Research & Creative Activities

Fall 2016

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE
GRADUATE SCHOOL

Table of Contents

Sustainability Research at SIUE

The Association for Advancement of Sustainability in Higher Education defines sustainability research as: research that leads toward solutions that simultaneously support social well-being, economic prosperity, and ecological health. It includes academic research that:

- explicitly addresses sustainability and/or furthers our understanding of the interconnectedness of social, economic and environmental issues
- contributes directly toward solving one or more major sustainability challenges (e.g. contributes toward achieving principles outlined in the Earth Charter) and/or
- engages community members with the aim of combining knowledge and action to achieve positive social, economic and environmental outcomes (e.g. participatory and community-based research and engaged scholarship).

Scholarship and Research Endowment

The SIUE Graduate School provides educational opportunities to nearly 2,500 students annually. The Graduate School is currently able to provide a few of these students with scholarship funding to succeed in their chosen endeavors. Scholarships and research support allow students to pursue their educational interests based upon passion and excitement, and not debt concerns. It allows students the ability to focus on their studies rather than their bank statements and provides opportunities for students of exceptional acumen with limited means the opportunity to make a difference in life. As a commitment to our students' pursuit of excellence, the SIUE Graduate School is launching a High-Impact Campaign to raise a minimum of $50,000 over the next 18 months to create a Scholarship and Research Endowment.

The Scholarship and Research Endowment will create a permanent and lasting source of support for our graduate students. It will provide a commitment to attract and retain the finest graduate students and will incentivize them to excel in their fields of study. Funding will be provided to outstanding students from across the University annually and will reward them for their academic excellence.

Give today: siue.edu/give

Combating Heroin Addiction (cover photo)
Heroin is more prominent than ever in the streets of Madison County, Illinois. An SIUE psychology professor is working with probation and court services to offer offenders a potentially life-saving alternative to jail time. Read more on pages 6-7.

Civic Responsibility and Sustainability in this Generation and the Next

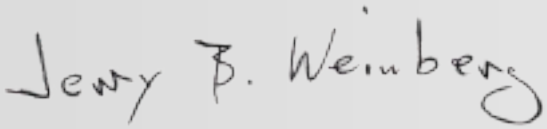
"If there's something wrong, those who have the ability to take action have the responsibility to take action." – Ben Gates, National Treasure [1]

In 1999, the Campus Compact (compact.org), a coalition of 1,100 institutions dedicated to "improv[ing] community life and to educat[ing] students for civic and social responsibility," challenged all institutions of higher education "to become engaged, through actions and teaching, with [their] communities" [2]. The document, which SIUE signed, is a strong assertion that higher education, having the ability to help meet the challenges of the communities they reside in, has the responsibility to do so. It is extremely important to recognize that the document sets out this responsibility within the mission of education. It notes that only through community engagement with their research, creative activities, and course of study will students gain the understanding of how the knowledge they acquire can benefit society and influence democratic decision making. Higher education, including SIUE, is "uniquely positioned to help both students and our communities to explore ways of fulfilling the promise of justice and dignity for all" [2], as well as the other tenets of sustainability.

In these difficult budget times for states, there is a common theme among our legislators of the value of higher education that "emphasizes individual gainful employment in the area of the degree received, personal lifelong earnings at levels notably above those associated with a high school diploma, and the provision of a workforce that helps the United States to remain the world leader in research, technology, defense, and innovation" [4]. All are very important attributes of higher education. However, this emphasis misses the public good, "the duties of active citizenship and civic participation" that are crucial to the future success of our society and democracy. The danger in this narrative is that, as public education budgets are cut, the support for community engagement and community partnerships can be viewed as tertiary expenses to education, as opposed to integral. We run the risk of educating generations of students who "acquire knowledge without ever understanding how that knowledge can benefit society" [2], along with being negligent as an institution to our responsibility to the communities in which we reside.

This issue of *Research and Creative Activities* is dedicated to SIUE's impacts in making our campus and communities more sustainable through civic engagement. You will learn about Dr. Jeremy Jewell and his students' research in the treatment of heroin addiction and how it provides an opportunity for community members to have a second chance at life. You will read about the East St. Louis Center that houses programs positively impacting thousands of children and adults with the assistance and engagement of faculty and students from across SIUE. You will find out about the Small Business Development Center that engages students from the School of Business to support members of our community in starting their own businesses, which in turn brings new services to and builds the economy in our region. You will see how our graduate students' research has direct impact on our communities, such as Uyoyoghene Tina Onothoja, whose work will help provide solutions to the restoration of the ecologically important Cache River Wetlands in southern Illinois. And many other stories about how faculty and students meet SIUE's civic responsibility.

As penned in the Presidents' Declaration on the Civic Responsibilities of Higher Education, "we will know [we are successful] when our community partnerships improve the quality of community life and the quality of the education we provide" [2]. The selection of stories in this edition highlight how successful SIUE is.



Jerry B. Weinberg, PhD
Associate Provost for Research and Dean of the Graduate School

Acknowledgement
I wish to express my deep gratitude to Dr. Susan Morgan, associate dean of research and graduate studies, who applied her unparalleled editing prowess to significantly improve the Dean's Message, as well as the entire issue.

References

1. J. Turteltaub, Director (2004), National Treasure
2. Campus Compact (1999), Presidents' Declaration on the Civic Responsibilities of Higher Education, Campus Compact, compact.org/wp-content/uploads/2009/02/Presidents-Declaration.pdf
3. Campus Compact, compact.org/signatories
4. National Science Board (2016), Higher Education as a Public and Private Good, nationalscienceboard.com/sense-of-the-board

SELECTED RESEARCH SPOTLIGHTS AND NEWS

Research Award of Excellence

Bill Retzlaff, PhD, College of Arts and Sciences associate dean and professor of biological sciences, won the Research Award of Excellence from Green Roofs for Healthy Cities, a not-for-profit association working to promote the green roof industry throughout North America. The award honors individuals or groups who have made outstanding contributions to the green roof industry in research.

Retzlaff is co-director of the St. Louis metropolitan area research collaboration G.R.E.E.N. (Green Roof Environmental Evaluation Network) based at SIUE. His main areas of research include evaluation of green roof and green wall technologies, sustainable green infrastructure, and sustainable use of residual waste products. Retzlaff began his sustainability work and research at SIUE more than 15 years ago. Among other things, his efforts have promoted the development of green roofs on six campus buildings, totaling more than 17,500-square-feet of green roof space.

"The benefits of green roofs depend upon the region in which they are installed," Retzlaff illuminated. "In St. Louis, there is a significant problem with storm water runoff because of the rainfall. Green roofs can mitigate the effects of runoff, because the rainfall is retained on the roof and the plants utilize it."

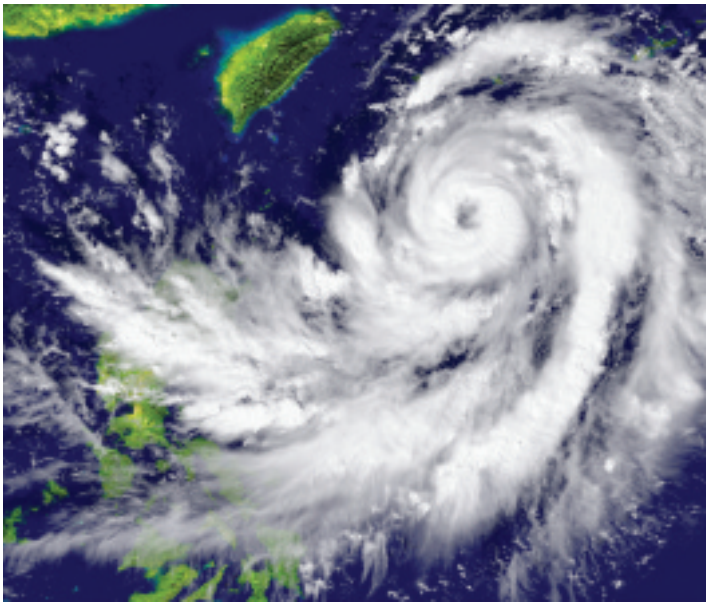
Green Roofs for Healthy Cities' mission is to develop and protect the market by increasing awareness of the economic, social and environmental benefits of green roofs, green walls and other forms of living architecture through education, advocacy, professional development and celebrations of excellence.

Building Sustainably

SIUE is recognized as a STARS Silver Institution for accomplishments in campus sustainability. The rating is based on the Sustainability Tracking, Assessment and Rating System for campus-wide sustainable practices from the Association for the Advancement of Sustainability in Higher Education.

SIUE has completed a $300 million construction and infrastructure improvement plan. All new campus construction is Leadership in Energy and Environmental Design (LEED®) certifiable by the U.S. Green Building Council. SIUE is second in the region for the number of LEED® buildings on a university campus. Currently, the SIUE campus is home to six LEED® certified buildings:

- Art & Design West – LEED Gold
- School of Dental Medicine's Multidisciplinary Laboratory – LEED Silver
- Lukas Athletic Annex – LEED Silver
- Science Building West – LEED Silver
- Engineering Building Addition – LEED Silver
- One residential building in Cougar Village – LEED Residential



Graduate Students Win Best Paper at International Conference

School of Engineering computer science alumni Sheetal Bagga (MS ’15) and Rakeem Shelby (MS ’15) were awarded best paper at an international conference in Seattle. The 23rd Association for Computing Machinery Special Interest Group on Spatial Information (ACM SIGSPATIAL) International Symposium on Advances in Geographic Information Systems was held in November 2015.

The paper, entitled “Component Moving Region Operations: Implementing Set Operations on Region Streams” and authored by Shelby, Bagga and Mark McKenney, PhD, associate professor of computer science, was selected by a committee of workshop organizers as the best paper of the workshop. The paper was an extension of Shelby’s thesis work and included work from Bagga’s master’s project.

The paper was later expanded and published in the *Journal Geoinformatica*. The work describes mechanisms to implement operations over moving regions. A moving region is an object that has spatial extent, but changes in shape and position over time. One example of a moving region is a hurricane, which at a specific time instant can be represented as a region that is affected by hurricane-force winds. A moving region is able to represent the hurricane as it progresses over its lifetime, allowing the hurricane to be examined as it existed at any time instant, as well as the trajectory of the hurricane over time.

“In order to analyze moving regions effectively at a large scale, we need to be able to compute operations over them,” McKenney said. “It is useful to find if two hurricanes overlap. Such information is easy to obtain visually for a small number of moving regions, but we need computational mechanisms to enable such analysis on a large number of moving regions.”

According to McKenney, the work developed by Shelby and Bagga provides a general mechanism to efficiently compute a variety of operations over moving regions. “There are no commercial systems that provide such operations, and their contribution solves a long standing gap in the literature.”

Post-Civil Rights Repositories Housed in SIUE’s Lovejoy Library

An idea germinated by Howard Rambsy, PhD, associate professor of English language and literature at SIUE, the Eugene B. Redmond Collection and Learning Center opened in fall 2015. The center is named in honor of Redmond, SIUE emeritus professor in the Department of English language and literature, author, editor and poet laureate of East St. Louis.

Located in Lovejoy Library, the Center recently received the St. Louis Regional Chamber Arcus People’s Choice Award for its contributions toward making St. Louis a more attractive place to live, work and invest, and has attracted several national supporters, including Maya Angelou, Nikki Giovanni, Toni Morrison and Tavis Smiley.

Redmond’s collection is a unique historical record of African-American and multicultural arts movements and contains thousands of books, magazines, rare program booklets and flyers, audio/visual recordings and historic posters. It also holds more than 150,000 photographs that he has taken over the last four-and-a-half decades of literary artists, musicians, entertainers, scholars, dancers/choreographers, supporters of the arts and political activists.

Dr. Maya Angelou, the late legendary American author, poet, dancer, actress and personal friend of Redmond, wrote: “He has … amassed a one-of-a-kind collection that deserves to be placed under one roof and made available to scholars, teachers, the general public and especially children.”

The Collection and Learning Center contains a reading room which displays many of Redmond’s collections and artifacts, a special collections workroom and a teaching room equipped with 24 computers, a smart board and a state-of-the-art podium.

East St. Louis Center

Where Preparation and Opportunity Meet

The mission of the SIUE East St. Louis Center (ESLC) is to improve the quality of life for individuals and families in Greater East St. Louis in the areas of education, health, social services and the arts. The ESLC identifies urban community needs and opportunities through research and leverages resources to support students on campus and in the community.

Having supported youth, adults and families in the Greater East St. Louis community for more than 50 years, the ESLC is committed to providing assistance and inspiring individuals and families to lead successful, healthy lives. ESLC grant-funded programs prepare youth in grades Pre-K-12 each year for successful futures.

- **SIUE Head Start/Early Head Start:** This early childhood program serves more than 1,500 families and youth from birth to age five, including children with special needs, in St. Clair County.
- **Project Success:** This after-school, tutorial enrichment program serves 102 children ages 5-14 who are in protective custody and are referred by the Department of Children and Family Services.
- **TRIO Upward Bound:** These tutoring, enrichment, and college prep counseling programs serve 245 high school students from low-income families and/or potential first-generation college graduates.
- **Center for the Performing Arts:** This summer performing arts program serves approximately 100 youth ages 5-17.

Located just 20 miles south of the SIUE campus, the ESLC connects the community with the research, faculty, students and credibility that a nationally recognized university brings. Partnerships include:

- SIUE East St. Louis Charter High School
- SIUE WE CARE Clinic
- SIU Dental Clinic
- Student Nurse Achievement Program
- SIUE Institute for Urban Research
- SIUE Small Business Development Center

Graduate and undergraduate students and faculty from a vast array of academic disciplines, including psychology, social work, speech-language pathology, pharmacy, nursing, dental medicine, and education, work and volunteer in the many programs. The integration of services provides faculty and students the opportunity to professionally collaborate across disciplines to solve real-world issues using experiential learning.

Digital East St. Louis

Funded by the National Science Foundation, Digital East St. Louis promotes interest in science, technology, engineering and mathematics (STEM) education and the digital humanities while nurturing community pride among East St. Louis middle school students. Working with SIUE faculty and staff from various academic backgrounds, students are conducting interviews, capturing photographs, drafting written media and recording video to create a website that includes local historical archives, content-rich digital maps, a walking tour of East St. Louis neighborhoods and more.

The three-year program will run all week for four weeks through the summer, as well as 15 Saturdays during the school year.

“This study is examining out-of-school learning and what role it can have in shaping students’ STEM interest, attitudes and educational choices,” said Sharon Locke, principal investigator on the Digital East St. Louis project and director of the SIUE STEM Center.

SIUE WE CARE Clinic

In order to provide the Greater East St. Louis area with access to quality and affordable healthcare, the ESLC partners with the SIUE School of Nursing to offer services through the SIUE WE CARE Clinic. A nurse-managed primary care clinic, the WE CARE Clinic provides medical services to hundreds of families each year.

With the assistance of a three-year, $1 million grant awarded to the School of Nursing jointly from the Health Resources and Services Administration and the U.S. Department of Health and Human Services, the WE CARE Clinic is collaborating with the Schools of Pharmacy and Dental Medicine as well as the Department of Social Work to expand the services provided. Through this grant, the Clinic has made it possible for patients to access primary healthcare, dental healthcare, pharmacy consultation and medical social work services–all in one visit and under one roof.

"The population we serve has a wide array of healthcare needs and often is unable to access assistance," said Kim White, PhD, director of the WE CARE Clinic and clinical assistant professor in the School of Nursing. "This grant is allowing us the perfect opportunity to meet those needs."

Medical professionals at the WE CARE Clinic explain that this initiative not only reduces healthcare costs and improves the synergy of information across health disciplines but also provides additional opportunities for student patient care and collaboration across academic disciplines.

SIUE Head Start/Early Head Start

The SIUE Head Start/Early Head Start Program is a collection of 14 early childhood centers supported by a grant from the U.S. Department of Health and Human Services.

Using this program as a conduit, the SIUE School of Education, Health and Human Behavior and the College of Arts and Sciences provide graduate students with hands-on learning experiences while offering important specialized services to children that would otherwise be unattainable. Under the supervision and guidance of faculty members, students in the art therapy, psychology, and speech-language pathology graduate programs provide art enrichment, behavior management, and social language services.

The services they provide are incredibly beneficial to our children and families," said G. Lynnie Bailey, program director for SIUE Head Start/Early Head Start. "Art therapy is such a unique program to our University; we definitely could not find another avenue to duplicate the services they provide to our children."

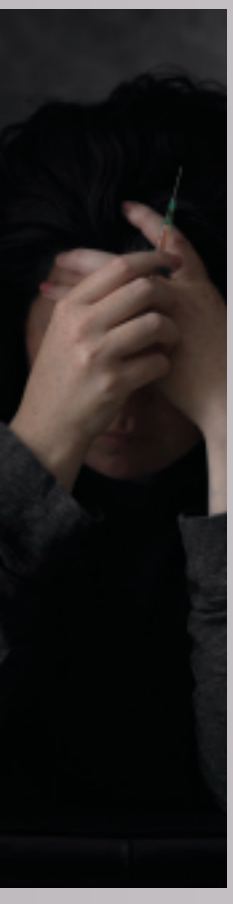
According to Bailey, children under the age of five living in East St. Louis have a more than 90 percent chance of living in poverty or high poverty. There is a similar chance they have already witnessed some sort of criminal activity.

"There are a lot of risk factors and traumatic experiences these children experience at a young age. The mental health of the children, as well as their parents and our staff is an important issue," Bailey said. "The psychology graduate students and Dr. Stephen Hupp, professor of psychology, go above and beyond with the services they provide."

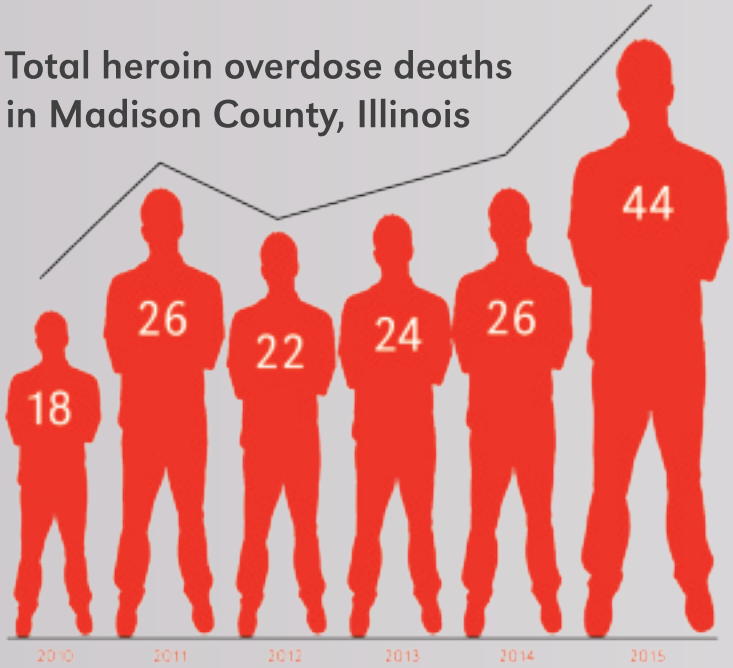
Bailey believes it would be a challenge for the children to receive speech and language services outside of the SIUE Head Start/Early Head Start program. "The children's parents may be asked to go someplace that could be across town. With the population we serve, that's not always realistic," Bailey said.

"No other university in the country has a satellite campus in an urban center that educates more than 2,000 children from 0-18 years old daily while providing health and dental services to another 4,000 individuals," said Jesse Dixon, executive director of the SIUE East St. Louis Center. "The East St. Louis Center serves as a national model for how a university can leverage faculty, students and research to systematically transform the lives of so many families in a high-poverty community."

Combating Heroin Addiction



Prior to 2008, heroin use in the St. Louis region was relatively rare and largely controlled. Hosting a collection of cross-national highway systems, St. Louis' reputation as the "Gateway to the West" has become a major avenue for drug trafficking, serving as a pit stop for transportation between coasts. As a result, heroin has infiltrated St. Louis' metropolitan communities and is more prominent than ever in the streets of Madison County, Illinois.



Since 2009, Jeremy Jewell, PhD, professor of psychology in the SIUE School of Education, Health and Human Behavior, has taken the initiative to tirelessly combat this growing problem. Collaborating with the Madison County Probation and Court Services Department and Chestnut Health Systems, Jewell and his colleagues have vigorously sought solutions for this rapidly growing epidemic. There were 44 confirmed heroin-related deaths in Madison County in 2015, a nearly 50 percent increase from 2014.

Pictured left to right: SIUE graduate student Allison Benware; Nancy Cooper, chief probation officer, MCSCDT Alternative Court Division; Jeremy Jewell; SIUE graduate student Jenna Belgard

Founded in the 1980s, drug court programs have rapidly grown to become an effective imprisonment alternative for convicted drug abusers. In 2014, there were 2,619 programs throughout the U.S., according to the Office of Justice Programs Drug Court Clearinghouse and Technical Assistance Project.

The Madison County Superior Court for Drug Treatment (MCSCDT) was the first drug court program in Illinois and has provided aid to recovering substance abuse victims in the area since 2005. Generally a 14-month program, MCSCDT participants undergo a rigorous, court-mandated treatment program. The program requires frequent court meetings and drug testing, as well as four Alcoholics or Narcotics Anonymous meetings each week and one probation officer meeting each week.

Through the Court, Jewell and his colleagues have facilitated diversified treatment opportunities for Madison County drug abuse victims under a previous federal grant, Project Safe Recovery, and the team's current federally funded research initiative, Project New Direction.

A 2009 expansion project of the MCSCDT, Project Safe Recovery provided treatment for an underserved niche: female drug abuse victims. By creating a place of worship and purchasing a bus to provide transportation for participants, Jewell and his team were able to construct a treatment option customized toward the needs of women. Project Safe Recovery's data were conclusive in finding that completion of drug court treatment indeed reduces a participant's risk of recidivism.

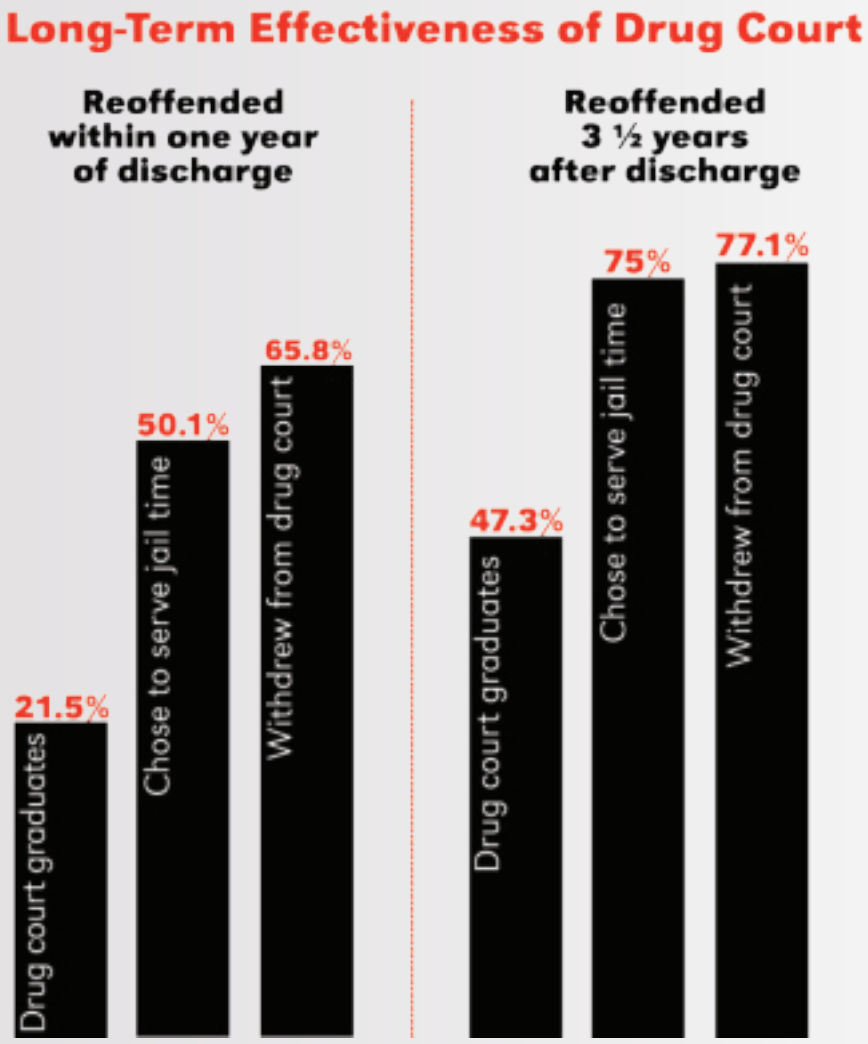
"I was at a drug court graduation two years ago and a graduate, who was a young mother, stepped to the podium with her daughter in her arms," Jewell explained. "She thanked those involved for giving her a second chance, then the child leaned to the microphone and said, 'Thank you for giving me my mommy back!'

"That moment was incredibly moving for me. The woman had not had custody of her child for several years because of her drug use, so the child literally got her mother back – and it saved the young woman from the grave."

Jewell is currently evaluating Project New Direction's data. Project New Direction services both male and female drug abuse victims and employs the use of medication-assisted treatment in the care of substance abuse victims. Reassembling the same project team, Jewell and his colleagues purchased expensive medication options to wean participants away from the cravings of opioid use while continuing to provide long-term substance abuse treatment.

With the help of two graduate student assistants, Allison Benware and Jenna Belgard, as well as a former graduate assistant, Meaghan Malherek, Jewell has gathered quantitative information which further defends his ongoing research of the long-term effectiveness of drug courts. Jewell concludes that within one year of discharge, MCSCDT graduates were found to reoffend only 21.5 percent of the time, in comparison to 65.8 percent of participants who withdrew from services and 50.1 percent of users who declined services and opted to serve jail time.

After tracking participants for more than three and a half years, he found that only 47.3 percent of MCSCDT graduates have reoffended to date, in contrast to 77.1 percent of participants who withdrew from services and 75 percent of users who declined services and served jail time. Jewell's research also shows statistical evidence that MCSCDT graduates have a lower number of other criminal incidents and the classes of such crimes have been lower than violations by members of the control groups.



"The drug does not know a socioeconomic group, and it crosses all barriers," said Nancy Cooper, chief probation officer of the Alternative Court Division for the MCSCDT. "It doesn't matter if someone is rich or poor, educated or uneducated – they are becoming addicted to this drug. It is just so prevalent in Madison County and the surrounding areas, and the damage being done is horrible.

"The data Dr. Jewell collects and interprets for us is very important because it reveals areas for improvement, solutions for helping our drug court clients be more successful in sobriety, and reveals concerns of overdosing or mental illness."

The MCSCDT and the outstanding work of Jewell and his colleagues have gained international recognition in the field of drug court treatment and effectiveness. Jewell recently had a paper accepted by the International Journal of Mental Health Addiction titled "The Long Term Effectiveness of Drug Treatment Court on Reducing Recidivism and Predictors of Voluntary Withdrawal."

"Through the actions of our drug court and the support of Dr. Jewell, we are enhancing our community and making it safer, aiding in family restoration, improving the social welfare of our clients, and helping to reunite families who are falling victim to this drug," Cooper said.

"Providing treatment for drug use is incredibly important," Jewell said. "I'm so glad that the American justice system has moved from a 'catch-and-punish' to a 'catch-and-treat' model. There will always be people who refuse treatment, but I hope this success continues to build nationwide. I appreciate the help I've received from others in building awareness, and I'm blessed to be a part of it."

Building a Sustainable Campus

Sustainability and Student Retention

Recent statistics from *The Princeton Review* indicate that 69 percent of college applicants cite a university's level of commitment toward environmental sustainability initiatives as a factor in the college selection process, with 24 percent of applicants citing such initiatives as a very significant factor in the selection process.

SIUE has been and continues to be committed to campus sustainability. In 2013, Connie Frey Spurlock, PhD, associate professor in the Department of Sociology and Criminal Justice Studies, was named the University's first-ever faculty sustainability fellow.

"Completing SIUE's first STARS (Sustainability Tracking, Assessment & Rating System) assessment provided a means of identifying needs and developing strategies for transforming curriculum and pedagogy," said Kevin Adkins, SIUE sustainability officer. "SIUE recognized that a faculty member would be an ideal liaison to work with the Provost's Office and provide a much-needed connection to Student Affairs."

The fellow works across academic disciplines to increase awareness of sustainability among the faculty, foster the inclusion of sustainability into the curriculum and encourage scholarly activity in fields related to sustainability. "The faculty fellow, therefore, becomes an agent for change and works directly with other faculty members," said Frey Spurlock.

Frey Spurlock also works closely with Adkins to support the University's sustainability initiatives and conduct relevant research. In a recent project, "Sustainability: A Solution to Student Retention," they set out to determine if a correlation exists between campus sustainability initiatives and student retention and graduation rates. The pair analyzed the presence of these relationships by collecting data on regional, state-funded academic institutions with student enrollments under 20,000.

Statistical findings were interpreted using several variables, including:

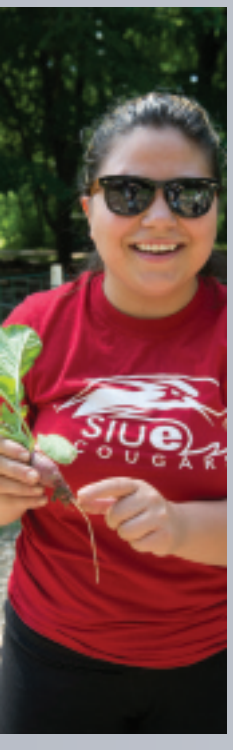
- Number of Leadership in Energy and Environmental Design (LEED) buildings present on an institution's campus
- Presence of an Office of Sustainability/ sustainability officer
- Presence of an established committee in support of sustainability initiatives on campus
- Association for the Advancement of Sustainability in Higher Education (AASHE) membership
- Institutional completion of STARS assessment
- Presence of sustainability in curriculum
- Presence of sustainability in co-curricular activities

"Initial studies were conclusive in finding that academic institutions which possess the first five criteria do, in fact, enjoy higher student retention rates and, with the exception of one group of institutions included in the study, yield higher graduation rates," Frey Spurlock said.

Frey Spurlock and Adkins analyzed three groups of schools: *The Princeton Review's* Green Rating Honor Roll schools; SIUE's Illinois Board of Higher Education (IBHE) peer institutions; and the University's *U.S. News & World Report* peer schools.

When schools in each of these three groups had all five sustainability criteria in place, those schools reported higher retention rates. For example, IBHE peer schools with fewer than five criteria in place have an average retention rate of 73 percent. Schools in that same group with all five criteria in place have an average retention rate of 78 percent—a full five percentage points higher than schools without all five criteria.

The same pattern held true for graduation rates, with the exception of the *U.S. News and World Report* schools. Those schools, instead, showed a one percent decline in graduation rates. Both IBHE peer schools and The Princeton Review's Green Rating Honor Roll schools, however, showed increases of seven percent and five percent, respectively.



A Campus Commitment

Involvement in campus sustainability initiatives extends beyond Frey Spurlock and Adkins. The commitment to sustainability reaches many members of the SIUE community.

The Sustainability Advisory Group comprised of faculty, staff and students was created in 2008. Led by the vice chancellor for administration, the group meets regularly and provides leadership for campus sustainability initiatives by assessing progress on existing initiatives and vetting ideas for future efforts.

SIUE students learn about the University's commitment to sustainability before they step into their first classroom. During freshman orientation, incoming SIUE students have the opportunity to visit an information table hosted by Frey Spurlock and Adkins. Students learn about:

- The definition of sustainability
- The Association for the Advancement of Sustainability in Higher Education
- SIUE's Bike Share Program and Water Bottle Refill Stations
- LEED-certified and green buildings on campus
- SIUE's Student Organization for Sustainability
- The University's Sustainability Literacy Assessment

SIUE is also home to two sustainability-focused student organizations: Student Organization for Sustainability (SOS) and Natural Connections. Both groups work diligently toward the betterment of the world around them.

SOS student-members promote awareness of environmental issues and natural resource sustainability and plan events which help alleviate unsustainable activities. Last year, SOS members received more than 1,100 signatures from campus community members on a petition pledging continued commitment to recycling practices. The organization also collaborated with the Office of Sustainability and students from an undergraduate interpersonal communication class to host the University's first Recycle Bowl. The event served as a fun way to interact with students and increase recycling awareness throughout campus by allowing students to recycle a plastic bottle, aluminum can or paper cup in exchange for a reusable bottle.

Natural Connections promotes awareness of and participation in community gardens to create a connection between people and the food they consume. The student group conducts workshops to educate members on various nutritional facts of homegrown produce, as well as how to grow food and work a garden. Last year, The Gardens at SIUE, a 35-acre botanical garden on the SIUE campus, provided the group with land for an on-campus community garden. Members who participated in the planting and tending of the gardens throughout the growing season were encouraged to harvest and eat the vegetables from the garden.

"The students involved in SOS and Natural Connections spend a tremendous amount of time and energy organizing campus events to promote sustainability," Adkins said. "But their greatest contribution is educating their fellow students about sustainability, how it touches on every aspect of their education, and the impact their decisions have on the environment and their communities."

SIUE is recognized as a STARS Silver Institution for accomplishments in campus sustainability. The rating is based on the Sustainability Tracking, Assessment and Rating System for campus-wide sustainable practices from the Association for the Advancement of Sustainability in Higher Education. Schools are graded on academics, engagement, operations, planning, and administration and innovation.

Pooling Awareness for Big Data and Pollution

A one-acre plot located on the west side of the SIUE campus, the "Wave Pool" environmental artwork visually connects the Engineering Building and the Art and Design West Building through a rolling, oceanic display.

Created by Brad Eilering, a Master of Fine Arts candidate at SIUE, the artwork is constructed upon a grid-like, grassy landscape and features repurposed railroad ties at various heights. Each tie is topped with a blue cap, made of repurposed plastic bags, to encase information on harmful environmental stressors. These ties are fitted into particularly-mowed grass contours to represent the relationship between man-made inputs and nature. Through these visual aesthetics, Eilering seeks to capture observers and inform them of the issues surrounding plastic pollution in our oceans.

"Discarded plastics contain toxic chemicals and are finding their way into the oceans via storm sewer connections to rivers," Eilering said. "These chemicals accumulate in the food chain and impact many aquatic life forms, including several fish species that are consumed by humans. The solution lies in managing our waste, cleaning the oceans and finding alternative packaging materials."

Each year, up to 12 large-scale, outdoor works of art are designed and installed by current students through the Sculpture on Campus program. Supported by several University departments, this unique program provides art students a stipend to offset the cost of materials. The original student sculptures remain on display for one year.

While aquatic plastic pollution is largely documented, the quantity of plastic entering the oceans due to land-generated pollution remains unknown. Using globally collected data on solid waste, population density and economic status, researchers from the American Association for the Advancement of Science have estimated that 275 million metric tons of land-generated plastic pollution was produced by 192 coastal countries in 2010, with between 4.8 and 12.7 million metric tons entering the oceans. Without improvements to the infrastructure of global waste management, the quantities of aquatic plastic pollution are predicted to increase significantly by 2025.

Eilering found inspiration for his sculpture by fusing his interests in art, science and Boyan Slat's Ocean Cleanup project. The Cleanup project proposes to use ocean currents to allow plastic waste to concentrate itself, reducing the theoretical cleanup time from millennia to mere years.

While Eilering's collected data is physically displayed in the sculpture, it is further represented symbolically through the number of ties in the piece and the heights of each. Each of the sculpture's nine "full height" ties refer to one metric ton of plastic pollution currently entering our oceans while the heights of the other ties represent data for other pollution quantities.

The sculpture's location is also significant, as the background of the Art and Design West Building is intended to represent a man-made influence which further beautifies the landscape.

The goal of Eilering's research is to create awareness of how art-based thinking is relevant to science-based environmental issues–and he has worked tirelessly to do just that. Eilering and his sculpture have become highly regarded in the field. In addition to being chosen as part of the SIUE Sculpture on Campus, his research was rigorously reviewed before he was invited to present his project last year at the Data Science Workshop at the University of Washington, an event sponsored by the National Science Foundation. Eilering also presented his Wave Pool sculpture this past summer at the International Congress of Qualitative Inquiry at the University of Illinois.

"Creating awareness on a topic I'm passionate about through my love for creativity has been a magnificent experience," Eilering said.

2015 Outstanding Thesis Award

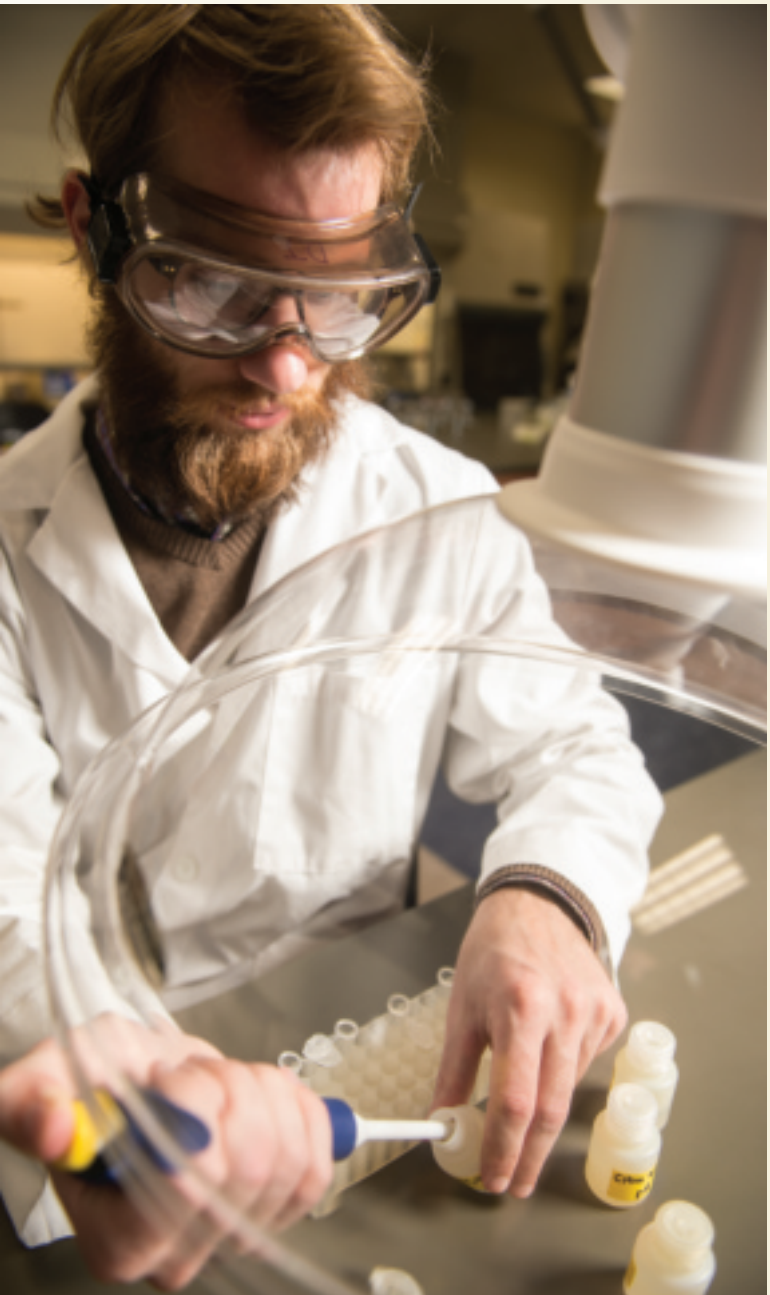
Drake Jensen, MS Chemistry '15, is the recipient of the SIUE 2015 Outstanding Thesis award. Titled "Functional Analysis of Calmodulin's Calcium Dependent Inactivation of Orai1," Jensen's thesis research focused on the further understanding of calcium ions and their intracellular movement through the transmembrane calcium ion channel, Orai1.

The Outstanding Thesis Award recognizes and rewards a graduate student whose thesis has been selected by the Graduate Student Award Committee as outstanding among all those nominated during the previous academic year. The winner receives a monetary award and their thesis is forwarded by the University to the Midwestern Association of Graduate Schools Distinguished Master's Thesis Award competition.

Essentially, Jensen's research created a binding relationship between the calcium-binding protein, Calmodulin, and two Orai1 peptide sequences to deactivate calcium intake through the transmembrane calcium ion channel, thus preventing excessive levels of cellular calcium uptake.

"The results are especially remarkable because this new-found interaction appears to be vital for cells to replenish cellular calcium depletion through a process called store-operated calcium entry," said Jensen's thesis advisor Chin-Chuan Wei, PhD, associate professor of biochemistry in the SIUE Department of Chemistry.

Several human diseases are directly associated with imbalances of intracellular calcium levels. Excess calcium uptake – also known as hypercalcaemia – is a leading cause of myocardial infarctions, relating Jensen's results to health issues such as parathyroid functionality, tumor metastasis, kidney failure and severe combined immunodeficiency disease (SCID).



Through these findings, Jensen has not only impacted the physiological understanding of biochemistry but has also provided rich insight into further drug discovery in the area of immunology.

"Drake became the first researcher to show that signal changes in steady-state fluorescence do not always correlate with binding affinity– discrediting a common assumption in the field," Wei said. "He was also the first to confirm the structural behavior of Calmodulin to Orai1 compounds in solution, setting new ground for what is now considered a rare binding mode for Calmodulin.

"While extensive research exists in the area of Orai1 channel activation, Drake is one of a few researchers to describe and propose plausible hypotheses for channel deactivation to halt intracellular calcium influx."

Similarly, Leah O'Brien, PhD, professor and chair of the SIUE Department of Chemistry, said, "Drake was the first to separate the Orai1 complex into smaller domains so that various active portions of the channel could be identified."

Jensen is currently a PhD candidate at the Washington University in St. Louis School of Medicine, studying biochemistry and molecular biophysics. He remains involved at SIUE, actively engaging in Wei's research lab to train SIUE undergraduate and graduate students while also gathering data for projects outside the scope of his thesis work.

Small Business Development Center

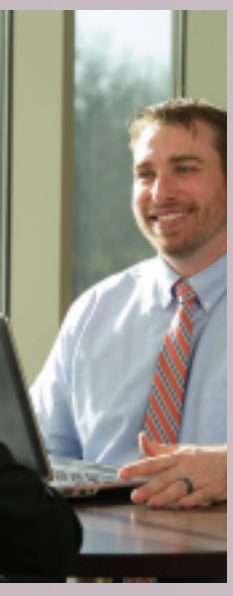
Small Business Development Centers were created in 1984 by the U.S. Small Business Administration (SBA) to work with small business owners and entrepreneurs to help ensure their success.

As part of a national network of more than 900 Small Business Development Centers (SBDC) throughout the United States, the Illinois Metro East SBDC at SIUE (SIUE SBDC) assists beginning entrepreneurs and existing small business owners operating in a nine-county region. Housed within the SIUE School of Business, the SIUE SBDC is supported by a grant from the Illinois Department of Commerce and Economic Opportunity and has enhanced the region's economic interests by providing one-stop, no-cost assistance to individuals by means of business plan development, counseling, training, research and advocacy for new ventures and existing small businesses for more than 30 years.

A hotbed for innovation and entrepreneurship, the SIUE SBDC has positioned itself as a unique service to the Metro East region and the St. Louis Metropolitan area. Serving well over 500 clients each year, it has seen tremendous growth in entrepreneurial assets, infrastructure and activity in the region. The SIUE SBDC offers diversified services in agriculture, manufacturing, technology, retail and various other industries.

"We are positioning the SBDC to be the conduit for innovators and high-growth businesses being created in our region," said Jo Ann Di Maggio May, interim director of the SIUE SBDC. "We are finding ways to develop professional partnerships, promote economic activity and innovation, expand the resource base, and take full advantage of what is available in this region.

"Whether it is enhancing talent development and available business capacities or promoting resources available through the University, we are connecting our clients with these assets to make a significant impact in the region. It's an exciting time for us."



While the SIUE SBDC specializes in business startup, they also foster long-term relationships with clients, making themselves an available resource when small business owners are confronted with business issues or advancement opportunities.

To provide additional client services, the SIUE SBDC collaborates with the SIUE School of Business. Through class assignments, business students work on various projects for SBDC clients, such as website creation and marketing initiatives.

The SBDC also partners with the School to sponsor on-campus events to raise awareness about entrepreneurial opportunities, including "The Other 40" business plan competition and "100 Donuts, 100 Ideas." The primary goal of these events is to get students thinking about their personal innovative and entrepreneurial abilities while also providing them with the knowledge to move forward with such endeavors.

"We are striving to provide resources and advance our community perception and commitment as a regional leader in entrepreneurship, and flying the SIUE flag while we're doing it," said May.

Among the numerous client success stories are Saving Grace Beauty, LLC, and Pacidose.

Led by SIUE alumna Erica Harriss, Saving Grace Beauty LLC was recognized as first-prize winner at the 2016 local InnovateHER Business Challenge. Harriss received a $2,500 cash prize and an array of in-kind legal services from Mathis, Marifian and Richter Ltd. of Belleville.

InnovateHER

Sponsored by the U.S. Small Business Administration, InnovateHER Business Challenges bring together creative ideas in support of women's efforts to push the professional limits, break the glass ceiling and create positive changes in professional gender equality. The competitions seek to lift and aid female entrepreneurs as they generate innovative solutions to key challenges of the 21st century.

Harriss worked with a graduate-level international business management course in the SIUE School of Business to consider multinational sales of her major product, Saving Grace Hair Powder – an all-natural, daily-use hair care product that covers growing roots and extends the time between hair coloring treatments.

"I realized this was a real opportunity when a local hair salon called and asked about carrying my products," Harriss said. "My next step was to attend a workshop at SIUE for starting a new business and get the help I needed to launch my startup."

Dr. Agnes Scoville, along with her husband and business partner Anson, created Scoville & Co. to produce the award-winning product Pacidose, which allows medication to be accurately dosed and delivered to infants via a soft pacifier nipple. She first recognized the need for this product as an emergency room doctor and perfected the idea with her own child.

Scoville captured third place at the 2016 national InnovateHER Business Challenge. Scoville and the other nine finalists were invited to the White House and met with the SBA's Office of Women's Business Ownership.

"I'm grateful to the SIUE SBDC for giving me the opportunity to continue marketing my product," Scoville said.

For the future, the SIUE SBDC remains committed to connecting both the University and the Metro East community with opportunities that can make major impacts. When balancing multiple life obligations, people may become reluctant to take on more commitment – even if it means giving up on their entrepreneurial dreams. Di Maggio hopes to combat this perception. "The SIUE SBDC is a resource and an advocate for entrepreneurs and small business owners. We are here to help with the challenges that may be perceived as obstacles."

Technology Transfer at SIUE

The SIU Office of Technology Transfer assists SIUE faculty, staff and students with protecting and commercializing intellectual property. They assess ideas for their ability to be protected (such as through patenting) and their marketability. They also license the products—benefiting SIUE, the inventors and the public.

Learn more
siusystem.edu/tech-transfer

Lead-Free Solder Joint Reliability Testing

Jeff Darabi, PhD, associate professor of mechanical and industrial engineering in the SIUE School of Engineering, has concluded research on the reliability of leaded versus lead-free solder joints. In partnership with Basler Electric, in Highland, Ill., Darabi tested these solder joints to determine the abilities of each to withstand certain thermal, mechanical and electrical behaviors.

Solder joints are non-homogeneous structures which are crucial and complex elements in most electronic assemblies. As such, they are subject to non-uniformly distributed forces exerted by interconnected parts. These forces can result in solder joint failure and functionality, including microstructural coarsening, micro-void formations, crack initiations and crack growths.

Darabi's work is critical to the success of the electronics industry, as all solder joint producers are required to begin lead-free production by 2017. Although leaded solder compounds have been found to develop stronger bonds, there is rising concern for the adverse health effects of lead. The adjustment of practices is also important for international business success, as the European Union discontinued commercialization of lead-based products in 2006.

"Basler Electric serves markets where robust quality products are paramount," said Jeff Burnworth, manager of technology development at Basler Electric. "It was imperative for Basler to study and understand the impact of restriction of hazardous substances (RoHS) compliance while still meeting the customer expectations of a robust quality design. This project confirmed that the reliability and performance of Basler's products will not be affected when designed and manufactured to be RoHS compliant utilizing the lead-free solder process."

Assistants on the project included co-principal investigator Terry Yan, PhD, professor of mechanical and industrial engineering in the SIUE School of Engineering, as well as three graduate students, Hamed Gholami Derami, Sivash Ghanbari and Shravan Kumar Vettigunta.

"It was important to me that I involve student researchers in this project," said Darabi. "It is our job as faculty to mentor and ensure students are ready to enter the high-skilled workforce."

Beginning with an extensive survey of literature, Darabi researched to gain a better understanding of the reliability factors of both types of solder joints. Among the most common causes of failure is thermal fatigue, often due to a mismatch in the coefficients of thermal expansion (CTE) to other electronic components, substrates and solder joints. Other common failure mechanisms are mechanical stress (often caused by fatigue, vibration of electronic interconnections and drop impacts) and electromigration failures (characterized by excessive electrical current densities in electronic components). Solder joint functionality is also threatened by metallurgical factors, such as exposure to inter-metallic compounds and corrosive substances.

Darabi in close collaboration with engineers at Balser designed and constructed custom electronic assemblies – mounted on a vibration table and equipped with an accelerometer and LED illumination – in order to test the solder joints for these failure mechanisms. Using a colored dye penetration method, the researchers occasionally paused testing to determine if there was any presence of cracks. Tests were continued until each solder joint became inoperable.

Analyzing Trends in the Mississippi River Ecosystem

A river spanning more than 2,300 miles, the Mississippi River is a biological hotbed. It is home to thousands of living organisms, including more than 150 species of fish—many of which are endangered or extinct.

The Upper Midwest Environmental Sciences Center and various other contracting agencies have created a unique and complex data system that studies changes in the Mississippi River ecology over time. Now possessing nearly 23 years of data, the U.S. Geological Survey is the only big river management collection of this caliber in the world.

Using his self-developed trajectory analysis tool, Peter Minchin, PhD, associate professor of biological sciences at SIUE, is performing data analysis and seeking further explanation on ecological trends of the Mississippi River.

By studying various fish species, Minchin seeks to answer whether there have been ecological changes to the river, whether there have been ecological changes to the fish community and, if so, whether the community is changing in a particular direction.

Minchin has found that positive ecological changes and trends have been present along the Mississippi River, revealing that strong strides have been taken toward successful ecosystem restoration of the river's habitats. Dividing the river into "pool" segments via locks and dams, Minchin and his collaborators used identical research methodologies to collect data at six of these pools throughout the river system to analyze variables such as water chemistry, water temperature, water pH levels, chlorophyll levels, and vegetation growth.

Minchin is currently determining the specific variables which are causing changes in each pool but has concluded that the causes of changes and trends throughout the river system are quite different due to the differentiated ecosystems and habitats which are present throughout the channel.

"For example, the river is much narrower and has far more vegetation up north, near Minnesota," Minchin said. "Near St. Louis, the river has increasing nutrient loads due to agricultural runoff. As a result, the causes of change are entirely situational. Those variables impacting change in one area of the river may be entirely different than those variables causing changes downstream in other pools."

While positive findings have been determined, Minchin warns of the harms that continue to threaten the Mississippi River's ecological health.

"Studies have found that the combination of man-made levies, insertion of locks and dams, and river transportation have progressively and massively changed the overall ecology of the Mississippi River," Minchin said. "It has even changed the river's flood patterns and the seasonality of when floods occur."

The Mississippi River has numerous floodplains which are a major source of nutrients and are critical to the biological growth and development of aquatic species. Because of human influences, the floodplains' nutrients and other vital resources are not fully replenished each year, due to seasonality fluctuations in flooding.

Minchin's trajectory analysis tool has pioneered the future of big river ecosystem management by allowing for data trend analysis and manipulation of variables to further improve the health of river systems.

"The hope is that other international teams can find similar success in setting up these large monitoring programs in rivers such as the Nile River, the Amazon River and more," Minchin said.

SELECTED RESEARCH GRANTS FOR GRADUATE

SIUE graduate students Lisa Emily Adden, Molly McCready and Uyoyoghene Tina Onothoja are all 2015 recipients of Research Grants for Graduate Students (RGGS) Awards. The purpose of RGGS is to support research and creative activities initiated and conducted by SIUE graduate students to enhance their academic progress. Through the mentorship of faculty advisors, recipients typically work on projects related to their thesis or final projects.

Mechanistic Molecular Toxicology of Silver Nanoparticles on Escherichia coli

While they are imperative to our daily routine, we rarely stop to ask the question: How are laundry detergents, cosmetics and other consumer products not only impacting me but the world around me? Lisa Adden, a graduate student in the Department of Biological Sciences, seeks to answer this important question through her thesis research titled "Mechanistic Molecular Toxicology of Silver Nanoparticles on Escherichia coli."

Adden will investigate the reactions between silver nanoparticles and Escherichia coli—more commonly known as E. coli—in an effort to determine the potential risk of ecological contamination by the nanoparticles. While the use of silver nanoparticles is currently unregulated by the Food and Drug Administration and the Environmental Protection Agency, their effect on reactive oxygen species (ROS) can be quite severe. Natural byproducts of growth in environments containing oxygen, ROS are toxic to organisms but normally are produced in negligible quantities. However, Adden's research hypothesizes that the presence of silver nanoparticles will increase ROS production.

Adden seeks to determine the threshold at which silver nanoparticles become environmentally toxic. Through her thesis research, she hopes to make scientific contributions which will provide insight in the identification of solutions to environmental nanoparticle contamination.

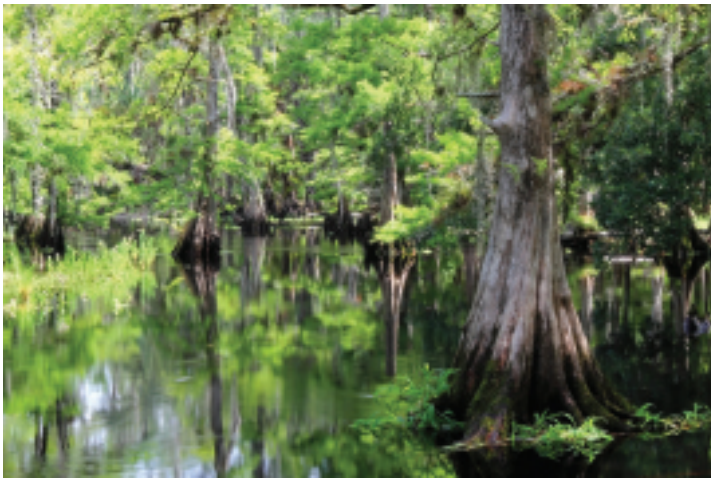
An Analysis of Community Capacity to Implement Sustainable Water Policy in Sprawling Municipalities

According to Molly McCready, a graduate student in the Department of Environmental Sciences, there is an issue that too often goes unnoticed in urban living: water system sustainability and management.

In her thesis work, titled "An Analysis of Community Capacity to Implement Sustainable Water Policy in Sprawling Municipalities," McCready will address the issue of urban sprawl on water resources, noting that urban development often outpaces the resource planning and management necessary to accommodate drastic community growth. She cites a 99 percent increase in population and a 127 percent increase in U.S. water usage since 1950, resulting in nearly one in 10 watersheds being stressed as demand for water resources exceeds natural supply.

McCready indicates that a transition into more sustainable water management practices is necessary but requires citizen compliance through collaborative governance. She argues that this can be facilitated through direct citizen engagement with policymakers to form collaborative and transparent governance. McCready will perform a case study analysis in Waukesha, Wis., using interviews and surveys. She will compare these data to previously conducted studies in Boston, Mass., and Charlotte, N.C., to assess previous municipalities' successes and failures with collaborative governance for water management.

Working with decision-makers and community members in Waukesha, McCready will study the process of how collaborative decision-making proceeds within the community and gain an understanding of how community members perceive their capability to act as autonomous individuals through participation in democracy on sustainable natural resource management.



Using TM Satellite Images in Monitoring Changes in the Cache River Basin

Comprising more than 6,314 acres of protected land in southern Illinois, the Cache River Wetlands are designated by the Ramsar Convention of the United Nations Educational, Scientific and Cultural Organization as one of only 37 wetlands of international importance in the United States. Because of the area's rich biological variety, the Cache River Wetlands rank similarly to the Florida Everglades in ecological value. However, the Wetlands are at risk for loss of its remaining land area due to severe anthropogenic impact, natural impact and ecological degradation.

As part of her thesis work, titled "Using TM Satellite Images in Monitoring Changes in the Cache River Basin in Illinois, USA between 1985-2014," graduate student Uyoyoghene Tina Onothoja from the Department of Geography is poised to find solutions for restoration of the Cache River Wetlands.

Onothoja's study is focused on identifying land use and land cover changes in the Cache River Wetlands, the causes of these changes and local efforts toward conservation of the Wetlands' remaining resources. Onothoja will use remote sensing image classification methods to locate areas of the wetlands which were most vulnerable to land use or land cover changes between 1985 and 2014. Through this data, Onothoja will generate maps which reveal historical land changes, the human and natural causes of these changes, land areas which are most threatened by change, and identification of land uses that have most displaced the wetlands over time.

With the assistance of local wetlands conservation groups, Onothoja will develop a sustainable wetland management strategy to provide conservation solutions for the Cache River Wetlands.

Healthcare Informatics Student's Work Provides Life-saving Benefits

Welcoming a new life into the world is a beautiful moment. For an expectant mother, the medical field has greatly evolved to provide ease in the birthing process. However, a benefactor of St. Louis Children's Hospital recognized a critical, unmet healthcare need: specialty prenatal care for rural women in high-risk pregnancies. Through support from St. Louis Children's Hospital and BJC Healthcare, Jeanne Desmond, an SIUE master's in healthcare informatics alumna, was able to complete a telemedicine initiative to aid this underserved population in Illinois and Missouri.

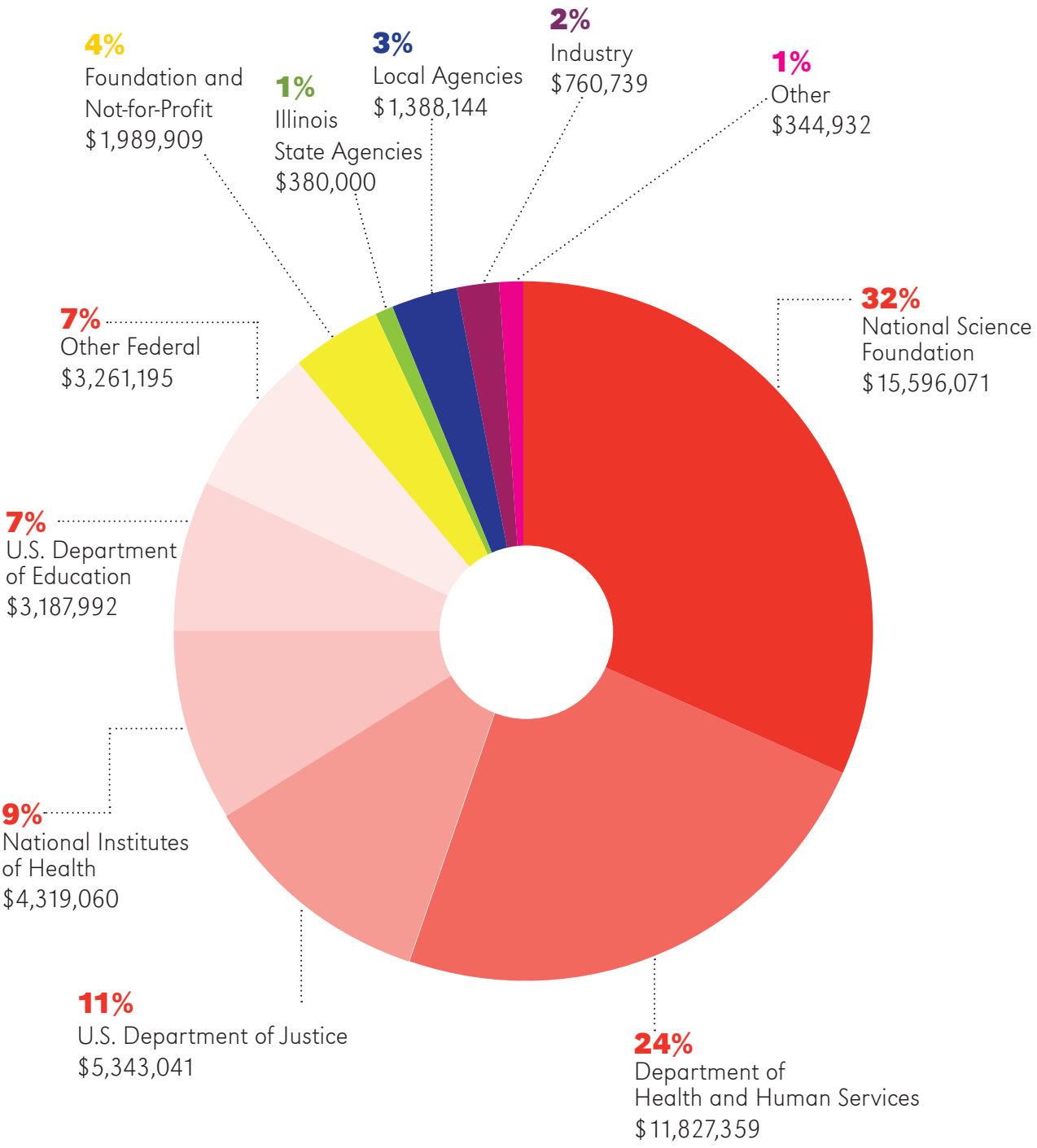
A collaboration of St. Louis Children's Hospital, Washington University School of Medicine, BJC Health Care and Poplar Bluffs Regional Medical Center, Desmond's program transfers ultrasound images from an ultrasound device into secured cloud storage. Through this capability, medical professionals have real-time access to ultrasound information, allowing sonographers and physicians to provide immediate maternal-fetal specialty consultations with expectant mothers via teleconference.

Originally released at Poplar Bluffs Regional Medical Center, Desmond's program has since been accepted by facilities in Maryville, Ill., Mount Vernon, Ill., and Southern Illinois Health in Carbondale.

"Our first day live was remarkable," Desmond said. "When a patient's studies arrived, the sonographer and the doctor looked concerned. They immediately ordered the mother of twins be sent for labor and delivery monitoring, detecting that one of the babies was at grave risk. An emergency delivery team was assembled and sent to location by helicopter, later airlifting the baby in distress to St. Louis Children's Hospital. Without this program, the outcome would have been quite different for this mother and her twins."

Externally Sponsored Projects

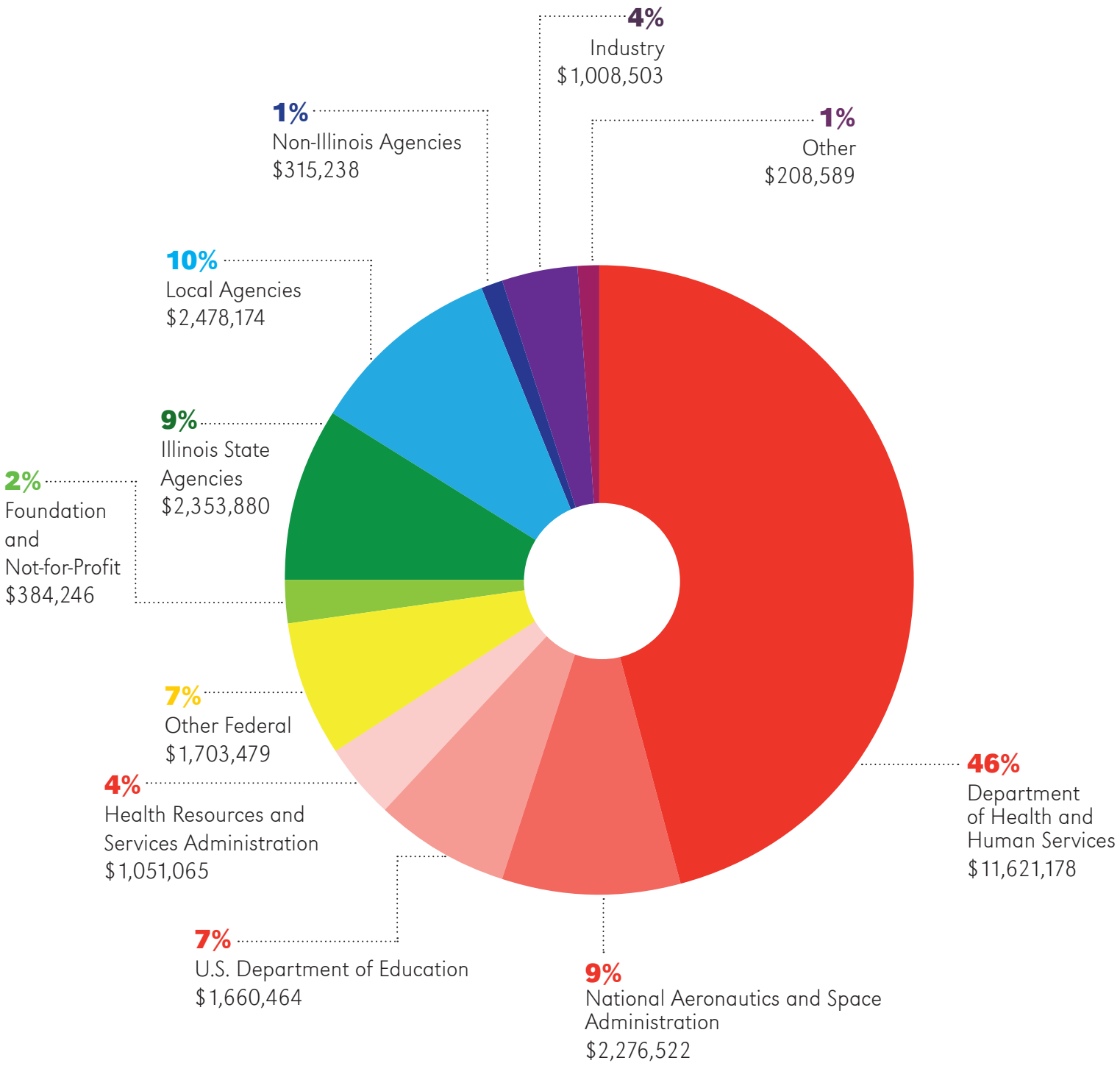
FY16 Proposal Submissions by Agency Type



92% of FY16 proposals* were submitted for federal funding

*by dollars

FY16 Awards by Funding Type



90% of FY16 awards* were federally funded

*by dollars

INTERNAL GRANT AWARD WINNERS

Emeriti Faculty Association

Founded in 2013, the SIUE Faculty Emeriti Association provides opportunities for retired faculty to remain actively involved in the SIUE community while supporting current faculty. Each year, the group awards grant funding to select faculty projects aimed at strengthening the academic quality of programs and enhancing the University's reputation.

2015 Grant Award Recipients

- Jessica Harris, PhD, Assistant Professor, Department of Historical Studies, College of Arts and Sciences
- Bryan Jack, PhD, Assistant Professor, Department of Historical Studies, College of Arts and Sciences

Drs. Jessica Harris and Bryan Jack received an award of $3,000 to help finance a trip to New Orleans for students enrolled in History 130, History of Black America. Harris and Jack will lead students on an exploration of sites related to the internal slave trade. Upon return, students will be required to share their experiences with other students and engage them in discussions of race and diversity.

Vaughnie Lindsay New Investigator Award

This award is presented to junior faculty members to recognize and support individual programs of research or creative activities that have the promise of making significant contributions to their field of study and to SIUE in general.

Sarah Luesse, PhD, Assistant Professor, Department of Chemistry, College of Arts and Sciences

Luesse's research focuses on the development of organic reactions that are helpful for the design and preparation of potential pharmaceutical drug candidates. According to Luesse, the overall goal of her work is to develop reactions that can be used to construct complex organic molecules that resemble those structures found in nature. The method being developed involves a multi-component coupling reaction, meaning several different chemicals are combined to make a complex molecule in one step. Luesse's research is important within the healthcare arena and clearly demonstrates her commitment to SIUE's teacher-scholar model.

Competitive Graduate Awardees

Mauryne Kihuriri Abwao, Mass Communications
Tammy Banning, Social Work
Allison Bischoff, Psychology
Laura Boville, Teaching English as a Second Language
Jessee Crane, Art Studio
Alyssa Golike, Art Therapy Counseling
Kay Guyer, Art Therapy Counseling
Md Nahid Hasan, Mechanical Engineering
Molly Josephs, Kinesiology
Kassandra Karssen, Biological Sciences
Luke Lack, Public Administration
McKenzi McClain, Applied Communication Studies
Amanda Mortimer, Accountancy
MD Monjur Ellahi Rafi, Electrical Engineering
David Seidel, Biological Sciences
Ajim Uddin, Economics and Finance
Britne Walker, Social Work
Daniel Wescovich, English and American Literature
Olana Yadessa, Biological Sciences

Research Grants for Graduate Students Awardees

Lisa Adden, Biological Sciences
Philip Alabi, Chemistry
Jordan Albright, Psychology
Aaron Alexander, Biological Sciences
Md Ali, Biological Sciences
James Beil, Psychology
Nicole Benner, Art Studio
Branden Bennett, Biological Sciences
Jennifer Bivens, Psychology
Elizabeth Caldieraro, College Student Personnel Administration
Kathryn Carter, Biological Sciences
Noah Dell, Biological Sciences
Kimia Emami, Art Studio
Alison Gabel, Art Therapy Counseling
Carolyn Gillen, Art Studio
Matin Golozar, Mechanical Engineering
Carly Gridley, Biological Sciences
Christina Hall, Kinesiology
Daniel Halleran, Mechanical Engineering
Matthew Harris, Kinesiology
Aubrey Harris, Chemistry
Melisa Hillman, Biological Sciences
Joanna Hoge, Art Studio
Rahbia Hussein, Chemistry
Stephanie Jacobs, Psychology
Candice Johnson, Biological Sciences
Frantz Joseph, Environmental Sciences
Nichole Kaufman, Chemistry
Samuel Keck-Flory, Biological Sciences
Joseph Keevin, Environmental Sciences
Alexis King, Biological Sciences
Jill La Rue, Biological Sciences
Janna Locke, Psychology
Jenelle Mathias, Biological Sciences
Molly McCready, Environmental Sciences
Caitlin McLaughlin, College Student Personnel Administration
Deependra Mishra, Electrical Engineering
Ryan Momenteller, Biological Sciences
Ummul Vara Qurratul Ain NLN, Biological Sciences
Corrinne O'Brien, Biological Sciences
Uyoyoghene Onothoja, Geography
Mojdeh Raeisi, Chemistry
Rachel Rodgers, Biological Sciences
Christine Ryder, Psychology
Hana Thixton, Biological Sciences
David Umbaugh, Kinesiology
Kathleen Veys, Art Therapy Counseling
John Wall, Biological Sciences
Rachel Walther, Environmental Sciences
Danie Wilson, Psychology
Kelli Zenner, Social Work

Research Grants for Research Doctoral Students Awardees

Margaret Hartig, Nurse Practitioner
Andrew Williams, Educational Leadership

Annette and Henry Baich Award

This award is given annually to the most outstanding Seed Grant for Transitional and Exploratory Projects proposal for basic research conducted within the parameters of the Sigma Xi Society. Disciplines include the physical sciences, life and medical sciences, earth science, engineering, psychology and mathematics.

Timothy York, PhD, Assistant Professor, Department of Electrical and Computer Engineering, School of Engineering

York's award-winning proposal, "Intrinsic Optical Detection of β-Cell Function Using Polarized Light," seeks to investigate whether polarized light can be used to detect β-cell function and dynamics in rat islet cells. York aims for his project to provide an opportunity to explore a new area of diabetes research using his hypothesis that β-cells produce a change in optical polarization signature during insulin secretions and can be measured using division-of-focal-plane polarimetry at high frame-rates without the use of chemical markers or dyes.

INTERNAL GRANT AWARD WINNERS

Paul Simon Outstanding Teacher-Scholar Award

This award recognizes a faculty member for being an outstanding teacher and researcher and for demonstrating the belief that to be a good teacher, one must also be a good scholar. Winners have shown significant contributions to original research or creative activities and have successfully integrated those contributions into their teaching and mentoring practices.

Cristina De Meo, PhD, Professor, Department of Chemistry, College of Arts and Sciences

De Meo has been a principal investigator (PI) or co-PI on 10 grant submissions, resulting in more than $500,000 in externally funded grants and $9,300 in internal grants. In her 13 years with SIUE, De Meo has trained 25 undergraduate students and 13 graduate students. She has served as chemistry club advisor, student assessment and standards committee member, and curriculum committee member chair. Almost all of De Meo's students have had the opportunity to travel and present their research at conferences. Sixteen of her students have been credited in her 22 publications. De Meo espouses a teacher-scholar model in her interactions with students and she finds the interconnection between research and teaching to be one of the most interesting and often fulfilling aspects of her job.

Concept Commercialization Award

This award promotes interest in and involvement with intellectual property development and commercialization in order to benefit the health, safety and welfare of the community and the economic welfare of the University. The award is primarily intended for patentable inventions or discoveries but can also support trade secrets and copyright materials.

Sohyung Cho, PhD, Associate Professor, Department of Mechanical and Industrial Engineering, School of Engineering

"Novel Syringe System for Isolation of Lipoaspirate" is a collaborative effort between Cho and co-researchers from the SIU School of Medicine. The researchers propose their innovative syringe device has a unique feature to separate fat from oil and blood more conveniently and quickly. They assert that their syringe system is simpler and more efficient than current methods, and therefore will reduce procedure time necessary for such processes as fat grafting, a widely used breast reconstruction technique. The Concept Commercialization Award was presented in conjunction with a corresponding School of Medicine Concept Development Award.

Distinguished Research Professor

This academic rank is awarded to faculty members in recognition of outstanding and sustained contributions to research and creative activities as a result of their continued commitment to scholarship beyond the period of their promotion to professor. Recognition is only awarded to nominees demonstrating superior merit. Award recipients are recognized with the rank of "SIUE Distinguished Research Professor" for the duration of their tenure at SIUE.

George Pelekanos, PhD, Professor, Department of Mathematics and Statistics, College of Arts and Sciences

Pelekanos has received international recognition for his contributions to inverse scattering theory for acoustic, elastic and electromagnetic waves. His publication output includes 30 research peer-refereed journal articles and seven educational peer-refereed journal articles. He has given 22 national and international conference presentations and invited talks. Pelekanos is co-investigator of a $829,979 National Science Foundation STEP-UP project, titled Student Teams Engaging Peers for Undergraduate Progress (STEP-UP), with funding through summer 2018.

Ali Kutan, PhD, Professor, Department of Economics and Finance, School of Business

Kutan's scholarship includes international finance and trade, macroeconomics and monetary economics, financial markets and institutions, and applied econometrics and time series analysis. His remarkable publication output comprises 125 peer-refereed journal articles, five contributed papers to various venues and eight book reviews. Additionally, Kutan has given 32 invited conference presentations and workshops.

Hoppe Research Professor Award

This award recognizes and supports a faculty member's individual program of research or creative activities that has the promise of making significant contributions to their field of study. One of the University's major research awards, recipients receive two years of support.

Jeremy Jewell, PhD, Professor, Department of Psychology, School of Education, Health and Human Behavior

Jewell's project, "Investigating the Effectiveness of Compassion Meditation with Behaviorally Disruptive Youth," will work to understand the impact of a compassion meditation (CM) program on the emotional, social and psychological functioning of behaviorally disruptive youth in a public school setting. According to Jewell, his project will be the second study to ever investigate the effects of meditation on behaviorally disruptive youth in schools. It will be the first to examine the effectiveness of CM on improving psychological outcomes in youth.

Visualizing Research Impacts

The SIUE Graduate School's inaugural Visualizing Research Impacts (VRI) competition, held during the spring 2016 semester, offered SIUE faculty, staff and students an opportunity to share the results and impact of SIUE research and creative activities through imagery.

Seventeen entries were received from faculty and students that depicted a wonderfully rich diversity of creative activities across the institution from the sciences, engineering, arts, humanities and education. Award winners received a $1,500 monetary prize to fund their continued research or creative activities.

"The VRI competition was created as a unique visual way of promoting the innovative research and creative activities at SIUE to a wider audience in a way that captures their imaginations," said Jerry Weinberg, associate provost for research and dean of the Graduate School. "The quality and creativity of the images resulted in passionate deliberation by the panel of alumni and emeritus faculty judges."

Most Creative Representation of Research Impact

"New York City Graffiti Density Map"

Kodi Thompson, MFA student, ceramics

Thompson experimented with such materials as concrete, resin, steel mesh and glass to produce a 4x3-foot piece depicting a density map of graffiti in New York City.

"The gridded steel mesh is layered together to represent higher amounts of graffiti in that location," Thompson wrote in his VRI submission statement. "The higher density areas are also more rusted as they get thicker, playing with the idea of time and history."

Best Representation of Research Impact

"Life Recoded"

Rachel Rodgers, MS student, biological sciences

Rodgers' winning imagery is representative of her research on the evolutionary relationships among all forms of life that can be inferred directly from DNA.

"As the oldest and most diverse group of vertebrates, fishes are of particular interest in understanding traits important to the success of the vertebrate lineage, which includes humans," Rodgers' submission statement detailed. "Salinity tolerance is among the most critical traits possessed by fishes, determining which habitats they may occupy. Understanding salinity tolerance is important for understanding emerging issues such as pollution tolerance."

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE
GRADUATE SCHOOL

Box 1046
Edwardsville, Illinois 62026-1046

NonProfit
U.S. Postage
PAID
Permit No. 4678
St. Louis, MO

GRADUATE STUDIES AT SIUe

A graduate degree from SIUE offers opportunities for career advancement and opens doors in a variety of career fields. The graduate programs at SIUE are academically rigorous, and the intellectual learning environment emphasizes research and practice. You will be challenged and inspired to hone your skills and develop new ones.

- SIUE offers more than 40 highly regarded master's and specialist degrees, post-baccalaureate certificates, four doctoral degrees and three cooperative doctoral programs.
- *Washington Monthly* and *U.S. News & World Report* consistently rank SIUE among the top master's granting colleges and universities in the nation.
- SIUE ranks first among all Emerging Research Institutions in the Midwest for research expenditures, according to the National Science Foundation.

Printed by authority of the State of Illinois, 8/16, 2.25m, 17070006

LEARN MORE
siue.edu/graduate-students
graduateadmissions@siue.edu

For more information about research and creative activities at SIUE, visit siue.edu/research or contact the Graduate School at 618-650-3010.