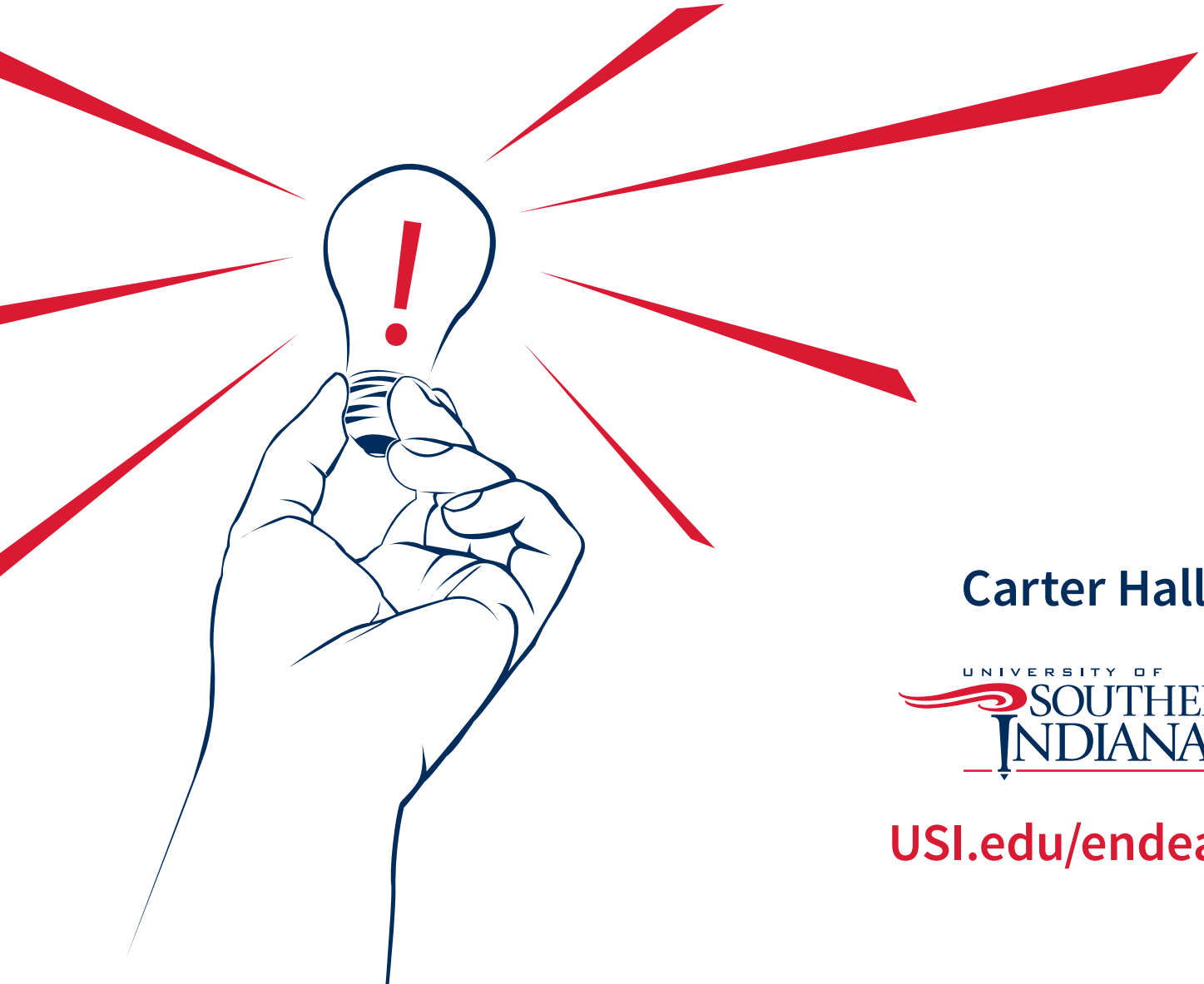
23rd Annual Symposium

2025

USI Endeavor Awards for Research & Creativity



Carter Hall

University of Southern Indiana

USI.edu/endeavor

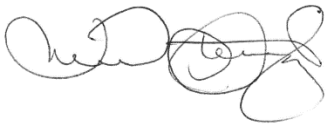
April 10, 2025

Dear Endeavor Symposium Presenters, Sponsors, and Guests:

Welcome to the 2025 Endeavor Symposium. As I'm sure you've come to appreciate, combining research and learning is one of the best ways to get the most out of your time here at USI, and I hope that the experience has helped to develop strong ties to your education – ties that you will take with you after you leave the university.

You have worked hard on your projects, and we are proud to give you the chance to present the results of your work to the USI community.

Sincerely,



Michael Strezewski, Ph.D.
Professor of Anthropology
Director, Endeavor Research and Creativity Awards

Endeavor Symposium Program

Thursday, April 10, 2025

8:30 a.m.	**Check-in** is open for presenters and sponsors: Pick up your programs and ID badges at the registration table (located in the hallway outside Carter Hall).
9 a.m. – noon	**Poster Sessions**, *University Center, Carter Hall D* (note: all posters must be removed from Carter Hall D by noon).
10 – 11:30 a.m.	**Oral Presentations**, Room UC 226 and UC 227 (next to Carter Hall).
Noon – 1 p.m.	**Endeavor Luncheon** for student participants and mentors, *Carter Hall A-C*. Your badge will serve as your lunch ticket.

Endeavor Research and Creativity Awards Committee

Dr. Michael Strezewski	Director, Endeavor Awards for Research and Creativity, Professor of Anthropology, College of Liberal Arts
Dr. Ryan Butler	Associate Professor of Nursing, Kinney College of Nursing and Health Professions
Dr. Jeannie Collins	Associate Professor of Chemistry, Pott College of Science, Engineering, and Education
Ms. Rebecca Deeg	Grant Administrator, Office of Planning, Research, and Assessment
Dr. Erin Dennis	Associate Professor of Advertising, College of Liberal Arts
Dr. Ronald Diersing	Associate Professor of Engineering, Pott College of Science, Engineering, and Education
Dr. Erin Reynolds	Associate Professor of Health Services Administration, Kinney College of Nursing and Health Professions
Mr. Peter Whiting	Professor of Library Science, Rice Library
Dr. Bohan Ye	Assistant Professor of Economics, Pott College of Science, Engineering, and Education

Acknowledgements

The Endeavor Committee thanks the following for their support of the Endeavor Research and Creativity Award Program and Endeavor Symposium:

- Dr. Steve Bridges, President, University of Southern Indiana
- Dr. Shelly Blunt, Provost
- Dr. Jason Hardgrave, Assistant Provost for Academic Affairs
- Jenn Horn, Interim Director, USI Honors Program
- Michele Duran, Senior Administrative Associate, Office of the Provost
- Rhonda Woolsey, Special Events Supervisor
- Romain College of Business
- College of Liberal Arts
- Kinney College of Nursing and Health Professions
- Pott College of Science, Engineering, and Education

2024 - 2025 Endeavor Symposium Faculty Mentors

- Dr. Kristina Baker
- Dr. Alex Champagne
- Dr. Julian Davis
- Mr. Rob Dickes
- Dr. Fernando Ferreira
- Ms. Alisa Holen
- Dr. Jacob Lutter
- Dr. Stacey Murray
- Dr. David O'Neil
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- Dr. Michael Strezewski
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- Dr. Kimberly Delaney
- Dr. William Elliott
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- Mrs. Emily Holt
- Dr. Cacee Mabis
- Dr. Alexandra Natoli
- Dr. Todd Nelson
- Dr. Milad Rad
- Dr. Rex Strange
- Mrs. Jordan Thomason
- Dr. Alyssa Weatherholt
- Dr. Stephanie Young

9-10 a.m. POSTER SESSION

Carter Hall D

Seth Cooper and Jeremiah Bissey	Thermal Protective Systems: A study on Ceramic Coatings for Turbine Jet Engines
Erin Emery	Social Work Policy and Gay Straight Alliance Clubs in Indiana
Madison Fritchley	Descriptions of Defendants Experiencing Autism Varying Offense Type and Race
Bennett Gallentine	Molecular Models: Visualizing the Invisible
Madison Hahn	The Breast Cancer Gene
Lillian Kemper and Jhay Quirante	Bridging the Gap: Medication Education in Assisted Living Residents
Kaitlyn Knox and Megan Bass	Students' Attitude Changes Toward Individuals with Disabilities Through Prescribed Exercise Programs
Michelle McCarty	Ivy Tech Campus Tour
Nicholas Mack	Yankeetown v. Duffy Site Ceramic Analysis
Jenna Malone	Demystifying Gender Affirming Care
Abigail Mitchell	The Science Behind the "Science of Reading"
Treasure Nickelson and Katherine Thombleson	Incarceration and Pregnancy
Caden Porter	A Lecture on GLP-1 and GLP-1 Receptor Agonists
Parker Provost	Understanding the Vital Foundations of Effective Project Management
Elise Schultheis and Deznee Kinsey	Design and Analysis of a High-Altitude Balloon Camera Stabilization System

Jada Smith	Gene Editing: Advancements from Early Techniques to Modern CRISPR/Cas9
Cassidy Sozio	Binary and Beyond: Physical Appearance Preferences in Partner Selection among Bisexual, Gay, and Heterosexual Individuals

10-11 a.m. POSTER SESSION

Carter Hall D

Seth Cooper and Jeremiah Bissey	Thermal Protective Systems: A study on Ceramic Coatings for Turbine Jet Engines
Kasey Disbro and Nicholas Mack	Analysis of Hide Processing Tools from the Caborn Site, Posey County, Indiana
Erin Emery	Social Work Policy and Gay Straight Alliance Clubs in Indiana
Hannah Flamion	Synthesis of a Collapsed 16-MC-6 Metallacrown with Two Proximal Lanthanide Ions
Madison Fritchley	Descriptions of Defendants Experiencing Autism Varying Offense Type and Race
Bennett Gallentine	Molecular Models: Visualizing the Invisible
Benjamin Grubbs	Analysis of Caborn-Welborn Ceramic Effigies from Southwestern Indiana
Madison Hahn	The Breast Cancer Gene
Allie Howell	Mochaware Bottlenecks
Drake Hubert	Does Knowledge Entail Justification?
Taryn Joest	Paleoclimate Interpretation from the Study of Plant Fossils from the Bond Formation (Upper Pennsylvanian, Missourian) at the Old Dam Site near New Harmony, Posey County, Indiana
Lillian Kemper and Jhay Quirante	Bridging the Gap: Medication Education in Assisted Living Residents

Kaitlyn Knox and Megan Bass	Students' Attitude Changes Toward Individuals with Disabilities Through Prescribed Exercise Programs
Michelle McCarty	Ivy Tech Campus Tour
Nicholas Mack	Yankeetown v. Duffy Site Ceramic Analysis
Jenna Malone	Demystifying Gender Affirming Care
Christan Manning	Pregnancy and Substance Use: A World Without Stigma
Cesar Mendez De Leon	Designing a Remote-Controlled Aircraft for the 2024 SAE Aero Design Competition
Abigail Mitchell	The Science Behind the "Science of Reading"
Treasure Nickelson and Katherine Thombleson	Incarceration and Pregnancy
Caden Porter	A Lecture on GLP-1 and GLP-1 Receptor Agonists
Parker Provost	Understanding the Vital Foundations of Effective Project Management
Sydney Rendes	Anxiety: Presentation, Treatments, and the Effects of Social Media
Elise Schultheis and Deznee Kinsey	Design and Analysis of a High-Altitude Balloon Camera Stabilization System
Jada Smith	Gene Editing: Advancements from Early Techniques to Modern CRISPR/Cas9
Cassidy Sozio	Binary and Beyond: Physical Appearance Preferences in Partner Selection among Bisexual, Gay, and Heterosexual Individuals
Jacob Vawter, Wyatt Ellerbrook, Hunter Russell, Keaton Youngblood, and Jason Meeks	USI Combat Robot for UIUC Robobrawl 2025 Competition
Katie Wagler and Jessica Fauquher	Collaborative Care in Action: Enhancing Healthcare Through Interprofessional Education Simulations

11 a.m. - noon POSTER SESSION

Carter Hall D

Kasey Disbro and Nicholas Mack	Analysis of Hide Processing Tools from the Caborn Site, Posey County, Indiana
Hannah Flamion	Synthesis of a Collapsed 16-MC-6 Metallacrown with Two Proximal Lanthanide Ions
Benjamin Grubbs	Analysis of Caborn-Welborn Ceramic Effigies from Southwestern Indiana
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Oral Presentations
Session 1
UC 226

10 – 10:15 a.m. **Linh Nguyen** – France's Impact on Global Cuisine through Colonialism

10:20 – 10:35 a.m. **Grace Gingerich** – Improving Access to Oral Care Devices to Maintain Oral Health

10:40 – 11 a.m. **Benjamin Grubbs** – Scraping across Cultures: A Comparative Analysis of Caborn-Welborn and Oneota Endscrapers

11:05 – 11:20 a.m. **Timothy Rosignal** – Criteria of Courage: Personally and Normatively Defining Courage

Oral Presentations
Session 2
UC 227

10 – 10:15 a.m. **Kaz Mull** – Alt in the 812: An Ethnographic Study of Local Punk Culture

10:20 – 10:40 a.m. **Ivys Quintana Leira** – Science of Reading Teaching Demo in an 8th Grade ELA class

10:45 – 11 a.m. **Maxwell Stoll** – Scaling up Hydration: Water and Lipid Interactions in the Stratum Corneum of the American Alligator (*Alligator mississippiensis*)

11:05 – 11:25 a.m. **Bailey Roby** – Echoing Ideations

Oral and Poster Presentation Abstracts

Thermal Protective Systems: A Study on Ceramic Coatings for Turbine Jet Engines

Seth Cooper and Jeremiah Bissey

Faculty Mentor: **Dr. Julian Davis**

Since the beginning of powered aviation, engineers have strived to enhance aircraft propulsion methods for increased efficiency and power. One method of doing so is increasing gas turbine exhaust temperatures. To do this, components downstream of combustion process, such as the stator and turbine, must be protected from the increased temperatures. The objective of this project was to evaluate the effectiveness of ceramic coatings for protecting the stator and turbine. Early results indicated that ceramic coating negatively affects the core temperature of the stator blades, thus harming the stators. This indicates that the tested ceramic coatings are not beneficial to the stator nor the turbine. However, the tested ceramic coatings may be optimal for use elsewhere within the gas turbine engine. The resulting insights gathered from these scale model tests are poised to serve as proof of concepts for larger scale engines.

Analysis of Hide Processing Tools from the Caborn Site, Posey County, Indiana

Kasey Disbro and Nicholas Mack

Faculty Mentor: **Dr. Michael Strezewski**

Our research focuses on the end scrapers found at the Caborn Site in Posey County, Indiana, and are associated with the Caborn-Welborn culture (A.D 1400-1650). In this project, we measured the dimensions of 563 end scrapers composed of nine different chert types: Wyandotte, Burlington/Crescent, Mill Creek, Brecciated, Holland, Dover, Fort Payne, Dongola, and Hopkinsville. Our research compared the end scrapers found at the Caborn Site with those of the Oneota culture. We categorized them into the possibility of six different planview shapes, including triangular, rectangular, ovate, convergent, and undetermined. By comparing their dimensions and planview shapes, we were able to compare these two cultures to understand better how end scrapers would have been used. In brief context, end scrapers were utilized in the processing of hides. We will continue this research by processing hides with replicated end scrapers and sending a sample of Caborn-Welborn tools and ours for use wear analysis.

Social Work Policy and Gay Straight Alliance Clubs in Indiana

Erin Emery

The purpose of this Honors Capstone project is to research social work policy regarding gay straight alliance clubs in the state of Indiana. It is so important to protect the youth in our community. Creating a safe place for LGBTQ+ youth will always be important. As a future social worker, I need to know how policy affects the people in our community, and how I can best advocate for them. I am presenting a poster that will include my research on Indiana policies concerning this topic.

Synthesis of a Collapsed 16-MC-6 Metallacrown with Two Proximal Lanthanide Ions

Hannah Flamion

Faculty Mentor: **Dr. Jacob Lutter**

Lanthanide metal ions have fascinating electronic and magnetic properties due to their valence electrons in the 4f orbitals. However, these ions are difficult to excite due to a parity forbidden f–f transitions leading to low extinction coefficients. A common strategy to overcome this limitation is based on the use of the "antenna effect," a process in which the excitation light is absorbed by a chromophoric group such as the anion of salicylhydroxamic acid (H3shi) and the resulting energy is transferred to the lanthanide to excite it. Metallacrowns (MCs) have been used to study the electronic and magnetic properties of lanthanides due to the ligands' ability to serve as antenna for lanthanide sensitization. MCs are ring-like structures formed by repeating [–M–N–O–]n subunits with an overall structure similar to crown ethers. We are interested in MC where M are galliums(III) and lanthanides(III) and the N–O source is shi3–. Various lanthanides were used to synthesize a range of analogous collapsed 16-MC-6 structures which are expected to be a great tool to examine an isolated pair of lanthanides at the core of the complex. X-ray crystallography, absorbance and fluorescence spectroscopy, and mass spectrometry were used to evaluate the structures and the properties of these new MCs.

Descriptions of Defendants Experiencing Autism Varying Offense Type and Race

Madison Fritchley

Faculty Mentor: **Dr. Kristina Baker**

While the prevalence of autism spectrum disorder (ASD) is 1 in 36, research finds that these individuals may be significantly overrepresented in the legal system (King & Murphy, 2014). This may be partly attributable to biased perceptions of individuals with ASD. As part of a mock juror study varying defendant ASD label and race, and offense type, 511 participants described the defendant. We coded for mental status, race, age, four character variables (e.g., violent, anxious), nine social communication and

interaction impairments (SCII), and four restrictive and repetitive behaviors (RRB). SCII and RRB were summed to create total scores. When the defendant had an ASD label, most (69%) participants included it in their description. In the violent offense condition, 17% described the defendant as violent or aggressive (vs 10% in the non-violent condition). Similar percentages of participants identified the defendant's race in the Black (17%) and White (15%) conditions. Participants were more likely to mention SCII ($p < .001$) and RRB ($p = .005$) when an ASD label was present (SCII: $M = .31$, $SD = .83$; RRB: $M = .34$, $SD = .63$) than absent (SCII: $M = .06$, $SD = .32$; RRB: $M = .20$, $SD = .49$). Participants descriptions also included RRB more in the violent ($M = .34$, $SD = .62$) than the non-violent condition ($M = .21$, $SD = .50$), $p = .007$). In sum, defendants with ASD are described as having more SCII and RRB which may affect jurors' perceptions of them in legal proceedings.

Molecular Models: Visualizing the Invisible

Bennett Gallentine

Faculty Mentor: **Dr. Kimberly Delaney**

For my capstone project, I will present a poster board about 3D molecular models and their uses in science. My layout includes an introduction to 3D models, explaining that they are physical or digital renditions of molecules emphasizing the 3D structure and interactions. These structures can help scientists determine active portions of the molecule and their interaction with other molecules, potentially aiding in drug development. Also included is a description of the different model types (ball and stick, space filling, and computer generated) showing a heavy focus on the computer-generated aspect. I add a portion about case studies in medicine, using molecules such as the CFTR protein impacted by cystic fibrosis, as well as the structure of SARS-CoV-2 virus. With these, I elaborate on how the models have helped scientists develop treatments for these diseases. I conclude my poster with the application of 3D models in today's world, including past and present examples of 3D models used, including practical use of models to discover the shape of DNA, as well as how drug companies design drugs to fit into active sites on proteins.

Improving Access to Oral Care Devices to Maintain Oral Health

Grace Gingerich

Faculty Mentor: **Ms. Emily Holt**

This project served as the capstone project for the USI Honors' Program. With the wisdom gained from previous research for other honors projects, it was important for this one to give back to others. This project aimed to improve the oral health of the Catholic sisters who live at the Daughters of Charity near USI's campus. These sisters have spent their lives serving others in and out of their communities. The majority of the sisters who live there are at least 70 years of age or older. This project investigated how targeted educational interventions and the provision of oral care devices could improve oral health outcomes among older adults. Initial needs assessments had been conducted through discussions with the wellness organizer of the Daughters of Charity, leading to the development of an educational

presentation and distribution of essential oral health care supplies. Recognizing the unique challenges faced by this population, including reduced dexterity and mobility, the project provided tailored educational resources and ergonomic oral care tools to the participants. Funding from an Endeavor grant allowed for the purchase of 58 powered toothbrushes, 72 bundles containing a manual toothbrush/toothpaste/floss, 12 denture kits, denture cleaning tablets, and 110 interdental picks. The project's methodology included pre- and post-tests to evaluate participants' knowledge and behavior along with an interactive workshop to ensure proper use of the tools provided. Personal interviews were held to gather reflective feedback. The project's objectives encompassed a comprehensive approach, including needs assessment, educational development, device provision, implementation, evaluation, documentation, and sustainability planning. By addressing these objectives, the project sought to promote lasting improvements in oral hygiene practices among the sisters, with the ability to enhance their oral health. The Sisters at the Daughters of Charity prioritized their oral health, with a focus on preventive care from a young age. Despite facing dental issues like cavities and gum disease, they maintained a routine of brushing, flossing, and using mouthwash while being open to trying new products. Their approach was proactive and informed, adjusting as needed to improve their oral care.

Analysis of Caborn-Welborn Ceramic Effigies from Southwestern Indiana

Benjamin Grubbs

Faculty Mentor: **Dr. Michael Strezewski**

The current research focuses on ceramic effigies from the Hovey Lake, Murphy, and Caborn sites in southwestern Indiana. All three are late Mississippian sites, dating to Caborn-Welborn phase, ca. AD 1400-1600. These effigies were often a part of bowls and took the shapes of birds, ducks, humans, amphibians, fish, and others. It has been suggested that the choice of certain animals on effigy bowls may represent long-told stories and cosmological themes. As part of this research, the species of each effigy animal was determined as best as possible, with consideration as to how these choices may reflect Mississippian cosmological beliefs. I studied the surface treatment, theme, types, possible purpose, and noted certain aspects of each effigy, including the facial features. These features were compared to similar artifacts from the central Mississippi River valley. Through these comparisons, the most prevalent themes in each location were identified.

Scraping across Cultures: A Comparative Analysis of Caborn-Welborn and Oneota End Scrapers

Benjamin Grubbs

Faculty Mentor: **Dr. Michael Strezewski**

This capstone project investigates possible connections between the Caborn-Welborn culture (Southern Indiana) and the Oneota culture (Wisconsin/Missouri) during the late Mississippian period, ca. AD 1400-1600. Data was collected from three sites, including the Murphy, Hovey Lake, and Caborn site, all located in Posey County, IN. An analysis of 1412 end scrapers, stone tools used for hide-processing, reveals

similarities in length, width, thickness, and plan-view shapes, suggesting shared crafting styles. Additionally, further investigations were made through site locations, chert distribution, and frequency of end scrapers throughout the Mississippi River Valley. This project compares potential shared lithic technology, possibly pointing towards a deeper connection between these two groups and likely cultural exchanges.

The Breast Cancer Gene

Madison Hahn

Faculty Mentor: **Dr. Rex Strange**

This project investigates the BReast CAncer-1 gene (BRCA-1), which has been strongly associated with an increased risk of breast cancer. While this gene is not solely responsible for the development of breast cancer, over 200 different mutations are known of this gene that have been linked to an increased risk of breast cancer in both males and females. This gene is located on the long arm of chromosome 17 and codes for the BRCA-1 protein which normally repairs double-strand DNA breaks, thereby acting as a tumor suppressor and cell cycle regulator. The most common mutations in the BRCA-1 sequence are a deletion at position 185 (exon 2) and an insertion at position 5382 (exon 20). Mutations to BRCA-1 are more common in Ashkenazi Jewish populations due to the small and isolated founding group of ancestors. This research follows a meta-analysis of 13 publications from multiple peer-reviewed sources such as the National Institute of Health, the Archives of Pathology and Laboratory Medicine, and the International Journal of Molecular Sciences.

ASME e-HPVC

Jonas Hollis

Faculty Mentor: **Dr. Milad Rad**

The 2025 University of Southern Indiana (USI) American Society of Mechanical Engineers (ASME) Student Organization is proud to introduce our newly designed electric-assist human-powered vehicle (eHPV), which we will be showcased at the ASME e-Human Powered Vehicle Challenge (eHPVC) in Charlotte, South Carolina on April 26–27. This project not only highlights newfound training (such as welding) and technical skills (design) but also marks a fresh start for USI's ASME student chapter, which had been previously disbanded and inactive for a time. With a brand-new team, made up of 1st year and 2nd year students, and no prior materials to guide us besides the web, this initiative became an opportunity to reconnect with competitive engineering, a way for young engineers to learn problem solving, and to lay a strong foundation for a student organization we hope will thrive for years to come.

Our 2025 vehicle features a sturdy galvanized steel pipe base for durability and impact resistance, paired with lightweight aluminum connectors bolted together for easier assembly and transportation, as it can be packed up completely and not one single piece. It is powered by a 500W motor and a 48V 500Wh lithium-ion battery. The design follows tricycle configuration, prioritizing stability, safety, and control. Key safety features include a 5-point harness, a rollover protection system (RPS), an emergency shutoff, and

reflectors. Our testing shows that the vehicle meets the brake and handling standards set by eHPVC regulations.

Beyond the technical achievements of our members, this project has revitalized an important engineering organization on our campus, sparking renewed interest in hands-on design, collaboration, and outreach within the STEM fields. The vehicle integrates multiple branches of engineering, including Mechanical, Electrical, and Manufacturing.

Throughout the project, our team focused heavily on simplicity, qualities that ensure the vehicle's adaptability for future competitions and continued growth within our chapter. It is what you would call "bare bones," but it is built in the purpose of function. In short, our 2025 eHPVC entry is more than just a competition entry to us and USI, it is a goal of reestablishing ASME's presence at USI. Just like the vehicle, we also plan to continue using the stepping stone of this competition to build ASME to be a respected student organization on campus. We are excited to compete in South Carolina and proud to demonstrate what can be achieved through determination, teamwork, and creativity.

Mochaware Bottlenecks

Allie Howell

Faculty Mentor: **Ms. Alisa Holen**

Historically, pottery has been an important indicator of cultures across the world. It has told us the stories of how people before us lived through ritualistic art, decorative art, and functional art. Bottlenecks, while beautiful, remain to be one of the hardest shapes to throw on the pottery wheel. Nevertheless, they are classy figures with narrow necks and wide bellies. Mochaware was developed in the 18th century in England. It is a fascinating process that involves the chemical structures of an acid-colorant mixture and clay itself. This technique leaves the surface with dendritic tendrils. Lastly, soda-firing is final practice used on these pieces; in the midst of firing, baking soda was shoveled into the kiln, leaving the mochaware bottlenecks with a "flash."

Does Knowledge Entail Justification?

Drake Hubert

Faculty Mentor: **Dr. Chad Gonnerman**

A chief problem that epistemologists wrangle with is the problem of justification as a necessary component of knowledge. This study is a continuation of a study conducted by Gonnerman et al. which surveyed participants by asking them to say whether a person would be justified in believing a knowledge proposition, assuming the knowledge proposition was true (i.e. If Person A believes proposition X, and proposition X is true, are they justified in believing proposition X?). That study found a small, but statistically significant gap between justification assertions and knowledge assertions. Our theory was that this gap is a result of misinterpreting the knowledge claims in non-literal ways (i.e. interpreting the term "knows" as anything other than "Person A literally knows that proposition X is true). Therefore, this study was conducted in a similar way but included an "Interpretation Check" which ensured that the participants

were interpreting knowledge claims in the literal sense. The results showed that, when only taking into account the participants who interpreted knowledge claims literally, the gap between justification and knowledge ceases to be statistically significant. This suggests that the epistemological problem of justification as a necessary component of knowledge may be explained more precisely as: There is evidence to suggest that justification is a necessary component for knowledge, but our understanding of this remains incomplete. The next step of this study would be to re-conduct the first study (i.e. study 3) and only change it by adding an interpretation check. If such a study yielded the same results as study 2, there would be reason to believe that justification is a necessary component for knowledge so long as the term "knows" is interpreted literally.

Paleoclimate Interpretation from the Study of Plant Fossils from the Bond Formation (Upper Pennsylvanian, Missourian) at the Old Dam Site near New Harmony, Posey County, Indiana

Taryn Joest

Faculty Mentor: **Dr. William Elliott**

The Bond Formation (Upper Pennsylvanian, Missourian) of the McLeansboro Group consists of shale, siltstone, and sandstone with subordinate layers of coal and limestone. A partial exposure of the Bond Formation is accessible along the Wabash River southwest of New Harmony at the Old Dam Site. Plant fossils were collected from a dark gray shale just below a thin coal deposit, likely the Fairbanks Coal. Above the coal is a 5 cm bed of black shale with localized pyrite concretions, overlain by 50 cm of skeletal wackestone with disaggregated and abraded marine fossils; this latter unit is identified as the Riverview Limestone Member. The plant fossils were collected in late August 2024 by excavating approximately 1 square meter of shale. In the lab, the specimens were sealed with clear acrylic to preserve and enhance their durability. Plant fossils were identified to genus and/or species using a 10x hand lens, Olympus 20x to 40x binocular microscope, and by comparing morphological features to reference collections and published literature. The most common fossils are Medullosans, dominated by Neuropteris. Multiple individual pinnules of *Macroneuropteris scheuchzeri* occur in samples dominated by *N. flexuosa*, *N. ovata*, and *N. vermicularis*. There is a moderate abundance of Calamites, Cordaites, and Cyclopteris, along with *Annularia sphenophylloides* and *N. fimbriata*. There are some trace occurrences of *Sphenophyllum dubium*, *Sphenophyllum emarginatum*, and *Sphenopteris elegans*. The genera identified are typical of the Late Pennsylvanian and are consistent with a wetland environment associated with a broad, river-dominated delta complex, but also indicate a paleoclimate with marginally drier conditions than the Early Pennsylvanian. This gradual shift in flora away from true ferns and lycophytes, which were absent in the collected samples, indicates an environment that is seasonally, or on average, much drier in comparison to the tree-fern and lycopsid-rich swamps of the Lower Pennsylvanian.

Bridging the Gap: Medication Education in Assisted Living Residents

Lillian Kemper and Jhay Quirante

Faculty Mentor: **Mrs. Amy Pierce**

Working in healthcare exposes professionals to widespread health literacy deficiencies among patients and the general public. However, it also presents numerous opportunities for healthcare workers to address this gap. Properly understanding medication regimens is essential for improving the health and autonomy of residents in assisted living facilities. Our project aims to bridge this knowledge gap at North River Assisted Living by providing clear, accessible information about medications and collaborating with the facility's team. We will implement interactive workshops to educate residents on medication purposes, potential side effects, proper management, and the importance of adherence. To coordinate these workshops, we will work directly with the assisted living facility manager to schedule appropriate dates. Through these workshops, we hope to empower residents to take an active role in their healthcare while fostering open communication between residents and staff. To assess the project's effectiveness, we will administer pre- and post-surveys to evaluate residents' baseline knowledge and identify areas for further education. Survey questions will include: "How comfortable do you feel asking nurses questions about your medications?", "How often do you discuss your medications with nursing staff?", "Do you know why you are taking your medications?", and "Are you aware of your medication's side effects?" The results of the pre-survey will guide our workshop content, ensuring it meets the residents' educational needs. During the workshops, residents will be encouraged to ask questions about educational posters and engage with staff and nursing students, promoting autonomy and expanding their understanding. For equitable access, the workshop can also be brought directly to residents' rooms. After the sessions, post-surveys will help measure the workshops' effectiveness and provide feedback on whether they should continue in the future. This project aims not only to enhance medication education at North River Assisted Living but also to highlight the crucial role healthcare workers play in educating the public about medications and health-related topics.

Students' Attitude Changes Toward Individuals with Disabilities Through Prescribed Exercise Programs

Kaitlyn Knox and Megan Bass

Faculty Mentor: **Dr. Alyssa Weatherholt**

This study investigated if prescribing and teaching exercise programs at a community center influenced students' attitudes toward individuals with disabilities. This is a descriptive research study with one group. The independent variable is the students who prescribe the exercise. The dependent variable is attitudes toward individuals with a disability. Twenty-three college-age participants were found, with an average of 0.8 ± 1.0 years of experience working with individuals with disabilities. A Qualtrics survey assessing attitudes, descriptive statistics, and dependent t-tests were used. Out of 30 survey questions, 3 showed significant changes in students' attitudes. Firstly, students perceived individuals with disabilities as less conscientious than others (-0.9 ± 2.0, p = .045). Second, they believed that individuals with severe

disabilities worry more about health than those with minor disabilities (1.3 ± 1.7, $p < .001$). Lastly, the students acknowledged that most individuals with disabilities can care for themselves (1.0 ± 1.7, $p = .011$). The findings indicate a shift in students' attitudes toward individuals with disabilities following the intervention. The students perceived individuals with disabilities as less conscientious, recognized that those with severe disabilities have greater health-related concerns compared to those with minor disabilities, and acknowledged that most individuals with disabilities are capable of self-care.

Ivy Tech Campus Tour

Michelle McCarty

Faculty Mentor: **Dr. Kevin Valadares**

This honors project aims to foster community engagement by connecting students from Ivy Tech Community College of Evansville with opportunities to further their education at the University of Southern Indiana (USI). As a transfer student from Ivy Tech, I did not have the chance to visit and learn about the opportunities at USI before beginning my coursework, but I wanted to give the current students this opportunity. This initiative will introduce Ivy Tech students to the academic and professional opportunities available at USI, specifically within the Kinney College of Nursing and Health Professions. Under the guidance of Dr. Valadares, Ivy Tech students from the Surgical Technology and Medical Assisting Health Science programs, along with their program chairs, will participate in a campus tour. They will have the opportunity to connect with admissions and financial aid. Additionally, students will experience a Health Informatics class, gaining firsthand insight into the academic environment. Also, information about the Honors Program will also be shared and discussed. The visit will conclude with a Q&A session, providing students with the opportunity to ask questions and engage in meaningful discussions, followed by lunch. This project serves as an essential step in creating a seamless transition for Ivy Tech students interested in advancing their education at USI, fostering awareness, and strengthening academic collaboration between the two institutions.

Yankeetown v. Duffy Site Ceramic Analysis

Nicholas Mack

Faculty Mentor: **Dr. Michael Strezewski**

Yankeetown culture, located in southwestern Indiana and adjacent areas, lasted from AD 700 to 1100. This Late Woodland culture is known for its large numbers of decorated ceramics. The focus of this project is to examine the decorated pottery from both the Yankeetown site, located in Warrick County, Indiana, and the Duffy site, located in southern Illinois, to see if there any differences in the types or frequencies of decorative motifs between the two sites. Both collections are housed at USI. My goal is to compare decoration types from both sites and provide an analysis of the sherds collected. A total of 300 plain sherds were recovered from the Yankeetown site, while 250 were found at Duffy. Analysis of the pottery indicates that while a large percentage of the pottery was decorated at both sites, the percentage is lower

at Duffy. Though the Duffy site exhibited a lower percentage of decorated sherds, their pottery is more detailed and "thought out."

Demystifying Gender Affirming Care

Jenna Malone

Faculty Mentor: **Dr. Wendy Turner**

Gender identity and gender affirming care are highly contentious topics in America's current political climate. Today, 26 states have attempted to or successfully banned gender affirming care for individuals under the age of 18. Furthermore, a recent executive order by the Trump Administration bars federally funded agencies from "promoting gender ideology" to all ages. These policies directly impact evidence-based social work practice with transgender, nonbinary, and gender diverse clients.

This exhibit challenges the common notion that only queer people engage in gender affirming care. The current scientific consensus is that gender refers to a sense of identity constructed from the social norms, expectations, and roles assigned to males and females (National Academies of Sciences, Engineering, and Medicine, 2022). Everyone engages with these norms, expectations, and roles across their lifespan to express their identity, even if their gender aligns with their sex assigned at birth.

I gathered items from friends, family, and peers that they use in their daily lives to affirm their gender. These items are displayed alongside the individual's self-reported gender identity, pronouns, and age. The display is supplemented by a poster presentation of how and why gender affirming care is important for competent social work practice.

The goal of this exhibit is to demystify the term "gender affirming care" and provoke viewers to think about how they express their own gender identity. It seeks to humanize transgender, nonbinary, and gender diverse people by visualizing shared experiences. For social workers and other helping professionals, this exhibit suggests creative and accessible tools for practitioners to offer clients experiencing gender dysphoria under increasing legal limitations.

Pregnancy and Substance Use: A World Without Stigma

Christan Manning

Faculty Mentor: **Ms. Jean Zelenko**

Substance use disorders (SUD) during pregnancy pose critical challenges for both mothers and their babies. Pregnant and postpartum women with SUD often face stigma, fear, and systemic barriers that prevent them from seeking the necessary care and support. This project highlights the importance of culturally competent social work practices, as outlined in the Council on Social Work Education (CSWE) Competency 6, to successfully engage with this vulnerable population. Competency 6 emphasizes the integration of person-in-environment (PIE) frameworks, empathy, reflection, and interpersonal skills to provide culturally responsive support.

This poster presentation will explore key negative outcomes of SUD during pregnancy, including increased risks of miscarriage, stillbirth, neonatal abstinence syndrome (NAS), and foster care placements.

It will also address the stigma and fear these women experience, which often leads to avoidance of care. To mitigate these challenges, the presentation will focus on best practices such as trauma-informed care, harm reduction strategies, and medication-assisted treatment (MAT), while being mindful of the context of cultural competence.

The project introduces "The Healing House," an innovative program facilitated by the Lawrence County Health Department in Lawrenceville, Illinois. This program offers comprehensive support for pregnant and postpartum women, addressing stigma through education and recovery-focused interventions. The presentation will feature a detailed curriculum for the program, alongside educational flyers and resources.

By combining theoretical insights and practical tools, this poster aims to educate and empower social workers and healthcare providers to engage empathetically and effectively with pregnant and postpartum women facing SUD, ultimately fostering a world without stigma and improving outcomes for both mothers and their children.

Designing a Remote-Controlled Aircraft for the 2024 SAE Aero Design Competition

Cesar Mendez De Leon

Faculty Mentor: **Dr. Julian Davis**

The Society of Automotive Engineers (SAE) Aero Design competition allows students to gain real world experience by applying concepts learned within their engineering education to a real-world application. The competition challenges students to design and build a fixed wing, all-electric, remotely controlled aircraft. The team participated in the regular class, where the focus was to design an aircraft to maximize carrying capacity while performing under a 750-watt power constraint. Based on thorough research, the team finalized crucial design aspects for the aircraft. These decisions included the implementation of the Eppler 423 airfoil for the wings, ensuring optimal lift and aerodynamic performance. Complementing this, the NACA 2412 airfoil was selected for the tail to enhance stability and control. Furthermore, the team chose aluminum, steel, and balsa wood as the primary construction materials, balancing strength, weight, and cost-effectiveness. In April 2024, the University of Southern Indiana team competed in California, achieving 3 successful flights, including one carrying a 7.2 lbs. payload. The team's performance earned them 7th place for flight score and 15th place overall.

The Science Behind the "Science of Reading"

Abigail Mitchell

Faculty Mentor: **Dr. Stacey Murray**

This study explores the origins of the "Science of Reading", an approach to reading instruction that has surged in recent years, as well as the research that stands behind it. By considering debates that have sparked over this approach, studies that either support or oppose its effects, and strategies that have been utilized in classrooms, a conclusion is drawn as to whether or not the Science of Reading satisfies

the expectations educators should have towards their instruction. In addition to judging SoR's longevity in education, this study also aims to provide context on how this revolutionary approach has grown into what it is today. Many educators have been instructed by administration or government policies to incorporate this method into their teaching without knowledge of the science behind it, so this aspect of SoR is also discussed.

Alt in the 812: An Ethnographic Study of Local Punk Culture

Kaz Mull

Faculty Mentor: **Dr. Stephanie Young**

This ethnographic study examined the hardcore punk music culture within a midsized Midwestern city. While there are many stereotypes of alternative music culture, little scholarship, specifically communication research, has focused on punk culture (Herrmann, 2012). By examining the lived experiences of individuals within this subculture, I seek to understand punk's role as a form of self-expression, resistance, and identity formation for its members. I used an ethnographic approach to this project, as it is a "research strategy that allows researchers to explore and examine the cultures and societies that are a fundamental part of the human experience" (Murchison, 2010, p. 4). Themes emerged from fieldwork and interviews: socialization and relationships, identity as one entity, acceptance and expression, dedication, support and defense, positivity and humor, and rules. Additionally, a close textual analysis (Foss 2009) of the pub where these shows occurred was analyzed. By taking up a visual rhetorical analysis of the space, I examined how the artwork and artifacts expressed shared beliefs of the culture and how the space gathers members to create a sense of home for the alternative music scene. Ultimately, this ethnography hopes to contribute to a more nuanced communicative perspective of the culture of Punk.

Incarceration and Pregnancy

Treasure Nickelson and Katherine Thombleson

Faculty Mentor: **Dr. Gina Schaar**

The criminal justice system and pregnancy are not two things that are often associated with each other, but with the rise of female prison inmates, it is becoming more and more of a concern. Incarcerated women often have risk factors for poor pregnancy outcomes due to factors that were attained before incarceration such as alcoholism, substance abuse, poor nutrition, and overall deficient health. Despite this, when compared to similarly disadvantaged groups in the United States, pregnant women who were incarcerated during their pregnancy showed lower number of low birth weights and still births. However, being incarcerated during pregnancy still puts a patient at risk for numerous negative outcomes, such as inadequate prenatal care, lack of education, psychological trauma, postpartum depression, and most of all, lack of a support system. Our research explores the combination of incarceration and pregnancy, emphasizing the need for reform in the criminal justice and healthcare systems to ensure the health, dignity, and rights of pregnant incarcerated individuals. It advocates for policies that prioritize the health

of both incarcerated mothers and their children, aiming to address the inequalities and challenges faced by this marginalized group.

France's Impact on Global Cuisine through Colonialism

Linh Nguyen

Faculty Mentor: **Dr. Alexandra Natoli**

French cooking has been established as one of the most respected cuisines in the world, known for its fresh ingredients, creative presentation, and simple flavors. Its techniques, main ingredients, and basic composition have become the foundation of modern-day cooking and inspired many dishes around the world through France's long history of colonization. Some famous dishes today that are strongly linked with the identity and culture of people in that region were born out of French settlement and the consequent blending of both cultures. An example of this dish is bánh mì, a Vietnamese street food that combines the French baguette and Vietnamese meat fillings, emerged from the French colonial period of Vietnam in the 19th century. I will create a cookbook that aims to synthesize the relationship between French cuisine and colonialism. The book will include an introduction describing the relationship between colonialism and food as well as five recipes from countries around the world that were born as a result of French colonialism, such as Morocco, Vietnam, and the Louisiana region in the US. Along with the recipes, there will be a short excerpt describing the history of this dish and its link with French colonialization of the area.

A Lecture on GLP-1 and GLP-1 Receptor Agonists

Caden Porter

Faculty Mentor: **Dr. Kimberly Delaney**

The increasing popularity of medications like Ozempic has led to questions about their underlying mechanisms and effects. This lecture delves into the molecular biology of glucagon-like peptide-1 (GLP-1) and how this endogenous hormone is secreted from specialized cells in the gastrointestinal tract to cause certain effects in the body. In addition to the GLP-1 hormone, this lecture discusses the types of GLP-1 receptor agonists that were developed to mimic the effects of GLP-1 with an enhanced duration compared to the natural hormone. The use of these GLP-1 receptor agonists (GLP-1 RAs) has the potential to help numerous people, but tradeoffs must be considered, such as the need for chronic use, potential negative side effects, cost, and the risk of substituting medication for behavioral and dietary changes.

Understanding the Vital Foundations of Effective Project Management

Parker Provost

Faculty Mentor: **Dr. Fernando Ferreira**

Almost everything we interact with on a daily basis is - in some form - a business process. Whether it be the food we eat or how we interact with each other, business plays a vital role in it all. Project managers play an essential role in the success of a business both externally - the project itself - but also internally - how employees interact with each other and the work at hand. The purpose of my project is to provide the foundational skills of effective project management, as a company's success is often a reflection of the success and capability at the top. Although technology has made communication exceptionally easy, it seems that these developments haven't yielded more effective communication. As an individual navigates the website, future managers and professionals alike can use the interactive links to not only gain a deeper understanding of project management and leadership but also use the examples and templates provided throughout the website for their own endeavors. Successful completion of the website will enhance users' understanding of effective project management, including how to be a good leader and how to communicate with a group.

Science of Reading Teaching Demo in an 8th Grade ELA class

Ivys Quintana Leira

Faculty Mentors: **Drs. David O'Neil and Cacee Mabis**

This capstone project addresses the need for improved literacy instruction in secondary education, focusing on the Science of Reading's application to morphology. With an alarming increase in literacy problems among U.S. students, research-based strategies are necessary. This project originates from observations in an 8th-grade classroom where most students performed below grade level on assessments, and the initiative to apply Science of Reading strategies from EDUC358 (Literacy Strategies). In order to support struggling students, the student teacher developed a morphology teaching demo that emphasized prefixes and root words relevant to the curriculum. The lesson included a pre-lesson worksheet, a Kahoot game, a slideshow, and a collaborative word-sorting activity. The teacher assessed student progress through a post-lesson quiz and collected reflections. Results showed that most students successfully identified prefixes and root words, demonstrating increased recognition of morphemes. After the demo, many students improved their morpheme comprehension and shared positive feedback on the lesson's engaging activities. These findings suggest that short, interactive activities help students understand abstract linguistic concepts more effectively. The project highlights the need for consistent grammar and literacy instruction in secondary curricula. Schools should integrate frequent, concise morphology lessons rather than relying on students using lists of morphemes during tests. However, time constraints and strict curricula make it difficult to implement Science of Reading strategies. This project demonstrates how these strategies effectively support struggling readers in secondary classrooms.

Anxiety: Presentation, Treatments, and the Effects of Social Media

Sydney Rendes

Faculty Mentor: **Dr. Brent Summers**

My presentation gives a brief overview of anxiety and then goes on to explain how it commonly presents itself. It also shows the different drugs used to treat anxiety and their mechanisms, along with how social media influences anxiety.

Echoing Ideations

Bailey Roby

Faculty Mentor: **Mr. Rob Dickes**

Echoing Ideations is a triple - projection art piece that has both a musical and visual components. The Endeavor award allowed me to purchase the three projectors and other software to be able to physically create this 3-wall projection installation. For this piece, I started by making a musical component that would shadow over the entire installation. After I created the music, I listened the music and danced to the music with what felt natural to the musical queues and high points. Once I recorded a multitude of dances, I overlaid these videos and the dances at certain high points in the music to represent the idea of multiple thoughts racing through my head at one time. Once the dance video was finalized, I created the animated writing videos that would be projected on the walls to the left and right of the dance video. I first installed this piece at the New Harmony Gallery of Contemporary Art where it showed throughout the summer- and then secondly I showed this piece in the USI student gallery. Echoing Ideations is a depiction of a very challenging point in my life and through the process of creating and demonstrating the piece I allowed myself to work through that time using this piece as a means to heal and focus my energy.

Criteria of Courage: Personally and Normatively Defining Courage

Timothy Rosignal

Faculty Mentor: **Dr. Andrew Buck**

Many philosophers, authors, and researchers have defined courage, but the definition has never been consistent. There is much disagreement on courage. While a definition should be straightforward, the social application of the word and its use by members of a society makes the term more complex. A personal definition of courage hinges on the presence of fear. The experience of emotion, specifically fear, is unique to everyone, yet people utilize their experience with emotion to read others' behavior, assuming a false consensus of fear. This analysis discusses how a personal definition of courage is not wrong but should be considered separately from the utilization of the term in social contexts. The social perception

of an individual as courageous is not based purely on the presence of fear, but instead on the subjective assumptions on the thoughts and behaviors of others; thus, a normative definition of courage, based on previous ideas of courage as a virtue from the work of Plato, Aristotle, and Aquinas, should be used to describe courage within social instances.

Design and Analysis of a High-Altitude Balloon Camera Stabilization System

Elise Schultheis and Deznee Kinsey

Faculty Mentor: **Dr. Julian Davis**

On April 8th of 2024, a total solar eclipse occurred, and the path of totality crossed North America, including parts of Indiana. A high-altitude weather balloon with a camera stabilization system attached was launched into the atmosphere. The goal was to capture footage of the shadow of the Moon cast on the Earth during the progression of the total solar eclipse. High altitude balloons have been used to view eclipses and their shadows from the atmosphere but have had many challenges when it comes to stabilizing the payloads so that a clear image or video can be taken. This team re-designed a camera stabilization system from a previous USI research project. The camera stabilization system included a magnetometer, an accelerometer and gyroscope, two Arduinos controlling a stepper motor, a GoPro camera, an aluminum connecting bar, and a rotating plate. The team's final design consisted of the rotating plate epoxied and tack welded to the connecting bar with the GoPro camera attached. The results from finite element simulations, which assumed a fully welded connecting bar and rotating plate did not appropriately model the final design. These inaccuracies in the modeling assumptions led to failure of the connection upon landing. However, during flight, the GoPro camera captured videos indicating the system was operational but was unable to capture a fully stabilized image.

Gene Editing: Advancements from Early Techniques to Modern CRISPR/Cas9

Jada Smith

Faculty Mentor: **Dr. Kimberly Delaney**

Gene therapy has undergone an incredible transformation from early experimental approaches to revolutionary technologies like CRISPR/Cas9. Traditional gene therapy, developed in the 20th century, relied on viral vectors to deliver functional genes into patient cells and was aimed at fixing defective or missing genes. While it was an exciting milestone for medicine and biology, these methods often faced challenges including immune responses, off-target effects, and minimal precision. In contrast, modern gene-editing technologies, such as CRISPR/Cas9, use base or prime editing to offer a more targeted approach. These methods have been shown to be more efficient and safer than previous technologies. These methods enable precise DNA alterations at very specific locations in the genome which allow for minimized off-target effects. This poster compares the mechanisms, advantages, and limitations of traditional and modern gene therapy approaches. By examining the progression of gene editing, we can draw conclusions towards advancements in treatments in medicine. While early gene therapy paved the

way for modern technologies, today's precise genome-editing tools hold promise for safer and more effective treatments, bringing personalized medicine closer to reality.

Binary and Beyond: Physical Appearance Preferences in Partner Selection among Bisexual, Gay, and Heterosexual Individuals

Cassidy Sozio

Faculty Mentor: **Dr. Urska Dobersek**

Sexual selection in human heterosexual populations is well-established. Females, more than males, prefer partners exhibiting social and physical superiority, while males seek younger and more attractive partners. However, relatively few studies examined attractiveness and body size preferences in non-heterosexual populations—especially bisexual individuals. To close this gap, we explored attractiveness (n = 1296) and body size (n = 1234) preferences in bisexual, gay, and heterosexual individuals in a cross-sectional analysis. Consistent with the evolutionary mating perspective, heterosexual males preferred more attractive and relatively smaller-bodied mates compared to heterosexual females, who preferred mates with less attractive and larger body sizes. Preferences among gay and bisexual individuals were more heterogeneous, reflecting diverse influences beyond traditional sex-typical patterns. These findings support established theories in heterosexual contexts while emphasizing the importance of considering diversity within non-heterosexual populations.

Scaling up Hydration: Water and Lipid Interactions in the Stratum Corneum of the American Alligator (*Alligator mississippiensis*)

Maxwell Stoll

Faculty Mentor: **Dr. Alex Champagne**

Lipid molecules in the stratum corneum (SC) play a crucial role in the barrier function of the skin by preventing water loss while also binding to water molecules to maintain hydration. In the American Alligator (*Alligator mississippiensis*), the SC's lipid composition closely resembles that of birds, reflecting their shared evolutionary history. However, it is unclear whether these lipids interact with water in a manner similar to birds. In this study, we investigate the effects of hydration on SC lipids by exposing samples (n=9) to 0%, 75%, and 100% relative humidity (RH) at 33^{o}C for 24 hours. We used infrared spectroscopy to analyze the relative strength of hydrogen bonding and the prevalence of gauche defects in lipid chains. Furthermore, we analyzed the same variables in samples exposed to 100% RH comprised of deuterated water (D_2O). Exposing the samples to D_2O allowed us to precisely differentiate the hydrogen bond strength in water from the hydrogen bonding contributions of other hydroxyl groups in the SC because -OH stretching absorbance peaks are located in a different region of the infrared spectrum. We found that the strength of hydrogen bonding in the SC decreased after exposure to 100% RH, but analysis of the -OD stretching region confirmed that elements of the SC continue to influence hydrogen bond strength even at high water content. Additionally, the number of gauche defects in lipid chains did not

change in response to hydration with H_2O or D_2O, with lower variability in gauche defects upon exposure to D_2O. Taken together, our results indicate that polar lipids bind with and sequester water molecules outside lipid layers in a manner similar to that observed in bird SC and may play a role in hydrating the skin.

USI Combat Robot for UIUC Robobrawl 2025 Competition

Jacob Vawter, Wyatt Ellerbrook, Hunter Russell, Keaton Youngblood, and Jason Meeks

Faculty Mentor: **Dr. Todd Nelson**

Combat robotics provides a considerable outlet to exercise an array of engineering knowledge including, but not exclusive to, materials, dynamics, design of machinery, and electronics. When confronted with the opportunity of competing in the annual UIUC Robobrawl competition, it was determined a good project could be made from this. The end goal is thus to design and build a fighting robot to compete in the annual UIUC Robobrawl competition on April 4, 2025. Due to the large undertaking of this project, the cost to produce such a bot would be substantial for a Senior Design project and therefore will be funded by both the USI Endeavor Grant and the USI Engineering Department. The Endeavor Grant was able to provide $2500 for the project, and the Engineering Department will help fund the remaining $1500. We will discuss the motivation and research of past projects required to conceptualize and design the robot. Furthermore, both the desires and rules that the robot must meet will be examined, followed by a discussion of conceptual designs. Lastly, the final design and its computations will be deliberated on to justify the decisions made and show what will be completed for the Senior Design capstone course.

Collaborative Care in Action: Enhancing Healthcare Through Interprofessional Education Simulations

Katie Wagler and Jessica Fauquher

Faculty Mentor: **Mrs. Jordan Thomason**

Within health professions education, interprofessional education (IPE) is a tool that is becoming more widely utilized and recognized for its vital role in preparing students for real life situations they will face in the workplace. With the use of IPE simulations, students report feelings of increased levels of preparedness and comfort due to the new approach of education (Patten, D. A., & Fieler, G., 2019). For this project, our aim was to create a simulation students enrolled in the Kinney College of Nursing and Health Professions would be able to participate in, allowing for an increase in their readiness for work after graduation.

To do this, we broke down a clinical case study involving collaborative care from many different teams of health care professionals surrounding a pathological process students will likely encounter while working in southern Indiana. Through interviews we conducted of various personnel employed locally and statistical research, we determined communication and expectations needed when treating this pathology to support the roles and responsibilities outlined in our simulation. This multi-step, multi-team

experience involving multiple programs within the college further adds to the excellence of education students receive while at the University of Southern Indiana.

Plan to Attend

The 2026 Endeavor Undergraduate

Research and Creative Work Symposium

University Center

Thursday, April 9, 2026

USI Endeavor Awards for Research & Creativity

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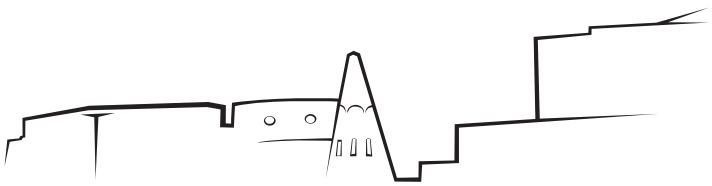

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