressed in his "Sunday suit" for awards at some Illinois State ceremony, I thought that he had the look of a between-the-wars elder of a rural church. However, the blue jeans and checkered work shirt of the farmhand were his natural and comfortable skin. Despite his at times austere appearance and manner, he was possessed of a highly developed sense of humor. He would deliver piercingly insightful one-liners with a twinkle in his eyes.

When I interviewed for a job in the department in 1978, I, and many others before and since, found his presence to provide credibility and reassurance that we could pursue the kinds of careers in research, teaching, and service to which we aspired. There is a deep

throughline from today's iteration of the School of Biological Sciences at Illinois State University to Dr. Herman E. Brockman, to whom we are forever indebted.

The School of Biological Sciences honors two exemplary students with undergraduate research awards

The School of Biological Sciences is proud to announce the recipients of two prestigious undergraduate research awards, recognizing the outstanding achievements of students whose contributions are advancing science, mentorship, and community within the school's research ecosystem. These students exemplify what is possible when talent, hard work, and generosity converge in a research setting. Their achievements remind us of the transformative potential of undergraduate research not only for individual discovery, but for building a stronger scientific community.

Grady Jacobson named Outstanding Undergraduate Researcher

Grady Jacobson, a double major in biochemistry and molecular and cellular biology, has been selected as this year's recipient of the Outstanding Undergraduate Researcher Award. Jacobson's research journey at Illinois State has been marked by scientific excellence, initiative, and leadership. As a key contributor to multiple peer-reviewed projects, including a co-authored publication in the *Journal of Bacteriology,* Jacobson has already made his mark in the scientific community.

Working in Dr. Jan Dahl's lab, Jacobson has demonstrated exceptional technical skills in quantitative PCR, phenotypic assays, and infection model development, while also securing competitive research funding through Illinois State's FIREbird program (Faculty-mentored Independent Research Experiences) and the prestigious Research Internships in Science and Engineering (RISE) provided by the German Academic Exchange Service (DAAD) in Germany (see below). His intellectual independence and drive have led to original experimental work expected to yield at least two additional co-authored publications.

In addition to his research, Jacobson has served as a part-time lab manager, coordinating day-to-day operations and mentoring peers. His ability to balance scientific rigor with collaborative leadership sets him apart as not only a gifted researcher, but also a role model for future scientists.

Tim Kedzierzawski receives Undergraduate Service Award

By Andrés G. Vidal-Gadea, assistant director undergraduate studies

Tim Kedzierzawski, a Navy veteran and non-traditional student pursuing a second bachelor's degree in biological sciences, has been awarded the Undergraduate Service Award for his remarkable commitment to mentoring and supporting his fellow researchers in Dr. Hammond's lab. Despite joining the lab relatively recently, Kedzierzawski quickly became a central figure, sharing his expertise in PCR, cloning, microscopy, and fungal genetics with over 20 peers involved in a large-scale project on the genetics of spore killing in Neurospora crassa.

While conducting his own research and generating data of publication quality, Kedzierzawski distinguished himself through acts of informal leadership. He provided consistent guidance and encouragement to less experienced students, often volunteering his time to ensure the group's collective success. Faculty and peers alike credit him with significantly improving the lab's cohesion and productivity.

This award recognizes Kedzierzawski's selfless service and mentorship, qualities that have amplified the impact of undergraduate research far beyond his own contributions.

Members of the Sedbrook lab celebrating Liza Gautam's successful defense of her Ph.D. dissertation. *From left*, Maggie Marlino, Liza Gautam, Arjuman Lima, Ryan Bayliss, Nikhil Jaikumar.

Sedbrook lab focused on enhancing the feed quality of Winter Cereal Rye.

References: Gautam B, Kim H, Wang C, Park K, Cahoon EB, Sedbrook JC. 2025. Meeting Liquid Biofuel and Bioproduct Goals: Biotechnological Design of the Intermediate Oilseeds Pennycress and Camelina, and Beyond. *J Exp Bot*. doi: 10.1093/jxb/eraf415.

Gautam B, *et al*. 2025. Creating a new oilseed crop, pennycress, by combining key domestication traits using CRISPR genome editing. *bioRxiv* 2025.03.15.643467; doi: https://doi.org/10.1101/2025.03.15.643467

Dr. Logan Sauers from the School of Biological Sciences receives the Sorensen Distinguished Dissertation Award

Dr. Logan Sauers was awarded the Clarence W. Sorensen Distinguished Dissertation Award in 2024. This university-wide competition recognizes an outstanding completed dissertation of the highest research standards. Sauers' research in the Sadd lab has made major

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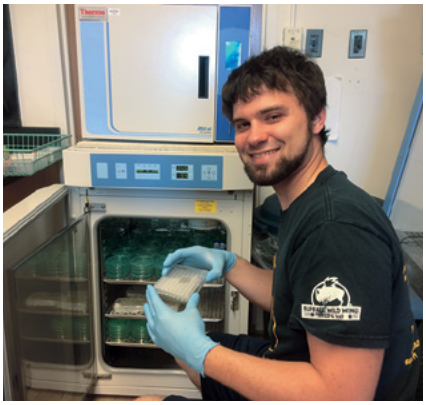

***Dr. Logan Sauers**, continued from Page 13*

contributions to our understanding of the relationships between animals and their beneficial gut microbes, uncovering factors shaping these relationships. He worked on insect pollinators, particularly bumblebees, but his work addressed broader concepts that are also relevant to our interactions with bacteria in our guts.

Sauers' first dissertation chapter was published in *mBio*, the flagship journal of the American Society of Microbiology, and included the discovery of a new bacterial species. Sauers has five published papers, with at least four more in the pipeline from his work at Illinois State. He was also very active in funding acquisition, amassing $20,000 from local, national, and international sources. Sauers also excelled as a dedicated and compassionate mentor, making major contributions in the mentorship of undergraduate students in their research and careers. Sauers is now a postdoctoral researcher at the University of Manchester, U.K., where he has taken concepts from his Ph.D. and is now applying them to understand interactions between human baby immunity and their gut microbiota.

Sugar Creek Urban Ecology Area: On-campus site for answering basic and applied questions about ecosystem sustainability

By Vickie Borowicz

Alumni from the 1980s may remember studying ecology along Sugar Creek near Cardinal Court Apartments. Since then, 30 years of neglect left the site an unusable tangle of honeysuckle and other undesirable plants. Seeing opportunity, biology graduate student Jesse Smith and Dr. Ben Wodika rolled up their sleeves, recruited volunteers, and began to reclaim the site. In 2020, the School of Biological Sciences launched development of the Sugar Creek Urban Ecology Area (SCUEA) with help from Facilities Planning and later, a grant from the Office of Sustainability. Five years later, the site is shaping up as a living outdoor laboratory that serves a three-part mission: research, education, and public engagement.

Fire! Annual prairie management conducted by Facilities Planning personnel.

Preparation of the Sugar Creek experimental site in May 2021.

Replicate plots in May 2024, early in the fourth growing season.

Development is an evolving process. Thirty plots in the northwest portion are devoted to an experiment examining whether nonnative plants equal native prairie species in sustaining abundance and diversity of native insects and other animals (Functional Equivalence Hypothesis). An insect survey funded by a grant from the dean of the College of Arts and Sciences in 2024, annual vegetation surveys, and independent projects by students are amassing data to test this hypothesis. These prairie plots, as well as the surrounding woodlands, provide diverse habitat on campus for introductory courses as well as botany, entomology, and avian biology classes. It is also a handy site for students to conduct independent research.

A conglomerate of native prairie flowers including wild bergamot *(Monarda fistulosa)*, purple coneflower *(Echinacea purpurea),* and common yarrow *(Achillea millefolium)*.

As restoration along the creek continues, native spring ephemerals have appeared, and more animals have been sighted. As the area becomes more accessible, its potential for public engagement grows. Perhaps the future will bring the development of citizen science techniques that are then disseminated broadly through partner organizations/sites. However, beating back honeysuckle is a constant job. Towards this end, volunteers have contributed much as they get a taste of the hard work of restoration and create opportunities for future development. Let's see what the next five years bring!

The students and faculty of Biological Sciences.

Undergraduate students out sampling aquatic arthropods in local Bloomington-Normal parks in fall 2025, as part of the Community Ecology lab in BSC 201 (Introductory Ecology).

Illinois State biology graduate students visiting the Chicago Field Museum in fall 2025, complete with a behind-the-scenes collections tour.

State Sen. Dave Koehler, *second from right,* visits Dr. John Sedbrook's agricultural biotechnology lab in the Science Laboratory Building.

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