PENN STATE LEHIGH VALLEY

Undergraduate Research Symposium

April 10, 2025

PennState
Lehigh Valley

WELCOME TO THE PENN STATE LEHIGH VALLEY
Undergraduate Research Symposium

Thank you for attending today's celebration of undergraduate research scholarship at Penn State Lehigh Valley. In our midst are thirteen undergraduate research projects representing the academic excellence of students on our campus. The student researchers behind these posters asked pivotal questions and will share important data and/or discoveries on a variety of topics.

Undergraduate research experiences benefit both students and our society. These experiences allow students to participate in a scholarly apprenticeship with a faculty member that (1) engages their intellectual curiosity, (2) promotes their critical thinking, (3) gives them an outlet for their creativity, (4) enhances their proficiency in oral and written communication, and (5) allows them to explore career directions.

Essentially, undergraduate research experiences help shape students into the next generation of problem solvers, researchers, inventors, visionaries, artists, and/or entrepreneurs. These student researchers gain the confidence, knowledge, and skills to tackle the many issues, challenges, and realities facing our world today.

Our campus is fortunate to have outstanding faculty who publish their research and/or creative accomplishments in prestigious academic journals and share their work at national and international conferences. Even more impressive, many of these faculty members invite undergraduates to carry out independent or course-based authentic research while taking quality time to mentor and guide them through the research process. This is a tremendous opportunity for our students — the kind of opportunity typically afforded to graduate students in research intensive programs.

During today's event, student presenters will share their research using their posters as visual backdrops to faculty judges and compete for awards. These students will be judged on their posters, oral presentations, and research aptitude as it relates to their projects. If students win at today's event, they may be invited to present their work at the Penn State Eastern Regional Undergraduate Research Symposium to be held at Penn State Brandywine on April 26, 2025.

An event like this does not happen without the hard work of many talented and devoted faculty and staff, especially the mentors of the students who will showcase their work today. Many thanks to all these exceptional people and the members of the organizing committee, the judges, and our maintenance staff.

It is now my pleasure to encourage everyone to meet our student scholars and engage in academic discussions to provide them the opportunity to showcase their hard work and research.

Tina Q. Richardson, Ph.D.
Chancellor, Penn State Lehigh Valley

PENN STATE LEHIGH VALLEY
Undergraduate Research Symposium

The Penn State Lehigh Valley Undergraduate Research Symposium showcases high-quality undergraduate student faculty collaborative research and scholarship in all fields of academic study by students enrolled, or previously enrolled within the past academic year, at Penn State Lehigh Valley.

The event provides an opportunity to bring together college students, faculty, expert judges, and the public at large to share in the experiences, knowledge, and original thinking of students engaged in research.

STUDENT PARTICIPANTS

Tracey Charles	Nathan Peters
Brooke Crossley	Braden Pierce
Farishta Faruk	Gabriel Roman
Fiona Liu	Madalyn Saylor
Alex Martinez	Muhammadmahdi Shivji
Ana Mercado	Benjamin Shoemaker
Samreen-Joy Minhas	Dylan Sarkozy
Cora Oberly	Michelle Tatidoum
Kiara Padilla	Jessica Urquiza

SPECIAL THANKS TO JUDGES AND MENTORS

JUDGES

Science, Technology, Engineering, Mathematics

Dr. Dale D Edward Malinzak
Richard Martin
Alison Bonner

Arts, Humanities, Business, Social and Behavioral

Colleen Krchelich	Dr. Tracy Carbonetto
Dr. Kevin Kelly	Dr. Jackie Mclaughlin
Dr. Maung Min	Teri Kistler
Dr. Samantha Beebe	Liz Kepner

University Libraries Excellence in Information Literacy

Jen Jarson
Elizabeth Nelson
Lisa Rand

Alternates

Dr. Andjela Kaur
Dr. Subhadra Ganguli

MENTORS

Dr. Subhadra Ganguli	Dr. Jennifer Parker
Dr. Andjela Kaur	Dr. Jeffrey Stone
Dr. David Livert	Dr. Brenna Traver
Dr. Jacqueline McLaughlin	

PLANNING COMMITTEE MEMBERS

Dr. Elizabeth Flaherty	Dr. Andjela Kaur
Dr Subhadra Ganguli	Larry Musolino (Chair)
Jen Jarson	Dr. Todd Retzlaff

KEYNOTE SPEAKER
Mia Peifer

Mia Peifer is currently pursuing a PhD in Cell and Molecular Biology at the University of Pennsylvania's Perelman School of Medicine. She graduated from Schreyer Honors College at Penn State in Spring 2024 with a BS in Biochemistry and Molecular Biology. As an undergraduate researcher in the Hanna-Rose Lab at Penn State, she investigated how disturbances in genes involved in purine metabolism contribute to the neurological and muscular symptoms associated with inborn errors of purine metabolism. Her extensive research as an undergraduate resulted in her co-authorship of two publications and a presentation at the 24th International *C. elegans* Conference in Scotland. She also served as an Undergraduate Research Ambassador, mentoring students interested in research and creative scholarship.

SCHEDULE
Thursday, April 10, 2025

8:00–9:30 a.m.	Setup, Breakfast, Tea and Coffee
9:30–10:00 a.m.	Welcome and Introduction by Aníbal Torres, Ph.D., Chief Academic Officer and Professor
10:00 a.m.–noon	Judging and Presentation/Exhibition of Student Scholarship
Noon–1:00 p.m.	Introduction of Speaker: Larry Musolino Assistant Teaching Professor, Mathematics
	Keynote Speaker: Mia Peifer Finding Your Path in STEM: Building Community, Cultivating Persistence, and Embracing the Challenges of Research
1:00 p.m.	Awards Ceremony

STUDENT PRESENTATIONS:
Science, Technology, Engineering, and Mathematics

STUDENT PRESENTER: Alex Martinez
FACULTY MENTOR: Dr. Brenna Traver

Ugly Bugs Need Love Too: The Impact of Attractiveness Bias in Insect Conservation

Conservation efforts are vital for maintaining ecological balance and preserving Earth's biodiversity. However, these efforts are often focused on species that humans view as attractive, which could potentially pull attention and resources away from equally important organisms that people find less charming. This bias can be detrimental to the conservation of insects as they are often stigmatized for their less appealing appearance. This study aims to determine whether such a bias is present in the context of animal conservation, specifically if an animal's perceived attractiveness affects a person's willingness to contribute to the conservation of that animal. Participants were college students who engaged in a virtual environment where they observed one of two butterflies: one with brightly colored, visually pleasing wings (physically attractive), and another with brown, camouflage-patterned wings (physically unattractive). Following this, participants were asked how much money they would be willing to donate towards the conservation of the butterfly. The results inform conservation efforts of biases that impact insects perceived as physically unattractive but are ecologically important.

STUDENT PRESENTERS: Farishta Faruk, Fiona Liu, Gabriel Roman, Benjamin Shoemaker
FACULTY MENTOR: Dr. Jacqueline McLaughlin

Using Basement Membrane Constituents to Study Endothelial Cell Growth and Glycocalyx Deposition In Vitro

The endothelial glycocalyx (EG) is an organized network of glycoproteins, glycolipids, proteoglycans, and glycosaminoglycans, predominantly heparan sulfate (HS), that lines mammalian blood vessels and faces the bloodstream. Despite its critical role in cardiovascular health, researching the EG in vitro remains a persistent challenge, primarily due to its vulnerability under traditional cell culture conditions. This study aimed to replicate in vivo substrate conditions in an attempt to evaluate the efficacy of five biologically relevant basement membrane proteins – collagen types I or IV; a mix of collagen types I and III; laminin; and collagen type IV layered with laminin – in promoting EG deposition and visualization using bovine aortic endothelial cells (BAOECs). Due to the known prevalence of collagen IV and laminin in the basal lamina, it was hypothesized that these substrates in a layered configuration would yield optimal confluency, classic morphology, and most identifiable EG after a 24-hour culture period. Cell confluency and morphology were assessed via phase-contrast imaging while EG deposition was evaluated through HS biotinylated streptavidin antibody immunofluorescence (IF) using ImageJ (NIH) quantification. The data supports the proposed hypothesis and adds to the current knowledge base for optimal in vitro culturing conditions for BAOECs in conjunction with quantifying EG deposition..

STUDENT PRESENTATIONS:
Arts, Humanities, Business, Social and Behavioral Sciences

STUDENT PRESENTERS: Madalyn Saylor
FACULTY MENTOR: Dr. David Livert

Friends and "Lifting"

A large body of research has documented the importance of friendship networks on adolescent behavior, particularly delinquent behavior (Azad, Hau, Karlsson, 2017; Houghton, S., & Bednall, J., 2010; Thomas, 2015). While previous research has investigated the independent effects of social exclusion and peer influence on adolescent behavior (Ling, 2017; Vásquez & Zimmerman, 2014), few studies have investigated their combined impact, especially in terms of the specified behaviors of shoplifting and graffiti. This mixed-method research study explores the influence of social networks on adolescent deviant behaviors, measured by shoplifting and graffiti involvement. A survey has been distributed to undergraduate students at Penn State Lehigh Valley, along with a series of follow-up interviews. Individuals with close social networks may be more likely to engage with deviant behaviors, if such behavior is consistent with network norms. Alternatively, weaker networks may be predictive of deviant behavior for individuals experiencing social exclusion. Both peer pressures to conform to norms and peer social exclusion can be viewed as distinct motivators for partaking in deviant behavior. It is through gaining a greater understanding of these motivators that interventions can be more accurately targeted towards reducing adolescent criminal behavior while also minimizing the harmful implications of shoplifting and graffiti behavior.

STUDENT PRESENTER: Cora Oberly, Kiara Padilla
FACULTY MENTOR: Dr. Andjela Kaur

How AI Helps Shape Research Questions? Insights from a Collective Autoethnography

Artificial intelligence, otherwise known as AI, is an increasingly relevant online software tool. Frequently, this tool is used in casual and academic settings alike in the hopes of gaining insights and data relevant to one's research. Our research examines the use of AI in a course on interdisciplinary and transdisciplinary research. After experiencing the use of AI to help students formulate research questions, we explore our insights from the perspectives of two students and one instructor in a single course. We use collective autoethnography as a method for our investigation into the limitations of AI to create probing research questions and to address the question of how AI could be considered a knowledge-based perspective in a transdisciplinary research process. The results of our study contribute to the scholarship on AI in higher education as well as to the understanding of collective autoethnography as a method of scientific inquiry.

STUDENT PRESENTER: Muhammadmahdi Shivji
FACULTY MENTOR: Dr. Jennifer Parker

From Arrival to Adaptation: Unpacking Sociodemographic Predictors and Temporal Trends in Immigrant Health Trajectories

The health status of immigrants in the U.S. is a multifaceted issue influenced by socioeconomic, demographic, and acculturation-related factors. This study examines how insurance coverage, length of U.S. residency, race/ethnicity, homeownership, education, and sex shape health outcomes among immigrants. Using data from the National Health Interview Survey (NHIS) (N=9,750), statistical analyses were conducted with SPSS to explore these relationships. Findings reveal that while insurance coverage increases with time in the U.S., self-reported health declines, particularly for Black and Hispanic immigrants. Stratified analysis by race/ethnicity highlights unique patterns: longer residency improved health for White (OR = 4.22, p < .05) and Hispanic immigrants (OR = 0.58, p < .01) but worsened it for Black immigrants (OR = 0.14, p < .01). Citizenship positively impacted health for Hispanics (OR = 1.32, p < .05) but negatively for Asians (OR = 0.57, p < .05). Younger age, higher education, and economic stability emerged as consistent predictors of better health, though disparities persist across groups. Moderation analysis showed that longer U.S. residency accelerates the decline in health with age. These findings underscore the need for targeted policies addressing group-specific barriers, including enhancing financial and housing stability, improving pathways to citizenship, and expanding culturally competent healthcare services. This study adds nuance to existing literature, emphasizing the importance of tailored interventions to mitigate health disparities among immigrant populations.

STUDENT PRESENTERS: Ana Mercado
FACULTY MENTOR: Dr. Subhadra Ganguli

AI Collaboration for Forecasting in Business Using Prompts - A Case Study Analysis: Using AI to Assist in Travel Planning

This research is about using AI and delving into its advantages and disadvantages. For this case, I will discuss the use of AI in the course ECON 481, which assisted me in travel planning. I will compare my work to AI's and highlight its pitfalls and upsides. My work will bring a student's perspective into the use of AI in the classroom.

STUDENT PRESENTER: Samreen-Joy Minhas
FACULTY MENTOR: Dr. Jeffrey Stone

Sexual Harassment In Video Games

Gaming has usually been stereotyped as a male-dominated space and industry. As of today, the gaming industry is made up of 70% men and 23% women—this is only up 3% from last year and 6% from five years ago. The effects of the majority-male industry is apparent in the design and culture of video games, where they portray highly sexualized or stereotyped versions of women. This can cause men to have more aggressive tendencies toward women in real life. In addition, due to the anonymous nature of video games and the high percentage of male players, gaming has created a culture where it is not only acceptable but encouraged to be hostile toward female and other minority players. This culture has caused a lot of harassment toward female players, making it harder for them to break into leading roles at video game companies, as well as esports.

My research focuses on 1) how companies detect harassment toward women, not only in-game but within their company, 2) how aforementioned companies punish harassment toward women, and 3) how companies can improve their detection and punishment methods to mitigate harassment and create a culture of inclusivity within video games—and within their corporations.

STUDENT PRESENTER: Tracey Charles
FACULTY MENTOR: Dr. Jennifer Parker

Stress, challenges, and coping strategies for student-athletes dealing with mental health struggles.

Athletes are frequently under pressure to uphold an illusion of mental toughness, which equates weakness with vulnerability. In addition to this stigma, people may refuse to talk about mental health issues out of fear of being judged, which could hurt their performance and general well-being. Teams should address this by creating a supportive and accepting atmosphere where open conversations about mental health are accepted. Teams can create safer environments that improve athletes' performance and foster a strong, respectful team culture by redefining mental toughness to include asking for help as a sign of courage and resilience.

STUDENT PRESENTER: Nathan Peters
FACULTY MENTOR: Dr. David Livert

Pornography Use and Its Effects Toward Gendered Attitudes and Sexual Behavior

While research has been limited and up for debate, there are studies that have uncovered correlations between pornography use, increased prevalence in stereotypical gendered beliefs and aggressive sexual behaviors. Bernstein and colleagues (2022) found correlations between pornographic viewing, stereotypical gendered beliefs such as perceiving women to be inferior and objectification, and potentially harmful sexual attitudes such as rough and violent sexual acts. Men were most affected by pornography use. Another 2016 study by Bridges et al. explored the relationship between pornography use and pornography-normative sexual behavior in heterosexual adults. Analysis showed that more frequent pornography use was linked with "higher engagement in or interest in trying sexual behavior consistent with pornographic scripts," (Bridges et. al 2016).

STUDENT PRESENTER: Brooke Crossley, Jessica Urquiza
FACULTY MENTOR: Dr. Jennifer Parker

Sun Knowledge and Behaviors: Understanding Motivations and Barriers to Sun Awareness Among Adults

The purpose of this study was to gain an understanding of what motivations and barriers influence adults to comply or not comply with sun protective measures. The current knowledge and daily behaviors of participants was measured using the The Skin Cancer and Sun Knowledge (SCSK) Scale and The Sun Protection Behavior Scale (SPBS). The data concluded statistically significant data about the relationship between people's knowledge of the risks of skin cancer and their behaviors. There was also a significant conclusion regarding different demographic categories such as age, gender, race/ethnicity, and personal/familial history.

STUDENT PRESENTER: Michelle Tatidoum
FACULTY MENTOR: Dr. Jennifer Parker

Healthcare Experiences and Reproductive Health Among College Women of Color

The healthcare experiences and reproductive health of college women of color are shaped by a combination of social, economic, and cultural factors that create challenges in accessing quality care. Research has found that challenges faced by college women of color often stem from systemic inequalities and personal interactions with healthcare providers, mistrust of the healthcare system, language difficulties, stigma surrounding reproductive health. Additionally, college women of color frequently face issues such as lack of insurance, cultural insensitivity, and bias within the healthcare system. One study (Rohrer & Modrek, 2023) found that university health services often failed to address the cultural and specific health needs of women of color. This study intended to qualitatively assess the experiences college women of color face in navigating the health care system today, emphasizing their perspectives on barriers, health outcomes, and the significance of culturally sensitive care. This IRB approved study utilized in-depth semi-structured interviews (N=5) with collegiate women of color in the Eastern Hemisphere of the

United States. For data analysis, content analysis was employed, with a focus on identifying thematic patterns. Findings included instances in which patients felt dismissed by their providers, experienced racial microaggressions and misogyny from male providers, and moments when they felt respected and heard. Themes were categorized as positive or negative experiences and policy implications were discussed.

STUDENT PRESENTATIONS:
Non-Judged Exhibitors

STUDENT PRESENTERS: Braden Pierce, Dylan Sarkozy
FACULTY MENTOR: Dr. Subhadra Ganguli

US Pandemic Unemployment and Monetary Policy

Our exhibit will focus on our group's research conducted in conjunction with our ECON 104 Honors project. Braden will be researching unemployment, and Dylan will be researching monetary policy.