

SC EPSCoR/IDeA

SOUTH CAROLINA EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH AND INSTITUTIONAL DEVELOPMENT AWARDS

EPSCoR/IDeA programs are merit-based, competitive, authorized programs operating within five federal agencies (NSF, NIH, DOE, USDA, NASA) across 25 states and three US territories, including South Carolina. These programs invest in research that will lead to new technologies as well as train the future science and engineering (S&E) workforce during a time of increasing global competitiveness and economic challenges. Since 2006, SC EPSCoR/IDeA programs have been directly responsible for about **\$250 million** of funding for research and workforce development to South Carolina's institutions of higher learning. Since 1988 EPSCoR/IDeA programs have funded the **hiring of 195 faculty** members in science and engineering disciplines.

EPSCoR/IDeA FUNDING BY SOUTH CAROLINA CONGRESSIONAL DISTRICT

Congressional District	Institution	Amount* (Millions)
District 1	College of Charleston	\$8.9
	University of South Carolina Beaufort	\$2.4
District 2	University of South Carolina Aiken	\$0.7
District 3	Clemson University	\$34.5
	Presbyterian College	\$0.8
District 4	Converse College	\$0.6
	Furman University	\$8.4
District 5	Winthrop University	\$7.1
District 6	Clafin University	\$6.3
	Medical University of South Carolina	\$96.4
	South Carolina State University	\$2.9
District 7	University of South Carolina	\$78.1
	Coastal Carolina University	\$0.7
	Francis Marion University	\$2.2

*Includes NSF/EPSCoR Co-funding

Total : \$250.0

NATIONAL SCIENCE FOUNDATION

The (2009-2016) \$20 million NSF/EPSCoR funded SC Project for Organ Biofabrication was leveraged with state funds to construct the Bioengineering Building at MUSC. A statewide Advanced Tissue Biofabrication Center, was established and has successfully transformed the popularity of 3D printing into an innovation called **3D BIOprinting** to meet a national need for living and implantable biological tissues and organs. NSF funds were also used to hire 24 new tenure-track faculty to fill voids in statewide expertise in tissue engineering and regenerative medicine. As of 2016, these new faculty members have secured more than **\$23 million in non-EPSCoR awards**.

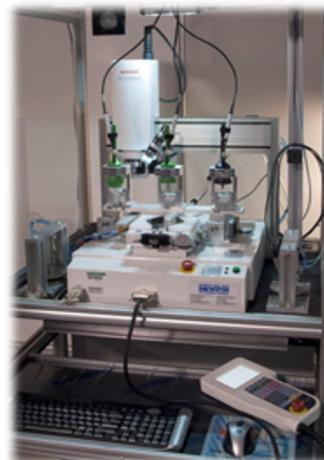


Image courtesy of The Advanced Tissue Biofabrication Center, MUSC

US DEPARTMENT OF AGRICULTURE

Funds from the USDA to Dr. Kenneth Robinson of Clemson University are used to study the benefits of small, **local farms supplying produce for food banks** in South Carolina.



In this relationship, food banks serve fresh, nutritious meals while developing and sustaining the local economy. This supports public health and further develops small communities across the state.



Childhood obesity rates across the nation are high and rising. Dr. Sonya Jones at USC evaluates food system strategies that can be used to **prevent childhood obesity** and improve overall public health.

In 2016, Dr. Stephen Foulger of Clemson University received a **\$6 million NSF Research Infrastructure Improvement Track-2** award to expand the uses of the method that allows experimenters to activate individual neurons or groups of spatial and temporal control, by flashing light on them. In this project, a system will be developed to allow the use of low-dosage X-rays, rather than visible light, as the activating signal. The project includes multiple opportunities to involve students, especially members of under-represented minority groups. The project is conducted in collaboration with researchers from the University of South Carolina. Agreements are in place to host students from Winthrop University and Northern New Mexico College, which serve highly diverse student populations, in existing summer research programs at research-intensive universities.



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NATIONAL INSTITUTES OF HEALTH

South Carolina is home to

- **Ten NIH Centers of Biomedical Research Excellence (COBRE)** awarded to strengthen biomedical research infrastructure. (About \$100 million over five years)
- An **IDeA Network of Biomedical Research Excellence (IBRE)** to strengthen biomedical research infrastructure across institutions including MUSC, USC, Clemson and 14 South Carolina undergraduate colleges and HBCUs. (\$18.2 million over five years)



While strokes are among the most disabling conditions in the state and the nation, few options exist to treat survivors. The **COBRE for Recovery from Stroke** at the Medical University of South Carolina is a collaboration of medicine, rehabilitation, and engineering experts working to understand the impact of stroke on brain

function. These studies will lead to better post-stroke therapy and improve quality of life for survivors.

COBRE for Dietary Supplements and Inflammation researchers at the University of South Carolina School of Medicine are studying the effects of botanical treatment on inflammatory and autoimmune symptoms of diseases such as Alzheimer's disease, prostate cancer, and heart disease. These studies form the basis for disease therapeutics using plant-based treatment.

Eukaryotic pathogens cause devastating diseases in humans including malaria, dysentery, sleeping sickness, and meningitis. The new Clemson University COBRE lead by Dr. Lesly Temesvari will focus on multidisciplinary **study of important global eukaryotic pathogens**. It also aims to increase the number of NIH-funded scientists in South Carolina by establishing a world-class research center, the Eukaryotic Pathogens Innovation Center.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

In 2016, Dr. Raymond Torres of the University of South Carolina received funding from NASA EPSCoR to improve our understanding of **how floodplains function**, and how they are likely to respond to natural and human-induced perturbations.



The research will use airborne radar, numerical simulations and *in situ* observations to assess the dynamics of flow paths and water fluxes over the inundated floodplain of the Congaree National Park, SC. This research is conducted in collaboration with researchers at USC Aiken.

DEPARTMENT OF ENERGY

Clemson University's Dr. Brian Powell was awarded a three year **\$5.25 million grant** to study the movement of radionuclide waste in contaminated soils to improve methods of waste



containment. The research team includes faculty from SC State University and the University of South Carolina.

SMALL BUSINESS INNOVATION AND TECHNOLOGY TRANSFER

SC EPSCoR/IDeA supports more than 50 early-stage small businesses through \$6,000 grants to increase their competitiveness for federal Small Business Innovative Research (SBIR) and Technology Transfer (STTR) programs. These awards support the startup stage; commercialization of the technology, product, or service; and partnerships with research institutions to move ideas from the laboratory to the marketplace. Resulting from research at USC, CarboNix LLC is commercializing a technology that removes household allergens that trigger allergies and asthma. The company **leveraged four SC EPSCoR/IDeA grants into \$1.24 million** in federal SBIR awards from the NIH.

