

**College of Natural Sciences
and Mathematics
26th Annual
Student Research Symposium**



April 17, 2020

Welcome from the Dean

The College of Natural Sciences and Mathematics has sponsored an annual Student Research Symposium since the college was founded in the academic year 1994-1995. Many of our students are active in research and they present their work at meetings all over the country. Most of these meetings are held in the spring, and this year most of them have been canceled due to the Covid-19 pandemic. We wanted our students to have a venue to present their work, but as the University is closed a traditional symposium isn't possible. Accordingly, we are hosting a virtual Student Research Symposium. In future years we will likely supplement our traditional symposium with a virtual symposium. Join us in celebrating the successes of our students.

To view the symposium, please follow the link below to the college YouTube channel:

https://www.youtube.com/playlist?list=PLBEiQ1-5yVfw4-IZe_AEU2KD3JEAUlpMk

I encourage you to visit all the presentations and please let the students know that you appreciate their efforts. We will leave the symposium up for the rest of the semester.

We will be announcing the students who have been selected for AURS and SWN research awards early next week.

In conclusion, I want to thank all of you for your efforts to move classes online over the last several weeks. We face new challenges every day, but we continue to meet those challenges and we will emerge from this crisis stronger and wiser.

Thanks again, and stay well,

Steve Addison

Biology Research

Using land-use to determine trends in fish assemblage change in the
Spring River, Arkansas over the last 40 years

Student: Calvin Rezack

Faculty Mentors: Reid Adams, Ginny Adams, Matthew Connolly

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Exploration of fish community differences between streams
with intermittent and perennial flow regimes

Student: Chance Garrett

Faculty Mentors: Ginny Adams, Reid Adams

§

Determining if phospholamban expression increases as SERCA2b expression
increases with estrogen exposure.

Student: Claudy Sarpong

Faculty Mentor: Brent Hill

§

Assessing temporal trends in fish assemblage structure in an Ozark River.

Student: Daniel Morrill

Faculty Mentors: Ginny Adams, Reid Adams, Matthew Connolly

§

Examining the status, habitat use, and natural history
of *Erimystax harrisi* (Ozark Chub) and *Notropis ozarcanus* (Ozark Shiner).

Student: Danielle Talbot

Faculty Mentors: Ginny Adams, Reid Adams

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The prevalence of Burkholderia and Chlamydiae bacterial symbionts
in natural populations of social amoeba.

Student: Erin Golden

Faculty Mentor: Tamara Haselkorn

Biology Research

Understanding changes in fish assemblages related to LULC

Student: George Gavrielides

Faculty Mentors: Reid Adams, Ginny Adams

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Examination of the current status and distribution of the

Creole darter in the Ouachita River Basin

Student: Grace Davenport

Faculty Mentors: Ginny Adams, Reid Adams

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Climate change perception and understanding among first-year college students

Students: Hunter Moore, Anna Copeland

Faculty Mentor: Mark Bland

§

The Status, Distribution, and Detectability of the Colorless Shiner in Arkansas

Student: Joseph Miller

Faculty Mentors: Ginny Adams, Reid Adams

§

Life history variation along an environmental gradient: age and size at maturity

in the Prairie Lizard, *Sceloporus consobrinus*

Student: Justin Mosbey

Faculty Mentor: Matthew Gifford

§

Performance tradeoffs in the prairie lizard (*Sceloporus consobrinus*) and how they vary both between individuals and within individuals.

Student: Katherine Lang

Faculty Mentor: Matthew Gifford

Biology Research

Surveying the diversity of fungal symbionts in social amoeba to understand the ecological relevance of amoeba as potential reservoirs for fungal intracellular adaption.

Student: Laurel Woods

Faculty Mentor: Tammy Haselkorn

§

Identifying common gene expression patterns in rice roots during associations with plant growth-promoting bacteria

Students: Matthew Ohler, Grant Wiggins, Connor Deen

Faculty Mentor: Arijit Mukherjee

§

Investigating the feasibility of using artificial habitat to augment the roosting habitat for tree-inhabiting bats in northern Arkansas.

Student: Sarah Martin

Faculty Mentor: Vickie McDonald

§

Antimicrobial Efficacy of Local Arkansas Honey Types

Student: Stephany Crabtree

Faculty Mentors: Kari Naylor, Samantha Hewett

Chemistry Research

Making models of the multicopper oxidase metalloenzyme family.

Student: Joseph Schneider

Faculty Mentor: Lei Yang

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Implementing waste treatment labs into undergraduate curriculum.

Student: Lindsey Morrison, Avery England

Faculty Mentor: Robert Mauldin

Physics Research

Timelines of heavy element production in our galaxy, shown through the abundances found in Metal-Poor Red Giant stars.

Student: Grace Zimmerman

Faculty Mentor: Debra Burris

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Examining the spectra of several open field red giant stars with extremely low metallicities

Student: Jordan Sturdivant

Faculty Mentor: Debra Burris

§

Measuring the emission of two gamma rays in coincidence (simultaneously).

Student: Jordan Sturdivant, Austin Smith

Faculty Mentor: Rahul Mehta

§

Climate change perception and understanding among first-year college students

Student: Luke Ogle

Faculty Mentor: Debra Burris

Physics Research

Spectral analysis of low metallicity stars in the halo region of our galaxy.

Student: Luke Ogle

Faculty Mentor: Debra Burris

§

Developing a reaction control system for high altitude balloon payloads.

Student: Max Huggins

Faculty Mentor: William Slaton

Thank you...

to all the faculty, staff, and alumni who continually encourage and support our students in their research efforts. Without your continued support, our students would not have the equipment, research facilities, or opportunities they now have to conduct research at the University of Central Arkansas.

Although this is just a small sample of the research being done in our college, it clearly shows the dedication and ability of our students to rise above the challenges and press onward.

Thank you for your support and encouragement. We couldn't do it without you.



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