

NSF EPSCoR

IMPACTS IN ARKANSAS

ARKANSAS NSF
epscor

PLANT SCIENCES

- Arkansas plant researchers are focusing on the application of plant biotechnology for therapeutic proteins ranging from aquaculture fish to human rare diseases.
- Arkansas researchers developed a new analytical paradigm, known as “No-Boundary Thinking” for bioinformatics research spanning plants sciences to biomedical databases. No Boundary Thinking (NBT) is a new approach to defining problems and research questions in areas where interdisciplinary or “big data” approaches are not optimal. An NBT approach to problem definition includes an understanding of the roles of data, a broad range of disciplinary methodologies, and infrastructure for computational science while (rather than after) a research problem is being defined.
- A team of faculty from Arkansas and Missouri are working on a joint project to enable high-throughput imaging technologies to address plant stress issues.



ENERGY

- Arkansas engineers are leading the innovation for integrated photonics with the development of Silicon-Germanium-Tin solar cells that collect more energy and cost less than traditional solar cells.

- Research has demonstrated a direct bandgap $\text{Ge}_{0.9}\text{Sn}_{0.1}$ alloy – the first demonstration of germanium-tin alloys in the world.
- The GREEN Mobile Solar Energy Laboratory on Wheels is a project that provides outreach to K-12 students, two-year colleges and the general public. The mobile lab features six 235-watt solar panels mounted on the driver's side that will be able to power all elements of the lab while on site visits and can be used for solar energy demonstrations.



NANOTECHNOLOGY & ENGINEERING

- Arkansas engineering teams have achieved world class success in high-temperature Silicon-Carbide (SiC) integrated circuits, building more than 40 circuit designs that will operate at a world-leading 500° C. Arkansas companies will be able to use this technology for energy and space exploration, transportation, and grid applications.
- Arkansas researchers have developed the first generation of coatings that change color based on light exposure.
- A statewide group of faculty are working to develop tunable, multifunctional nanosystems for cancer targeting and tissue generation, and what are currently the smallest plasmonically active nanosystems for cancer cell destruction.

WORKFORCE DEVELOPMENT

- EPSCoR has increased the highly skilled workforce in Arkansas graduating 58 students with advanced degrees and 48 postdoctoral students in the last 5 years. EPSCoR has graduated 65 baccalaureate students in the last five years.

COMMERCIALIZATION AND ECONOMIC EFFECTS

- Since 2010, research teams have filed more than 14 patents generated from NSF EPSCoR research, and 13 new technology companies are directly tied to EPSCoR infrastructure.
- Since 2007, SBIR funding exceeding \$18,371,407 has been generated by NSF EPSCoR-associated start-ups or technology companies utilizing EPSCoR innovations and infrastructure.

CYBER INFRASTRUCTURE EXPANSION

- EPSCoR funding has enhanced cyber infrastructure throughout Arkansas by creating a statewide virtual network – a “ScienceDMZ” through ARE-ON – which promises to provide fast and easy access to the geographically-separated high-performance computing clusters and visualization resources.
- All Arkansas higher education institutions will be able to access supercomputing and advanced scientific instrumentation from personal desktops utilizing the new cloud, one of the most extensive in the nation.

SURFACE MATERIAL SCIENCE

- The Center for Advanced Surface Engineering (CASE) is a new collaboration between higher education, government and industry to reduce costs and environmental impact of manufacturing, improve recovery for brain trauma patients, design better filters from forestry byproducts, develop new surface materials with adjustable properties, build the nation’s first statewide high-performance cloud, and train the next generation of scientists and STEM skilled workers.

OUTREACH AND ENGAGEMENT

- During the past five years, EPSCoR researchers have produced 587 publications disseminating research information.
- Since 2010, EPSCoR has trained 705 teachers and provided hands-on scientific resource kits for 14,166 students.

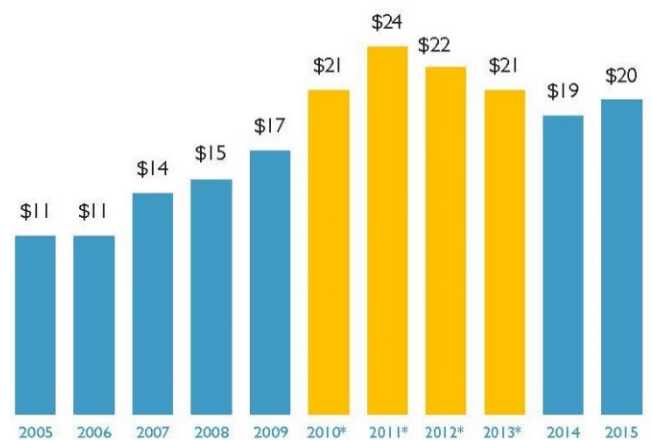
FUNDS SECURED: 2005 TO 2015

NSF EPSCOR RII TRACK-1 & TRACK-2 AWARDS

Grant Years	Track	Amount w/ state match	New Funds Generated*
2007-2010	Track-1	\$13,500,000	\$15,049,719
2010-2015	Track-1	\$24,000,000	\$76,255,721**
2014-2017	Track-1	\$3,150,000	\$436,000**
2015-2020	Track-1	\$24,000,000	\$15,307,926
TOTALS		\$67,500,000	\$97,049,366

*Does not include NSF RII awards or state funds ** >\$40M still pending

This chart shows multi-year award funding from NSF and the resulting additional funds secured, distributed across project calendar years.



* American Recovery and Reinvestment Act Years

