

# RESEARCH

AND

## GRADUATE STUDIES

ANNUAL REPORT FISCAL YEAR 2022



ILLINOIS STATE  
UNIVERSITY

*Illinois' first public university*



MISSION

Illinois State University is committed to the creation, dissemination, and preservation of knowledge through scholarship, research, and creative expression. These activities fulfill a solemn and longstanding obligation to the community at large by: furthering our understanding of the natural and physical worlds; exploring human behavior and culture—past and present; developing the organizational practices and technological innovations that power human and economic development; and improving the quality of life through cultural enrichment. This we do while embracing students as active participants in a community of scholars, thereby facilitating a lifelong, research-centered mode of learning that provides for a more informed and active citizenry to the benefit of society.

RESEARCH AND GRADUATE STUDIES

Units

Graduate School

Dr. Noelle Selkow, director

Research and Sponsored Programs

Jason Wagoner, senior director

Research Ethics and Compliance

Kathy Spence, director

Centers

Center for Collaborative Studies in Mathematical Biology

Dr. Olcay Akman, director

Center for Mathematics, Science, and Technology (CeMaST)

Dr. Rebekka Darner, director

Center for a Sustainable Water Future

Dr. Joan Brehm and Dr. Noha Shawki, directors

Office of Student Research

Dr. Gina Hunter, director

Stevenson Center for Community and Economic Development

Dr. Frank Beck, director

Message from the associate vice president

Fiscal year 2022 (FY22) represented a year of continued change in the Office of Research and Graduate Studies. There was a great deal of turnover in personnel, and we welcomed several new staff members. In addition to the support we provide internally as a university, external sources of funding make substantial contributions to the advancement of faculty scholarly activities, student experiential learning, and university outreach. The work made possible by such funding supports the core values of Illinois State University, most directly the values of learning and scholarship, civic engagement, and col-laboration. Furthermore, the research, creative activities, and educational outreach made possible by external support are integral parts of the University’s direction, objectives, and actions outlined in the University’s strategic plan, *Educate · Connect · Elevate*. External support is one factor in a number of rankings for the University, including our Carne-gie classification as a High Research Activity Doctoral Institution (R2). Support comes through a variety of channels (e.g., grants, contracts, agency dollars, foundation support, etc.) and for a number of functions (e.g., research, instruction, public service, etc.). This annual report attempts to capture grants and contracts support as well as highlight the work of our interdisciplinary centers, the Office of Student Research, and the Graduate School.



Several activities were points of pride from the previous year, including:

- continued supplemental funding for University Research Grants (URGs), the main source of internal support for faculty research;
- participation in helping secure approximately \$29.8 million in external funding to projects for FY22 and beyond;
- submission of 210 proposals through Research and Sponsored Programs and 174 awards;
- the appointment of a director of the Graduate School, Dr. Noelle Selkow;
- the first in-person Research and Creative Scholarship awards ceremony in April 2022;
- the holding of the University Research Symposium in the newly renovated Bone Student Center; the first in-person event since 2019. Three hundred students participated with 218 in person (103 undergraduates and 115 graduate students) and 82 choosing an e-poster option (28 undergraduate, 54 graduate);
- a fantastic student-led research lecture series co-sponsored by the office;
- the finalization of pooled fringe benefits charged to restricted and foundation funds and subsequent policy update;
- several prominent awards from the National Endowments for the Humanities and the Arts;
- the Illinois Tutoring Initiative, supported by a state contract, began offering tutoring statewide to help students who had fallen behind during COVID-19;
- increased efforts in engaging community and corporate partners to support and license our work and increase interaction with our faculty and graduate students;
- the Office of Student Research continued to promote and celebrate student research on campus, continuing the new student research support fellowships, adding more grant programs, extending programs to include graduate students, and continuing an Image of Research competition.

As we move into FY23, we expect to see even more progress. As one example, former Vice President for Academic Affairs Provost, and current Interim President, Dr. Aondover Tarhule, has announced a bold multi-year program to support multi-disciplinary teams. A group has been charged with strengthening support with corporate partner s, including support of students and re-search. Many announced shifts and policy changes have been announced in the federal landscape, and more may come following the fall election cycle. I look forward to working with our many partners to keep improving and innovating. Thanks for reading.

Craig C. McLauchlan

Associate Vice President for Research and Graduate Studies

Professor of Chemistry

# GRADUATE SCHOOL

The Graduate School has taken the past year to plan and improve. The pandemic has placed initiatives on hold while we navigate the year. Our graduate students are strong, resilient, and eager to learn. While our total overall graduate enrollment took a small dip in fall 2021, mostly due to international student visa approval issues, we are happy to say that our enrollment for fall 2022 has taken a turn in the positive direction.

Here are a few highlights from the past year:

- **Growing staff:** Our staff grew, adding three additional members to the Graduate School. Two coordinate admissions and recruitment initiatives, and our new assistant director assists in student success and professional development initiatives.
- **Student events:** The Graduate Student Association was as active as it's ever been, hosting several events each semester. Students were excited to connect with one another in person again.

- **New programs:** There were three new approved graduate programs, including a new B.S.N. to Ph.D. program in nursing, an online master's in English education, and a master's in computer science.
- **Student recruitment:** We've expanded our reach for student recruitment, working with a firm to advertise our graduate programs across the state.
- **Strategic planning:** The Graduate School hired Dr. Jeri Beggs to connect with departments, faculty, and students on campus to begin data collection for a new strategic plan.
- **Campus partners:** We continue to partner with campus units to enhance our students' experience.

We have several goals in 2022 and our guiding principle always goes back to: How can we best advocate for graduate students?

## New technology systems

We are in the beginning stages of implementing a current student system that centralizes forms and paperwork, aiming to make the process smoother for students and departmental contacts. In addition, we're working to make applying to the University even easier by implementing a centralized application system.

## New programs

We are excited to announce three new proposed programs thus far: a master's in public health online degree; a STEM master's of business administration; and a master's in business analytics. We will begin actively recruiting students for fall 2023 after the programs are approved by the Illinois Board of Higher Education in October.

## Enrollment growth

With the return to pre-pandemic levels, our goal to increase enrollment hasn't changed. We strive to recruit a diverse, well-balanced graduate student body. We strive to increase enrollment each year.

## Writing assistance

A new writing fellows program will begin later this fall to assist graduate students with academic writing. This cross collaboration with the Barbara and Larry Efaw Center for Educator Excellence will train three outstanding graduate students to serve as fellows in the program.

We believe our graduate programs are some of the best in the state and across the country. If you're an alum, prospective student, campus partner, or friend of the University with a story to tell about a graduate student experience, we'd enjoy hearing from you. This university is a special place and the Graduate School strives to cultivate positive interactions with students and staff.

Noelle Selkow, Ph.D., ATC  
Director  
Graduate School  
[nselkow@IllinoisState.edu](mailto:nselkow@IllinoisState.edu)



## Three Minute Thesis (3MT)

Britannia Howe had a big night on February 24, 2022. She won first place and the People's Choice Award at the Graduate School's Three Minute Thesis (3MT) competition, and then almost immediately rushed off to lead the dress rehearsal for *Legally Blonde*, the musical she directed which was opening the following night.

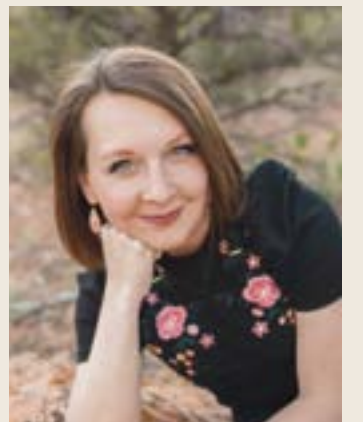
"I'm a bit surprised (about winning). I can't wait to tell my children," said Howe, an M.F.A. directing candidate, who has a 5-year-old son and a 9-year-old daughter. "This has been a great opportunity to distill all the research theories that I've tried in my practice of directing this production and this thesis project. And it's really brought to the surface what my goals are as an artist."

Howe's presentation, "'Take It Like a Man,' Exploring Gender Disparity in the Workplace through the Musical *Legally Blonde*," focused on the work she did preparing the cast for a musical that explores feminist themes. And she explained to the audience how she brought the production up to date from its debut in 2001.

"This show was written and originally cast by predominantly white actors. So, we asked ourselves who is being left out of the story. This led us to cast racially diverse and gender-nonconforming actors in roles that historically they haven't been considered for to create a sisterhood of different voices," Howe said. "When working with the actors, I used the rehearsal room as a laboratory using techniques and exercises that freed the actors to physicalize a presence of empowerment."

"Theatre for social change is a call to action. It demands that we examine ourselves in the mirror. I believe that if we study societal issues like this one and attempt to find a solution through the arts of theatre, music, and laughter, it can encourage empathy and stimulate change."

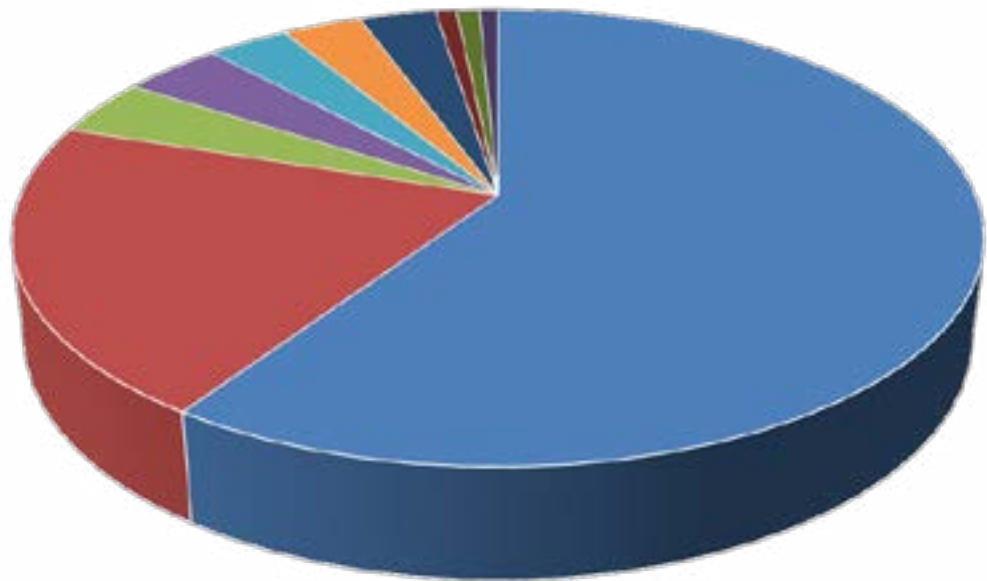
Howe was one of seven graduate students to compete in the sixth annual event that challenges participants to see who can best explain their research to a general audience in three minutes or less. Each student was limited to a single static slide and live-streamed their presentations from the location of their choice.



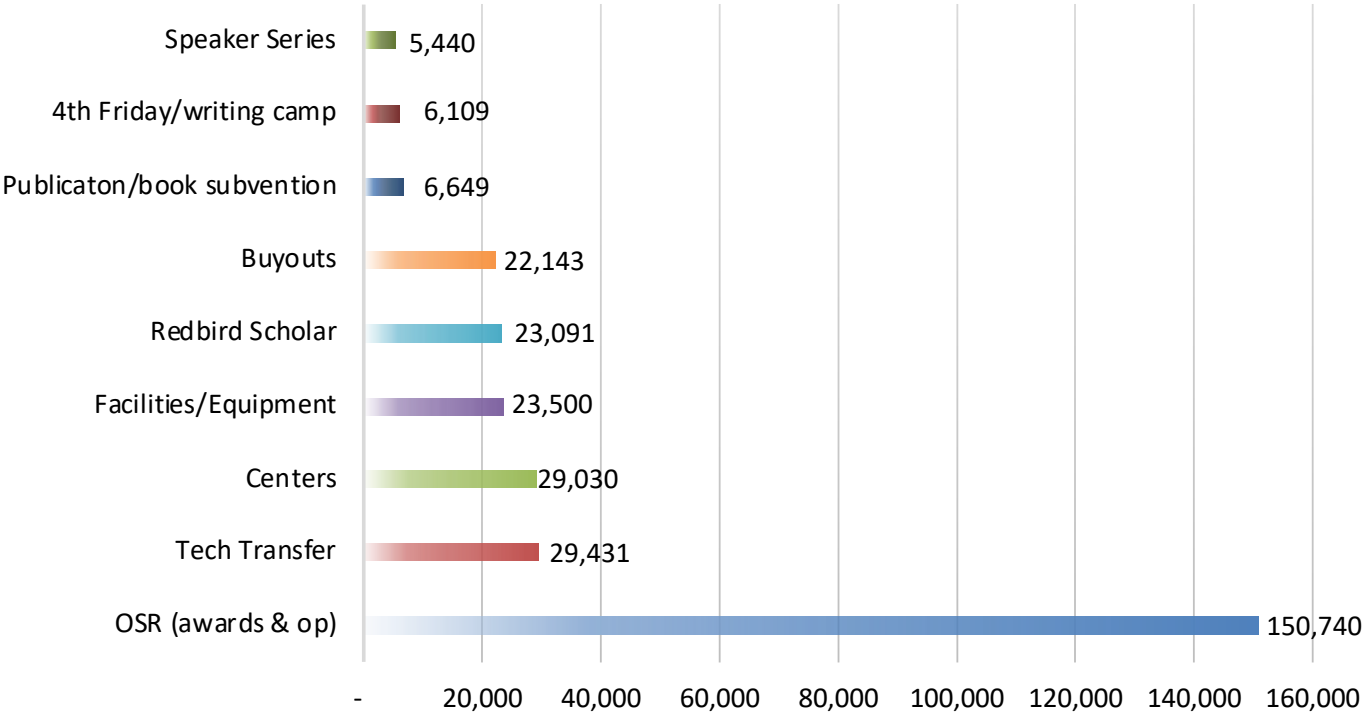


# ORGS investments

- Over \$730K in support for Research and Creative Scholarship in FY22
- Additional support through personnel and support from colleges and units

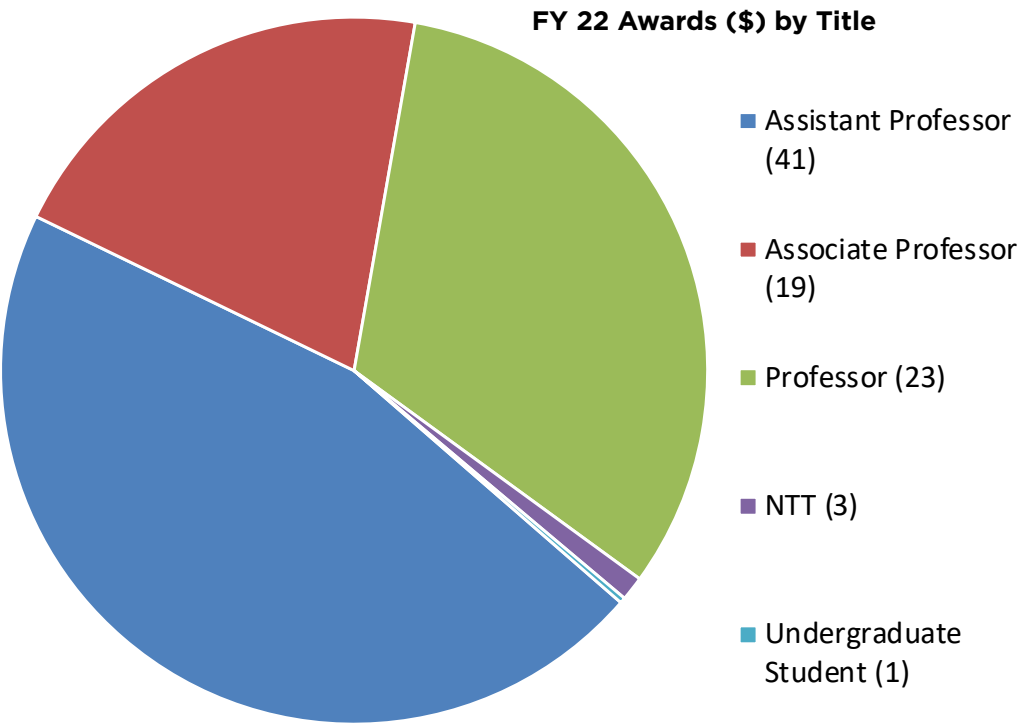


- URG (incl. supp.)
- OSR (awards & op)
- Tech Transfer
- Centers
- Facilities/Equipment
- Redbird Scholar
- Buyouts
- 4th Friday/writing camp
- Publication/book subvention
- Speaker Series

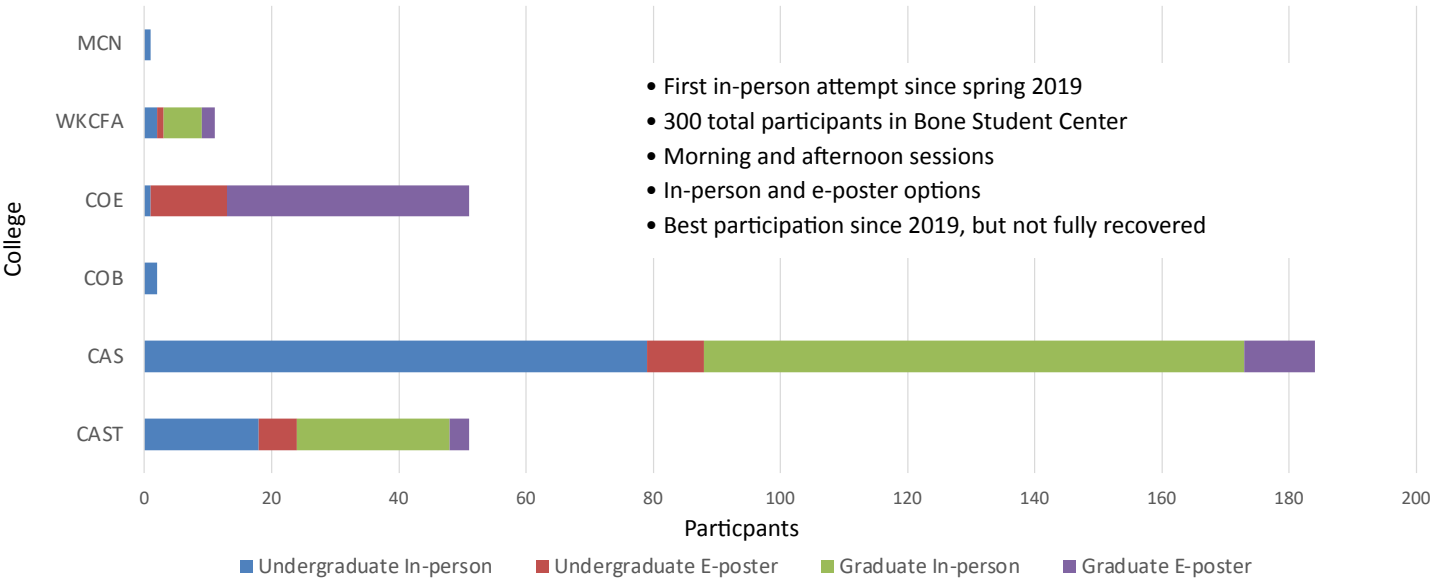


# University Research Grants (URG)

- Over \$430K awarded in URG funding in FY22
- Some colleges supplement further
- Funding for 87 investigators reported
- Most awards and \$ to Assistant Professors
- Funding acts as seed
- External funding requests in many cases
  - Scholarly outputs expected in all



# 2022 University Research Symposium



- First in-person attempt since spring 2019
- 300 total participants in Bone Student Center
- Morning and afternoon sessions
- In-person and e-poster options
- Best participation since 2019, but not fully recovered

# Writing support

- Twenty attended three-day writing retreat at Lake Bloomington
- Ten events held on Fourth Fridays in FY22
- 109 unique attendees, representing Milner Library and all six academic colleges
  - 34 departments/schools represented
- Twenty-three total (17 unique) faculty supported through book subvention and publication/exhibition support funds

# AWARDS

## Outstanding University Researchers

The Outstanding University Researcher Award recognizes faculty whose research is acknowledged at the national or international level for its quality and contribution to the profession or discipline.

### Kathryn Sampeck, Department of Sociology and Anthropology

Kathryn Sampeck (B.A., M.A., University of Chicago; Ph.D., Tulane University) is a professor of anthropology at Illinois State University and an associate with the DuBois Research Institute at the Hutchins Center for African and African American Research at Harvard University. Sampeck uses multidisciplinary approaches to investigate a variety of topics such as taste, cultural landscapes, race, literacy, money, and commerce in American commodities in the early modern world. She has devoted years of archaeological and historical research to understanding the cultural history of chocolate, and as a board member of the Fine Cacao and Chocolate Institute, advocates for a more equitable and transparent chocolate-cacao value chain. Her archaeological endeavors are community-based, including co-directed projects with the Tribal Historic Preservation Office of the Eastern Band of Cherokee Indians. She co-edited, with Stacey Schwartzkopf, the 2017 volume *Substance and Seduction: Ingested Commodities in Early Modern Mesoamerica*. She has published numerous articles in leading peer-reviewed history, anthropology, archaeology, and geography and Latin American Studies journals. Forthcoming works include *Rich: Cacao Money in Mesoamerica and Afro-Latin American Archaeology: An Introduction*. She currently holds a Fulbright to the United Kingdom for research at the British Library and has held two previous Fulbrights. She was the Central America fellow at the David Rockefeller Center for Latin American Studies and the Afro-Latin American Research Institute at the Hutchins Center at Harvard University, a long-term and a digital fellow at the John Carter Brown Library at Brown University, and a fellow at Colonial Williamsburg. Major research grants have been funded by the National Science Foundation, Wenner-Gren Foundation for Anthropological Research, and the Social Science Research Council. She serves as the archaeology seat on the American Anthropological Association Executive Board, coordinates the Society for American Archaeology Afro-Latin American

Archaeology Interest Group, and is editor of the journal *Historical Archaeology*.

### Justin Vickers, School of Music

Professor Justin Vickers is a British music researcher who specializes in the music, life, and endeavors of 20th century composer Benjamin Britten and his spouse, the tenor Peter Pears. As a 2020-2021 U.S. Fulbright Scholar to the United Kingdom, Vickers focused on completing his first monograph, *The Aldeburgh Festival of Music and the Arts: A History of the Britten and Pears Era, 1948–1986*, commissioned by The Boydell Press. Vickers was recently named co-editor of *Elizabeth Maconchy in Context* with Lucy Walker (forthcoming, Cambridge University Press). A new project that will result in a co-edited volume with Joy H. Calico, *Childhood and the Operatic Imaginary*, has been awarded a 2022 Exploratory Seminar funded by Harvard University's Radcliffe Institute for Advanced Study (summer 2022). Together with Philip Reed, Vickers is editing a memoir of the first Aldeburgh Festival manager, Elizabeth Sweeting, alongside her correspondence with Britten (The Bittern Press, 2023). He is co-editor of *Benjamin Britten in Context* (Cambridge University Press, 2022) and *Benjamin Britten Studies: Essays on An Inexplicit Art* (The Boydell Press, 2017) with Vicki P. Stroehrer. He has contributed to *The Sea in the British Musical Imagination* (The Boydell Press, 2016) and *Literary Britten: Words and Music in Benjamin Britten's Vocal Works* (The Boydell Press, 2019), and has multiple Britten articles in print or at press. Vickers has been a regular contributor to programming at The Red House, Britten's heritage home and archive in Aldeburgh on the Suffolk coast; he has performed there in recital and lecture-recitals, appeared on the *From The Red House* podcast, and in public talks, as well as writing essays for the annual exhibition booklets "A Circle of Support": *Britten and Women* (2022), "Such an artist to write for": *Inspiration and Collaboration* (2020-2021), *Britten in America* (2018), *Queer Talk: Homosexuality in Britten's Britain* (2017), and *Britten's Words* (2015). His additional research focuses on Britten's song and the creative process, and the 33-year history of the English Opera Group, among other midcentury composers and subjects in the British Isles. Vickers has been named Visiting Fellow of Music at New College, University of Oxford, England, for Trinity Term 2023.

## University Research Initiative Awards

The University Research Initiative Awards are presented to faculty who, within their first five years at Illinois State University, have initiated a promising research agenda early in their academic careers.

Brea Banks, Department of Psychology

Matt Caplan, Department of Physics

Luke Russell, Department of Family and Consumer Sciences

Michelle Shropshire, Mennonite College of Nursing

Melinda Snodgrass, Department of Special Education

## Outstanding University Creative Activity Awards

This award is given for outstanding creative work. Creative contributions include but are not limited to the following: painting, sculpture, film, drama, musical composition, choreography of a dance, poetry, a novel, creative nonfiction, and creative media programming. The contribution(s) must have been recognized in the field as having national and/or international significance. This award is not designed to recognize a single major work, but consistent and sustained contributions to the profession, discipline, and field.

### John Stark, School of Theatre and Dance

John Stark is a professor of design in the Illinois State University's School in the Theatre and Dance. In 2017, he was named the artistic director of the Illinois Shakespeare Festival. He received a B.S. from Wayne State College and an M.F.A. in scene design from the University of Nebraska-Lincoln. Stark joined Illinois State in 1991 after teaching at Illinois Wesleyan University and Arizona State University where he was named College of Fine Arts Distinguished Teacher of the Year. He is a member of the United Scenic Artists Local 829 and has designed professionally for Chicago Theatre companies including Red Orchid Theatre, Victory Gardens, Seanachai Theatre, Drury Lane Theatre, The Next Theatre, Noble Fool Theatricals, and Famous Door Theatre where his design of *The Living* was awarded the Joseph Jefferson Award for Scenic Design. He has designed 36 productions for the Illinois Shakespeare Festival. Regional credits include, Indiana Repertory Theatre, The Garden Theatre (Winter Garden, Florida), The Sacramento Theatre Co., Nebraska Repertory Theatre, Pennsylvania Center Stage, Diablo Light Opera (Walnut Creek, California), Actors Theatre of Phoenix, Childsplay (Tempe, Arizona) and Actors Lab of Scottsdale. Stark has also worked professionally in St. Louis. His design of Way to Heaven for the New Jewish Theatre was nominated for a St. Louis Theatre Circle Award in 2013. In 2011, John designed the world premiere of Falling at Mustard Seed Theatre. In 2012, *Falling* (also designed by John) opened Off-Broadway at the Minetta Lane Theatre receiving three Drama Desk nominations. He is





married to Illinois State Professor of Acting Lori Adams. They have two artist children: Anna, a Brooklyn-based dance artist and arts administrator; and Nathan, a professional actor who is currently in the International M.F.A. acting program at the Bristol Old Vic Theatre School in Bristol, United Kingdom.

**Tuyen Tonnu, School of Music**

Vietnamese American pianist Tuyen Tonnu is known for her sensitive command of timbral color, her singing lyricism, and striking style. She has graced the world’s stages with solo and chamber music concerts in the U.S. as well as Asia and Europe.

As a champion of new music, Tonnu’s performances have garnered praise for their powerful and insightful interpretations. Her collaborations have included premieres and works by Hans Otte, Tristan Murail, Sheila Silver, Libby Larsen, Adrienne Elisha, Jeffrey Mumford, Martha Horst, and Lukas Ligeti, among others. For the past two decades, she has been the foremost interpreter of the piano music of the late Egyptian American composer Halim El-Dabh, presenting the premiere performances of many of his works. El-Dabh’s first piano concerto was composed for and dedicated to her. In 2001, Tonnu was one of 10 musicians selected from the U.S. to perform in Alexandria, Egypt for the inauguration of the Bibliotheca Alexandrina.

Other notable performances included collaborations with the Escher String Quartet and the Stony Brook Contemporary Chamber Players, the world premiere of *Martha Horst’s Piano Concerto No. 1* with the Illinois State University Symphony Orchestra, and the U.S. premiere of *Roque Cordero’s Piano Concerto No. 1* with the Texas Christian University Symphony Orchestra. In September 2020, Tonnu’s solo commercial album, *Roque Cordero: The Complete Works for Piano Solo* was released on the American/British label Albany Record. The CD has received rave reviews in *Fanfare: The Magazine for Serious Record Collectors* (March/April 2021) and in the *American Record Guide* (March/April 2021).

Tonnu is associate professor of piano at Illinois State University. She earned her degrees from Pacific Lutheran University, Eastman School of Music, the Cleveland Institute of Music, and Stony Brook University. Her teachers and coaches have included James Avery, Daniel Shapiro, Anne Epperson, Thomas Hecht, Christina Dahl, Gilbert Kalish, and Sergei Babayan.

**Creative Activity Initiative Award**

This award shall be given to recognize faculty members who have initiated promising creative productivity early in their academic careers. Creative contributions include but are not limited to the following: painting, sculpture, film, drama, musical composition, choreography of a dance, poetry, a novel, creative nonfiction, and creative media programming.

Ruth Burke, Wonsook Kim School of Art

Ela Przybylo, Department of English

**Outstanding Cross-Disciplinary Team Research Award**

The Outstanding Cross-Disciplinary Team Researcher Award recognizes exemplary collaborative research conducted by multiple investigators from different disciplines.

**Chris Mulligan, Department of Chemistry; Jamie Wieland, Department of Management and Quantitative Methods; and Michael Gizzi, Department of Criminal Justice Sciences**

Dr. Christopher C. Mulligan, professor of analytical chemistry, joined the Illinois State University Department of Chemistry in 2008, where his research group is focused on applying and adapting portable mass spectrometric (MS) devices for use in areas of societal need. Through his research, Mulligan seeks to demonstrate the performance, impact, and practicality of portable MS systems featuring ambient ionization methods for use in forensic evidence screening, the law enforcement/first response communities, and in environmental contaminant monitoring. Mulligan’s collaborative and interdisciplinary research on portable MS systems has been funded by the National Science Foundation (NSF), National Institute of Justice (NIJ), and Research Corporation for Scientific Advancement. He has conducted field research with the Army Corps of Engineers, Forensic Technology Center of Excellence (FTCoE) at RTI, U.S. National Guard Civil support teams, and various local and state-level police agencies. His research in areas of societal need was acknowledged by back-to-back selections to the 2017 and 2018 “Power List” by the *Analytical Scientist Magazine* and the 2021 American Society for Mass Spectrometry PUI Research Award.

Dr. Jamie R. Wieland is an associate professor in the Illinois State University Department of Management and Quantitative Methods. She received her B.S. in industrial engineering and management science and economics from Northwestern University and her M.S. and Ph.D. in industrial engineering and operations research from Purdue University. Wieland’s research interests are in applied statistics and computational modeling for purposes of decision analysis, policy evaluation, and systems optimization. Her research in the forensic sector has been supported by two National Institute of Justice (NIJ) grants, where she assessed the financial viability (via cost-benefit modeling) and error probabilities of broad field implementation of portable instrumentation for forensic evidence processing. In the College of Business, she teaches statistics, operations management, and applied tools for business decision making.

Dr. Michael Gizzi is a professor of criminal justice sciences and holds a Ph.D. in political science from the University at Albany, SUNY. He taught criminal justice and political science at Colorado Mesa University from 1995 until 2008, when he

came to Illinois State. Gizzi’s research is diverse and focuses on privacy, vehicle searches, narcotic dog sniffs, and the intersection of technology and law. He also writes and researches on the usage of qualitative data analysis techniques. His interest in technology and law led him to the collaboration with Drs. Mulligan and Wieland on the policy sides of the use of the portable mass spectrometer. Gizzi’s most recent books are *The Practice of Qualitative Data Analysis: Research Examples Using MAXQDA with Dr. Stefan Rädiker* (MAXQDA Press,

Berlin, 2021), and *The Fourth Amendment in Flux: The Roberts, Crime Control, and Digital Privacy with Dr. Craig Curtis* (University of Kansas Press, 2016). He uses qualitative and mixed methods methodologies in his work and is a certified trainer in the of use of MAXQDA computer-aided qualitative data analysis software in the social sciences.







# Dr. Tina Williams’ research seeks to change perception of underemployment

**By Evan Linden**

Imagine that you have years of experience in your field, but the only job that you can find after some time away from the workforce is an entry-level position. Or, that you studied physics, but the best job that you can be hired for is in sales.

Dr. Tina Williams, interim chair and associate professor of the Department of Management and Quantitative Methods, specializes in studying this phenomenon, referred to as underemployment. Williams published her first paper on underemployment in 2009—in the middle of the largest economic meltdown since the Great Depression.

In her research, Williams connects underemployment to diversity, equity, and inclusion (DEI). Williams also examines the outcomes of overqualification in the workplace. She was inspired to study these areas after facing underemployment herself.

“Before I went back to earn my Ph.D., I had to make a decision as to whether or not I would take a job that would pay me 40% less than I made at my previous job,” said Williams. “I

decided not to take the job, and I realized when I went back to school that not everybody has that privilege. What does work look like for people who were required to take that job, understanding that they have made more in the past at a job where they had more responsibility and prestige?”

This revelation prompted her initial research question: How do job attitudes and behaviors differ between the overqualified and adequately qualified?

After finding that overqualification is a complex and polarizing issue in the workforce, Williams restructured her research question.

“Not all people who are overqualified are in that situation because they are forced to be; there are people who are overqualified because it fits with their lifestyle,” said Williams. “So, the question becomes, ‘How do job behaviors, attitudes, and outcomes look when you have a person who is voluntarily underemployed compared to a person who is involuntarily underemployed?’”

Williams defines underemployment as the inability to

secure adequate employment according to the individual’s specifications. There are five dimensions to underemployment.

The first dimension of underemployment is education, where one has more education than their job requires. The second dimension, experience, is a similar concept—one has more experience than their job requires. The third dimension is wage underemployment, which occurs when one makes less than they did at a previous job.

Job field underemployment occurs when the best position



*Dr. Tina Williams*

one can find is in a different field than they have experience in, while job status underemployment occurs when one is unable to secure full-time work.

“People who are experiencing job status underemployment will often have multiple part-time jobs trying to achieve adequate employment according to their preferences,” said Williams. “That creates a whole host of other issues.”

In a 2016 paper titled “Reimagining Overqualified Human Resources to Promote Organizational Effectiveness and Competitive Advantage,” published in the *Journal of Organizational Effectiveness*, Williams and her co-authors posited that organizations could benefit from hiring overqualified candidates who are voluntarily underemployed.

“The sentiment is that a lot of companies don’t want to hire people who are overqualified for their jobs because those employees might leave when they find a higher paying job

with more prestige, but not everybody is in that situation,” said Williams. “There are several instances when you should hire a person who might seem underemployed, especially if they are voluntarily underemployed; essentially, you’re getting a person with more resources and capabilities for less cost to the organization from someone who has chosen underemployment because it fits their job preferences. It’s a win for all parties.”

However, Williams said the challenge is distinguishing between voluntarily and involuntarily underemployed workers.

“There’s no delineation between voluntary or involuntary underemployment, and I am investigating that in an ongoing research project,” said Williams. “We should not treat all underemployed employees and job applicants as a homogeneous group.”

To alleviate the impacts of involuntary underemployment, Williams stresses that organizations must consider employees’ situations when making decisions.

“I think organizations can help to eliminate involuntary underemployment by taking job preferences into account,” said Williams. “Sometimes people end up in situations where they’re underemployed because of child care issues, downsizing, or technological advances. If an organization is downsizing, they can host a job fair or partner with employment agencies so that affected employees can search for new jobs. If technology is changing, organizations should consider reassignment, additional training, or retooling for affected employees.”

Additionally, Williams urges organizations to use data to solve socioeconomic inequities such as wage underemployment.

“The gender wage gap can be considered using the lens of underemployment. It sits at the intersection of gender and socioeconomic diversity,” said Williams. “While the gender wage gap is complex, we have the means to investigate it. Individual organizations have the data, so let’s evaluate that data and see if there are disparities between what’s paid for the same job for people of different genders. We can even go further; let’s look at people of different races, ages, sexual orientations, nationalities, degrees of ability. If we find problems, let’s fix them.”

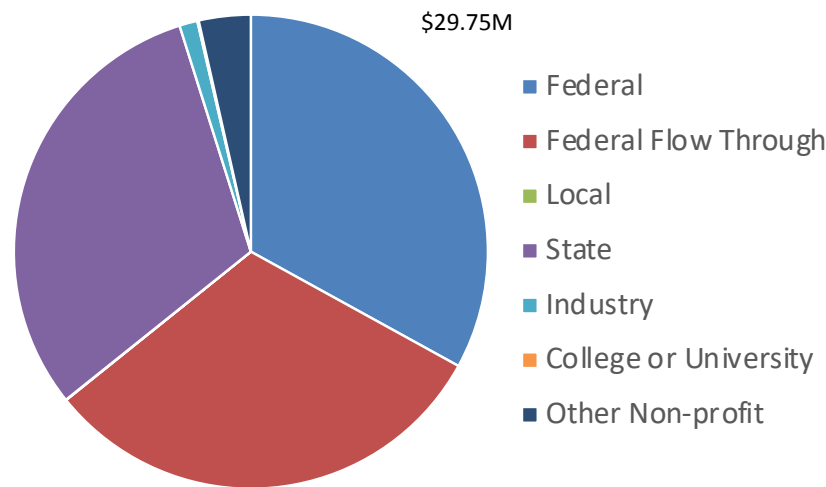
“Dr. Williams is a voice for all students on campus, regardless of their background,” said Distinguished Professor of English Roberta Trites. “Dr. Williams listens to students and colleagues who have been historically marginalized and then uses her creative skills as a scholar of organizational behavior to develop programs that help address those problems.”



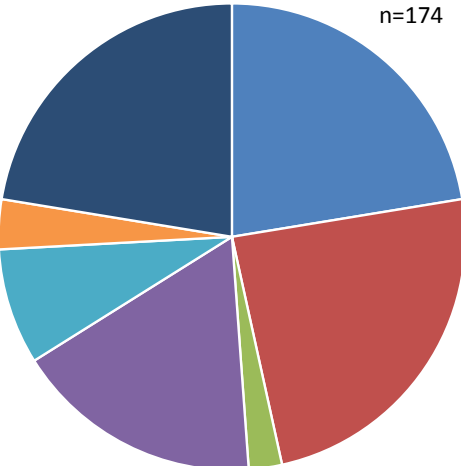
**Scan this QR code to learn more and read the full article in *Redbird Scholar*.**

# FY22 awards

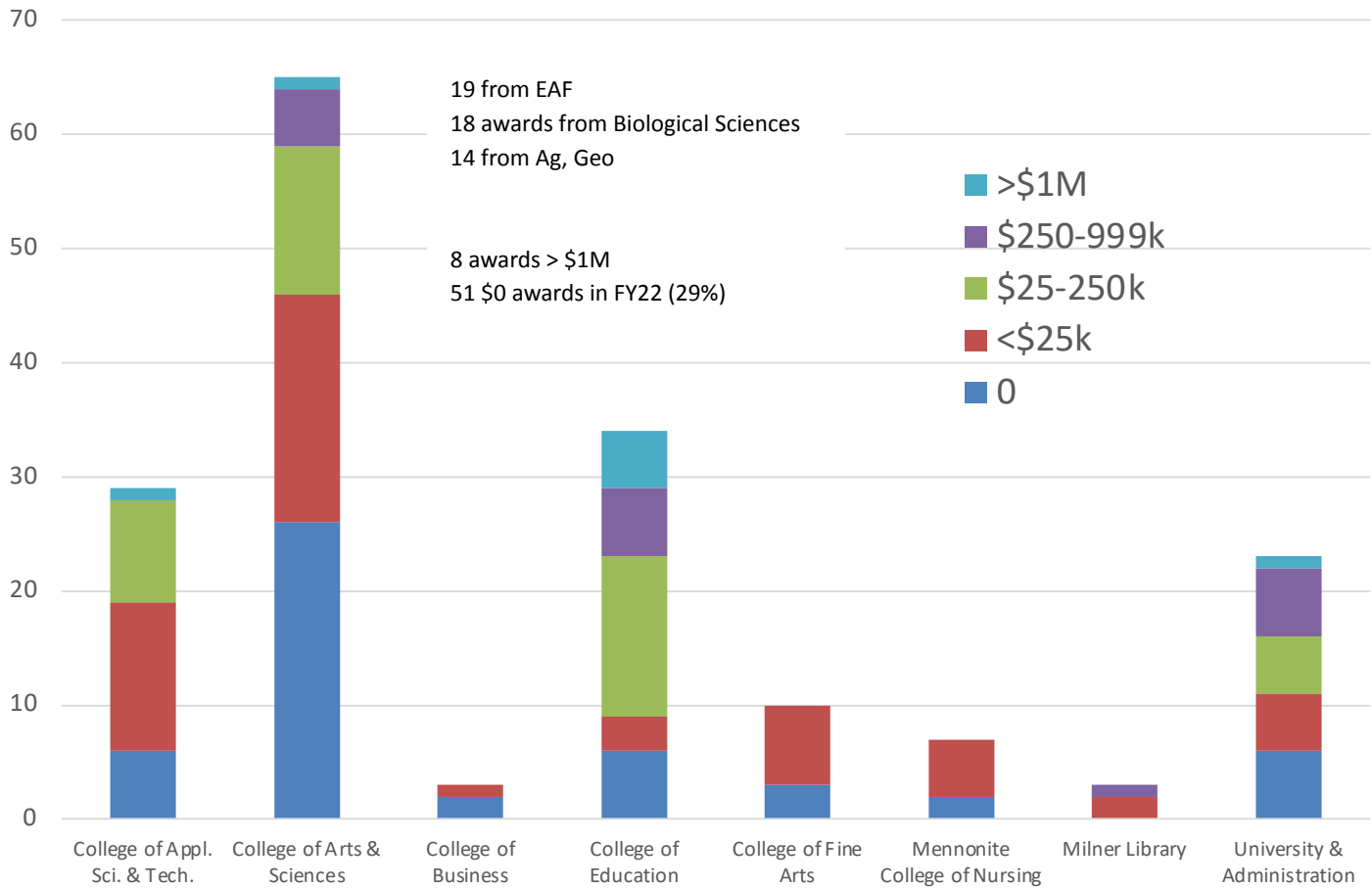
Projected amount (\$)



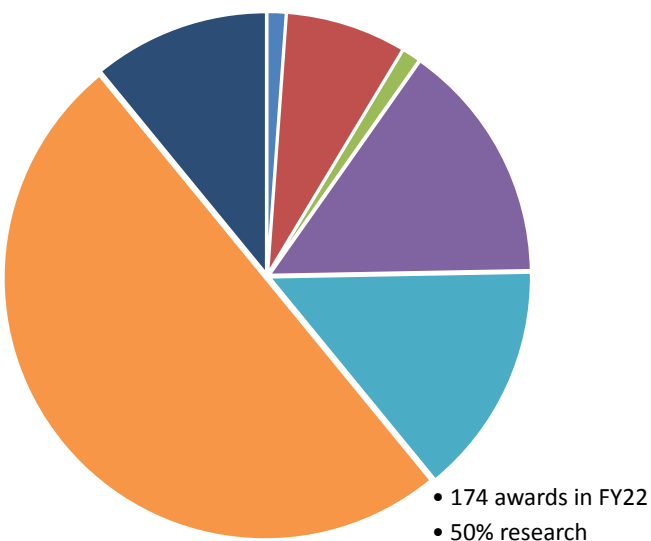
Number of awards



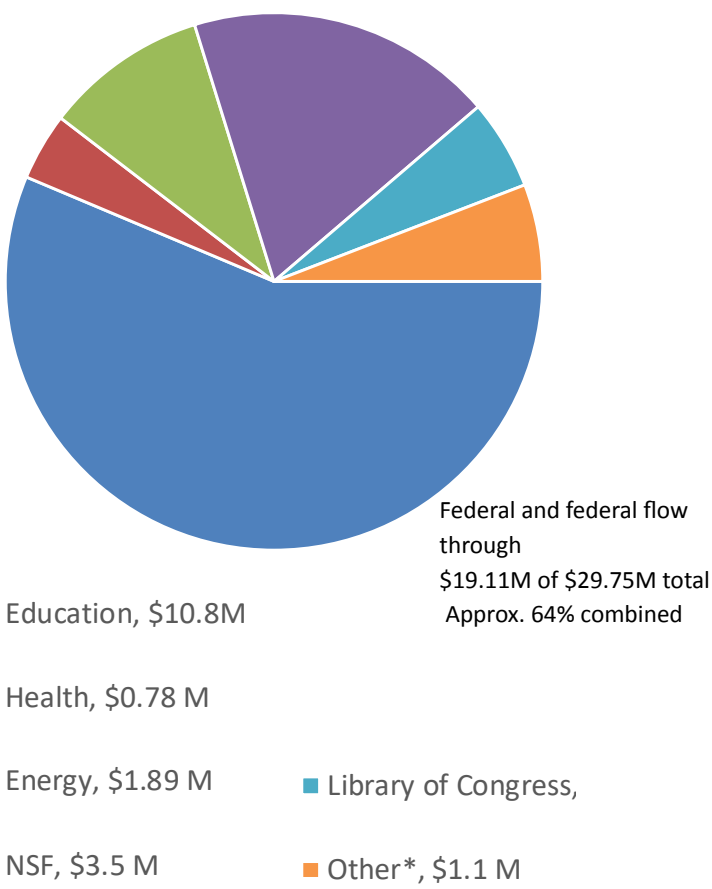
# Number of awards by size



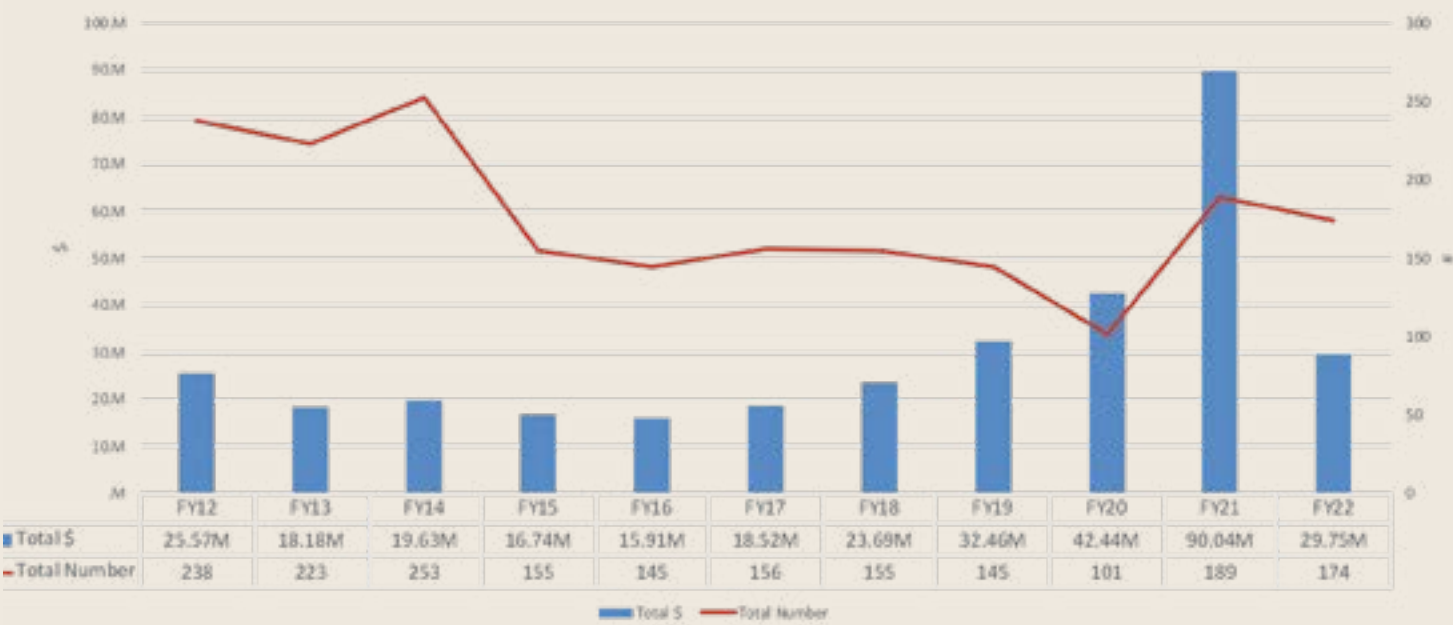
# Award by activity type



# FY22 projected federal awards by agency



# Awards at a glance





# Submissions and Awards

by College and Department/School

Fiscal Year 2022

	No. of submissions	Amount requested	No. of new awards	Total expected amount awarded
College of Applied Science and Technology				
College of Applied Science and Technology	1	\$42,500	0	-
Agriculture	7	\$558,454	14	\$397,707
Criminal Justice Sciences	1	\$28,145	0	-
Family and Consumer Sciences	6	\$483,065	4	\$60,330
Health Sciences	7	\$1,247,068	1	\$14,955
Information Technology	7	\$2,845,633	8	\$262,577
Kinesiology and Recreation	1	\$27,633	0	-
Technology	8	\$2,581,184	2	\$1,400,418
<b>College of Applied Science and Technology total</b>	<b>38</b>	<b>\$7,813,682</b>	<b>29</b>	<b>\$2,135,986</b>
College of Arts and Sciences				
Applied Social Research Unit	1	\$522,579		-
Biological Sciences	20	\$9,762,482	18	\$3,226,774
Chemistry	9	\$2,638,288	5	\$450,222
Communication Sciences and Disorders	1	\$39,517	0	-
Communication	10	\$383,322	5	\$184,521
English	8	\$384,385	6	\$63,099
Geography, Geology, and Environment	5	\$511,954	14	\$195,493
History	1	\$39,000	0	-
Mathematics	12	\$1,647,214	5	\$204,678
Physics	7	\$1,245,603	7	\$1,065,661
Politics and Government	0	-	1	-
Psychology	5	\$762,008	2	\$528,316
Social Work	2	\$115,059	2	-
<b>College of Arts and Sciences total</b>	<b>81</b>	<b>\$18,051,411</b>	<b>65</b>	<b>\$5,918,764</b>
College of Business				
College of Business	1	\$9,473	1	\$10,860
Marketing	0	-	2	-
<b>College of Business total</b>	<b>1</b>	<b>\$9,473</b>	<b>3</b>	<b>\$10,860</b>
College of Education				
College of Education	3	\$30,364,132	2	\$63,273
Illinois Tutoring Initiative	0	-	2	\$2,552,261
Educational Administration and Foundations	20	\$6,691,230	19	\$6,349,483
Special Education	9	\$6,508,548	5	\$1,367,696
Superintendent of Lab Schools	2	\$93,363	2	\$68,963

Teaching and Learning	11	\$2,292,250	2	\$1,843,965
Thomas Metcalf School	1	\$850	2	\$1,025
University High School	1	\$100,000	0	-
<b>College of Education total</b>	<b>47</b>	<b>\$46,050,373</b>	<b>34</b>	<b>\$12,246,666</b>
Wonsook Kim College of Fine Arts				
Wonsook Kim School of Art	2	\$155,696	1	\$5,700
Music	3	\$11,800	2	\$7,000
Theatre	2	\$17,850	3	\$15,350
University Galleries	3	\$24,000	4	\$14,850
<b>Wonsook Kim College of Fine Arts total</b>	<b>10</b>	<b>\$209,346</b>	<b>10</b>	<b>\$42,900</b>
Mennonite College of Nursing				
Associate Dean for Mennonite College of Nursing	4	\$43,144	0	-
Mennonite College of Nursing	3	\$4,365,964	7	\$23,000
<b>Mennonite College of Nursing total</b>	<b>7</b>	<b>\$4,409,108</b>	<b>7</b>	<b>\$23,000</b>
Milner Library				
Milner Library	6	\$1,631,830	3	\$953,693
<b>Milner Library total</b>	<b>6</b>	<b>\$1,631,830</b>	<b>3</b>	<b>\$953,693</b>
University and Administration				
AVP for Budgeting and Planning	0	-	1	-
AVP for Enrollment Management	1	\$709,272	1	\$709,272
AVP for Undergraduate Education	0	-	1	\$370,000
Career Center	1	\$50,000	1	\$50,000
Center for Mathematics, Science, and Technology	8	\$8,118,428	3	\$410,461
Center for Civic Engagement	3	\$2,350	3	\$1,850
Center for a Sustainable Water Future	0	-	1	-\$2,800
Emergency Management	1	\$68,549	3	\$378,121
Financial Aid	2	\$5,327,594	1	\$5,649,000
Graduate School	1	\$138,000	1	\$117,500
International Studies and Programs	0	-	2	-
Office of the Provost	0	-	2	\$29,516
Office of Student Research	1	\$149,942	0	-
Office of Technology Solutions	1	\$25,000	1	\$25,000
Stevenson Center	1	\$27,969	1	\$375,750
University College	0	-	1	\$309,457
<b>University and Administration total</b>	<b>20</b>	<b>\$14,617,104</b>	<b>23</b>	<b>\$8,423,127</b>
<b>Grand total</b>	<b>210</b>	<b>\$92,792,327</b>	<b>174</b>	<b>\$29,754,996</b>

\*Non-academic offices within the VP for Academic Affairs and Provost, VP for Finance and Planning, and VP for Student Affairs.





**By Evan Linden**

Did you know that tattooing was a fad among elites in the late-1800s in Europe and the United States? Did you know that Rowland H. Macy, Winston Churchill, and even the British Royal Family were tattooed? Some of the oldest bodies that have been recovered also have tattoos, including Ötzi the Ice Man, who had 57 of them.

None of this is news to Dr. David Lane, assistant professor of Criminal Justice Sciences. Lane grew up “surfing, skateboarding, around a hardcore punk scene that included lots of heavily tattooed people.” His friend’s brother became a tattoo artist, and eventually, so did other friends. “It was always around my social circle,” he said.

While finishing his Ph.D. studies, Lane had mentors encourage him to study tattooing. He resisted for a while, and then realized that they had a good idea.

While the art of tattooing is not new, the body of research around it is still relatively recent. Most of the research that does exist focuses on tattooed bodies. “I woke up one morning and realized that I didn’t want to read another article about people’s bodies and tattoos,” said Lane. “I realized the tattoo artist angle was very underexplored in the research, and I decided to dive in.”

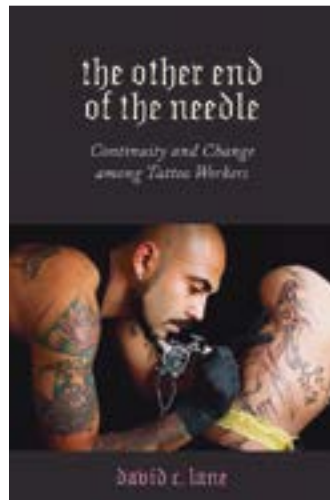
Lane’s new book, *The Other End of the Needle: Continuity*

*and Change among Tattoo Workers* (Bucknell University Press, 2020), focuses on how tattoo artists sustain their world.

“There is no clear-cut, linear path to becoming a tattoo artist,” Lane said. “Typically, you go to a tattoo shop, get tattooed, spend time convincing people there that they want to have you around.”

There are tattoo schools, but most tattoo artists view them as financial scams. “It’s more accepted to do an apprenticeship for free and pay your dues. It is to show that you are dedicated,” said Lane.

Tattooists must learn and get feedback from other artists; having other artists regard them legitimately is a big part of the word-of-mouth advertising that is necessary to be successful. Essentially, tattoo artists need their identities verified by other members of the occupation to prosper.



“One of the things that makes the tattoo industry so interesting is that there is really no formal institution or professional development group in place,” said Lane. Many conventional professions and occupations require members to have formal schooling or various credentials to be effective within the field.

Despite the industry having no labor unions, official guide-

“(The popularity of tattooing) is not a surprise, because it values human connection and authenticity. It allows people to carve out a little bit of themselves and build their own identity.”



*Humans have been getting tattooed for thousands of years. In his new book, Dr. David Lane explores the world of tattoo artists.*

lines, or strong professional associations in place, there is still a high degree of continuity in the work and a set of core values that is prevalent across the industry. “Because so many artists learn the occupation through apprenticing, they learn to value the past and the history of the industry,” Lane said. “It is common for artists to reference its history and past masters of the

industry since they learn a cultural code that helps them to make sense of the world around them. It is a cultural code that values tradition.”

During his research, Lane developed the typology of different types of tattooists:

- Legends or masters have high degrees of skill and “have established themselves in the collective memory of the occupation,” said Lane. “They have large followings of people that consider them to be the epitome of a tattoo artist.”
- Artists and craftsmen are underneath legends and masters. Craftsmen value the traditional way of doing things, including passing traditions on from mentor to mentee. “Contemporary tattooists work within established channels to uphold these traditions as an honorific component of the occupation,” said Lane. Artists use tattooing as a medium to explore their artistic talents and value creative and artistic freedom. “There is overlap between craftsmen and artists. Artists rely on the craftsmen to produce tools and materials. Craftsmen rely on artists to create new aesthetics and push the boundaries of the craft.”
- The shopless and scratchers are at the bottom of the tattoo stratification system. The shopless are “all those cast as outsiders by the established tattoo world,” said Lane. They are typically untrained or self-taught. Scratchers are “folk devils who established tattooists pin the evils of tattooing upon. Shopless and scratchers are pejorative terms related to the tattoo world; no one admits to being part of this group.”

Lane said tattooing is more popular now: “This is not a surprise, because it values human connection and authenticity. It allows people to carve out a little bit of themselves and build their own identity.”



**Scan this QR code to learn more and read the full article in Redbird Scholar.**





Dr. Emily Jones

## Understanding the physical education teacher education pipeline

By Kara Snyder

As a professor in the School of Kinesiology and Recreation (KNR), Dr. Emily Jones is finding new ways to get to know the student body through her research. She focuses on the concept of belonging when it comes to recruitment and retention of students in the physical education teacher education (PETE) major.

“We want to be proactive and intentional about understanding our student body and who we are recruiting to become future teachers,” said Jones, who arrived at Illinois State in fall 2017. She was awarded a University Research Grant from the College of Applied Science and Technology (CAST) in 2018 to study what motivates PETE students to choose physical education at Illinois State.

The grant-funded project’s goal was to understand how students walked through the process of considering Illinois State, as well as the factors that influenced their decision-making to apply and enroll. “We could not continue to use passive recruitment tactics. We knew that we needed to be strategic to recruit and retain students into our specific programs,” Jones said.

The research team embarked on a national survey of PETE students. Using a social capital framework, the survey asked the students what elements they value and how they came to be currently enrolled. For example, the team wanted to know if the students had families that valued education and/or health, or if the student was motivated to find a career that would elevate them socially or financially.

Though the research provided input on strategic marketing and promotional materials, the findings also addressed the issues and concerns of prospective students in a way that can inform classroom approaches. “We, as faculty members in

higher education, need to be welcoming. We want students to feel and know that they fully belong, and we want them to feel comfortable asking for support,” Jones said.

The research findings also allowed the department to see areas for improvement, including attracting a more diverse student population. “We weren’t losing our diverse students. We weren’t attracting them to begin with,” Jones explained.

What started with the CAST University Research Grant project has now grown to include a research team with faculty members from the University of Illinois at Urbana-Champaign, Northeastern University, Springfield College, and East Tennessee State University working alongside Jones.

“Collectively, we are all focused on diversifying the pipeline of teacher educators,” she said. “We need to think about how we are preparing these future teachers to teach all students, including being prepared to talk about diversity, inclusion, and social justice issues in the classroom,” said Jones.

While the formal research project is ongoing, Jones shared that there are likely inherent or social barriers to pursuing a career in PETE or teacher education in general. “Coming at it from a strengths-based perspective, we want to know what sort of support they experienced, and—perhaps most importantly—how do they see themselves as a future educator and valuable part of students’ lives?” Jones said.

She hopes the research informs significant change. “We will need to consider the kind of policies we have in place that are prohibitive instead of empowering,” she said. “When I do the work, I always ask myself, am I better? I can only be better tomorrow based on what I have learned today.”

Interested in learning more about Jones’s research or the physical education teacher education major? Visit [kinrec.IllinoisState.edu](http://kinrec.IllinoisState.edu) to learn more.



Illinois State University is one of 15 member hubs of the Illinois Innovation Network (IIN). The IIN is a network of public universities formed in 2019 to “ensure Illinois’ role in the 21st Century knowledge-based economy.” The vision of IIN is to drive inclusive and integrated research, innovation, and economic development across Illinois. The mission is to foster collaboration, increase capacity, and integrate systems in education, research, and innovation by connecting people, organizations, and resources. Illinois State was appropriated \$3 million of the \$500 million capital project, with the majority of the project going to support the formation of Discovery Partners Institute (DPI) in Chicago.

FY22 represented minimal progress in the capital portion of the Hub’s project. As the community started to resume some activities, the COVID-19 pandemic still had a tremendous impact on the ability to meet with local partners. The developer was forced to change the cost structure of our lease for the location in Uptown Normal where our business startup incubator was to be housed, which made the deal untenable. We had a Stevenson ACED Fellow for a second year who worked to keep the project’s momentum and keep our partners on track. The Center for Math, Science, and Technology led the efforts to develop a maker-space curriculum, if not lead the planned facility.

In the state-wide IIN efforts, Illinois State University was a major participant. Some of those efforts in FY22 included:

- Faculty and students presented at the 2021 IIN Sustainability Conference.
- Illinois State was part of statewide proposals for major funding opportunities from the National Science Foundation (NSF) and Department of Commerce and Economic Opportunity (DCEO).
- Illinois State faculty partnered with faculty at other IIN hubs to propose and get seed funding for collaborative projects.
- Illinois State also hosted the first in-person IIN Council Meeting since 2020 and participated in the STEAM Expo at the Illinois State Fair.





FY22 Research Lecture Series: Graduate student’s virtual lecture series explores how we engage with photographs

By Tyler Emken

Second-year graduate student Holly Filsinger’s virtual lecture series, “Experiencing Images: How the Visual Shapes Our World,” has given her a unique opportunity to share her natural curiosity and passion for research with the Redbird community.

“The topic and the theme of the series was related to a lot of the research I was doing and things that I’ve been interested in that have taken place across many different disciplines at ISU,” Filsinger said.

The Jamestown, New York, native is studying visual culture and researching cultural and generational trauma in contemporary art. Filsinger began developing the series in February 2021 after seeing a call for proposals for a lecture series curated by a graduate student on the Milner Library website.

The series, which was supported by the office of Dr. Craig McLauchlan, associate vice president for Research and Graduate Studies, featured distinguished speakers who explored individual and collective engagement with photography. The series dealt with themes of civic spectatorship, surveillance, and the construction of race; image production and representation; and trauma and memory.

Filsinger hosted two speakers in the fall. Dr. John Louis Lucaites, a professor emeritus of rhetoric and English at Indiana University, presented “A Museum Without Walls: Photo Exhibitions and Civic Spectatorship,” and “White Sight: Visual Politics of Whiteness” was presented the following month by Dr. Nicholas Mirzoeff, a writer and professor of media, culture, and communication at New York University.

“These topics are relevant to everyone in some form,” Filsinger said. “When we start to self-reflect on the images we take and consume, we start to walk through the world differently.”

Filsinger intentionally kept the topics of discussion broad so that the presenters felt they could speak openly about their experiences and give the audience the opportunity to relate those experiences to their own lives.

“It’s a very specific process how you go about reaching out to people and communicating what you want from them while also leaving them space for interpretation,” Filsinger said.

To start producing speakers for the series, Filsinger initially turned to her own scholarship and highlighted a few potential names she felt could best speak on some of the selected topics. She sought guidance from University Galleries Director and Chief Curator Kendra Paitz, with whom she conducted an independent study. Paitz helped Filsinger with contacting

speakers, marketing the events, and converting them to an online format due to the COVID-19 pandemic.

“It’s been really great working with a student who is making it happen,” Paitz said. “The range of speakers and topics she has been able to bring in has been great.”

Filsinger said Assistant Professor Byron Craig, in the School of Communication, helped her identify potential speakers, form ideas for lecture topics, and made sure she kept pushing forward.

“It is a real pleasure to work with Holly. She is extremely intelligent, wants to address every single detail, and works tirelessly to ensure what she visualizes comes to fruition,” Dr. Craig said.

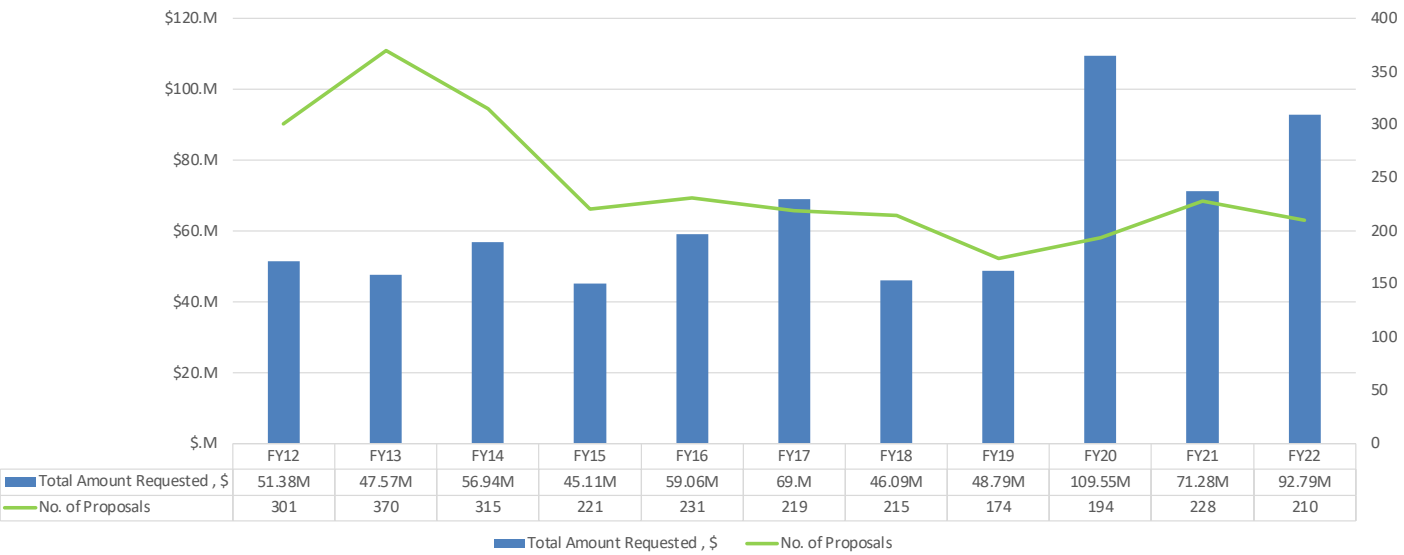


Holly Filsinger

Paitz notes that Filsinger’s work with the series and as a researcher is being noticed by Illinois State faculty, who are consistently impressed with the connections she has been able to make on campus and across the country.

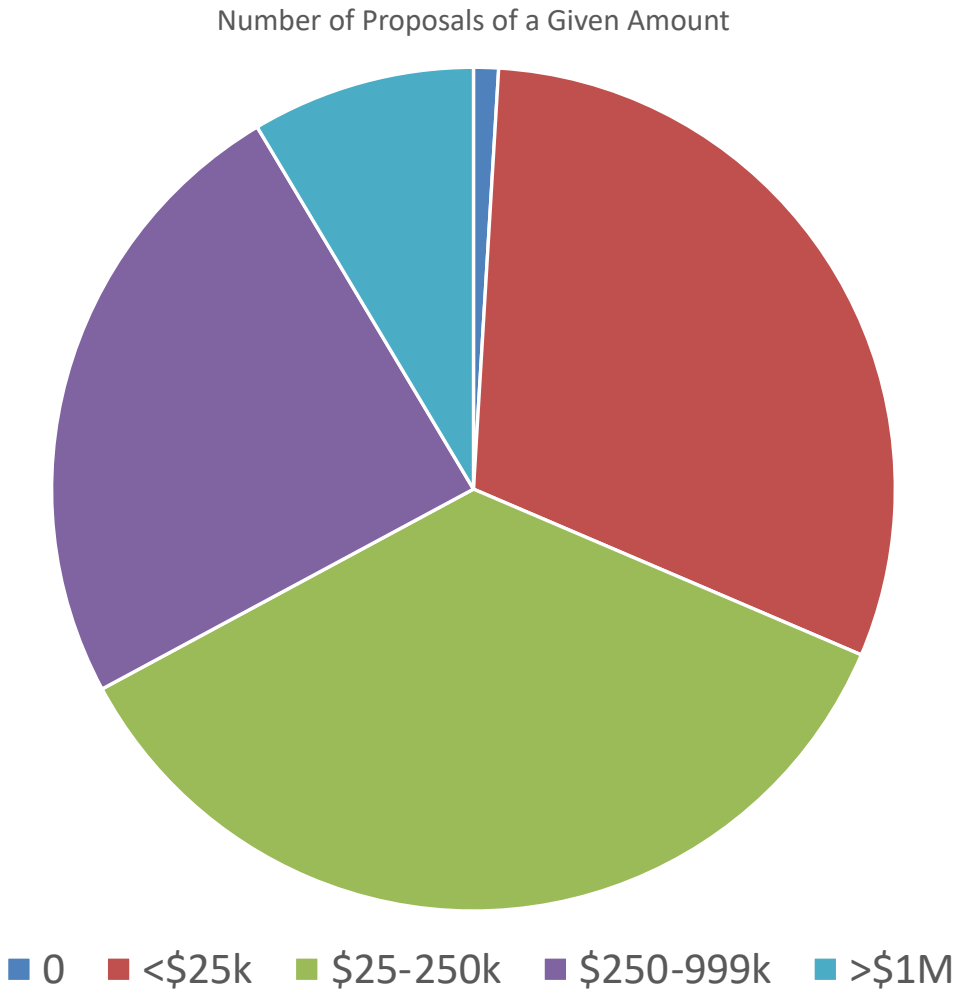
“We talk a lot about individualized attention and our roots as a teaching university, and I think this series exemplifies that,” Paitz said. “A student is realizing her ambitious goal of organizing a yearlong fully funded speaker series, and faculty and staff across multiple units are providing funding, support, and assistance.”

Proposals



210 submitted in FY22

- 18 over \$1M
- 5 funded
- 128 from \$25-999K
- 75 \$25-250K
- 51 \$250-999K
- 99 (47%) funded (so far)**
- 18 of 63 (29%) federal
- 39 of 48 (81%) state





# ORGS RESEARCH CENTERS

## Stevenson Center for Community and Economic Development

### Criminal Justice Coordinating Council (CJCC)

Our contracted work with the McLean County courts continues into its 12th year. We receive data monthly and we present to the CJCC or its executive committee monthly. The CJCC is comprised of judges, law enforcement, the State's Attorney and Public Defender, Court Services, county administration, social service agencies, and advocates.

Illinois passed bail-reform legislation earlier in 2022; it took effect January 1, 2023. In partnership with Loyola University's Center for Criminal Justice, we began an examination of how changes to the bail system will affect the McLean County courts and jail.

In 2018, Bloomington-Normal experienced a series of serious gun crimes and homicides perpetrated by juveniles and young adults. This prompted the CJCC to ask if there's anything the justice system can do to lessen the possibility of this happening again. The Stevenson Center spent considerable time linking data from the Juvenile Detention Center with that of the adult jail and courts. Once complete, we were able to identify persons who had repeated bookings into the JDC but then no bookings into the adult McLean County Detention Facility. We are interviewing a purposive sample of these persons in 2023.

We were also asked to update an analysis of the size and composition of the emerging adult population, those aged 18 through 25.

Ongoing work for the CJCC continues monthly. We track the size and composition of the jail population by charge severity, length of stay, race, sex, age, and mental health indicators. Through all of these efforts, the Stevenson Center Director educates undergraduate and graduate students in data management and analysis.

### Community Project Design and Management (SOC 477)

Stevenson Center students engaged two applied research projects through their graduate applied methods course. BN Welcoming (an initiative supported by Bloomington City Council) asked the center and class to analyze the economic contribution of immigrants to the Bloomington-Normal area and McLean County. The students used the Public Use

Micro-Sample data from the census to estimate the number of immigrants in the county, the portion of the local GDP that is due to their labor and spending, the number of languages spoken, homeownership among this demographic, etc. The Ecology Action Center partnered with the center and class to survey persons who drop recyclables into large containers placed throughout Normal. It was discovered that almost 50% of those using this service come from smaller towns in the county, and outside the county and they bring the materials to the drop stations when in town for work or otherwise.

### Scholarship of students

During the 2021-22 academic year, students completed eight capstone papers of use to their professional practice organizations. These covered topics ranging from the environmental consequences of leaving well-heads uncapped in California to telehealth during the pandemic. Melissa Quimby (Sociology) was the College of Arts and Sciences nominee for the James L. Fisher Outstanding Thesis Award. Her thesis is titled *Aid Worker Burnout as Injury: Policy implications for the Aid Sector*. Another student was a finalist for the Image of Student Research competition/event.

## Center for Collaborative Studies in Mathematical Biology (CCSMB)

The Center for Collaborative Studies in Mathematical Biology (CCSMB) had one of the most active and successful years since its inception.

One of the defining activities of CCSMB is its celebrated undergraduate research workshop, called Cross-Institutional Undergraduate Research Experience (CURE). The 2021 CURE workshop was held online due to COVID-19 restrictions. However, the organizers were able to break the monotony of holding sessions on Zoom. Instead, the workshop was held on a virtual meeting space on Gather.Town with a grant obtained from the Center for Integrated Professional Development (formerly CTLT). The participants—both students and faculty mentors—have praised the new innovative approach.

In 2022, the CURE workshop was held in person, hosted by the University of North Carolina Asheville (UNCA), jointly organized by CCSMB and the Department of Mathematics of UNCA. Students and faculty were hosted for an exciting workshop which included intensive classes on research meth-

ods, cutting-edge research projects, along with sessions on scientific writing and programming. Each day also included fun-filled activities. The student participants will return to present their research results at the 15th International Symposium on Biomathematics and Ecology Education and Research (BEER-XV).

## Office of Student Research

Although the Office of Student Research (OSR) was three years old in 2021–2022, it enjoyed a lot of firsts. In our first year coordinating the Barry Goldwater Scholarship competition, one of our candidates, Ian Freeman (Psychology), an OSR grantee from Summer 2020, won this nationally prestigious award. In February, we held our first in-person Image of Research Competition at University Galleries, where 22 finalists displayed their images, and 11 students received \$1,200 in cash prizes. Among the graduate students, Elliot Lusk (Biology) took the first-place prize with “Psychedelic Songbird Cerebellum,” and Bethany Worthley (Agriculture) won second place with her altered photograph “Worth Every Penny: Establishing Pennycress in Illinois Agricultural Systems.” In the undergraduate category, psychology student, Katelyn Tenuto, won first place for “Unraveling the Consequences of Human Longevity” and, in second place was Shaniya Barnett (Biology) with “Protein Zoo.” These students, winners of the “People's Choice” award, and those who earned an honorable mention, received cash prizes. Finally, in 2021, OSR began offering new grant programs including the BirdFEEDER and OSR Travel awards. The BirdFEEDER program provides small grants of up to \$500 for both graduate and undergraduate students who need funding for experimental materials, participant incentives, or travel to conduct research. The OSR Travel grant helps students to gain experience presenting papers and posters at professional conferences or to participate in juried performances and exhibits. The OSR Travel Grant program (\$300) is open to both undergraduates and graduate students. Combined with other university funding, these funds help our Redbird researchers take flight!

Cultivating curiosity, asking questions, collecting data, and analyzing findings are all part of the research process, but research means little unless the results are shared so that others can learn from it. Synthesizing and presenting one's original work is a key part of the scholarly endeavor, which is why participation in the University Research Symposium is required of students who receive FIREBird Grants through the Office of Student Research. FIREbird Grants provide students with the opportunity to conduct intensive, independent research under the guidance of a faculty mentor. Last summer, students used these funds to track invasive species in the Moab desert, Utah; develop VR models to help senior citizens age-in-place; investigate the genetic mutations leading to Charcot-Ma-



*Image of Research exhibit and reception at University Galleries*

rie-Tooth disease; and more. Often, the scholarly dissemination of this work occurs long after the initial grant period. Yet, our 2021 undergraduate grantees have already shared their research at regional and national conferences of professional associations, including the American Education Research Association, the Association of Technology Management and Applied Engineering, and the Geological Society of America Northeastern Section.

The faculty at Illinois State make student research happen through their effective mentoring. OSR was pleased to facilitate a mentoring skills Summer Institute “Effective Mentoring for Student Success.” Kudos to professors Fuxia Cheng (Mathematics), Kevin Edwards (Biology), Lydia Kyei-Blankson (Educational Administration and Foundations), David Lane (Criminal Justice Sciences), and Sercan Sengün (Creative Technologies) for completing the curriculum.

### OSR in Numbers FY22

FIREBird Grants: \$70,000 awarded

- 13 students from (CAS, CAST, and WKCFA) received AY 2021-22 grants.
- 20 undergrads (from CAS, CAST, and COB) received summer 2022 research grants.

BirdFEEDER Grants: \$ 4,000 awarded for research supplies and incentives

OSR Travel Grants: \$3,300 awarded for student travel to professional conferences

Image of Student Research

- 22 finalists, \$1,200 in cash awards

## Center for a Sustainable Water Future

Since the Center for a Sustainable Water Future was approved by the Office of the Provost in May of 2018, its activities





World Water Day lecture in Milner Library

have focused on three areas: teaching, research and creative activities, and community engagement. The center has been involved in a variety of activities, including the activities highlighted in the overview below of the center’s work in FY22.

Teaching

The center developed an innovative interdisciplinary core course for the minor that also carries general education credit. The course is innovative because it is truly interdisciplinary, integrating approaches and perspectives from the natural sciences, the social sciences, and the humanities to introduce students to water as a global issue. It has been team-taught by a social scientist and a natural scientist every spring semester beginning in spring semester 2021. We are not aware of examples of other classes team-taught by colleagues from different departments, and this interdisciplinary model for delivering the course remains unusual and unique. The course is currently being offered every spring semester (spring 2022 is the second time it has been offered). As of fall 2022, after only two offerings of the course with a max enrollment of 40 students, the minor in water sustainability has 17 students enrolled.

Research and creative activities

Efforts to foster interdisciplinary water research in FY22 have included securing an Illinois Innovation Network grant in collaboration with faculty from the University of Illinois, planning a series of water-themed collaborative research discussion opportunities, and securing Fell Trust funding for the Canal by Canal exhibit and lecture and hosting the exhibit and lecture on World Water Day in March of 2022. Additionally, the Water Center collaborated with the Office of Student Research to co-sponsor two student research grants that focus on water in FY22.

Community engagement

Efforts to do community outreach and promote community-engaged research and teaching include beginning to develop connections to stakeholders in Illinois, including the Illinois Farm Bureau and the Kaskaskia River Watershed As-



Matthew Hagaman shows students how to make ink from pennycress oil.

sociation, drafting a white paper to promote and support the creation of a student farm in collaboration with Rivian, as well as continuing to build support for a freight farm on campus in collaboration with the Office of Sustainability. Additionally, the center has been actively involved in efforts to create and support the new Sustainability Strategic Plan, which includes efforts to create momentum around the creation of a Center for Sustainability at Illinois State

Center for Mathematics, Science, and Technology (CeMaST)

During the 2022 fiscal year, the Center for Mathematics, Science, and Technology (CeMaST) continued collaboration on several grant-funded projects, all of which advance STEM education within and beyond the University. For example, CeMaST staff and three undergraduate interns iteratively developed a 4-H project book, *Cover Crop Science*, in support of the USDA-funded IPREFER (Integrated Pennycress Research Enabling Farm & Energy Resilience Project). This book was 4-H adopted in Illinois in fall of 2021, leading to 77 kids showing cover crop projects at county fairs in Illinois in 2022. Another example is NSF-funded Project EDDIE (Environmental Data-Driven Inquiry & Exploration), through which college/



GEMS (Girls Excelling in Math and Science) making ink from Pennycress oil.

university science faculty create flexible classroom teaching modules using large, publicly available datasets to engage students in quantitative reasoning. Project EDDIE also hosts professional development workshops for faculty on fostering quantitative reasoning using the modules. CeMaST continues to seek collaborators and funding for projects such as these to fulfill its mission to empower, conduct, and support STEM education and scholarship across the K-16 continuum.

CeMaST also supports equitable STEM participation at Illinois State in a variety of ways. CeMaST serves as the organizational home to the STEM DEI Taskforce, which seeks to pursue policies, procedures, and programs that contribute to establishing and maintaining equity, inclusion, sense of belonging, and diverse viewpoints across the STEM units at Illinois State. CeMaST collaborates with institutional efforts, such as the Growth Change Team, to provide intriguing STEM-focused professional development opportunities for faculty/staff; in February, this led to a seminar delivered by Dr. Ebony McGee on her book, *Black, Brown, Bruised: How*

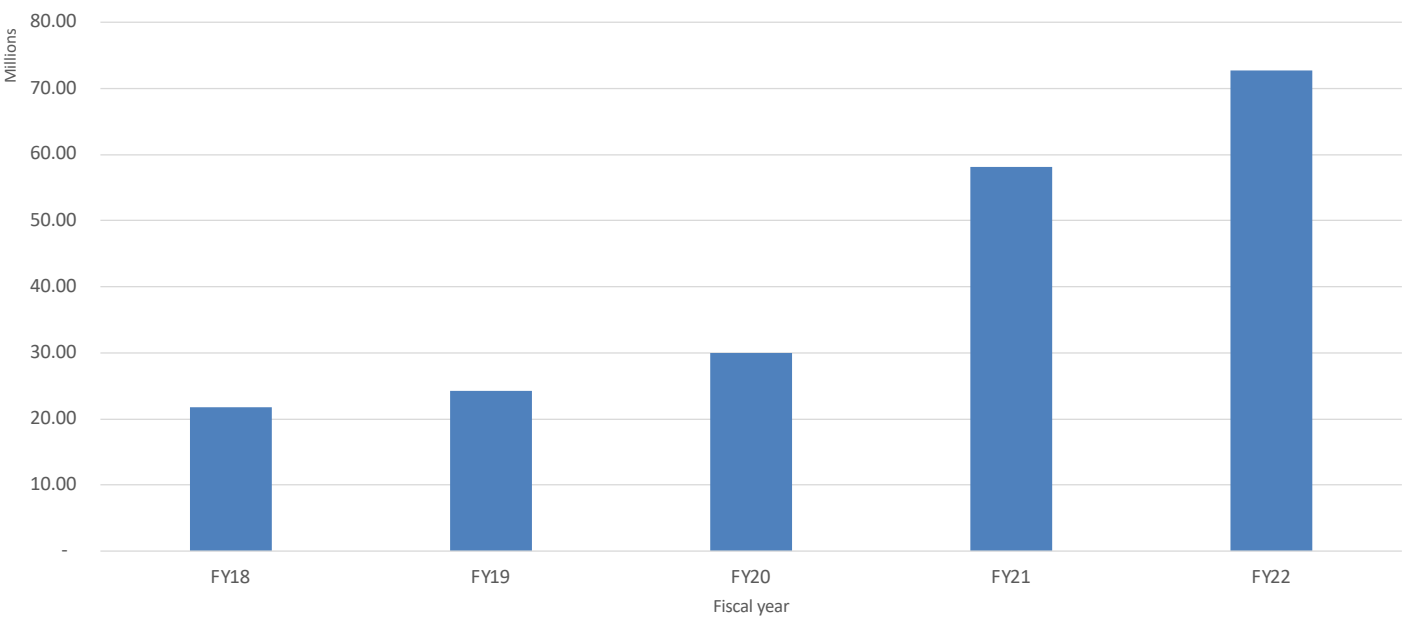
*Racialized STEM Stifles Innovation*. Together with University College, CeMaST supports the operation of STEM Alliance, which supports STEM majors who identify with a group that is marginalized in or minoritized by mainstream STEM. STEM Alliance events include career days, field trips, mentoring by STEM faculty, financial assistance, and support for engaging in undergraduate research.

CeMaST reaches out to the local community to foster STEM learning experiences and build STEM literacy. This year was the inaugural year of “The Green Screen,” a film series drawing attention to the climate crisis cosponsored by the Office of Sustainability and CeMaST. CeMaST also hosts the High School Research Symposium, in which students from around Illinois visit Illinois State for a day to present their research in a poster competition, as well as Illinois Summer Research Academy, in which high school students to mentored STEM research for a week during the summer.

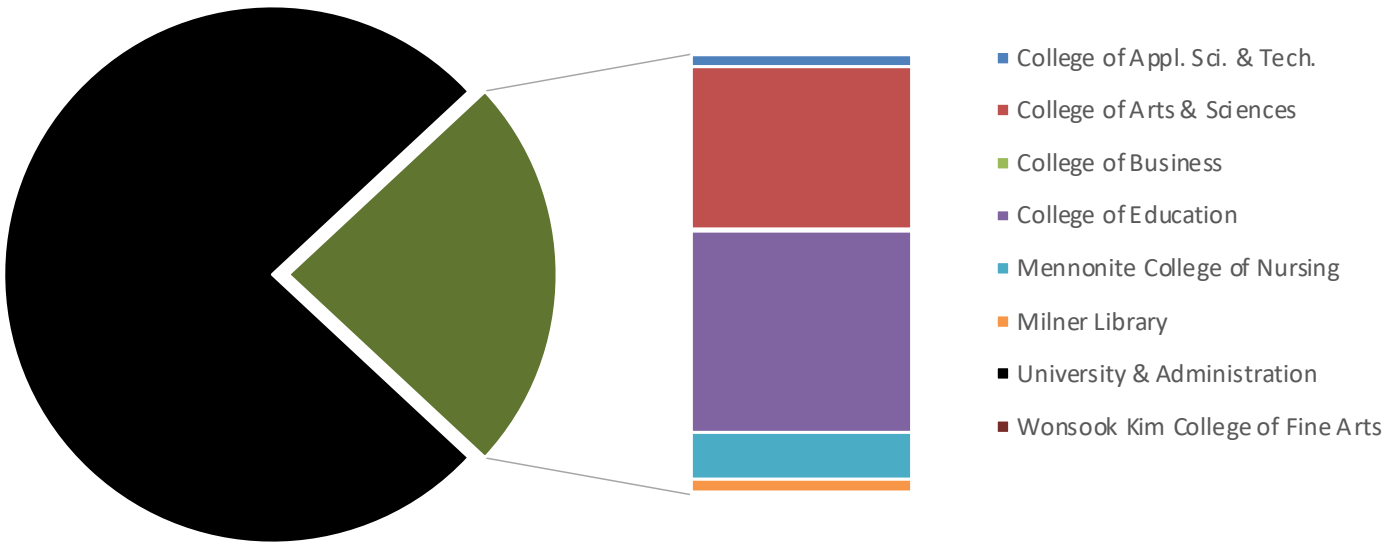




# Restricted expenditures



# Expenditure percentages



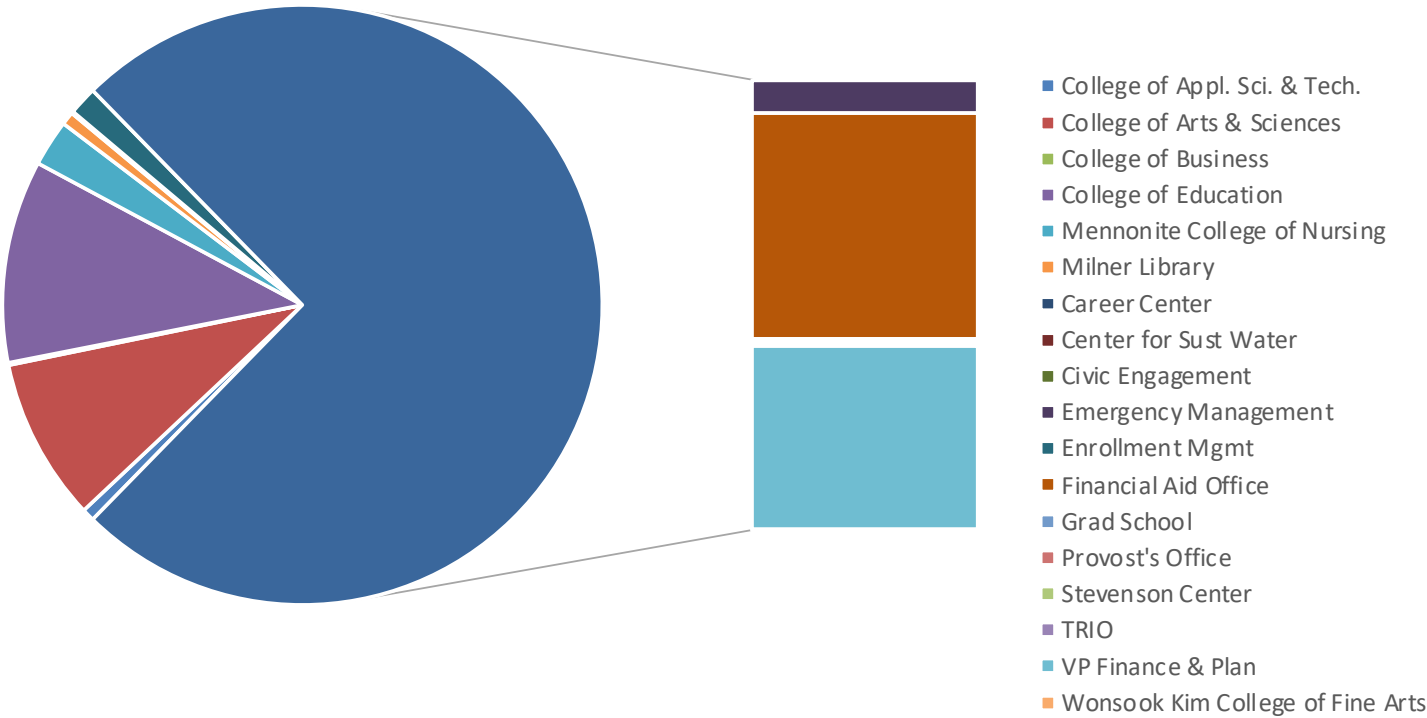
FY22 expenditures still dominated by emergency relief funding \$53M of approximately \$73.5M in restricted spending

### Colleges

- Education spent \$7.94M
- \$6.39M for CAS.

### Departments

- EAF spent \$5.67M then
- BSC with \$3.65M and
- MCN with \$1.82M





Chemistry professor’s research advances conversation in analytical science

By Nick Erickson

Dr. Jeremy Driskell’s research has landed major grants and been a part of some significant work that has had an immediate positive effect on public health. The professor of chemistry, who has been at Illinois State University since 2011, secured \$440,000 from the Department of Defense to help soldiers exposed to illness or bioterrorism, working to increase the speed of detecting and identifying vi-



Dr. Jeremy Driskell

ruses. He has partnered with other Illinois State scholars on a \$300,000 grant from the National Institute of Justice to create a device that would enable investigators to gather forensic evidence from the field to accelerate on-site drug analysis technologies. The National Science Foundation awarded a \$345,000 grant to him to study how proteins might stick to gold nanoparticles, a promising application in the medical field for delivering drugs, treating cancer, and detecting biomarkers for disease. These research projects are Driskell’s favorites in terms of application. They are the most exciting way to attract students to his team at the Driskell laboratory. And they are the easiest for the public to digest because they can see the impact of his research.

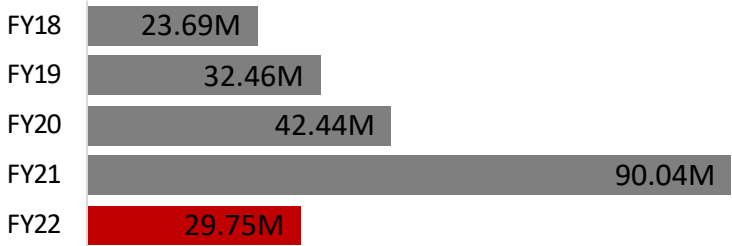
But as he sits back in his chair at his second-floor office in the Science Laboratory Building, Driskell smiles when talking about the nitty-gritty work that goes into smaller discoveries. As a scientist in love with his craft, some of Driskell’s favorite moments in the lab are when he finds the means that justify the ends. “I think some of those basic science discoveries are the most important discoveries that we’ve made that we can then use in the application,” Driskell said. “It takes a certain amount of experience to appreciate that level of detail.” Driskell began compiling that training and attention to detail as a student working with physical properties of nanoparticles as an undergraduate and in graduate school. As a postdoctoral researcher at the University of Georgia, he worked with a group of infectious disease experts and became particularly interested in solving biological problems. Those experiences led him to the research projects he has worked on while at Illinois State. They have largely focused on developing bioanalytical tools and improving detection technologies. According to his website, Driskell’s research “focuses on the development of novel diagnostic and biological assays by interfacing chemistry, nanomaterials, and biology.” His research also looks at the functions of surface-enhanced Raman scattering (SERS), antibody-antigen binding kinetics, and novel ligands. These complex scientific tests allow for faster analysis and the ability to better break down complex information in substances. “Our overall, long-term goal for all the work we’re doing is focused on developing point-of-care diagnostic assays,” Driskell said. An assay is a process of analyzing substance. “Hopefully, this can lead to the development of a simple modification method that can be applied to other protein systems,” said McKenzie Riley, a graduate student in Driskell’s lab. Driskell’s lab is particularly enticing to students who want to pursue health-related, bioanalytical research. His groups run parallel with one another, meaning there is a subgroup working on the basic chemistry and another working on application. He encourages students to conduct hands-on research and ask a lot of questions. “Identifying those areas of greatest need where you can potentially make the greatest impact is what we do,” he said.



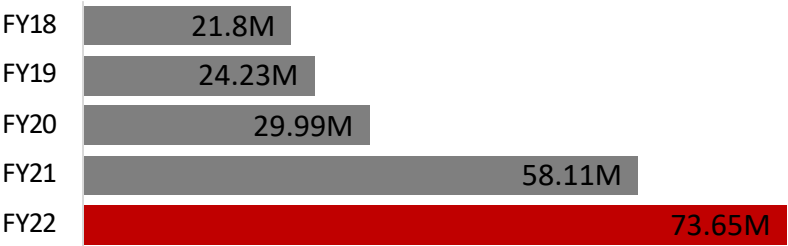
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AT A GLANCE

Awards



Expenditures



Proposals



- 8 FY22 awards > \$1M
- 3 new IP disclosures
- 1 active tech license
- 4 patents held
- 5,299 Web of Science listed publications since 2013
- ~207K square feet designated research space
- 1,185 works posted to ISU ReD Institutional Repository







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