



and their revolutionary research

2018



## Greetings



It is truly an exciting time for the research community at the University of Mississippi! Ole Miss researchers and staff have been working hard to increase the impact of our research mission on the state, region, nation and world. As a comprehensive research university, we bring a unique set of expertise, facilities and relationships to bear on complex problems.

These efforts are moving the needle. Over the past few years, we have seen strong growth in our external funding (up 23 percent in FY2018); we have established our cross-disciplinary Flagship Constellations initiative, which brings together experts from diverse fields to tackle hard problems affecting society; we have grown our engagement with industry to help translate our technologies into practical solutions; and we have been reaffirmed as a Carnegie R1: Doctoral Universities — Very High Research Activity university.

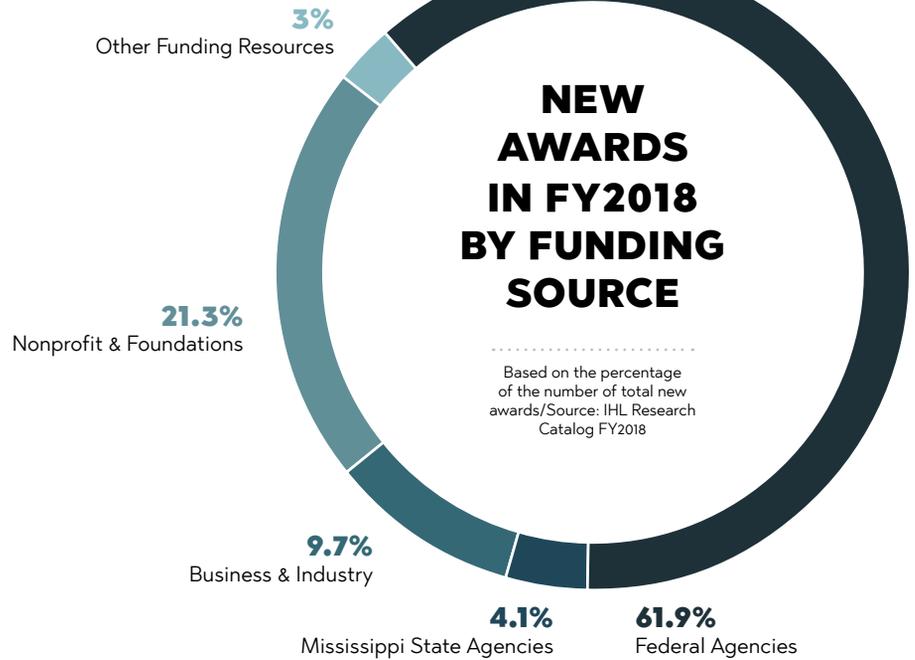
I hope you enjoy this new format for the latest edition of *UM Change Agents* as much as we enjoyed putting it together. Here we highlight just a few of the significant research efforts at Ole Miss, but you can learn more by visiting [research.olemiss.edu](http://research.olemiss.edu) and [olemiss.edu](http://olemiss.edu), or by following us on Twitter at [@UnivMSResearch](https://twitter.com/UnivMSResearch).

A handwritten signature in black ink that reads "Josh Gladden".

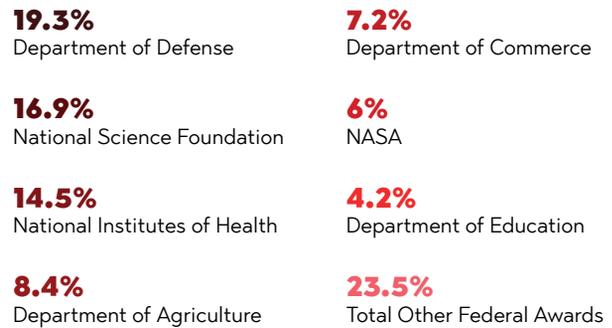
Josh Gladden

# UM RESEARCH

## NEW AWARDS IN FY2018 BY FUNDING SOURCE



## NEW FEDERAL AWARDS IN FY2018 BY FUNDING SOURCE



**\$71 million**  
in new external  
funding awards

**548**  
total active awards

**18**  
awards of more  
than \$1 million

**4**  
biomedical  
technologies  
in clinical  
development



## Pharmacy Professors Win New Investigator Awards

Two assistant professors in the University of Mississippi School of Pharmacy, both from the Department of BioMolecular Sciences, won prestigious 2018 New Investigator Awards from the American Association of Colleges of Pharmacy.

Hoang Le, assistant professor of medicinal chemistry, and Cole Stevens, assistant professor of pharmacognosy, each won one of only 16 New Investigator Awards bestowed by AACP in 2018.

Le's award resulted from his research on the rational design of inhibitors of two biologically complementary enzymes in cancer cell metabolism.

Stevens' winning research focused on using previously untried laboratory methods to discover new natural sources of antibiotics.

<https://news.olemiss.edu/two-pharmacy-faculty-win-new-investigator-awards/>

## Project Brings Ancient Graffiti to Life

Possibly thousands of ancient graffiti markings in Herculaneum and Pompeii were entombed under tons of volcanic pyroclastic flows and ash from the erupting Mount Vesuvius in A.D. 79.

Those graffiti are being documented and digitized by The Ancient Graffiti Project, a venture whose field director is University of Mississippi classics professor Jacqueline DiBiasie-Sammons.

The project, which started in 2014, has digitized more than 500 ancient graffiti, about 300 from Herculaneum and another 200 from Pompeii.

Besides publishing an electronic publication, the project members also study those inscriptions that survive on site and record other information such as the graffiti's size, letter shapes and exact location. They then photograph each inscription extensively.



<https://news.olemiss.edu/ancient-graffiti-project-offers-door-past-um-professor/>

## Delcamp Receives Selective DOE Award

Jared Delcamp, an assistant professor of chemistry and biochemistry at the University of Mississippi, received a highly selective \$750,000 award from the Department of Energy to fund his research into improving solar energy technologies.

The award is \$150,000 per year for five years and will support Delcamp, a postdoctoral student and a graduate student in their research to better understand how to use high-energy visible light efficiently in relation to solar energy. His proposal is titled "Controlling Interfacial Charge Separation Energetics and Kinetics."

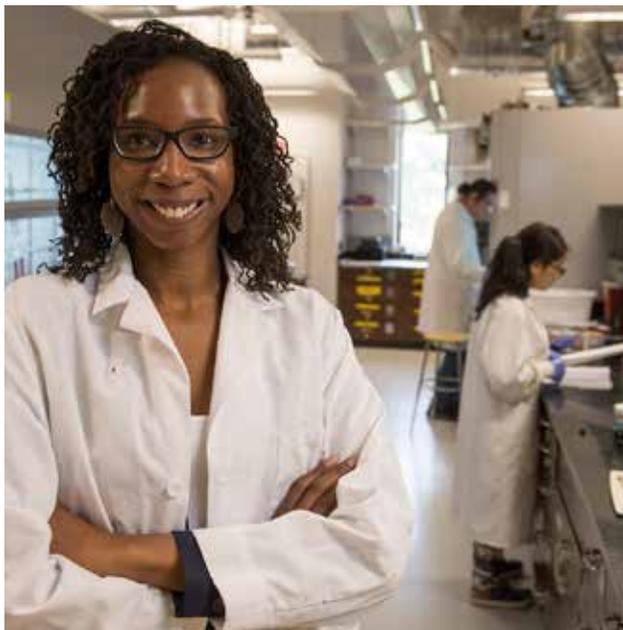
Delcamp was one of 84 scientists from across the nation to receive a research grant through the prestigious Early Career Research Program.

<https://news.olemiss.edu/professor-working-make-solar-cells-efficient/>



## Watkins Receives Young Investigator Award

● Davita Watkins, an assistant professor of chemistry and biochemistry at the University of Mississippi, was named a 2018 Young Investigator by the Polymeric Materials: Science and Engineering Division, a branch of the American Chemical Society.



She received the award for her work in the fields of organic chemistry and materials science.

PMSE Young Investigators are researchers in the first seven years of their independent career in academia, industry or national laboratories who have made significant contributions to their fields within polymer science and engineering.

Watkins' research interests include organic and materials chemistry, supramolecular chemistry and other areas, such as exploring the operational efficiency of functional materials.

<https://news.olemiss.edu/chemistry-professor-receives-prestigious-honor/>



## Wigginton Receives Humanities Without Walls Funding

● Caroline Wigginton, an assistant professor of English at the University of Mississippi, was awarded funding from Humanities Without Walls as part of a team that will study how indigenous art and activism affect Native Americans' claims to their homelands.

Wigginton is project consultant and UM workshop director for an interdisciplinary team of junior and senior scholars from multiple institutions on "Indigenous Art and Activism in Changing Climates: The Mississippi River Valley, Colonialism and Environmental Change."

The three-year project focuses on the shifting environmental, political, economic and racial climates that define the Mississippi River's course, meanings and relation to native peoples.

The project received \$138,360 from Humanities Without Walls.

Wigginton is collaborating with faculty members at Northwestern University and the University of Minnesota. The researchers will co-organize the entire project, which includes putting together a reading list, making collaborative research visits, connecting their undergraduate and graduate classes across institutions, putting together a publication and more.

<https://news.olemiss.edu/um-professor-receives-prestigious-humanities-without-walls-funding/>



## NCCH Software Helps Predict Flood Scenarios

● University of Mississippi researchers are providing real-time solutions during floods with a cutting-edge software program that is used to predict flows and estimate consequences when dams and levees fail.

Researchers at UM's National Center for Computational Hydroscience and Engineering created DSS-WISE Lite, a web-based, automated and fully geographic information systems-integrated, two-dimensional dam- and levee-break flood modeling and mapping system.

By using the web-based system, vetted users can easily set up and run simulations of varying scenarios in the event of a dam or levee failure and obtain outcomes. The results, including fully GIS-compatible maps, are returned to the user within a matter of hours.

<https://news.olemiss.edu/ncche-software-system-provides-real-time-solutions-floods/>

## University Wins NSF Award to Procure Electron Microscope

● A \$346,641 Major Research Instrumentation award from the National Science Foundation allowed the University of Mississippi to acquire a new field-emission scanning electron microscope. The state-of-the-art microscope enhances research capabilities for the School of Pharmacy, School of Engineering and College of Liberal Arts.

Scanning electron microscopes focus beams of electrons onto an object's surface to create images with high magnification and resolution. The instruments can be used to assemble microchips, conduct genetic testing and test new medicines.

The microscope is the most advanced electron microscope at UM, replacing the existing device that has supported research programs over the past 17 years.

<https://news.olemiss.edu/university-wins-nsf-award-electron-microscope/>



## Two NSF Awards Fund Lightning Research

● Two University of Mississippi professors are continuing their research on lightning, thanks to two recent National Science Foundation awards.

Thomas Marshall, professor of physics and astronomy, and Maribeth Stolzenburg, research professor of physics and astronomy, are pursuing the mysteries of lightning initiation. Knowing how lightning begins could lead to a better understanding of where it might strike and being able to better warn people of approaching weather conditions conducive to lightning strikes.

Marshall and Stolzenburg are not working on predicting lightning strikes, as the first question to answer is: How does lightning start?

<https://news.olemiss.edu/national-science-foundation-funds-lightning-research/>



## New UM Program Funds Summer Undergraduate Research

● Twenty-three University of Mississippi undergraduate students participated in the Ole Miss Summer Undergraduate Research Experience, an inaugural program to expand and enhance undergraduate research and creative achievement.

The UM Office of Research and Sponsored Programs announced that 15 Undergraduate Research Grants, including two Faculty Group Grants and 13 Individual Student Grants, were awarded from among 45 competing proposals submitted by faculty and students. The grants, totaling \$51,000, provide funding for student living stipends, faculty mentorship stipends, travel, lab materials and other costs associated with these student research projects.

<https://news.olemiss.edu/new-um-program-funds-summer-undergraduate-research/>

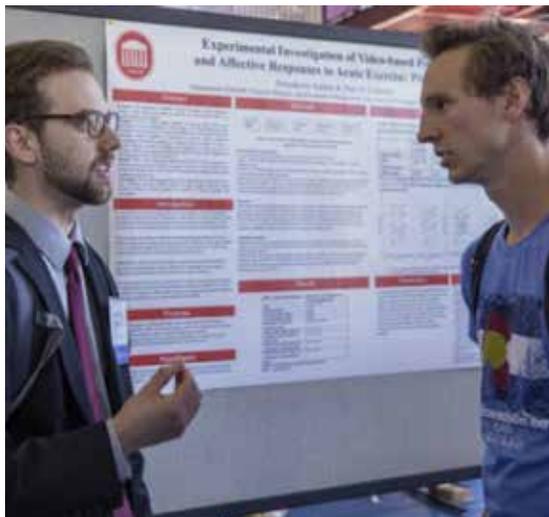
## UM Joins Accelerator Hub for Biomedical Technologies

● The University of Mississippi joined a consortium of academic institutions to create a technology transfer accelerator hub for biomedical technologies in the Southeastern U.S.

XLerateHealth, a Louisville, Kentucky-based health care technology accelerator that focuses on startups and commercialization, is the primary awardee of \$491,840 for the first year of a potential three-year, \$3.5 million grant from the National Institute of General Medical Sciences, part of the National Institutes of Health.

The goal of the hub, which includes Jackson State University, is to enhance the capacity to move scientific results from academic institutions into commercialization and to promote a sustainable culture of biomedical entrepreneurship.

<https://news.olemiss.edu/um-jsu-join-accelerator-hub-biomedical-technologies/>



## Dual-Campus Research Day Fosters Collaborative Science

Members of the Jackson and Oxford research communities gathered for the fourth annual UM/UMMC Research Day in the Norman C. Nelson Student Union at the University of Mississippi Medical Center.

Research Day, held in alternating years at University of Mississippi's Oxford and Medical Center campuses, is an opportunity for members of the university community to learn more about the scientific and scholarly research being conducted on both campuses. More than 150 attendees learned about the work of more than 80 faculty, administrators and trainees, ranging from artificial neural networks to health in Zambia. The day allowed presenters to discuss their resources and results, inviting new partners to join in their work.

<https://news.olemiss.edu/dual-campus-research-day-fosters-collaborative-science/>

## Mississippi Research Universities Awarded \$20 Million to Establish Center for Emergent Molecular Optoelectronics

The University of Mississippi and the state's three other research universities received a \$20 million, five-year grant from the National Science Foundation to spur creative discovery and economic opportunities through a new center.

With the grant funding, the state of Mississippi established the Center for Emergent Molecular Optoelectronics, an interdisciplinary, multi-institution materials research program that will assist the development of research capabilities and educational opportunities in the growing optoelectronic, energy and biotechnology research fields. The NSF grant comes through the organization's Established Program to Stimulate Competitive Research, or EPSCoR program, which enhances research competitiveness by strengthening STEM capacity and capability.

<https://news.olemiss.edu/state-awarded-20-million-establish-center-emergent-molecular-optoelectronics/>

## UM Researchers Uncover Brain Science Behind Impulsivity

Researchers in the School of Applied Sciences at the University of Mississippi discovered an anatomical link in the human brain associated with impulsivity.

Tossi Ikuta, assistant professor of communication sciences and disorders, and Alberto Jose Del Arco Gonzalez, associate professor of health, exercise science and recreation management, were two authors of the breakthrough study "White matter integrity in the fronto-striatal accumbens predicts impulsivity," published in the journal *Brain Imaging and Behavior*.

Some high impulsivity behaviors are associated with high behavioral risks, including taking illegal drugs or driving very fast.

<https://news.olemiss.edu/um-researchers-uncover-brain-science-behind-impulsivity/>



## Pharmacy Graduate Student Wins Scholarship for Alzheimer's Research

Purnendu Sharma, a fourth-year Ph.D. student in the School of Pharmacy's Department of Pharmaceutics and Drug Delivery, received an Alzheimer's Drug Discovery Foundation Young Investigator Scholarship for his research on the natural product resiniferatoxin, or RTX.

Sharma's project showed the potential of RTX to help in the treatment of diseases such as Alzheimer's. Sharma works under the supervision of S. Narasimha Murthy, professor of pharmaceutics in the School of Pharmacy.

ADDF is one of the most prominent nonprofit organizations in the world that provides funding to scientists conducting innovative Alzheimer's disease drug research.

<https://news.olemiss.edu/pharmacy-graduate-student-wins-scholarship-alzheimers-research/>



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## Biomedical Engineering Program Soaring

With a growing student enrollment, the new biomedical engineering program at the University of Mississippi continues its impressive rise.

In its second year, the program has 105 students and three new full-time faculty positions. David Puleo, who became dean of the School of Engineering in August, is also a biomedical engineer.

The program capitalizes on the school's existing strengths to prepare engineering students to meet the expected demand in biomedical industries in Mississippi and across the nation. It also provides additional human resources for the practice of medicine and to address public health issues.

<https://news.olemiss.edu/biomedical-engineering-program-soaring/>

## Professor Uses NSF Grant to Study Interpersonal Communications

Graham Bodie, professor of integrated marketing communications at the University of Mississippi, received a three-year grant from the National Science Foundation to research what happens during conversations about everyday problems.

The grant is from the NSF's Division of Behavioral and Cognitive Sciences as part of a collaboration involving Penn State University and the University of Minnesota that seeks to clarify how discussing everyday stressors with others conveys support and leads to different emotional outcomes.

Bodie's work will look at how a listener's supportive comments influence the way a person talks about their stressful experience.

<https://news.olemiss.edu/professor-uses-nsf-grant-study-interpersonal-communications/>