



CARNEGIE R1 STATUS
University of Memphis: A Tennessee Flagship
Carnegie R1 Research Institution.

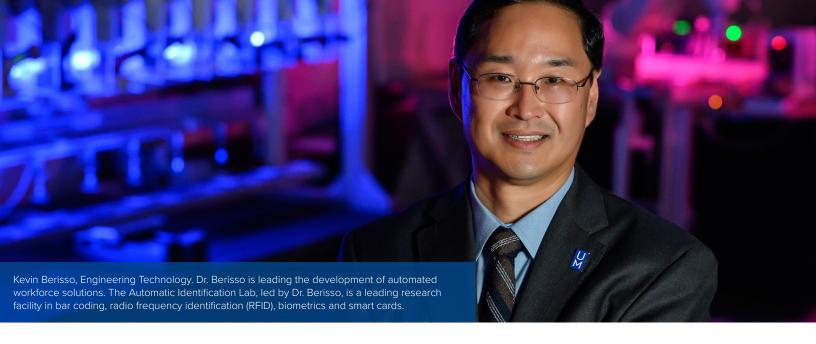


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**Left:** Thomas Goebel, Center for Earthquake Research and Information. Dr. Goebel is a 2022 NSF CAREER Recipient whose work is focused on induced Seismicity, fault structure, and earthquake source processes.

**Cover:** Amber Jennings, Biomedical Engineering. Dr. Jennings is a 2019 NSF CAREER Recipient who works with the Department of Defense and other agencies to design biomaterials that fight antimicrobial resistance to implants.

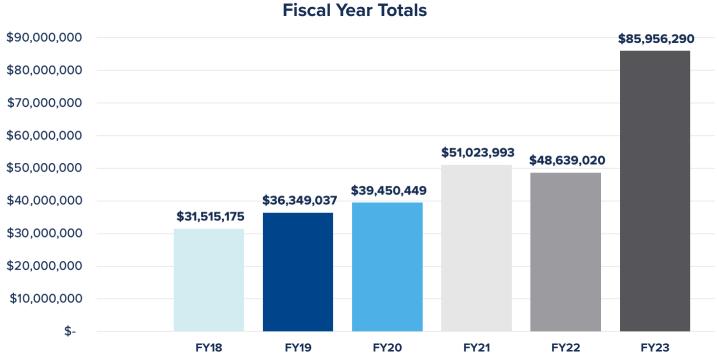


## **SUMMARY**

# The University ascends with continued research success.

In 2023, the University of Memphis achieved unprecedented success in funded research. We saw more funding than ever before, more departments achieving high levels of research activity, more millionaire Pls, and more research agencies interacting with our campus. Part of the noteworthy increase for this year can be attributed to the inclusive strategic planning process. Under our new strategic plan, Ascend, the University will continue this progress.

The last five years have yielded an increase in the research award footprint on campus of 273% - from \$31.5 million to just under \$86 million. This rapid near tripling of research awards is now challenging the research infrastructure of campus. The tremendous success of this year builds on a progressing trend of growth that has seen top record breaking trends in all major categories as compared to five years ago (see page 5).





FY18 Total
Research Award Dollars
\$31.5M

Departments or Units with \$1M+ Total Awards

11

**FY23** 

FY23 Total Research Award Dollars

\$86M

Departments or Units with \$1M+ Total Awards

20

Millionaire Principal Investigators

2



Millionaire Principal Investigators

15

Federal Agencies Awarding \$1M+

4



Federal Agencies Awarding \$1M+

11

Pl's Submitting Research Proposals

224



Pl's Submitting Research Proposals

**231** 

**FY18** 

Average Award Size

\$109,428

Average

**FY23** 

Award Size **294,022** 

Total Proposal Amount Submitted

\$134.6M



Total Proposal Amount Submitted

\$263.6M

Principal Investigators with \$500K or more

15



Principal Investigators with \$500K or more

34

First Time Principal Investigators

18



First Time Principal Investigators

41

Research Award Dollars (Award \$/# of faculty)

\$45,021



Research Award Dollars (Award \$/# of faculty)

\$122,795

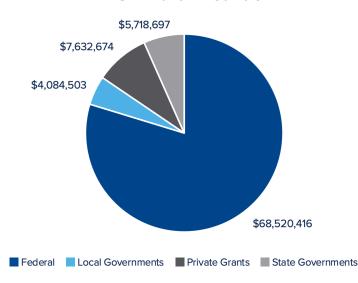
## **MAJOR TRENDS**

2023 was a landmark year for research growth at the University of Memphis. The strength of our research faculty and our role in the region have been enhanced with the designation of R1, and the result has been a significant increase in overall awards. Our total amount of awards - \$86M, is a tremendous step up from our previous record (FY21) of \$51M. This achievement is eclipsed only by the increased diversity of participation in the research enterprise. Twenty units achieved \$1M+ in awards, with four achieving the designation for the first time. We furthered our record number of millionaire Pls to 15 in a single year. A total of 84 new Pls in the last two fiscal years bodes well for the future of UofM research. This increasing participation of faculty signals a more broad-based research culture driven by the need for individual faculty members to fund their own research. Despite the constant number of proposals, the total award amounts have increased dramatically, which a is a clear indication of improved quality in proposal submissions. An increase in faculty lines, especially in areas that are funded heavily by federal research agencies, can only increase overall performance.

Research Awards represent federal external dollars being spent in our communities. The diversity of disciplines engaged in the research enterprise, and the inclusion of more partners in our work, has led to a more vibrant community of research that positively impacts the whole region.

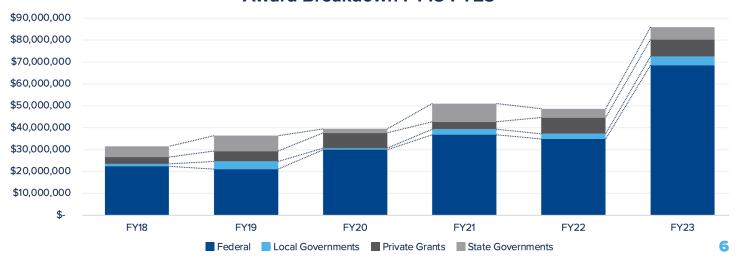
### **FISCAL YEAR DATA**

### FY23 Award Breakdown



Our total amount of awards—**\$86M**, is a tremendous step up from our previous record in FY21 of **\$51M**.

### Award Breakdown FY18-FY23



### **RESEARCH LEADERS WINNING MORE THAN \$1 MILLION**

### \* **Bold:** Deans



Laura Casey



Gary Emmert



Daniel Foti



Richard Irwin



Stephanie Ivey



Wesley James



Ashish Joshi



Kurt Kraiger



Santosh Kumar



Sabyasachee Mishra



Susan Neely-Barnes



Christos Papadopoulos



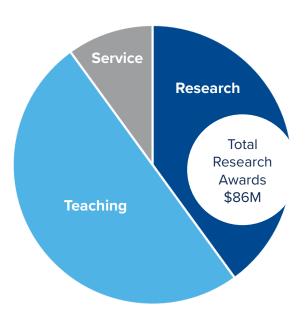
Brian Waldron



James Whelan

# **Total Faculty Salary and Benefits: Approximately \$132M**

The average faculty contract is divided into three parts:
Research – 40%
Teaching – 50%
Service – 10%



Externally Funded Research Awards Equal 163% of Faculty Research Effort

Faculty are now more than recouping the University's investment in the research effort.



# STRATEGIC RESEARCH DEVELOPMENT

# **Ongoing Faculty Support Programs and Key Outcomes**

### » INTEGRIT-E Regional Collaboration:

- The Innovation Through Entrepreneurship Guided by Research, Technology, and Equity is a regional collaboration of over 75 organizations formed in response to the NSF Engines program.
- The organization is designed to respond to regional challenges by building networks to apply for funding.

### » Communities of Research Scholars (CoRS):

- » Designed to facilitate collaborations and grow research engagement.
- » 63 CoRs funded, including faculty from over 51 disciplines
- » FY23 programs furthered a regional engagement strategy.

### » UofM Research Council

- » Developed a University of Memphis Centers and Institutes Policy.
- » IRB Review and Improvement Task Force assembled.

#### » Research Proposal Review Services

» Over 70 proposals reviewed in FY23, leveraging internal and external reviewers from multiple institutions and agencies.

### » Gap Funding Program

- » 16 proposals funded to date.
- The program helps faculty who are between grants or revising and resubmitting to federal agencies to continue their research.

### » NSF CAREER Academy

- Growing new faculty through professional development and comprehensive review services
- » Career Stats:
  - » NSF CAREER Awards: 9
  - » DoE CAREER Award: 1
  - » Applications Supported: 50+ to date
  - » UofM among top 25% of NSF CAREER winning institutions

### » Fine Arts, Humanities & Social Sciences Grants

- » 20 proposals funded to date.
- » 16 monographs or edited volumes published.
- » One album released.

### Defense Research Engagement

- » NDAA support secured for FY21, FY22, FY24.
- » Defense research networking preparation for faculty
- » 40+ faculty engaged in defense research initiatives.

### » FedEx Institute of Technology

- » FedEx support has yielded a 10x return on investment in research.
- The Systems Testing Excellence Program Lab opened inside the FIT in September 2022.
- » The Patents2Products Program spun out three additional technology startups from UofM Postdoc Entrepreneurs.
- » 80+ meetings, workshops, training programs, conferences and other events were offered by the FIT.



### » National Science Foundation Research Experience for Undergads Cohort Program

- » 11 participants in inaugural cohort program designed to increase REU applications from UofM.
- » REUs can supplement existing NSF awards and create opportunities for students in STEM disciplines.

### » Carnegie R1 Doctoral Fellowships

- » 48 PhD students funded to date.
- » Students included in over 60 grant proposals in two years.

### » Carnegie R1 Postdoc Program

- » 50+ postdocs funded to date.
- » 60+ grant proposals submitted with effort included for continued postdoc funding.
- » Provided comprehensive grantsmanship training to all postdoc members.
- » Current number of PhD qualified research staff: 48
- » Current postdoc count: 37

#### » UMRF Junior Professorships

- » All NSF Career recipients from current and prior years.
- » 2023 Recipients Aaryani Sajja, Carl Herickoff
- » 2022 Recipients Thomas Goebel, Kensha Clark
- » 2021 Recipients Maryam Salehi, Ana Doblas
- » 2020 Recipients Ranga Gopalakrishnan, Amber Jennings, Thomas Watson

### The Conversation Support

- » Subscription to *The Conversation* aides faculty in publishing to a general readership audience
- » 2.7M+ article reads for UofM faculty authors to date
- » Articles published in *Chicago Tribune, USA Today, CNN, Business Insider,* etc.

### » Research Equipment Database

Searchable database of all UofM research instrumentation, as reported by departments.

#### West Cancer Foundation Research Initiative

- » Four projects funded to date.
- Established in the fall of 2020, the West Cancer Foundation Initiative was created to cultivate research across the UofM campus in areas that advance cancer treatment, promote community health and wellness, and/or provide supportive patient care.

#### » INFER

- » Innovative Non-profit and Foundation Engaged Research (INFER) founded in 2020.
- » Seeks to bridge the efforts of researchers (in the areas of social science, life science and the humanities) and nonprofits (with social, human and health servicesrelated missions) to ensure that research efforts are relevant and useful to practitioners and that practice is effective and grounded in "best practice."

### » PECIR

The University of Memphis and Meharry Medical College partnered to fund six projects that build interdisciplinary partnership between institutions.

#### » RISE Fellowship

>> 70 PhD students funded to date.

### » First Gen STEM

» Nine PhD students funded to date.



# **FACULTY SUCCESS SPOTLIGHT**

### National Endowment for the Arts Recognizes Arts Entrepreneurship in Memphis



In the first direct award from the NEA to the UofM in recent memory, Dr. Josef Hanson was awarded funding for his project "The Motivations and Experiences of Minority Arts Entrepreneurs". Dr. Hanson has centered his work on the strong musical traditions of Memphis and the revitalization of music-oriented arts entrepreneurship in our region. He previously served as President of the Society for Arts Entrepreneurship Education.

# **NSF CAREER AWARDS**

# **Industry-aligned Strength Brings Top Level Talent**

The NSF CAREER Award is the among most prestigious junior faculty research awards made by the National Science Foundation. This highly competitive award helps aspiring research leaders to establish their career in a way that sets them up for future growth and funding. This year, the UofM received two CAREER awards – both in the same department. Drs. Aaryani Sajja and Carl Herickoff call the University of Memphis Biomedical Engineering (BME) Department home. Their awards further a reputation of high quality for the department – including Dr. Jessica Jennings, all junior faculty in BME have been awarded the CAREER. This is an exemplary and rare achievement in higher education.

The Biomedical Engineering Department is a key component of the biomedical device manufacturing landscape in our region. Memphis is the nation's second largest hub for the industry, and graduates from the UofM BME department are employed in nearly every company in the sector. Through research and student programs, departments like BME at the UofM are driving industry in our region.



Dr. Aaryani Tipirneni-Sajja



Dr. Carl D. Herickhoff

# BUILDING REGIONAL CAPACITY THROUGH RESEARCH-DRIVEN COLLABORATION

In 2023, the University of Memphis furthered its role as a leading University not just of Memphis, but the entire Delta Region. Through the work of multiple teams across campus, we have centered our efforts on thinking strategically about the biggest challenges facing the Delta region, and we are rising to meet those challenges through strategic collaborations that seek to build trust by centering on the lived experience of the people who call the region home.

### **HIGHLIGHTS OF REGIONAL DEVELOPMENT:**

### **Center for Regional Economic Enrichment (CREE)**

CREE focuses on enhancing the educational, environmental and economic well-being of the people and places of West Tennessee and the Delta. The Center, launched in 2021, brings together multiple grant funded programs that have focused on serving the people of Tennessee, Arkansas, and Mississippi.



Growing Relational and Occupational Wealth in West Tennessee Households (GROWWTH) has a goal to serve 2,500 low-income households over three years across West Tennessee. Over ten years, the program projects an estimated net benefit of \$850 million, including a boost to the gross domestic product and a savings of \$330 million from reduced social safety net spending. Fueled by a grant from the Tennessee Department of Human Services and Families First program, GROWWTH is a pilot program to help people improve their economic well-being and become self-sufficient. Partners include regional workforce boards (Workforce Mid-South, Southwest Tennessee and Northwest Tennessee), Community LIFT, Abyssinian Baptist Church, Economic Opportunities, Memphis Interfaith Coalition for Action and Hope (MICAH), Stand for Children, Whole Child Strategies, and The Organizing Expert, and are involved to ensure that the results of the program are sustainable and impact the communities most in need.

### Also a part of the CREE Grant-Funded Work:



Keep Tennessee Beautiful is the state level affiliate of Keep America Beautiful. Keep Tennessee Beautiful gives support to over 30 local/county KAB affiliates across the state.



The University of Memphis serves as one of three Memphis-area backbone organizations for the Opportunity Now Program, a program led by Workforce Midsouth and funded through the EDA Good Jobs Challenge. The program is designed to create an accelerated training program for individuals needing to gain sufficient knowledge and/or skills to qualify for jobs in one of three sectors: 1) Logistics Technology; 2) Advanced Manufacturing; 3) Construction.



## **Capacity Research Equity Opportunity Pilot Project (CREOPP):**

To bring transformational change to communities in the Delta region, we need to win grants. Yet, most communities in our region are under-resourced, and do not have the resources to apply for, win, and manage grants. CREOPP provides intensive support to help communities secure grant funding and achieve equitable and sustainable growth which helps the Delta to thrive.

There have been attempts by Federal agencies to connect rural and disadvantaged communities to funding opportunities, but simply connecting these communities to funding is not enough. Through the CREOPP program, the UofM is partnering with rural communities in the Delta region to identify funding, write the grant applications, and advise on establishing the partnerships and processes that ensure the sustainability of funding into the future. The pilot community participants are:

» AR: Helena, Osceola, Eudora

» MS: Hazlehurst, Port Gibson, Tunica

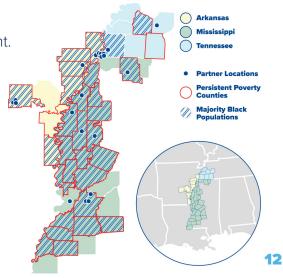
» TN: Brownsville, Whiteville

The goal of the program is to secure federal funding within 18 months of initial participation from federal granting agencies. By approaching the challenges of the Delta region through a regional collaboration centered on partnership that creates sustainable wealth, we can make progress towards overcoming pervasive poverty especially in minority and rural communities.

The CREOPP Program includes modules on impact investing, rural development, and strategic grantsmithing skill development.

# **Building Regional "Integrity":**

To strengthen regional collaboration, the University of Memphis led the development of a consortium of institutions across 43 counties in the Delta. The Innovation Through Entrepreneurship Guided by Industry, Technology, and Equity (INTEGRIT-E -pronounced integrity) brought together over 75 organizations across the Delta to examine big trends and challenges. Over six grants have been submitted to extend this effort, including CREOPP mentioned above.



### **Center for Community Research and Evaluation (CCRE)**

The mission of the Center for Community Research and Evaluation (CCRE) is to provide interdisciplinary social science research and evaluation support for community-based projects. The Center for Community Research and Evaluation (CCRE) at the University of Memphis strives to be the leading source of expertise on community transformation in the Mid-South. The center serves as a vital partner in research and evaluation of community-based projects, provides consulting services and conducts original research in the areas of rural and urban poverty, education, and health.

The CCRE partnership with Delta Health Alliance helps to address major challenges in the region. The partnership includes comprehensive service and support of the DHA's mission to improve the health and education of the men, women, and children who make the Mississippi Delta their home. Recently the partnership has worked on the Delta Futures program, which has effectively reduced teen pregnancy in the region. Overall, the most intensely served counties across the Delta have more than doubled the chances of a sharp decline in teen pregnancies than their lesser served counterparts, providing strong evidence for the effectiveness of this program.



### **Urban-Rural Systems Research Coordination Network**

The Mississippi River is an economic and environmental ecosystem that stretches from the Gulf of Mexico to Northern Minnesota. Across the whole region, common challenges persist:

- » Urban and suburban sprawl;
- » Disconnected food, energy, and water systems;
- » Frequent floods and uncontrolled water runoff;
- » Urban heat-induced hospitalizations;
- » Lack of ecosystem services; and
- » Climate change impacts.

The University of Memphis Design Collaborative has partnered with others in the region to consider land policy issues that impact the urban-rural interface, including land use and zoning, urban density and floor area ratios, land use patterns, urban nature, urban expansion plans, building designs and infrastructure,

as well as urban ecosystems, biodiversity and climate adaptation. The University of Memphis' Drs. Andy Kitsinger and Charlie Santo will lead the Memphis section along with colleagues in Baton Rouge, St. Louis, and Minneapolis.

Researchers plan for this project to lead to new regional policies and government actions that can create more resilient and sustainable environments for people living in the Mississippi River basin and other similar regions.





# CULTIVATING A DYNAMIC RESEARCH ECOSYSTEM

- » UMRF Research Park
- » UMRF Ventures
- » Phi Kappa Phi Innovation in Excellence Award Semifinalist
- » American Association of State Colleges and Universities Award
- » APLU Innovation Award Finalist
- » 21 Licensed Technologies
- » Patents2Products (P2P)
- » Seven companies launched





















## **TECHNOLOGY TRANSFER HIGHLIGHTS**

- » Efficient Forwarding Information Base Caching System and Method by Lan Wang, U.S. Patent 11,489,771 (11/1/2022)
- » Multi-user Permission Strategy to Access Sensitive Information (Shared Trust)
  by Dipankar Dasgupta, U.S. Patent 11,503,035 (11/15/2022)
- » Improving Transient Stability of Grid-connected Wind Generator System by Mohd Ali, U.S. Patent 11,509,138 (11/22/2022)
- » Composition and Method for Delivering an Agent to a Wound by Warren Haggard and Joel Bumgardner, U.S. Patent 11,576,975 (2/14/2023)
- » Blockchain-based Decentralized Public Key Management System by Lan Wang, U.S. Patent 11,582,024 (2/14/2023)
- » Composition and Method for Inhibiting Inflammation by Gary Bowlin, U.S. Patent 11,202,850 (12/21/2021)
- » Controlling Biofilms with Cyclopranated Fatty Acid by Jessica Jennings, U.S. Patent 11,311,506 (4/26/2022)

# **Companies Currently Licensing UofM Technologies**



















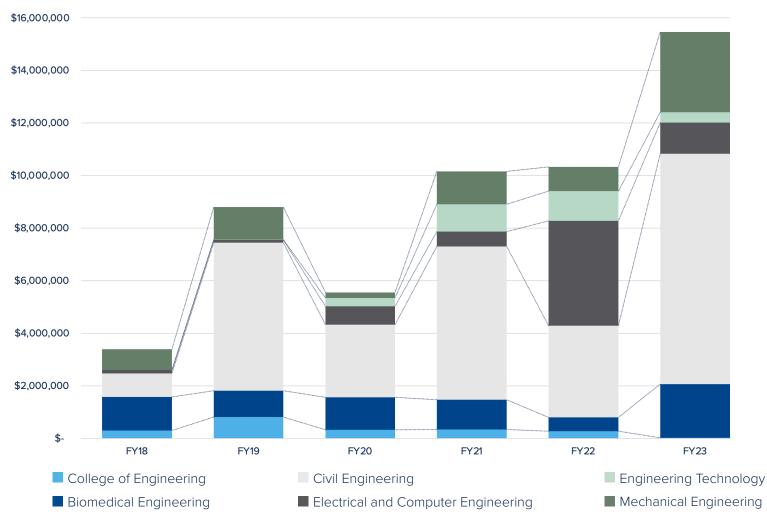




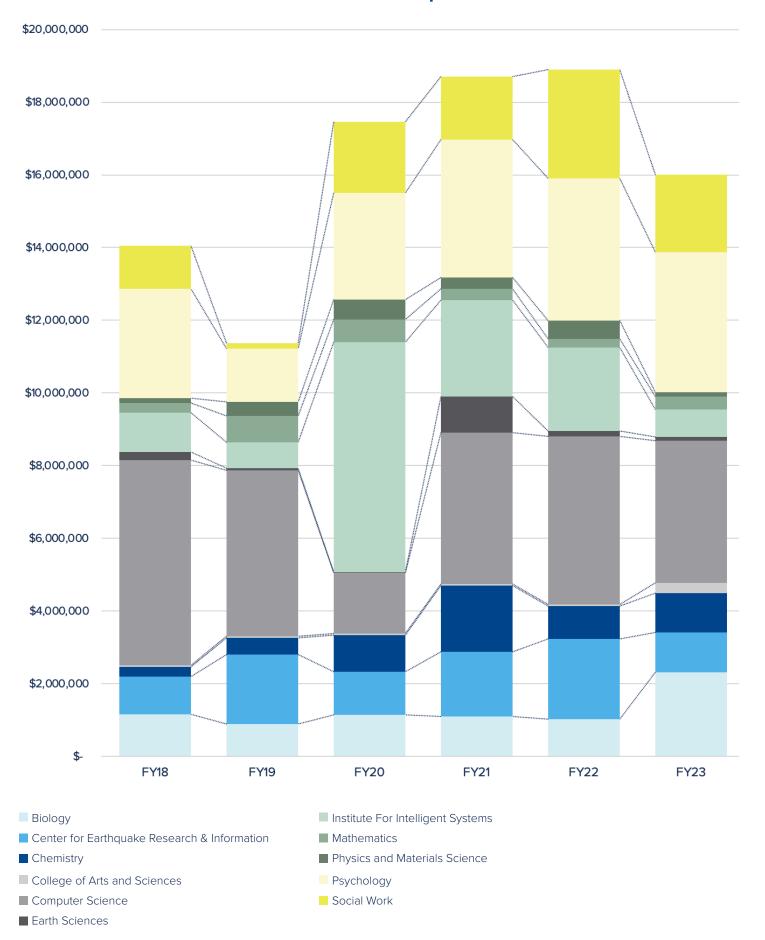


# **PROGRESS OF STEM ACADEMIC UNITS**

# **Engineering Departments**



# **Arts and Sciences Departments**



# **Principal Investigators with \$500K+ in Awards**

\*Note: \$\$ obligated amount in FY

FY21 Faculty		FY 22 Faculty		FY 23 Faculty	
Marshall, Melissa	\$4,919,560	Jacobs, Eddie	\$3,231,722	Irwin, Richard	\$26,896,151
Casey, Laura	\$3,140,880	Waldron, Brian	\$2,245,011	Joshi, Ashish	\$8,758,721
Waldron, Brian	\$2,828,561	Neely-Barnes, Susan	\$1,558,317	Waldron, Brian	\$4,473,617
Kumar, Santosh	\$2,398,500	Dasgupta, Dipankar	\$1,265,422	James, Wesley	\$2,181,986
Rus, Vasile	\$1,707,863	Whittaker, Jeremy	\$1,264,215	Whelan, James	\$1,970,290
James, Wesley	\$1,486,806	Yang, Kan	\$1,261,161	Foti, Daniel	\$1,695,800
Boykins, Anita	\$1,360,830	Collins, Tracy	\$1,257,855	Papadopoulos, Christos	\$1,430,745
Gopalakrishnan, Ranganathan	\$1,114,477	Kumar, Santosh	\$1,232,151	Kraiger, Kurt	\$1,400,393
Neely-Barnes, Susan	\$1,095,290	Whelan, James	\$1,205,000	Ivey, Stephanie	\$1,372,094
Berisso, Kevin	\$1,035,237	Irwin, Richard	\$1,120,905	Kumar, Santosh	\$1,318,430
Ivey, Stephanie	\$1,028,849	Withers, Mitchell	\$1,058,028	Neely-Barnes, Susan	\$1,318,178
Ozdenerol, Esra	\$1,000,000	Bekis, Barbara	\$945,839	Emmert, Gary	\$1,287,112
Murphy, James	\$889,701	LeDoux, Mark	\$911,040	Casey, Laura	\$1,173,752
Wang, Lan	\$865,000	Hirschi, Melissa	\$844,097	Mishra, Sabyasachee	\$1,003,825
Withers, Mitchell	\$841,311	Zoblotsky, Todd	\$823,783	Ali, Mohd	\$953,000
Salehi Esfandarani, Maryam	\$827,197	Smeltzer, Matthew	\$803,553	Gopalakrishnan, Ranganathan	\$833,217
Fagan, Thomas	\$770,364	Levy, Marian	\$776,757	Mandel, Jennifer	\$811,531
Hunter, William	\$750,000	Goebel, Thomas	\$769,960	Herickhoff, Carl	\$810,686
Zhao, Xuan	\$726,990	Rus, Vasile	\$715,941	Levy, Marian	\$786,263
Rudd, Loretta	\$694,845	Hunter, William	\$700,000	Bloomer, Richard	\$754,448
Parrill-Baker, Abby	\$651,741	Bloomer, Richard	\$698,342	Withers, Mitchell	\$716,729
Karmaus, Wilfried	\$589,485	Rudd, Loretta	\$684,209	Hunter, William	\$700,000
Santo, Charles	\$575,537	Ivey, Stephanie	\$640,028	Pichon, Latrice	\$679,459
Harding, Melvyn	\$536,993	Parrill-Baker, Abby	\$628,317	Anderson, Celia	\$652,440
Smeltzer, Matthew	\$532,965	Pichon, Latrice	\$628,285	Pence, Brandt	\$652,164
Mishra, Sabyasachee	\$519,359	McGinnis, James	\$599,997	Whittaker, Jeremy	\$648,000
Pichon, Latrice	\$505,336	Clark, Kensha	\$590,000	Smeltzer, Matthew	\$637,081
Sutter, Thomas	\$502,250	West, Steven	\$566,365	Sajja, Aaryani	\$609,976
		Sabatini, John	\$556,777	Gkolias, Michail	\$597,272
		Harding, Melvyn	\$536,993	Harding, Melvyn	\$536,993
		Berisso, Kevin	\$533,971	Sabatini, John	\$533,029
		Kedia, Satish	\$518,555	Rudd, Michael	\$513,967
		McKenna, Duane	\$506,597	Luu, Linh	\$500,000
		Murphy, James	\$501,805		

<sup>\*</sup> **Bold:** Received \$500K, or more, in FY21, FY22 and FY23 (3 consecutive years)

# **Research Units with \$1M+ in Awards**

\*Note: \$\$ is obligated amount in FY

Research Unit	FY18	FY19	FY20	FY21	FY22	FY23
UofM Global					\$445,000	\$26,898,504
School of Public Health	\$704,122	\$421,778	\$437,079	\$308,149	\$428,011	\$9,157,638
CAESER	\$351,304	\$3,639,421	\$964,278	\$2,928,579	\$2,391,309	\$5,336,127
Computer Science	\$5,643,879	\$4,558,806	\$1,675,828	\$4,157,486	\$4,517,323	\$3,919,426
Psychology	\$2,828,440	\$1,294,557	\$2,758,135	\$3,611,995	\$3,915,705	\$3,854,061
Instruction and Curriculum Leadership	\$1,525,398	\$1,652,731	\$1,884,702	\$3,890,880	\$984,096	\$3,244,619
Mechanical Engineering	\$781,565	\$1,242,584	\$212,712	\$1,250,767	\$909,745	\$3,045,530
Biology	\$1,150,836	\$893,769	\$1,137,560	\$1,093,838	\$1,020,292	\$2,306,784
Sociology	\$303,163	\$379,613	\$370,676	\$1,486,806	\$234,490	\$2,161,986
Social Work	\$1,190,317	\$142,500	\$1,951,753	\$1,738,217	\$2,987,173	\$2,137,455
Biomedical Engineering	\$1,277,712	\$997,911	\$1,236,040	\$1,142,052	\$522,945	\$2,041,355
College of Health Sciences				\$64,761	\$1,000,873	\$1,795,441
Social and Behavioral Sciences	\$158,980	\$618,677	\$738,670	\$787,778	\$1,547,681	\$1,555,921
Management						\$1,548,413
C-TIER					\$322,527	\$1,471,098
School of Urban Affairs and Public Policy			\$525,000	\$1,100,537	\$775,757	\$1,242,933
Electrical and Computer Engineering	\$73,828	\$103,586	\$691,932	\$374,970	\$3,974,650	\$1,177,558
Center for Earthquake Research & Information	\$1,043,633	\$1,899,837	\$1,180,062	\$1,782,242	\$2,016,646	\$1,093,129
Chemistry	\$271,257	\$467,608	\$1,017,346	\$1,827,035	\$908,635	\$1,086,610

# **COMMUNITIES OF RESEARCH SCHOLARS (CORS)**

### **FY23 Awarded Projects**

### Identifying Opportunities for Renewables and Energy Storage in the Mid-South

Alexander Headley, Mechanical Engineering

# The Language of Science: Implications for Teaching and Learning

Alistair Windsor, Institute for Intelligent Systems

### Creating a Culturally Adapted Social-Emotional Learning Curriculum: DBT STEPS-A with Black/ African American Adolescents

Amanda Hasselle, Psychology

# Establishing an Interdisciplinary Research Collaboration in the Fields of Machine Learning and Additive Manufacturing

Amir Hadadzadeh, Mechanical Engineering

# Investigation of a Multiplexed Wearable Sensor to Identify Engineering Undergraduate Students at Risk in Their Major by Means of Artificial Intelligence

Ana Doblas, Electrical and Computer Engineering

# **Exploring Synergies in Astrophysical and Engineering Simulation**

Benjamin Keller, Physics and Materials Science

### **Campus Dating Violence Collaborative**

Bernadette Ombayo, Social Work

# Climate, Environmental, and Energy Justice Research (CEEJR)

Chunrong Jia, Environmental Health

### Passport to Teach and Learn: UofM Interdisciplinary Training for Graduate Teaching Assistants and New Non-Tenured Faculty

Crystal White, Educational Psychology and Research

# Identifying the Potential Determinants of Death among Hypertension Patients while Staying at the Hospital using Publicly Available Clinical Datasets

Faruk Ahmed, Engineering Technology

# Regional Strategy for Regenerative Agriculture and Innovation

Leah Windsor, Institute for Intelligent Systems

# Supporting Data Collection Process: Evaluating Communication Strategies to Reduce Distracted Driving Among Adolescents

Maria Jaramillo and Subhash Jha, *Marketing and Supply Chain Management* 

### Virtual Reality Working Group

Marika Snider, Architecture

### The Annual Memphis Neuroscience Symposium

Nicholas Simon and Miriam van Mersbergen, School of Communication Sciences and Disorders

# Exploring the Role of Social Determinants of Health on Sepsis 90-day Sepsis Readmissions

Reba Umberger, Nursing

### An Interdisciplinary Research to Incorporate Machine Learning Techniques in Mechanical and Fatigue Life Predictions of Additive Manufactured Materials

Reza Molaei, Mechanical Engineering

# Research on Intimate Partner Violence Collaborative

Sarah Leat, Social Work

# The Tiger Blueprint: Building Extended Learning Programs through the Cypher Code Collective

William Hunter, Special Education

# Metadata-aware Imbalance Modeling for Clinical Outcome Assessment

Xiaolei Huang, Computer Science

### Designing A Culturally Tailored Diet Management Application for Type 2 Diabetic Patients

Yafang Li, Department of Business Information Technology

# Aerogel-Based Acoustic Tumor-on-a-Chip Model for Cancer Metastasis Research,

Yuan Gao, Mechanical Engineering



# FIRST-TIME PRINCIPAL INVESTIGATORS FOR FY23

**Celia Anderson,** *Instruction and Curriculum Leadership* 

**Leigh Boardman,** *Biological Sciences* 

**Michelle Brasfield,** Counseling, Educational Psychology & Research

**Jamie Brunsdon,** College of Health Sciences

**Melanie Burgess,** Counseling, Educational Psychology & Research

Qianyi Cheng, Chemistry

Daniel Collier, Leadership

**Mohammadreza Davoodi,** Electrical and Computer Engineering

**Anna Falkner,** *Instruction and Curriculum Leadership* 

**Lindsey Feldman,** Anthropology

**Mark Gillenson,** Fogelman College of Business Economics

Alexandrea Golden, Psychology

William Jackson, Earth Sciences

**Subhash Jha,** Marketing & Supply Chain Management

Kristen Jones, Management

Ashish Joshi, School of Public Health

Kurt Kraiger, Management

Philip Kunz, School of Accountancy

Rebecca Laumann, International Programs

Jose Lopez, Economics

Linh Luu, Health Center

**Brian Meredith,** *Graduate Programs* 

**Patrick Murphy,** Counseling, Educational Psychology & Research

**Cynthia Muzzi,** Center for Research in Educational Policy

**Suzanne Onstine,** History

**Viktoriya Pleshkan,** Loewenberg College of Nursing

**Caitlin Porter,** FCBE Academic Administration

**Sandra Richardson,** Fogelman College of Business Economics

Nichelle Robinson, College of Education

Scott Schoefernacker, CAESER

Gary Stinchcomb, Earth Sciences

William Thompson, College of Arts and Sciences

**Gina Tillis,** Instruction and Curriculum Leadership

**Sharon Wrobel,** *Public and Nonprofit Administration* 

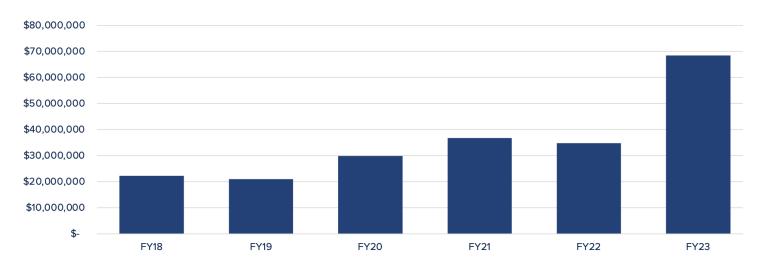
**Mohammed Yeasin,** *Electrical and Computer Engineering* 

**Velma Zahirovic-Herbert,** Fogelman College of Business Economics

Xiaofei Zhang, Computer Science

# **DETAILED VIEW | FEDERAL AWARDS**

\*Note: \$\$ is obligated amount in FY



# **Federal Funding By Source**

Funding Source	FY18	FY19	FY20	FY21	FY22	FY23
U.S. Department of Health and Human Services	\$359,374	\$401,400	\$660,321	\$2,030,801	\$598,901	\$25,447,360
Centers For Disease Control				\$599,217	\$1,431,937	\$10,871,089
National Science Foundation	\$2,772,267	\$3,728,217	\$8,549,222	\$8,919,989	\$6,711,757	\$6,783,826
National Institutes of Health	\$6,881,989	\$7,029,329	\$6,759,200	\$6,573,211	\$4,318,128	\$5,739,078
U.S. Economic Development Administration				\$490,833		\$3,296,544
Health Resources and Services Administration	\$970,591	\$12,143	\$3,604,701	\$3,784,476	\$6,356,954	\$2,753,764
U.S. Department of Education	\$3,409,391	\$2,251,692	\$4,522,972	\$6,279,542	\$3,634,096	\$2,665,265
Federal Highway Administration	\$49,952	\$40,328				\$1,384,896
U.S. Army Research Office	\$122,961	\$83,494	\$98,634	\$147,465	\$2,707,364	\$1,222,623
Office of Naval Research	\$323,824	\$60,000	\$411,453	\$50,000	\$120,176	\$1,039,824
U.S. Geological Survey	\$914,068	\$1,772,183	\$993,862	\$1,190,591	\$1,462,308	\$1,021,631

## Top 10 Federally Funded Projects By Fiscal Year

\*Note: \$\$ is obligated amount in FY

### **FY22**

Multi-UAS Multi-Sensor Intelligence, Surveillance, and Reconnaissance (ISR) | Eddie Jacobs \$2,707,364

Supporting the Retention of Next Generation Registered Nurses (STRONG-RNs) | Jeremy Whittaker \$1,264,215

CyberCorps: New Scholarships for Service (SFS)
Program at the University of Memphis I Kan Yang
\$1,261,161

Health, Education, and Access for Rural Tennesseans (HEART) | Tracy Collins \$1,257,855

mHealth Center for Discovery, Optimization & Translation of Temporally-Precise Interventions (mDOT) (multi-year award) | Santosh Kumar \$1,154,454

Cybersecurity Education for Critical Infrastructure Protection (in Community Development) through Regional Coalition | Dipankar Dasgupta \$1,014,076

INTEGRATE (INterprofessional TEams GRounded in Apprenticeship, Telehealth, and Evidence) |
Susan Neely-Barnes

\$931,153

External Evaluator - ERVA: The Vision for Engineering Leadership -a Multi-sector Alliance (VELMA) I Todd Zoblotsky

\$799,798

Operation of the Mid-America Integrated Seismic Network 2020-2024 (CERI) (multi-year award) | Mitchell Withers

\$702,675

iCODE: Investigating and Scaffolding Students' Code Comprehension Processes To Improve Learning, Engagement, and Retention | Vasile Rus \$650,600

### **FY23**

Growing Relational and Occupational Wealth in West Tennessee Households | Richard Irwin \$25,000,000

Center for Public Health Informatics, Data, Equity, Analytics, and Systems (PH-IDEAS) | Ashish Joshi \$8,739,721

Forward Now | Richard Irwin \$1,896,151

Black Wealth Advancement through New Business and Knowledge Development (BANK) | Kurt Kraiger \$1,400,393

mHealth Center for Discovery, Optimization & Translation of Temporally-Precise Interventions (mDOT) (multi-year award) | Santosh Kumar \$1,143,420

Collaborative Research: CCRI: NEW: Open Community Platform for Sharing Vehicle Telematics Data for Research and Innovation I Christos Papadopoulos \$871,098

Cavitation Erosion: Model to Full Scale | Daniel Foti \$830.000

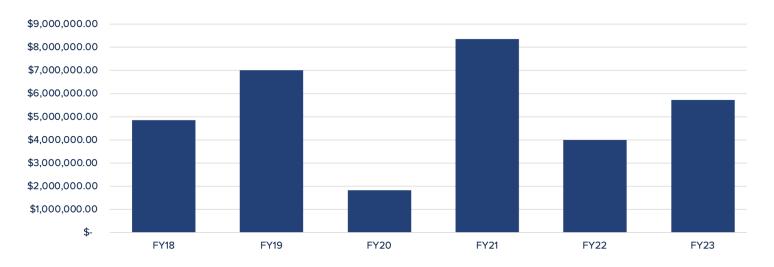
Collaborative Research: RESEARCH-PGR:
Comparative Genomics of the Capitulum:
Deciphering the Molecular Basis of a Key Floral
Innovation | Jennifer Mandel
\$811,531

Theoretical and Experimental Investigation of Grain Charging, Coagulation and Heating in Dense Nonthermal Dusty Plasmas for Large Scale Materials Synthesis I Ranganathan Gopalakrishnan \$725,689

UofM Home/Community Based Early Intervention (HCBEI) Services | Laura Casey \$718,212

# **DETAILED VIEW | STATE AWARDS**

\*Note: \$\$ is obligated amount in FY



# **State Funding By Source**

Funding Source	FY18	FY19	FY20	FY21	FY22	FY23
TN Department of Mental Health and Substance Abuse Services	\$185,070	\$187,752	\$180,000	\$360,000	\$1,205,000	\$2,095,290
Tennessee Department of Education	\$1,508,245	\$1,738,245	\$238,245	\$1,012,245	\$938,245	\$1,596,480
Tennessee Department of Agriculture			\$160,000	\$240,000		\$598,000
Tennessee Department of Transportation	\$998,569	\$4,150,941	\$194,794	\$5,655,715	\$711,023	\$477,974
State of Tennessee	\$1,206,482	\$230,914	\$360,027	\$179,168	\$299,200	\$281,374
West Tennessee River Basin Authority				\$165,000		\$176,784
Tennessee Higher Educ Commission	\$363,131	\$138,555	\$121,800	\$152,300	\$217,500	\$153,083
Virginia Department of Education					\$92,308	\$99,197
University of Tennessee Health Science Center	\$129,808	\$240,472	\$24,941		\$56,880	\$60,941
Paris Special School District						\$56,060
Mississippi Soybean Promotion Board						\$48,947
Tennessee Department of Commerce and Insurance	\$77,874	\$54,217	\$47,548	\$50,730	\$36,484	\$42,214
University of Tennessee - Knoxville	\$32,829				\$15,000	\$30,000
Tennessee Technological University						\$2,353

## **Top 10 State Funded Projects By Fiscal Year**

\*Note: \$\$ is obligated amount in FY

### **FY22**

Change the odds: a multi platform approach to gambling treatment (multi-year award) I James Whelan

\$1,205,000

Multi-Tiered Systems of Support for Behavior and Academics (multi-year award) | William Hunter

\$700,000

University of Memphis, Byway Management Program | Richard Irwin

\$675,905

TN Governor's School for International Studies I Keri Brondo

\$238,245

Administration of the Minority Engineering Scholarship | Isaiah Surbrook

\$205,000

**CoM Stormwater GIS reintegration** *(multi-year award)* **I Brian Waldron** 

\$190,000

GIVE 2.0 | Bradley Harrell

\$150,000

Loewenberg College of Nursing - Lactation Support Program | Genae Strong

\$148,300

Virginia 21st CCLC 2022 | Jack Strahl

\$92,308

TN Doctoral Scholars program | Robin Poston \$67,500

### **FY23**

Change the odds: a multi platform approach to gambling treatment (multi-year award) | James Whelan

\$1,970,290

Multi-Tiered Systems of Support for Behavior and Academics (multi-year award) | William Hunter \$700,000

University of Memphis College of Education Grow Your Own Program | Celia Anderson \$652,440

TDA Phase 2 | Brian Waldron

\$598,000

Stormwater Conveyance from Bridge Decks I Claudio Meier

\$337,975

Governor's School for International Studies I William Thompson

\$238,245

BlueOval Muddy Creek | Brian Waldron \$176,784

CoM Stormwater GIS reintegration (multi-year award) | Brian Waldron \$172,174

Public Behavioral Health Workforce Recruitment and Outreach Initiative I Susan Elswick

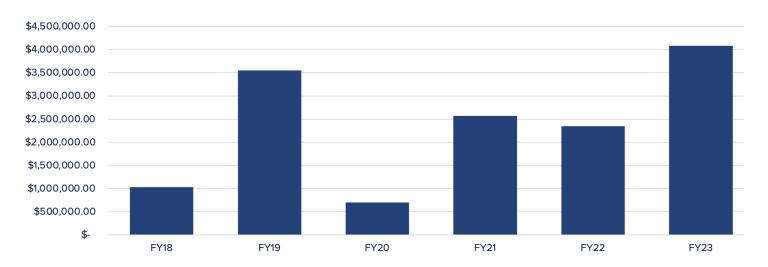
\$125,000

Informed Safety, Mobility, and Driver Comfort Enhancement Practices for Work Zones: Learnings from High-Fidelity Data I Sabyasachee Mishra

\$99,999

# **DETAILED VIEW | LOCAL PUBLIC AWARDS**

\*Note: \$\$ is obligated amount in FY



# **Top Local Public Funding Sources for Research**

Funding Source	FY18	FY19	FY20	FY21	FY22	FY23
Memphis Light Gas and Water		\$2,235,000		\$1,509,000	\$1,642,887	\$2,720,798
Shelby County Government	\$37,092	\$29,000			\$35,000	\$350,000
City of Collierville	\$9,500	\$9,500	\$41,500	\$41,500	\$73,500	\$305,864
Shelby County Schools		\$316,248	\$4,261	\$90,898	\$133,340	\$169,886
City of Bartlett	\$16,100	\$16,100	\$16,100	\$16,100	\$16,100	\$132,200
Memphis Area Transit Authority	\$127,209		\$107,458	\$120,000		\$129,999
City of Millington	\$10,000		\$5,000	\$10,000	\$5,000	\$96,313
Great Lakes Water Authority						\$84,444
Shelby County Community Services Agency					\$24,960	\$49,999
City of Germantown	\$16,100	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000

## **Top 10 Locally Funded Projects By Fiscal Year**

\*Note: \$\$ is obligated amount in FY

### FY22

MLGW Aquitard Year 4 (multi-year award) | Brian Waldron

\$1,342,887

City of Memphis Neighborhood Preservation Clinic | Daniel Schaffzin \$314,333

MLGW General | Brian Waldron \$300,000

SCS Culinary Arts Program at Bolton High (multiyear award) | Radesh Palakurthi \$94,000

Collierville GW Quality Research | Daniel Larsen \$64.000

BCS 2.0 | Brian Waldron \$56.580

Germantown GW Support | Brian Waldron \$45,000

SCS-Bolton HS Ambassadors | Stephanie Ivey \$39,340

Why Do Individuals Continue to Engage in Violent Crime?: Expected Early Death and Crime Desistance in Memphis I William Gibbons \$35,000

Evaluation of Shelby County Youth Assessment Center | Timothy McCuddy \$24,960

### **FY23**

MLGW General WHPP | Brian Waldron \$1,625,000

MLGW Aquitard Year 5 (multi-year award) | Brian Waldron \$1,095,798

Groundwater Monitoring Network and Public Education on Water in Shelby County I Scott Schoefernacker

\$350,000

Collierville Water Quality | Daniel Larsen \$166,147

Town of Collierville Wellhead Protection and Support Services | Brian Waldron \$139,717

City of Bartlett Wellhead Protection and Support Services | Brian Waldron

\$132,200

Asset Management Plan for Memphis Transit Fleet | Sabyasachee Mishra \$129,999

Millington Wellhead Protection, Education Outreach and Water Quality | Brian Waldron \$96.313

SCS Culinary Arts Program at Bolton High (multiyear award) | Radesh Palakurthi \$94,000

Investigating the Occurrence of Microplastic Pollution within the Biosolids of Wastewater Treatment Plants I Farhad Jazaei \$84,444

# **DETAILED VIEW | CORPORATE & FOUNDATION AWARDS**

\*Note: \$\$ is obligated amount in FY



# **Top Corporate & Foundation Funding Sources for Research**

Funding Source	FY18	FY19	FY20	FY21	FY22	FY23
Delta Health Alliance						\$2,161,986
Memphis and Shelby Crime Commission			\$525,000	\$525,000	\$525,000	\$1,242,933
Liquid IV						\$540,349
GS1 US Incorporated						\$405,000
FedEx Corporate Services	\$50,000	\$199,000			\$230,000	\$397,084
The Urban Child Institute		\$271,119	\$2,276,962	\$1,214,095	\$2,171,600	\$350,000
Conch Technologies		\$656,160	\$379,734	\$227,272	\$269,848	\$212,583
Trustees of Boston College						\$200,000
Hyundai Motor Company					\$157,200	\$163,000
American Institutes for Research						\$143,437
The Commonwealth Fund		\$18,050				\$112,885
Epicenter		\$510,000				\$112,800
Battelle		\$15,870	\$15,938	\$57,888	\$50,993	\$104,175
Kemmons Wilson Family Foundation						\$103,000

## Top 10 Corporate & Foundation Funded Projects By Fiscal Year

\*Note: \$\$ is obligated amount in FY

### **FY22**

Peer Power Institute | Barbara Bekis \$945,839

Community Partnership to Enhance Kindergarten Readiness Through Quality Caregiver/Parent-Child Interactions I Loretta Rudd \$553,876

Public Safety Institute (multi-year award) I Abby Parrill-Baker \$525,000

MLP/Memphis CHiLD (multi-year award) I Kathryn Ramsey \$436.870

School Mental Health Access to Resources through Teletherapy (SMART) Research, Training, and Treatment Center | Susan Elswick \$356,875

Fostering Resilience and Well-being in the Pediatric Trauma Population: Counseling Interventions for an At-Risk Population I Eraina Schauss

\$350,000

University of Memphis: Eradicating Systemic Racism and Promoting Social Justice through Academic Public Health | Marian Levy \$273,060

Digital Inclusion in South City-Phase II I Gregory Washington \$250,757

Improving FedEx Supply Chain Demand Forecasting in Turbulent Environments I Huigang Liang

\$230,000

Master - MLGW GSR (multi-year award) I Brian Waldron \$227,348

### **FY23**

Evaluation of Health and Educational Interventions I Wesley James \$2,161,986

Public Safety Institute (multi-year award) I Gary Emmert

\$1,242,933

A Randomized, Placebo Controlled, Semi-Blind, Crossover Study to Evaluate the Effects of Two Novel Hydration Beverage Formulas on Rehydration in Healthy Adults | Richard Bloomer \$540,349

GS1 US Bar Code Test Lab | Kevin Berisso \$405,000

Designing Machine Learning-based Solutions for APT Detection I Kan Yang \$397,084

MLP/Memphis CHiLD (multi-year award) I Kathryn Ramsey \$350,000

Master - MLGW GSR (multi-year award) I Brian Waldron \$212,583

PIRLS 2026 - Test Development | John Sabatini \$200,000

Research on welding virtual predictive technology to improve the robustness and reliability of steel-based PBV I Ali Fatemi \$163,000

AIR and University of Memphis AutoTutor Project I Xiangen Hu

\$143,437

## HIGH IMPACT SCHOLARS AT THE UOFM

Author Name	Department	Scopus H-Index
Bowlin, Gary L.	Biomedical Engineering	56
Fatemi, Ali	Mechanical Engineering	54
Sutter, Tom	Biological Sciences	54
Lasiecka, Irena	Mathematical Sciences	51
Ward, Kenneth D.	School of Public Health	48
Murphy, James G.	Psychology	47
Rudd, Michael David	Psychology	47
Huang, Xiaohua	Chemistry	46
Bollobas, Bela	Mathematical Sciences	45
Lindner, Ernö	Biomedical Engineering	43
Mishra, Sanjay R.	Physics	40
Oller, D. Kimbrough	Communication Sciences and Disorders	49
Triggiani, Roberto	Mathematical Sciences	40
Bumgardner, Joel David	Biomedical Engineering	39
Dasgupta, Dipankar	Computer Science	39
Skalli, Omar	Biological Sciences	39
Andrasik, Frank	Psychology	38
Gallagher, Shaun	Philosophy	38
Langston, Charles A.	Center for Earthquake Science and Information (CERI)	37
Liang, Huigang	Business Information Technology	36
Kumar, Santosh	Computer Science	35
Yang, Kan	Computer Science	35
Parrill, Abby L.	Chemistry	34
Lewis, Gladius	Mechanical Engineering	33
Zhang, Hongmei	School of Public Health	33
Smeltzer, Matthew	School of Public Health	30
Wang, Yongmei	Chemistry	30

**Note on Citations:** Citations in peer reviewed publications are a key metric for impact of research.

**Note on H-index:** H-index is an author-level metric that measures both productivity and citation impact of peer-reviewed scholarship. The h-index is defined as the maximum value of h such that the given author has published at least h papers that have each been cited at least h times. For example, an author with an h-index of 25 has at least 25 papers that were cited 25 times. The data for these h-index calculations was drawn from Scopus on 7/17/23.

**Note on Reporting:** All reported award amounts follow best practices at research institutions, are reported by report date and represent the entire amount reported. If, for example, you are awarded \$1M over three years and the report date reports the entire three year amount, then \$1M will be reported in the first year and no funds will be reported in subsequent years. If the report date on year one only shows the year one amount, then subsequent years will report their respective amounts. For questions, email **research@memphis.edu**.



# UNIVERSITY OF MEMPHIS RESEARCH COUNCIL

The activities of the Division of Research & Innovation are guided by the UofM Research Council.

# University of Memphis Research Council Membership Roster, 2022-2023

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Jeremy Orosz, College of Communication & Fine Arts
Laura Casey, College of Education
Kurt Kraiger, Fogelman College of Business
& Economics

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Cody Havard, Kemmons Wilson School of Hospitality
Jermain Johnson, Lambuth Campus
Alena Allen, Law School
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Reza Banai, City and Regional Planning
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Sanjay Mishra, Physics
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Sciences & Disorders

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Gary Bowlin, Biomedical Engineering
Dipankar Dasgupta, Computer Science
Ali Fatemi, Mechanical Engineering
Rebecca Howard, Art
Chunrong Jia, School of Public Health
Satish Kedia, School of Public Health
Katherine Lambert-Pennington, SUAPP
Meghan McDevitt-Murphy, Psychology
Max Paquette, School of Health Studies
Donal Harris, Marcus Orr Center
Chrysanthe Preza, Electrical/Comp Engineering
Tom Sutter, Biology
Steve Zanskas, CEPR
Genae Strong, Loewenberg College of Nursing

# **THANK YOU**

On behalf of the Division of Research and Innovation, we wish to thank the faculty and staff who make the research ecosystem at the University of Memphis a vibrant and dynamic place. The accomplishments of this past fiscal year and the next chapter of the University's growth are only possible because of your partnership and collaboration.

