Research & Creative Activities

Fall 2025

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

Dear SIUE Colleagues, Alumni, and Community Members,

It is with great enthusiasm that I introduce the 2025 issue of Research and Creative Activities. As the new Dean of the Graduate School and Associate Provost for Research, I am honored to step into this role and to witness firsthand the remarkable spirit of inquiry, creativity, and impact that defines our institution.

In my short time here, I have been inspired by the incredible breadth and depth of scholarship taking place across campus. This year's issue is a vibrant reflection of those accomplishments—from foundational research to groundbreaking innovation, from individual inquiry to interdisciplinary collaboration.

In these pages, you will find stories that span the sciences, humanities, arts, and professional disciplines. You will read about faculty tackling cancer treatment resistance, student-athletes advancing mental health awareness, and researchers exploring how AI impacts civil infrastructure safety. You will learn how a collaborative team is working to customize infant feeding accessories to support new mothers, and how faculty and students are uncovering insights about Jewish identity, queer lives in Nazi Germany, and environmental threats exposed by crawfish.

The impact of our research is also deeply rooted in community engagement. Programs like the Community-Oriented Digital Engagement Scholars initiative are transforming general education through community-based digital storytelling, while our research centers continue to strengthen connections between SIUE and the region we serve.

We are equally proud of our students, whose contributions are shaping the future of their fields. Their work—from investigating pharmaceutical pollution in waterways to analyzing performance strategies for collegiate athletes—demonstrates the hands-on, high-impact learning experiences that are hallmarks of the SIUE student research experience.

The achievements highlighted here reflect not only the dedication of our faculty, staff, and students, but also the support of our alumni, partners, and community members. Thank you for your continued commitment to advancing research and creative activities at SIUE.

Looking forward,

Christopher D. Slaten, PhD
Dean and Associate Provost
Graduate School and Office of Research & Projects (ORP)

Giving Opportunities

Scholarship and Research Endowment

The SIUE Graduate School provides educational opportunities to nearly 2,500 students annually. Gifts to support student scholarship and research allow academically talented students with financial need the opportunity to pursue their educational goals.

Rosemarie Archangel, Ellen Sappington, and Stephen L. and Julia Y. Hansen Innovation and Excellence in Graduate Education Endowment

Faculty scholarship and teaching determine the quality of the education students receive. Gifts to support this endowment will build on SIUE's culture of scholarship and research by supporting innovative activities and progressive changes in existing and new graduate programs, as well as graduate faculty development related to the strengthening of graduate studies.

GIVE TODAY!

connect.siue.edu/g/graduate-school

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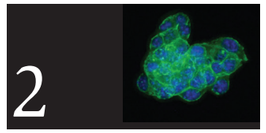
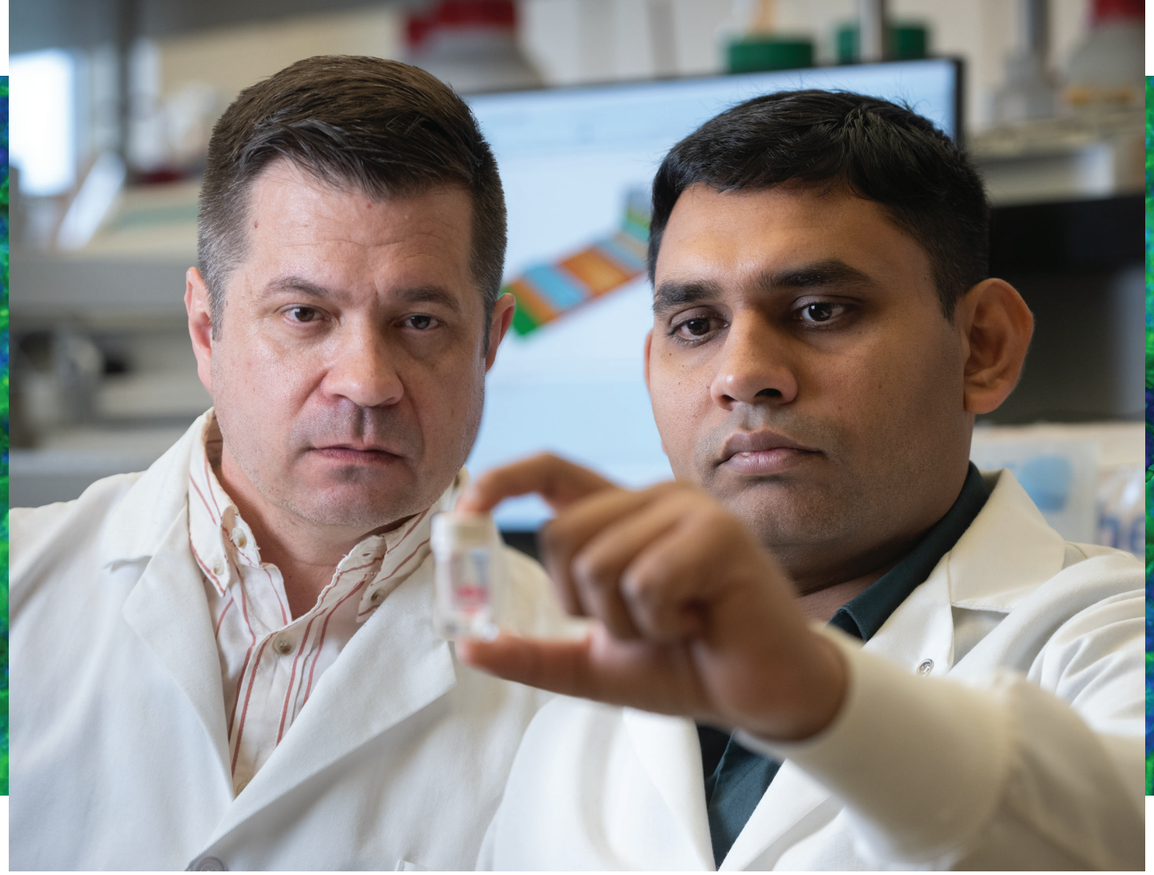
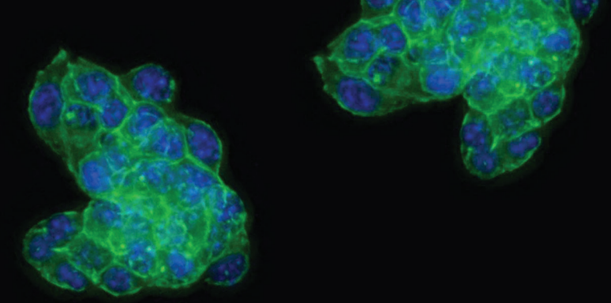




Breaking Resistance: Developing New Cancer Therapies by Targeting eIF4F

The American Cancer Society estimates there were nearly 2 million new cancer cases and more than 600,000 cancer-related deaths in the United States in 2024. Over 90% of cancer-related deaths are due to tumors having become resistant to first-line therapy treatments, making it more challenging to create effective therapies and improve patient outcomes.



Bhargav Patel, PhD, assistant professor of pharmaceutical sciences, and Joseph Schober, PhD, professor of pharmaceutical sciences, teamed up to address treatment resistance through their National Institutes of Health (NIH)-funded project.

The duo is investigating how targeting the inhibition of the Eukaryotic Initiation Factor 4F (eIF4F) complex could mitigate various cancers' resistance to therapy treatments. eIF4F complex functions when two subunits, eIF4E and eIF4G, interact. If the interaction is disrupted, cancer cell growth could be reduced.

> **This would pave the way for new, safer treatment combinations at lower doses, improving cancer treatment outcomes and increasing the likelihood of a cure.**
>
> Joseph Schober, PhD
> Professor of Pharmaceutical Sciences

"We hypothesize that by mimicking the structure of eIF4G, we can design molecules that bind to a specific site on eIF4E, thereby preventing the interaction of the two subunits," Patel explained. "Through advanced computational techniques, we have identified promising compounds that may interfere with this interaction. One such compound has demonstrated the ability to block the eIF4F complex, and we are currently working to refine it into a more effective and safer therapeutic."

Targeting the eIF4E protein could lead to potential treatments of various cancers, including malignancies of the breast, prostate, lung, head, and neck, as well as multiple types of leukemias and lymphomas.

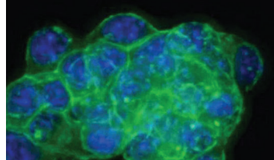
The NIH SURE-First grant supports the early phases of this project, allowing Patel and Schober to gather critical preliminary data and lay the foundation for a successful drug discovery initiative. Currently in their second year of the project, they hope to identify additional active compounds by the conclusion of the four-year grant.

"If successful, we could potentially discover drugs that effectively target chemoresistance in various cancers while minimizing side effects," Schober added.

Patel's and Schober's work brings new hope in the fight against cancer treatment resistance, with the potential to develop innovative therapies that could make a life-changing impact on patients.

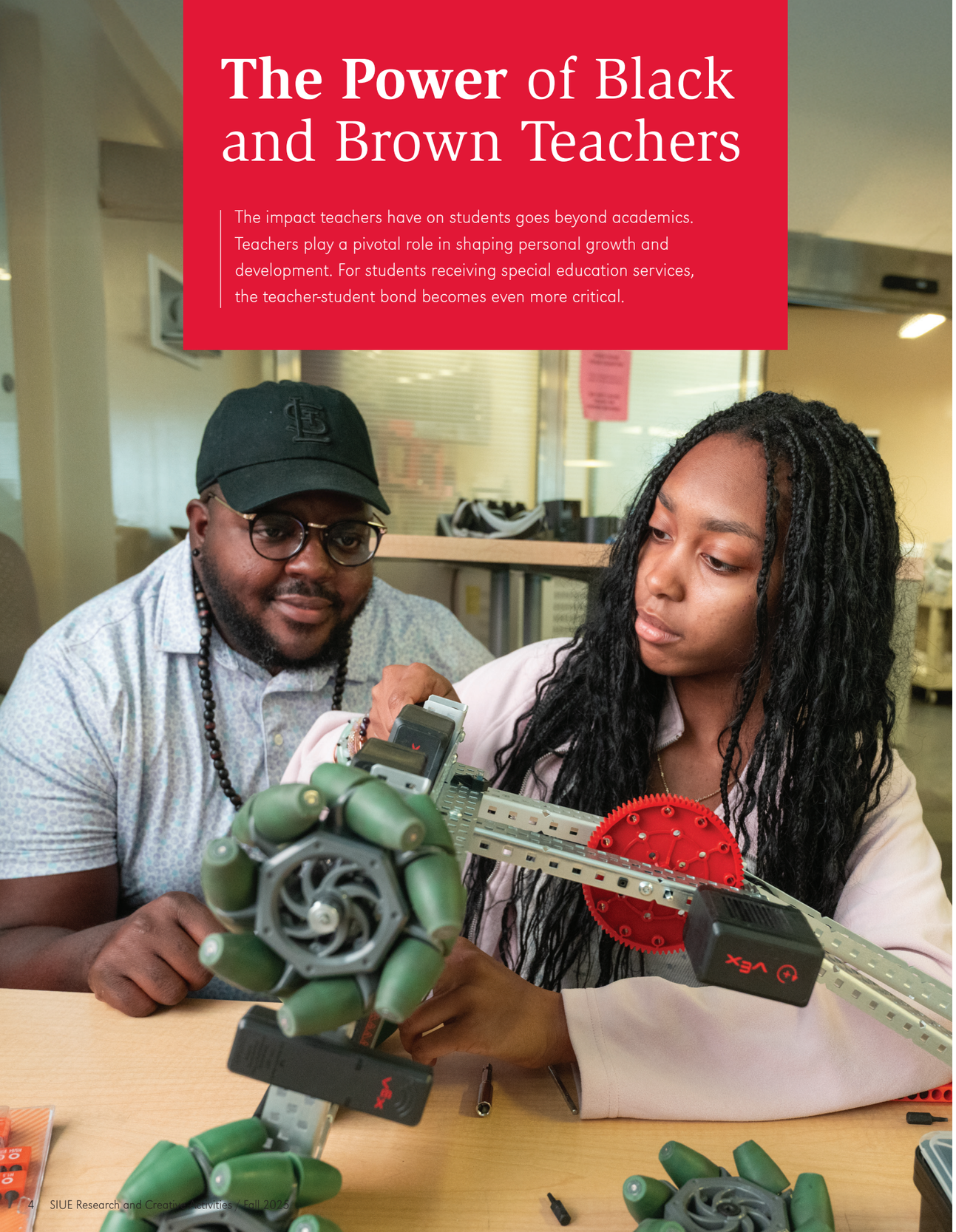
**This project was supported by the National Institutes of Health as part of an award totaling $361,250, of which $361,250 are federal funds. Research reported in this publication was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number R16GM150772. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health."*

Image: Fluorescence image of a small tumor of cancer cells grown in the research labs in the Department of Pharmaceutical Sciences, SIUE School of Pharmacy.



The Power of Black and Brown Teachers

The impact teachers have on students goes beyond academics. Teachers play a pivotal role in shaping personal growth and development. For students receiving special education services, the teacher-student bond becomes even more critical.



Previous research suggests that students benefit academically and socially when they share a similar racial background with their teacher. Building on that discussion, Derek Houston, PhD, associate professor in the Department of Educational Leadership, explored two key questions:

- How does receiving special education services influence STEM-related outcomes for students who experience a STEM teacher match?
- What is the relationship between STEM-related outcomes and students at the intersection of special education services and STEM teacher match?

I hope this research will shape the practices of recruiting and retaining teachers who racially and ethnically look like the K-12 student population, specifically in special education.

Derek Houston, PhD
Associate Professor in the Department of Educational Leadership

"Black and brown students are disproportionately identified as needing special education services compared to their white counterparts," Houston explained. "Additionally, Black and brown students are disproportionately less likely to pursue STEM degrees and careers. As such, exploring potential opportunity gaps at the intersection of all three could provide insights that can be used to shape policy and practice for the improved conditions of students."

Houston analyzed data from the High School Longitudinal Study of 2009, Common Core of Data, and the Civil Rights Data Collection, to determine the effects of teacher-student racial match specifically at the intersection of special education and STEM.

Houston's findings show that having a STEM teacher of color can positively impact students receiving special education services in three key areas: identity (how students see themselves in a subject), self-efficacy (their confidence in their ability), and utility (how valuable or useful they believe the subject is). The findings included:

- Black students receiving special education services (SPED) services with a Black math teacher experienced statistically significant gains in math identity, self-efficacy, and utility.
- Black, Latine, and Asian students receiving SPED services and taught by a math teacher of color also showed notable improvements:
  - Black and Latine students: increased math identity
  - Black students: increased math self-efficacy
  - Black and Asian students: increased math utility
- Latine students with a Latine science teacher demonstrated gains in both science identity and utility.
- Latine and Asian students with a racially matched science teacher reported:
  - Latine students: increased science identity
  - Asian and Latine: increased science self-efficacy
  - Latine: increased science utility
- Black students receiving special education services (SPED) matched with a Black science teacher saw decreases in science identity and utility, suggesting that race-match effects may vary depending on subject area and student subgroup.
- Black, Latine, and Asian students with a science teacher of color (not necessarily the same race) experienced overall gains in science identity, self-efficacy, and utility.

Houston's research highlights the importance of teacher diversity in STEM and special education, emphasizing its role in closing opportunity gaps. His findings call for increased efforts to recruit and retain diverse educators, ensuring all students receive the support they need to thrive. He also underscores the need to continually examine how race, special education status, and educational outcomes intersect. Ongoing analysis of these disparities assist in moving toward more equitable opportunities for all students.

** This research was supported by a grant from the American Educational Research Association which receives funds for its "AERA Grants Program" from the National Science Foundation under NSF award NSF-DRL #1749275. Opinions reflect those of the author and do not necessarily reflect those of AERA or NSF.*

Unlocking **Health Insights** from Rhesus Monkeys

Since 1938, the free-ranging rhesus monkey *(Macaca mulatta)* colony on Cayo Santiago, Puerto Rico, has been a crucial resource for biomedical and anthropological research. This unique island colony provides valuable insights into how genetics, environment, and health history influence bone and tooth development, aging, and disease in humans.

Luci Kohn, PhD, professor in the Department of Biological Sciences, joined a multi-institutional team* of distinguished researchers in 2019 to study this colony to advance translational research in human diseases. The project, funded by the National Science Foundation and entitled "Building a Primate Database to Determine Environmental and Familial Effects on Health and Life Expectancy" aims to:

- Document the morphological and pathological conditions of the Cayo Santiago skeletal collection.
- Build a comprehensive health database integrating genealogical and demographic information.
- Test hypotheses on secular trends and familial health disparities using this database.

The database, CSViewer, will be available to researchers interested in studying issues related to health, disease, demography, and influence of environmental factors over the history of the colony.

Kohn's research on skeletal morphology, quantitative genetics, and evolution plays a key role in the foundation of this project. She has been using the skeletal collections to measure macaque teeth across different life stages to understand how both genetic and environmental factors within the colony influence their development.

Rhesus macaques are a common model for human health and disease. This database is a powerful tool for analyzing the interplay of population dynamics, environmental factors, and family history.

Luci Kohn, PhD
Professor, Department of Biological Sciences

Kohn has also been investigating fluctuating asymmetry (FA)—small, random differences between the right and left sides of the body—as an indicator of developmental instability.

"I have been measuring the teeth of 466 monkeys between the ages of 3 months and 25 years that lived on Cayo Santiago between 1960-2018," Kohn explained. "I have found that there is significant FA across teeth, some members of some families show more FA than others."

Kohn continues to explore potential environmental factors and colony management practices that may influence tooth development and contribute to these patterns. As the project nears completion, the team is working to complete the CSViewer database and make it available to researchers worldwide.

The research at the Cayo Santiago colony and the efforts of the Caribbean Primate Research Center are made possible through vital funding and support from the National Institutes of Health.

**The team is led by principal investigator Qian Wang, PhD, Texas A&M, and includes co-investigators Kohn, Debbie Guatelli-Steinberg, PhD, The Ohio State University, and Qiang Zhao, PhD, Mercer University.*

Expanding SIUE's **Mental Health** Support

In Spring 2023, SIUE participated in the Hope Center for Student Basic Needs Survey, the nation's most comprehensive assessment of college students' basic needs. The survey found that 49% of SIUE students had experienced anxiety and/or depression. Additionally, 25% of the surveyed students said they had unmet mental health needs. SIUE has taken steps to address this gap in mental health resources on campus thanks to a $290,000 Mental Health Early Action on Campus (MHEAC) Act Competitive grant from the Illinois Board of Higher Education.

The MHEAC grant empowered SIUE's Division of Student Affairs, in collaboration with Intercollegiate Athletics and the School of Pharmacy, to launch a series of innovative mental health initiatives.

"These efforts aim to raise awareness, provide training, reduce stigma, and enhance student mental health support," said Vice Chancellor of Student Affairs Miriam Roccia.

Expanding Accessibility

An initial MHEAC grant previously allowed SIUE to partner with TimelyCare, a mental health support service. This partnership has significantly expanded students' access to mental health resources by offering:

- Extended Access Hours: Mental health counseling is available beyond standard business hours, including evenings, weekends, and lunchtime appointments.
- TalkNow: This feature provides 24/7 immediate crisis support, with an average wait time of five minutes for urgent care.
- Reduced Wait Times: TimelyCare has significantly reduced the wait time for scheduled appointments to 3-4 days, addressing urgent student needs faster.

According to Sydney K. Greenwalt, PhD, director of SIUE Counseling Services, hundreds of students have participated in psychoeducational sessions through the TimelyCare partnership. The additional MHEAC competitive grant has allowed SIUE to expand these vital mental health resources further and continue to cover the cost of the platform.

Mental Health Incubator

A key initiative of the latest MHEAC competitive grant is the Mental Health Incubator. "The Mental Health Incubator provides one-time financial support to fund student mental health initiatives that advance student mental health in innovative and creative ways," said Cathy Passananti, health promotions and outreach specialist.

Twelve projects submitted by student organizations, departments, faculty, and staff were funded in the spring 2025 semester. Projects included Mental Health Bingo hosted by University Housing, Pop-Up Sensory Space in the School of Engineering, and Narcan Training and Access Program provided by the Department of Social Work.

Student-Athlete Mental Health

Supported by MHEAC funding, SIUE Athletics is expanding its efforts to improve student-athlete mental health. The department added two new graduate assistantship positions to focus on enhancing access to mental health resources, including improving on-campus and virtual mental health accessibility, identifying diverse mental health care providers, and developing resources like virtual workshops, handouts, and educational modules.

SIUE Athletics has implemented the Green Bandana Project—a national student-led program that increases student awareness of mental health and suicide prevention resources and empowers students to seek help when needed. SIUE student-athletes complete suicide prevention training and wear a green bandana on their backpack as a symbol of support.

"The idea is that if enough student-athletes are walking around campus with a green bandana, students will start to ask what they are for. That gives them an opportunity to promote positive mental health and share resources on campus," said Ashley Simpson, assistant athletics director for student success.

Additional Initiatives

- Basic Student Needs Survey: Administered again in the spring 2025 semester to assess the University's progress since the initial survey in spring 2023
- Expanded Training Opportunities: Mental Health First Aid Trainer training, expanded marketing of the Be There Certificate, and the Question, Persuade, and Refer Suicide Prevention Online Gatekeeper Training
- Fresh Check Day: Uplifting mental health promotion and suicide prevention event hosted in the spring 2025 semester

**"Mental Health Early Action on Campus" was made possible by grant funding allocated by the Illinois Board of Higher Education.*

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> **Programs are designed to promote lasting improvements in student well-being while fostering a supportive campus environment.**
>
> Miriam Roccia
> Vice Chancellor of Student Affairs

Not All Nipples are the Same, and Bottles Shouldn't Be Either

"

This research is going to influence women's journey through motherhood, and I am excited to be part of that journey.

Rubi Quiñones, PhD
Assistant Professor, Department of Computer Science

According to the Centers for Disease Control and Prevention (2024), only one in four infants are exclusively breastfed at six months of age despite the known benefits of breastfeeding. Breastfed infants have reduced risk of a number of health concerns including sudden infant death syndrome (SIDS), severe lower respiratory disease, ear and gastrointestinal infections, leukemia, and diabetes. Breastfeeding mothers benefit from reduced risk of cardiovascular disease, type 2 diabetes, ovarian, breast, and endometrial cancer, and postpartum depression.

The reasons mothers struggle to breastfeed include challenges with lactation, milk-pumping, bottles, and work-life balance issues. Infant Feeding Accessories (IFAs) including bottles, pacifiers, and pump parts, are standardized, which can make transitioning back and forth between breastfeeding and bottle-feeding difficult.

Armed with this information and personal experiences with breastfeeding, a small business (CBEZ, LLC) teamed with SIUE, University of California, Davis, and Washington University in St. Louis to submit a Small Business Technology Transfer proposal to the National Institute of Health entitled "Custom Accessories for Breastfeeding Success".

Rubi Quiñones, PhD, assistant professor in SIUE's Department of Computer Science, began to explore how advanced computer science techniques could help create custom IFAs to better support breastfeeding. Quiñones used advanced computer vision algorithms to analyze images of the breastfeeding parent's nipple, areola, and surrounding tissue. The algorithms extracted key anatomical features, and artificial intelligence interpreted the data and identified common features. By grouping mothers with similar nipple anatomy into clusters, Quiñones aims to design and 3D print customized IFAs.

"Once we determine the various clusters, we can prototype a nipple that represents each cluster," said Quiñones. "It has been a challenge because of the various shapes, colors, and sizes of the breast. It's a beautiful thing and shows the diversity and inclusion of the research."

For Caleb Sutton, computer science master's candidate and graduate assistant, working on this project has been both educational and eye-opening. "This project has deepened my understanding of the workflow that goes into academic research," said Sutton. "Not only has my technical understanding improved, but I've also gained insight into the struggles mothers face when breastfeeding. Hopefully, with the success of this project, we can provide more options for mothers who face challenges, while also protecting the health of newborns."

The goal of the project is to define distinct groups of artificial nipples and create a mobile health platform that recommends customized IFAs. Through this platform, parents can upload images of their breasts, which the system would then analyze to recommend customized IFAs by matching anatomical features to the pre-identified clusters.

Quiñones is preparing to apply for additional funding to expand the research into prototype development and real-world testing, bringing the project one step closer to transforming breastfeeding support.

"Custom Accessories for Breastfeeding Success" was funded through a Small Business Technology Transfer award resulting from a team proposal with CBEZ, LLC to the National Institutes of Health. The proposal leveraged US Patent No. 10,449,121 B2 and U.S. Patent Application No. 17/954,324,8 ("Customized Accessories"). Research reported in this publication was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health under Award Number R41HD115477. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health."

Transforming General Education Through **Community-Engaged Research**

The Community-Oriented Digital Engagement Scholars (CODES) program at SIUE is transforming the college experience for students by placing them at the heart of community-based research. This innovative program offers an alternative general education pathway and full tuition award for students who are Pell-eligible, and/or first-generation college, and/or are historically underrepresented in their majors. The program builds upon the goals of Student Opportunities for Academic Results (SOAR), which elevates success by offering first-year students academic and professional support through advising, academic program coordination, and other resources.

Through hands-on, interdisciplinary learning, CODE Scholars use digital storytelling and collaborative research methods to tackle real-world issues affecting the St. Louis region. The program empowers students to become agents for change while developing skills that extend beyond the classroom.

CODES grew out of years of digital humanities work conducted by faculty at SIUE's Interdisciplinary Research and Informatics Scholarship (IRIS) Center, including Jessica DeSpain, PhD, co-founder of IRIS, professor of English, and curriculum director for CODES. Inspired by IRIS's 2014 initiative, the Digital East St. Louis project, DeSpain and her colleagues worked to develop a program that gave students the opportunity to conduct interdisciplinary research that would directly address real, complex issues within the local community. CODES launched in 2017 with a National Endowment for the Humanities (NEH) planning grant designed to examine innovative humanities programming. It was awarded an additional NEH implementation grant in 2021 and welcomed its first cohort in fall 2022.

"The program helps our students see that literature, biology, chemistry, geography, and more are not isolated disciplines," said DeSpain. "CODES allows the students to see themselves as content creators who can communicate effectively in both face-to-face and online environments."

Now in its third year, CODES students collaborate with local organizations to explore topics such as reparative and spatial justice, violence prevention, and environmental equity. Using digital strategies like mapping, podcasting, and data visualization, they analyze problems and present innovative solutions to community partners.

In 2024, SIUE was awarded a $1 million grant from the Mellon Foundation*. The funding will increase the cohort size from 25 to 100 students this year, support faculty and staff hires, and support the implementation of Locus. The digital publishing platform will feature peer-reviewed content and support tools like interactive maps, multimedia stories, and network visualizations. CODES will also be utilized as a model for SIUE faculty fellows and a training resource for visiting fellows from institutions across the country.

"I'm glad we are being recognized not for just the excellence in innovation in undergraduate education, but also for digital humanities curriculum and scholarship," said DeSpain. "Without our Scholars, there would be no Mellon Grant. They are game for a challenge, willing to try new things, and bring all their energy and dedication to the forefront."

**The Andrew W. Mellon Foundation is the nation's largest supporter of the arts and humanities. Since 1969, the Foundation has been guided by its core belief that the humanities and arts are essential to human understanding. The Foundation believes that the arts and humanities are where we express our complex humanity, and that everyone deserves the beauty and empowerment that can be found there. Through our grants, we seek to build just communities enriched by meaning and guided by critical thinking, where ideas and imagination can thrive. Learn more at mellon.org.*

Navigating the **Shifting Realities of Jewish Identity**

As a progressive Zionist Jew, Ezra Temko, PhD, associate professor in the Department of Sociology, has faced the challenges of antisemitism and antizionism firsthand. These experiences have fueled his interest in understanding how others navigate similar challenges. Zionism, the movement advocating for Jewish peoples' right to self-determination, remains central to his identity and work.

Temko received funding from the Society for the Scientific Study of Religion and the Academic Engagement Network to pursue a project conducting focus groups in New York City, Washington, D.C., San Francisco, and St. Louis to learn about experiences of antisemitism and antizionism. Participants included Jewish Americans involved in social justice activism, staff members from Jewish advocacy organizations, and students from public and private universities.

"Qualitative research allows one to gather data that has depth and provides genuine insight into people's lived experiences and how they are making sense of those experiences," Temko explained. "Focus groups, in particular, enrich the data as participants share insights, challenge one another, and engage in dialogue that prompts deeper reflection."

This research began in 2022, and when the Hamas-led attacks occurred on October 7, 2023 in Israel, this project, which was initially considered a "niche or esoteric" topic, became salient. While the scope of the research and the focus group questions did not change, participants were quick to share how their experiences shifted before and after October 7. Although Temko did not initially ask about the attacks, the topic arose consistently in response to early questions about whether participants felt affirmed in their Jewish and/or Zionist identities in progressive spaces.

"Participants described that before, their Jewish identity was usually just part of who they were and not questioned or was even positively received, and that afterward it was politicized," Temko explained.

The study revealed the following insights:

- Many participants who previously saw their Jewish identity as positively received, began to experience increased politicization and scrutiny for their Jewish identity.
- Participants reported feelings of isolation due to assumptions and misunderstandings on their stance on Israel or Zionism.
- Responses to the changing environment varied, with some participants feeling a stronger connection to Zionism, others hiding their Jewish identity, and many shifting between strategies depending on the context.
- Several participants described losing relationships and feeling unwelcome in spaces where they had previously been accepted.

In hopes of fostering a greater understanding of the Jewish community, Temko plans to share his research findings through future publications.

Emeriti Faculty Association **Research Spotlight**

Andrew J. Theising, PhD
Emeritus Professor
Department of Political Science

Retirement certainly has eased my schedule and allowed me to focus on what I love to do—reading, writing, and researching urban politics. It has been an enjoyable few years, and I look forward to many more.

Last fall, I finally had published one of my career's best works: "Mid-Mod Mayor: How Raymond Tucker Shaped St. Louis" (Bartholomew/Chambers, 2024). It's a deep dive into the mayoral administration of Ray Tucker and St. Louis in the 1950s that I had worked on for the last 10 years at SIUE. Tucker was the mayor who (for better or worse) built the Arch, the Poplar Street Bridge, Pruitt- Igoe/high-rise public housing, and cleared the Mill Creek Valley. It was such a dynamic time for all American cities, especially St. Louis.

He was an early advocate for civil rights (calling for public accommodation in St. Louis before the world had ever heard of Martin Luther King) and appointing the first woman and the first Black person to the mayoral cabinet. He led the desegregation of city institutions after Brown v. Board (1954), implemented the permanent city earnings tax, and pushed for both city charter change (twice) and city-county merger (both failed in public votes). When he died, the city renamed the street city hall stands on in his honor (Tucker Boulevard). Tucker was a WashU professor and engineer, and eschewed traditional political power. I'm very glad that in retirement, I get to teach a few classes at WashU and walk the same hallways he did.

My love of East St. Louis continues. I'm on the board of the East St. Louis Historical Society and was recently awarded a Meridian Society grant in conjunction with the Political Science Department to mark two dozen historic sites in the city. We'll be doing that in this school year.

I still get to work with SIUE students who are doing projects about cities generally and East St. Louis in particular. I have weekly meetings with a master's student who is doing an ambitious project around racial violence. It is such a pleasure to see a new generation of scholarships bringing new ideas and new views to ideas that I have cared about for so long.

It is always a pleasure to speak with interested audiences about our shared historical and political experience. I'll be speaking as part of the SIUE Lifelong Learning program on November 19 in the Morris University Center. I hope you can join me.

I have a just-for-fun new book coming out in time for summer reading—"Hell's Half-Acre: The Most Notorious Spot in St. Louis County". It's all about true crime that happened along a single street between Wellston and University City over the last century. I think it's enthralling! I hope you do, too.

Tracking Pharmaceuticals Through Crawfish

Beneath the surface of freshwater streams, crawfish may be quietly revealing the hidden impact of modern medicine. Chemistry graduate student Sydney Worth is investigating how trace amounts of medication in wastewater accumulate in the nervous systems of these invertebrates.

Sydney's journey began in the Undergraduate Research and Creative Activities (URCA) program, where she launched this project under the mentorship of Kevin Tucker, PhD, associate professor of chemistry. Now pursuing her master's degree, Worth continues to expand her research on pharmaceutical pollution and its ecological consequences.

"The main target of my lab's research is to study the accumulation of common pharmaceuticals and personal care products, such as antidepressants or statins, in organisms to gain a better understanding of how humans are impacting the environment through drug contamination," said Worth.

In her experiments, Worth exposes live crawfish *(Procambarus clarkii)* to varying concentrations of three antidepressants: paroxetine, sertraline, and citalopram. After one week of exposure, she dissects the ganglia and analyzes the samples.

> **I hope that my research spikes more interest and concern about the effects humans are having on the environment, especially in bodies of water.**
>
> Sydney Worth
> Chemistry Graduate Student

Worth's goals are to:

- Measure the amount of each drug that accumulates in the crawfish's nervous system
- Compare accumulation levels at different exposure concentrations
- Determine whether crawfish could serve as bio-monitors, organisms that indicate the health of an ecosystem, for pharmaceutical pollution

So far, Worth's research has shown that paroxetine accumulates in the abdominal nerve cord of crawfish at measurable levels, even after just one week of exposure. These findings suggest potential ecological consequences and highlight the importance of monitoring pharmaceutical contamination in freshwater environments.

Challenging the **Myths about Queer Lives** Under Nazism

History is complicated. That's what Emily Eckles, a doctoral candidate in history, would argue. Through her research entitled, "Exist, Persist, Resist: Queer Lives in Early 20th-Century Germany," Eckles dives into the complicated and contradictory lives of queer individuals in the early 20th-century Germany. Queer people faced both persecutions, and, in some cases, supported fascist ideologies.

"A person's sexuality and gender did not determine their compatibility with Nazism; their beliefs and actions did."

Emily Eckles
History Doctoral Candidate

Through her study of periodical and scientific publications, Eckles sought to challenge oversimplified narratives about queer experiences during the rise of Nazism.

"My goal with this research is to spread knowledge around the complicated nature of gender and sexuality in modern Germany," Eckles said "Queer and transgender people have always existed, and they were also historical actors with their own goals, hopes, and desires."

While it is well-known that the Nazis persecuted homosexual men, Eckles highlights that homosexual women and transgender people were also targeted.

"While queer oppression was inherently an aspect of the Third Reich, there were still queer people who supported and were members of the Nazi party; and there were also queer people who committed atrocities in the Nazi genocide of millions," Eckles continued.

Eckles hopes her research deepens the understanding of queer experiences in Nazi Germany, a topic that has gained scholarly attention since the 1970s. Her work explores how fascism and racial ideologies shaped queer lives, revealing that queer people's relationships with the Nazi party were far from straightforward.

Optimizing **Human-AI Collaboration** in Structural Bridge Inspections

As bridges across the nation age, ensuring their safety is more critical than ever. Artificial intelligence (AI) is rapidly emerging as a powerful tool for engineers, and civil engineering graduate student Abhishek Khatiwada is exploring how it can enhance—rather than replace—human expertise.

Khatiwada's research focuses on integrating AI into bridge inspections to improve accuracy, efficiency, and safety. "My research addresses challenges such as over-reliance on AI, diminished human expertise, and inconsistencies in inspection outcomes," said Khatiwada. "The study seeks to establish optimal human-AI interaction models by analyzing key factors, including task allocation, contextual understanding, AI limitations, cognitive load, workflow integration, skills development, and legal and ethical considerations."

Khatiwada's project objectives include:

- Evaluate existing AI technologies used in bridge inspections
- Collect industry insights through surveys and interviews
- Develop a decision-making framework combining AI analysis with human judgment
- Pilot and validate the framework in real-world inspections

Khatiwada's findings highlight the opportunities and challenges of integrating AI into infrastructure assessments. He emphasizes the need for a careful balance between automation and human oversight to create a more reliable and streamlined inspection process that upholds safety standards.

This research supports the broader goal of enhancing the reliability and efficiency of civil infrastructure evaluation, ensuring safer, more resilient structures while paving the way for smart, AI-supported engineering solutions in the field.

Abhishek Khatiwada
Civil Engineering Graduate Student

"Over-reliance on AI can lead to diminished professional judgment, false positives that increase workload, and inconsistent inspections due to biases in training data," Khatiwada explained. "Additionally, legal and liability concerns must be addressed to ensure accountability in AI-assisted evaluations."

He hopes his research will help establish best practices that can guide the civil engineering industry toward more effective human-AI collaboration in infrastructure inspections.

Outstanding Student Awards

Outstanding Thesis and Dissertation

Recognize a master's student's thesis and a doctoral student's dissertation that have been identified as outstanding among all those completed in the previous academic year.
Outstanding Thesis

- **Olivia Perez, MA in History**

"The Enemy is Wicked, Unjust, and Undisciplined: Ethno-Nationalism and Violent Antisemitism in Lithuania, 1920-1944"

Outstanding Dissertation

- **Julia Powers and Jewel Radford, Doctorate of Nursing Practice**

"Asthma Air Quality Mitigation as a Key Factor in Asthma Management and Prevention"

Outstanding Teaching Assistant Awards

Recognize and reward graduate students at the master's and doctoral level for outstanding performance in teaching and instruction.

- **Sheeba Sadiq, MS Chemistry**
- **Jill Passwater, Doctorate of Nursing Practice**

Driving Change Through Research

Distinguished Research Professor Award

Rank recognizes faculty members who have made an outstanding contribution to research or creative activities as a result of their continued commitment to scholarship beyond the period of promotion to professor.
Yun Lu, PhD, Professor in the Department of Chemistry

Hoppe Research Professor

Recognizing and supporting SIUE faculty members whose research or creative activities have the promise of making significant contributions to their field of study, this award supports a significant portion of a faculty member's larger research agenda for a two-year period. Recipients are expected to produce published scholarly works and externally sponsored funding.
Hernando Garcia, PhD, Associate Professor in the Department of Physics

Vaughnie Lindsay New Investigator Award

Presented to junior faculty members to recognize and support individual research programs or creative activities that promise to make significant contributions to their field of study and to SIUE in general.
Candace N. Hall, EdD, Instructor in the Department of Educational Leadership

Stephen L. and Julia Y. Hansen Humanities Award

Award funding research, scholarly, and creative projects that enrich faculty and student engagement in the understanding of and appreciation for the humanities within the College of Arts and Sciences at SIUE. Awarded projects are publicly engaged or community-facing, innovative projects that emphasize new archives, interdisciplinary applications, methodologies, and so forth.
Cindy N. Reed, PhD, Assistant Professor in the Department of English

Visualizing Research Impacts

The SIUE Graduate School's Visualizing Research Impacts competition offers SIUE faculty, staff and students the opportunity to share the results and impact of their research and creative activities through imagery. Faculty and students submitted a wide array of entries that depicted a wonderfully rich diversity of creative activities and disciplines from across the institution, including entries from the sciences, arts, humanities and nursing.
Aimee Clinger, MFA, Associate Professor in the Department of Art and Design

Faculty Scholarship and Creative Activities Awards

College of Arts and Sciences

Li, Tianyu, PhD, winner of the American Association of Geographers research award for research project entitled "Where Do Bees Thrive? Enhancing Food Security in Southern Illinois Through Pollinator Habitat Analysis with Geospatial Science and Artificial Intelligence," March 2025.

Savoie, John, PhD, winner of Press Americana book prize for book entitled "Sehnsucht: 99 Poems," Press Americana, 2024.

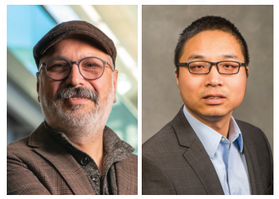
School of Engineering

Jianpeng Zhou, PhD, (corresponding author), along with Isam Alyaseri, Azadeh Bloorchian-Verschuyl, and Susan Morgan are winners of the ASCE Journal of Sustainable Water in the Built Environment Best Case Study Award for their article titled "Impact of Green Infrastructures for Stormwater Volume Reduction in Combined Sewers: A Statistical Approach for Handling Field Data from Paired Sites Containing Rain Gardens and Planter Boxes," February 2025.

School of Education Health and Human Behavior

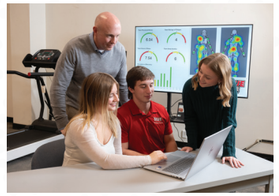
David Fisher, PhD, Stephen Good, Margaret Toich, and Elizabeth Schutt are winners of the APA Editor's Choice award for their article entitled "A meta-analysis of resilience in the workplace," February 2025.

Research Spotlight and News



SIU System Collaborative Grant Funds Interdisciplinary Biomedical Research

A collaborative team from SIUE and Southern Illinois University Carbondale (SIUC) has been awarded a 2025 SIU System Collaborative Grant to advance interdisciplinary biomedical research. Led by SIUE Industrial Engineering Chair and associate professor Sinan Onal, PhD, and SIUC associate professor Chao Lu, PhD, the project focuses on "Advancing Biomedical Research Through AI-Driven Dynamic Gait Phase Detection." The grant supports the validation of their artificial intelligence model, exploration of real-world applications, and positions SIU as a leader in AI-driven biomedical research.



Research Enhances Wellness and Performance of SIUE Athletes

Josh Wooten, PhD, professor and chair of the Department of Exercise, Sport, and Nutrition Sciences at SIUE has developed a comprehensive Performance Survey to support the health and performance of the SIUE women's volleyball team. Collaborating with Stephanie Cameron, PhD, instructor and certified mental performance consultant, and undergraduate research assistants, the survey assesses factors such as mood, energy, stress, sleep, muscle soreness, and training intensity. The data collected provides coaches with actionable insights to optimize training and recovery strategies. Beyond immediate athletic benefits, the research aims to enhance understanding of female athlete wellness, offering valuable experience for student researchers involved in the project.

SIUE Secures $200K Grant to Combat Student Housing Insecurity

SIUE has been awarded a $200,000 End Student Housing Insecurity (ESHI) grant from the Illinois Board of Higher Education to address the pressing issue of student housing insecurity. A 2023 survey revealed that 52% of SIUE students experienced food or housing insecurity or homelessness. The grant, secured by Assistant Dean of Students Mindy Dilley, EdD, Associate Vice Chancellor and Dean of Students Rony Die, and Vice Chancellor for Student Affairs Miriam Roccia, will fund initiatives aimed at expanding awareness, removing barriers, and providing support to students facing basic needs challenges.

**Support for "End Student Housing Insecurity" was made possible by grant funding allocated by the Illinois Board of Higher Education and distributed by the Illinois Department of Human Services.*

Selected Faculty Publications and Performances

School of Engineering

El-Sisi, A, Salim Hani, Gomaa S, El-Feky M. Progressive failure analysis of woven and non-woven CFRP composite/steel bolted joints. Polym Compos 2025

Avdan, Goksu; **Onal, Sinan;** Lu, Chao. IMU-Trans: Imputing Missing Motion Capture Data with Unsupervised Transformers. Neural Computing and Applications, Springer London, 2025.

College of Arts and Sciences

Acheson, Gillian. Teaching Geography and the Social Studies to Students with Learning Disabilities. [Book chapter in Handbook for Geography Education. (Sarah W. Bednarz and Jerry Mitchell, editors)] Springer, 2024.

Baasanjav, Undrah. Information Society and Media Development in Modern Mongolia. Amsterdam University Press. 2025.

Freeman, C.; Dittmer, E.; Nodorft, G.; Swanson, V.; Cruz, J. I.; Aiken, K. S.; Landge, S. M.; **Ghosh, D.** Photophysical investigation of phenanthrene derived 1,2,3-triazole molecule in non-ionic and cationic micellar environments. Journal of Molecular Liquids 2025, 423, 126998.

Gómez, Rubén Darío. Un Solo Pueblo: for Symphonic Band. 2025.

Hildebrandt, Kristine. 2024. "Narrating a Path: Digital Humanities Tools in the Linguistics Classroom". Proceedings of the Linguistic Society of America 9 (3): 5848.

Kooiman, Susan M., Jodie A. O'Gorman, and Autumn M. Painter (editors). Ancient Indigenous Cuisines: Archaeological Explorations of the Midcontinent. University of Alabama Press, 2025.

Li, Tianyu. Spatial Big Data Analytics of Inequity in Access to Live Music Among Disadvantaged Populations. Papers in Applied Geography, Taylor and Francis, 2024

Austin, Ava; Sager, Jessica; Phan, Lauren; **Lu, Yun.** "Structural Effects on the Hydride-Tunneling Kinetic Isotope Effects of NADH/NAD+ Model Reactions: Relating to the Donor-Acceptor Distances" The Journal of Organic Chemistry 2025, 90, 3110 – 3115.*

Luck, P. Otite, and **Kusi, Joseph.** Silver nanoparticle-induced antimicrobial resistance in Pseudomonas aeruginosa and Salmonella spp. Isolates from an urban lake. Environmental Pollution. 2025.

McCarragher, Shannon, Christopher Acuff, Chapel Cowden, and DeAnna E. Beasley. "A bibliometric analysis of urban greenway literature: implications for interdisciplinary research on urban systems." Discover Cities 1, no. 1 (2024): 25.

Mishra, Suman, Moody, Mia & Vasquez, Rosalynn. A. Black-Owned Business and Passionate Brand Publics: A Netnography of The Honey Pot Company PR Crisis. Public Relations Review, (2025).

Ramuglia, Anthony R., Zink; Jeremy R.; Warhausen, Adam J.; Abucayon, Erwin ; Xu, Nan; Shrestha, Kailash ; Richter-Addo, George B.; **Shaw, Michael J.** Electrochemical and spectroelectrochemical investigation of Ru(por)(NO)(OAr) derivatives (por = octaethylporphyrin, tetraanisolylporphyrin; Ar = Ph, C6H4-2-NHC(=O)CF3; C6H3-2,6-(NHC(=O) CF3)2). Published by Royal Society of Chemistry in 2025. Dalton Transactions, 2025,54, 3444-3455.

Redmond, Treasure. "An East St. Louis Son Shines." SIXTY Inches from Center. Sixty Inches From Center, 2024.

Savoie, John. "Homeric Dogma: Of Dogs and Men in the Iliad and Odyssey." Literary Matters, 2025. (note: italics for Iliad, Odyssey, Literary Matters)

Lukacovic, M. N., & **Sellnow-Richmond,** D. D. (2025). Strategic crisis communication faces malicious AI: Countering disinformation and deepfakes amid mega-crises. In Laskin, A. V. & Freberg, K. (Eds.), Public Relations and Strategic Communication in 2050: Trends Shaping the Future of the Profession.

Robb, Megan & Roy, Nia. Historical Review and Current Trends in Art Therapy Research (book chapter) in The Wiley Handbook of Art Therapy. Wiley. 2025.

Stacy, Jason, Fabric of a Nation: A History with Skills and Sources, with Matt Ellington, Bedford/Freeman/Worth, 2nd edition, 2024.

School of Education Health and Human Behavior

Gopalan, C. (2025). Enhancing Student Learning with Flipped Teaching and Retrieval Practice Integration. Advances in Physiology Education, 49(1), 147-153.

Jenkins, Diana; Leve, Leslie; Oro, Veronica. The Role of Homework Completion During Adolescence on Education and Income Levels in Emerging Adulthood: Results From a Randomized Controlled Trial With Females in Out-Of-Home Care. Emerging Adulthood, 2025.

School of Education Health and Human Behavior Cont

Pryor, Caroline R. & Kang, R. (2025). Society, Culture and STEM: A Model for Student Engagement and Teacher Collaboration. Boston: Roman & Littlefield

Slater, Graham B. (Ed.). (2025). "Science Fiction and the Cultural Politics of Education." Review of Education, Pedagogy, and Cultural Studies, vol. 47, no. 2.

School of Nursing

Wittler, A., Perez, A. & Griffin, V. (2025). Telehealth Virtual Simulation Across the Family Nurse Practitioner Curriculum. Nursing Education Perspectives, 46(1), 52-54.

Wittler, A. (2025). Dense breasts: Improved screening and risk-based management guidelines. Clinical Journal for Nurse Practitioners in Women's Health, 2(1).

School of Pharmacy

Gauthier TP, **Cady E,** Liu T, Landayan AM. Resources and strategies for learning infectious diseases pharmacotherapy during advanced pharmacy practice experiences and pharmacy residency. Am J Health Syst Pharm. 2025 Feb 10;82(4):228-234.

School of Dental Medicine

Garcia MN, Pinto A. Advocacy for Oral Health Equity: Reflections from the Hispanic Dental Association's June 2024 Oral Health Policy Change Research and Advocacy Workshop. JHDA 2025; Vol 3 Issue 2:115-20 JHDA2025 Accessed 02-20-25

Thompson LM, Coulter BM, **VanPutte CL.** Validation of a triiodothyronine (T3) ELISA for mouse fecal samples. Physiol Rep. 2024 Nov;12(21):e70115. doi: 10.14814/phy2.70115. PMID: 39472298; PMCID: PMC11521789.

By the Numbers
Sponsored Projects FY25

268 PROPOSALS
FOR
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153 AWARDS
FOR
$43,401,719

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siue.edu/graduate/about

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