



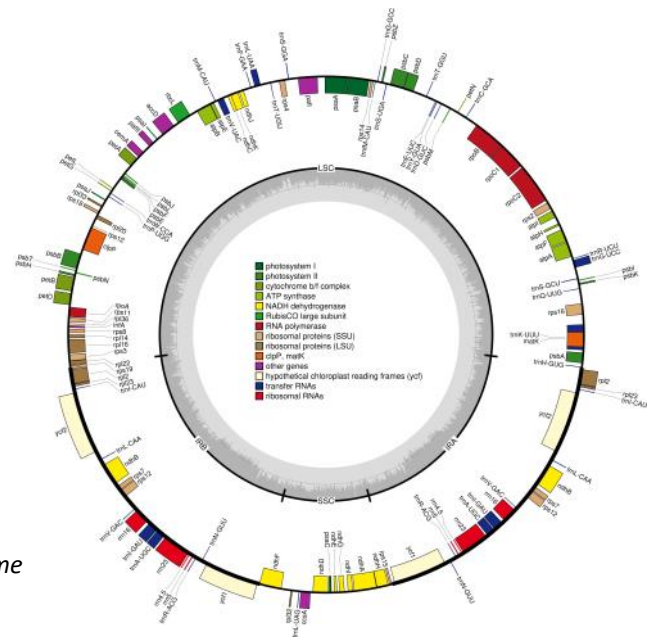
Biology Department faculty receives prestigious grant



Assistant professor Michael Gruenstaedl was awarded a NIH (National Institutes of Health) grant for Fall 2024-Fall 2026 for the project, “Enabling data quality assessment of organelle genomes archived on GenBank through novel open-source software tools.”

GenBank is one of the largest public databases for DNA sequence data. Among many other types of genomic data, GenBank stores tens of thousands of complete organelle genomes. These genomes are relevant to many aspects of biomedical research, including human genetics, microbiology, environmental health, toxicology, and forensics. Unfortunately, a considerable proportion of organelle genomes on GenBank exhibit signs of low sequence quality. This research project aims to develop bioinformatic methods for the quality assessment of archived organellar genomes: a team of three graduate students and the PI will write open-source software and then conduct genomic data mining to determine the actual proportion of low-quality organelle genomes stored on GenBank.

The novel software will enable scientists from various areas of biomedical research to make informed, evidence-based decisions on the reuse of archived organelle genomes. Using these novel tools, researchers will be able to compile secure, curated genome sets. Thus, this research project advances the goal of making high-quality genomic data assets identifiable to the biomedical research community. The participating graduate students will receive in-depth training on bioinformatics and organelle genomics.



Organelle genome



Inside this issue:

Presentations	2-3	Publications	4
Student news	6	KWEC	12

Meetings and Presentations

American Society of Mammalogists 103rd Annual Conference, Boulder, CO, June 7-11, 2024.

Finck, E. J. "Why do ASM members not return and what can we do about it?" (poster).

Hein, H. D. "Novel behavior in novel environments: Behavioral changes in invasive squirrels outside their native range" (poster).

Patrick, L. E. "Toward a better understanding of the relationship between bats and prairie dogs".

Redding, E. M. "Anything but another essay: Understanding undergraduate STEM student perceptions of creative, project-based learning" (poster).

Austrian Bioinformatics Workshop, Medical University of Graz, Austria, July 3rd, 2024.

Gruenstaeudl, M. "Developing bioinformatic tools for the data mining and quality control of archived organellar genomes – An ideal setting for genomic research and for training the next generation of bioinformaticians."

IBC24 – XX International Botanical Congress, Madrid, Spain, July 22nd, 2024.

Gruenstaeudl, M. "Some strategies to improve alignment accuracy in large-scale plant phylogenomic analyses."

Joint meeting of the Central Plains Society of Mammalogists (CPSM) and the Central Ecology and Evolution Conference (CEEC), Hays, KS, October 11-13, 2024.

Geyer, P., Z. Buffington, and L. E. Patrick. "Vigilance and foraging behaviors of two sciurid species between college campuses and urban environments" (poster).

Hanson, N. I., and M. Ambardar. "The Impact of anthropogenic infrastructure on avian reproduction: A study of house wrens in proximity to highways" (poster).

Herbert, Z., and D. Tarailo. "The swimming of sea serpents: A geometric morphometrics analysis of the locomotive morphology of Mosasauroids" (poster).

Patrick, L. E., H. C. Lanier, P. K. Connors, J. M. Duggan, L. Dizney, C. Yahnke, L. P. Erb, J. Varner, and E. A. Flaherty. "Effects of student demographics on self-identity as a scientist in course-based research modules" (poster).

Zerr, C., C. Cook, and L. E. Patrick. "Ordinal-level biomass of insects collected on and off prairie dog colonies" (poster).

Meetings and Presentations (continued)

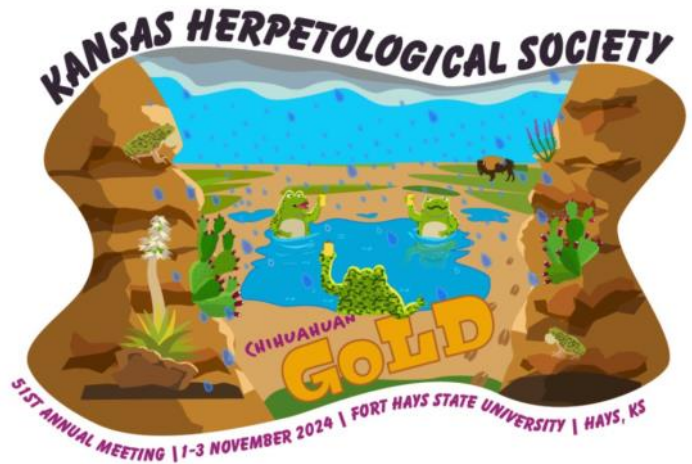
Kansas Herpetological Society 51st annual meeting, Hays, KS, November 1-3, 2024.

Braun, K. L., N. K. Lazerus, and W. J. Stark. "Wading in the waveforms: Acoustic survey of anurans on Fort Leavenworth Military Reservation."

Roberts, J. R. "Message received: Building collaboration between Kansas' rich repositories to facilitate and drive Kansas herpetology forward."

Taggart, T. W. "Herpetological collecting in Kansas: A synthesis."

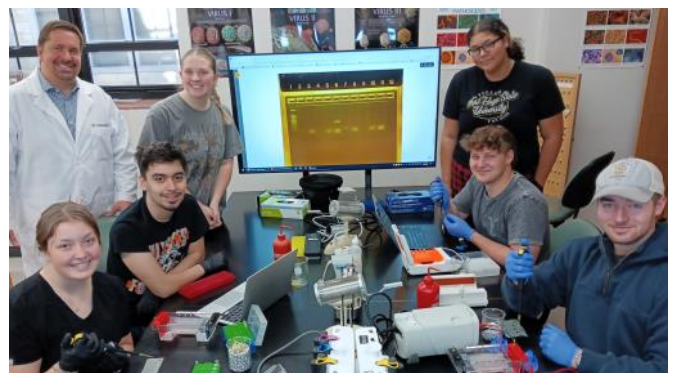
The local organizing committee for the KHS meeting included Dr. Bill Stark (Chair), Jacob Alexander, Sandra Guzman-Duran, Nora Lazerus, Jackson Roberts, and Travis Taggart. Cale Morris of the Phoenix Herpetological Society presented a hands-on workshop on proper handling and transport of venomous snakes, featuring live snakes from the Sternberg display collections. The organizing committee partnered with Defiance Brewing Company of Hays to produce a small batch-themed Mexican lager called Chihuahuan Gold for the Friday night social on Nov. 1st. The beer featured a custom label created by Biology graduate student Jacob Alexander.



Morning group

Dr. Michael Gruenstaeudl's

Fall 2024 Genetics class



Afternoon group

Publications

Cossette, A. P., & **Tarailo, D. A.** 2024. Crocodylian diversity during the early Eocene climatic optimum in the Golden Valley Formation of North Dakota, U.S.A. *Journal of Vertebrate Paleontology*, 44(1). <https://doi.org/10.1080/02724634.2024.2403579>

Da Silva Carvalho C. 2024. Knowledge and perception of antibiotic resistance and stewardship among pre-health and agriculture undergraduate students. *Journal of Microbiology and Biology Education*, 25(3):e00069-24. <https://doi.org/10.1128/jmbe.00069-24>

Dr. Sarah Elzay published a chapter in *Arthropod Management and Landscape Considerations in Large-Scale Agroecosystems* entitled, “Aphid biological control by parasitoids in winter wheat and canola in heterogeneous agricultural landscapes.”

Roberts, J. R., et al. 2024. Whole snake genomes from eighteen families of snakes (Serpentes: Caenophidia) and their applications to systematics. *Journal of Heredity*, 115(5): 487–497. <https://doi.org/10.1093/jhered/esae026>



Return of the Kites



A nesting pair of Mississippi kites were once again spotted this summer in the area bounded by Albertson Hall, the Memorial Union, the President’s Residence, and Stroup Hall. Campus pedestrians had to be on the lookout to avoid being “swooped” by the protective parent birds.

Dr. Medhavi Ambardar posted a helpful video about Mississippi kite awareness:
<https://www.facebook.com/reel/400960108969260>

Dr. Bill Stark's **Fisheries Management** students took a field trip to the Pratt Hatchery in October to get hands-on experience loading and unloading catfish. Students worked with fish of many size classes from fingerling to adult, with the help of FHSU alum Brian Fisher.



Student News:

Congratulations to Isaac Odoi,
who completed his master's
degree this semester!



On Friday, November 22nd,
the **Micro/Molecular
Journal Club** celebrated
the last meeting of the se-
mester with a potluck to
celebrate the graduation
of Isaac Odoi and Jordan
Wheeler.

*Seated, L-R: Jordan Wheeler, Jona-
than Ferguson, Dr. Yi-Chen Lee, Dr.
Claudia Carvalho, Dr. Ifelayo Ade-
fuye, Yaw Antwi, Louisa Acquah.*

*Standing, L-R: Audrey Rymer, Dr.
Michael Gruenstaeudl, Diana Staab,
Kwesi Taylor, Isaac Odoi, Alfred Ap-
piah, Henry Hein.*



Congratulations to **Camryn Greving**, who was accepted into Kansas State University's
Physician's Assistant program for January 2025!

Alumni news:

Dr. Nick Shiew (B.S., 2020) started a Family Medicine residency at Via Christi
Hospital in Wichita, KS.



FHSU Biology Junior **Lauren Rush** spent the summer working with the Kansas Department of Wildlife and Parks as a **biodiversity technician** on a stream crew. The team conducted fish and mussel surveys across Kansas.



Dr. Lori Patrick presented, “Bats in the Night” at the FHSU Science Café on October 28th.



Christmas bird count:

The 2024 Hays Christmas Bird Count occurred on Saturday, December 14. We had 18 participants in total, which included students, faculty, and members of the community. In total, we identified 69 species, which is the highest species count we've had since I took over as compiler in 2018! Some

of the fan favorites included Ruby-crowned Kinglets, Golden-crowned Kinglets, an Orange-crowned Warbler, and a Yellow-bellied Sapsucker.

-Dr. Medhavi Ambardar



In October, Dr. Patrick took students out to set up trail cams at The Nature Conservancy's **Smoky Valley Ranch** in Logan County. They are participating in Snapshot USA, a nationwide mammal survey that takes place every fall. The trail cams were later retrieved and students identified animals in the footage.



In September, students in Hilary Gillock's **Entomology lab** class search a wooded area near the alumni center on campus for cicada parasite beetles, among other insects.



Graduate student Jacob Alexander



A sampling of **cell membrane haikus**, written by students in Nora Lazerus' Principles of Biology class.

Haiku's about Biological Membranes
Select poems written by students in Nora's Principles of Biology Class

Thin walls made of fat
Tiny doors let things pass through
Keeping life inside

Fluid phospholipid
A barrier, selective gate
Life's boundaries dance

Lipids form a shield
Selective gates of life's flow
Cells whisper, "We thrive."

Biological
In and out and nope not you
Fluid bilayer

Dynamic cell
Can do almost anything
Adaptation is key ye

Congratulations!!

Dr. Rob Channell received the 25-year service award from the FHSU alumni association.



Rob with his wife, Dr. Kim Perez



Dr. Claudia Carvalho received the Werth College of Science, Technology, and Mathematics Outstanding Service award for Fall 2024.

Pictured l-r: Dr. Tara Phelps-Durr, chair of Biology, Dr. Carvalho, and Dr. Grady Dixon, Dean of WCoSTM.

The Biology Department held an end-of-semester potluck on December 3rd to celebrate graduating seniors and grad students.



The pollinator garden north of Albertson Hall supported a wide variety of plants and arthropods all season!





The Kansas Wetlands Education Center held its 11th annual **Butterfly Festival** on Saturday, September 28, 2024, featuring the tagging and release of several monarch butterflies.



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