NIH IDeA PROGRAM IN MS

The CoBRE and INBRE programs generate, complement, and enrich Mississippi’s research strengths by leveraging NIH investment in personnel, equipment, core facilities and student programs to solve health problems, build research capacity, and build a better student pipeline for the next generation of physicians, healthcare workers, and scientists. NIH CoBRE and INBRE investments are enabling Mississippi researchers to advance understanding of how to prevent, treat, and cure cardiovascular, renal, metabolic, and infectious diseases.

RESEARCH & TECHNOLOGY DEVELOPMENT

- Studying integrative relationships and health disparities in adverse pregnancy, pregnancy outcomes, and developmental programming of cardiovascular, renal, metabolic, and behavioral diseases;
- Establishment of 37 biomedical research laboratories at undergraduate institutions;
- Support of three core facilities used by researchers from all Mississippi institutions;
- Developing new diagnostics and treatment protocols for influenza, pneumonia, skin and blood infections, and other infectious diseases that affect humans, birds, and mammals;
- Developing novel mechanisms to deliver natural products-based therapeutic agents to target body parts while minimizing impact to other body parts—for treating diseases such as glaucoma;
- Developing multidisciplinary approaches to preventing, treating, and curing obesity, heart disease, renal disease, and animal/human viruses;
- Discovering biological basis for psychiatric illness and substance use disorders through animal models and human post-mortem brain tissues from psychiatrically-characterized subjects.

PUBLIC HEALTH

- Developing means to reduce Mississippi and national incidence and disparities in cardiovascular, renal, and metabolic disease, obesity, psychiatric illness, and substance use disorders;
- Outreach into underserved communities with health education;
- Fostering a greater understanding of infectious diseases to protect the safety of animals, humans, and the food supply;
- Providing outreach via health education in underserved communities throughout MS.

EDUCATION & WORKFORCE DEVELOPMENT

- Building a pipeline of new healthcare providers and researchers through student research experiences with biomedical researchers and clinicians;
- Developing a pipeline of students from undergraduate institutions into health-related fields;
- Recruiting, training, and mentoring a diverse group of undergraduate students and postdoctoral trainees to become the next generation of biomedical researchers and clinicians;
- Developing multidisciplinary, multi-institutional biomedical education collaborations among Jackson State University, Mississippi State University, the University of Mississippi including the UM Medical Center, the University of Southern Mississippi, and industrial partners.

TOP NIH-FUNDED RESEARCH AREAS IN MS

- Obesity, Cancer, and Sexually Transmitted Diseases
- Natural Products and Psychiatric Neuroscience
- Cardiovascular, Renal, and Metabolic Diseases
- Infectious Diseases in Humans & Animals
- Environmental Health/Toxicology
- Functional Genomics
- Perinatal Health

NIH COBRE AWARDS

University of Mississippi
Properties of natural products that affect the nervous system, 2006–2023, $22,173,330
Dr. Soumyajit Majumdar, PI & Director

University of Mississippi Medical Center
Dr. Craig Stockmeier, PI and Admin Core Director Cardiorenal and Metabolic Diseases Research Center, 2013–2018, $13,730,051
Dr. John Hall, PI and Director
MS Center for Excellence in Perinatal Research, 2017–2022, $4,608,522
Dr. Jane Reckelhoff, PI and Director

Mississippi State University
Environmental Health/Toxicology, 2002–2006, $10,483,105
Infectious diseases (pathogen-host interactions) affecting animals and human health, 2013–2023, $20,951,732
Dr. Steve Pruett, PI and Director

NIH INBRE AWARDS

University of Mississippi Medical Center
Mississippi Center for Clinical and Translational Research, 2016–2021, $11,546,556
Dr. James Wilson, PI and Director

University of Southern Mississippi
Obesity, Cancer and Sexually Transmitted Diseases, 2012–2019, $24,690,938
Dr. Mohamad O. Elasri, PI and Director
**Mississippi INBRE**

*IDEA Network of Biomedical Research Excellence*

**Mississippi IDEa Network of Biomedical Research Excellence (INBRE)** is supported by an Institutional Development Award (IDEA) from the National Institute of General Medical Science of the National Institutes of Health under grant number P20GM103476. Since establishment in 2001, Mississippi INBRE has received $570,624,947 in NIH funding guaranteed through FY2023. Mississippi INBRE is led by an administrative team at the lead institution, The University of Southern Mississippi, under Dr. Mohamed Elasri, Program Director. This funding has allowed Mississippi INBRE to establish a biomedical research network among colleges and universities across the state of Mississippi for the purpose of increasing the competitiveness of biomedical research and ultimately improving the health of Mississippians.

**Mississippi INBRE has three main approaches to accomplishing its mission:**

I. **To build the biomedical research infrastructure at Predominately Undergraduate Institutions (PUIs) in Mississippi though funding awards for development of new faculty research laboratories, as well as development or enhancement of new STEM curriculum undergraduate courses.**

   - **Research Development Awards** – Research awards are granted to junior or new researchers at PUIs throughout the State. These awards have been instrumental in increasing the total number of active biomedical researchers in Mississippi. Since 2004, 39 research laboratories have been established through Mississippi INBRE funding among 9 PUIs.
   - **Curriculum Development Awards** – Funding is provided for the development of new STEM courses at predominately undergraduate institutions in Mississippi. Since 2013, 31 grants have been awarded to 32 PUI faculty among 13 institutions, including 6 HBCUs and 5 community colleges, that have led to the creation or enhancement of 52 STEM courses that impact approximately 4700 undergraduate students in the state of Mississippi per year. In 2018, we began a partnership with the SEPA-STEMI program to offer Science Curriculum Development Awards to K-12 teachers across Mississippi. To date, two K-12 awards have helped enhance curriculum at two high schools with an annual student impact of 340 high schoolers.
   - **Core Instrumentation Facilities** – Since 2001, three Core Instrumentation facilities have been established at Partner Institutions that offer state-of-the-art equipment, expertise, and training services for INBRE network users for little or no cost, providing the necessary tools for furthering their biomedical research.
     - Genomics Core: University of Mississippi Medical Center
     - Proteomics Core: Mississippi State University
     - Imaging Core: The University of Southern Mississippi

II. **To provide biomedical research opportunities and training of Mississippi’s undergraduate students, thus increasing exposure and interest in STEM fields, building professional relationships, and increasing the retention of students within the state for biomedical graduate programs that will directly promote Mississippi’s biomedical workforce.**

   - **Biomedical Summer Internships** – Support is provided to students interested in the field of biomedical research and outreach through internship programs:
     - **Mississippi INBRE Research Scholars** program allows student access into biomedical research laboratories at one of five host institutions, enabling hands-on research experience in a competitive laboratory environment under the guidance of a mentor for 11 weeks. Students are trained on laboratory techniques, responsible conduct of research, ethics, biosafety, bioinformatics and career development. The goals for this program are accomplished in partnership with the five centers of excellence and one center for clinical and translational research, both IDEA supported initiatives.
     - **Mississippi INBRE Service Scholars** program invites students into the community for engagement in health education and intervention through a partnership with My Brother’s Keeper, Inc. of Jackson, MS. Students receive training and certifications in CPR, phlebotomy, and HIV testing and counseling.
     - **Mississippi INBRE Academic-Year Research Scholars** program allows students to work in one of the 34 active INBRE-established labs throughout the State. Students are able to gain research experience at their home institution while they are still enrolled in classes. These students are trained on laboratory techniques, responsible conduct of research, ethics, biosafety, bioinformatics and career development.

   All students are trained to give effective scientific presentations and are supported to attend conferences including the annual Mississippi IDEA meeting and Mississippi Academy of Sciences.

III. **To enhance community-based outreach and research to target the health needs of Mississippians. Mississippi INBRE’s scientific focus is cancer, diabetes, obesity, infectious diseases, and other health disparities directly affecting Mississippians.** Through Mississippi INBRE’s Community Engagement and Training Core (CETC) and extended partnerships with the public health educators, My Brother’s Keeper, Inc., both faculty and students serve Mississippians in their communities by informing, educating, and positively impacting their quality of health through biomedical research and community outreach projects. The CETC additionally offers **Community-Based Participatory Research grants** to actively engage research in health disparities related to obesity and HIV/AIDS.