

Mississippi EPSCoR

The Mississippi

Established Program to Stimulate
Competitive Research
msepsc.org

Mississippi's

17 active

EPSoR/IDeA

projects total

more than

\$74.8M

in federal

funding to date.



NSF EPSCoR FUNDING

The Mississippi NSF EPSCoR programs are focused on enhancing the state's research and development through competitive science and engineering programs. With more than \$77.9M in NSF EPSCoR funding, Mississippi's research universities are having a positive impact across the state.

SCIENCE AND ENGINEERING

- The Center for Emergent Molecular Optoelectronics project seeks to address fundamental challenges associated with advance materials, laying the foundation for increased competitiveness in optoelectronics research.
- MS EPSCoR scientists are advancing the next generation of nanomaterials through the use of computational chemistry to guide synthesis of nanoparticles, and computational models to evaluate their environmental impact.
- EPSCoR researchers are using quantum mechanical/molecular mechanical tools to study chemical reactions that can be used to improve the design of future biosensors.
- Working to establish technologies for the formal reduction of carbon dioxide and molecular nitrogen with water and sunlight as inputs, MS EPSCoR researchers are revolutionizing world-wide energy and food production,



HUMAN HEALTH

- Our researchers are bridging computer science and biology by developing new algorithms to characterize biomolecular networks, leading to new techniques for genetic mapping and identification, for example, detection of genes known to increase the risk of cancer.
- MS EPSCoR researchers are significantly advancing the state of the art in biomedical simulations, including new models for prediction of physiological systems at the organism level, and mechanistic simulations of organ function.
- New insights into the structure and function of complex polymer-oligonucleotides have allowed EPSCoR researchers to begin constructing polymeric vehicles for tailored delivery of RNA to obtain a specific therapeutic response.

COMMUNITY ENGAGEMENT

- Mississippi EPSCoR Education and Outreach programs have reached more than 70,000 individuals, including over 700 K-12 teachers and 50,000 K-12 students.
- EPSCoR has produced more than 450 highly trained graduate and undergraduate students in the STEM area.



COMMERCIALIZATION

- HC Simulation is a spinoff software company focused on delivering advanced health simulation software for use in research, teaching and clinical environments. An example product can be seen at <http://justphysiology.com>.
- Advanced technologies developed as part of an EPSCoR project are being utilized by Seacoast Science, Inc., which specializes in chemical sensor products and development.
- MS EPSCoR researchers have been awarded numerous patents and product licenses.

CYBERINFRASTRUCTURE

- Significant investments through EPSCoR programs have facilitated completion of the MS Optical Network (MissiON), increasing the bandwidth connecting each of the state's four research universities with one another and federal facilities at Vicksburg and Stennis.



NASA EPSCoR

RESEARCH

- Increasing Mississippi's competitiveness for aerospace research grants by seeding multi-institutional research collaborations with NASA centers;
- Addressing performance challenges in deep space communications;
- Developing materials to allow space vehicles to withstand impacts from space debris, and technologies to shield space communication components from radiation damage;
- Addressing adverse health effects of space travel, including high-energy radiation effects on astronauts' vestibular balance and immune functions, and microgravity-induced cardiac risks.
- Better understanding effect of acoustics on structural vibrations of space launch vehicles.
- Better understanding how bacteria respond to spaceflight.



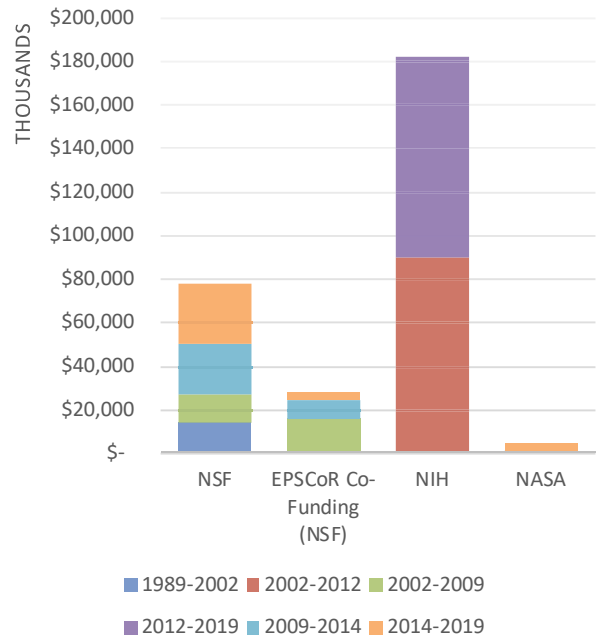
EDUCATION &

WORKFORCE DEVELOPMENT

- Growing and diversifying the STEM workforce in Mississippi through outreach programs to nurture teachers and inspire students;
- Promoting the alignment of Mississippi universities, students and researchers with the aerospace industry—a target industry of the Mississippi Development Authority;
- Enhancing aerospace-related research opportunities for undergraduate and graduate students.



MISSISSIPPI EPSCoR/IDEA AWARDS



Active Mississippi EPSCoR/IDEA Awards

PROGRAM	AMOUNT	# AWARDS
NSF EPSCoR RII – Track I, II, IV	\$21,509,401	6
NIH IDeA CoBRE	\$35,682,678	5
NIH IDeA INBRE	\$15,419,167	2
NASA EPSCoR CAN, RID, ISS	\$ 2,199,495	4
Total	\$74,810,741	17



THE UNIVERSITY of MISSISSIPPI



MISSISSIPPI STATE UNIVERSITY



THE UNIVERSITY OF SOUTHERN MISSISSIPPI