

NSF EPSCOR IMPACTS IN ARKANSAS



Cumulative Data on Projects 2010-2018

28 Patents Filed

519 Participants Statewide

270 Proposals Submitted

5+ Startups Created

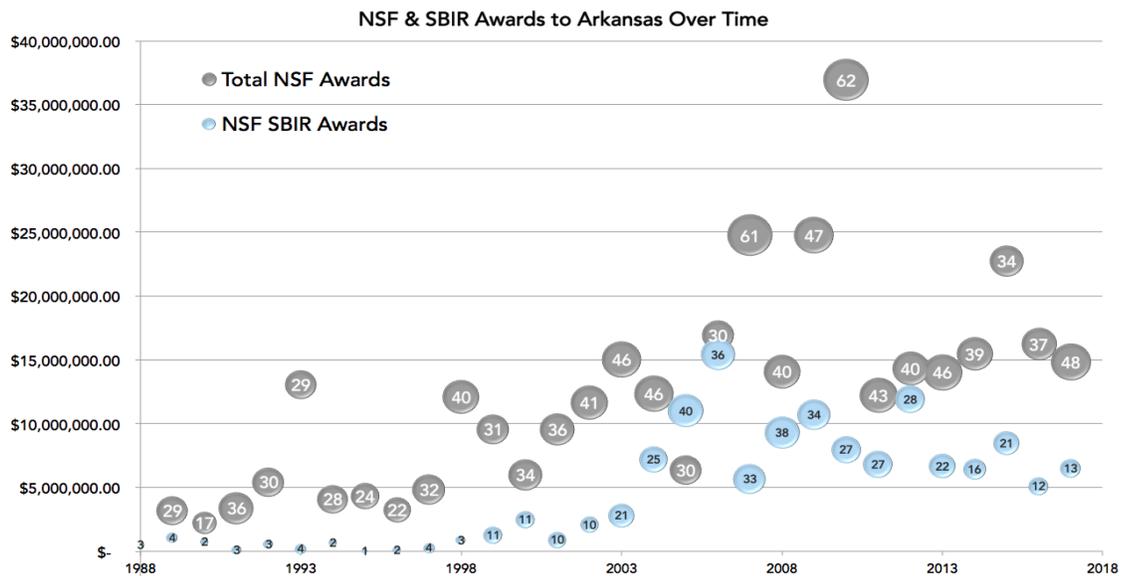
EPSCoR's Success in Building Infrastructure in Arkansas

Grant Period	Initial Award (with state match)	Additional Funds Generated
2007-2010	\$ 13,500,000	\$ 15,049,719
2010-2015	\$ 24,000,000	\$ 76,255,721
2014-2017	\$ 3,150,000	\$ 21,687,851
2015-2020	\$ 24,000,000	\$ 12,960,971

With the nearly \$65 million in EPSCoR awards the state has received since 2007, EPSCoR researchers have successfully leveraged over \$110 million in additional research funding to Arkansas institutions (left). This includes numerous SBIR grants from multiple federal agencies to commercialize technology developed in EPSCoR-funded labs. There has also been a generally positive trend in NSF awards to Arkansas, SBIR awards, and an increase in university-awarded patents (below).

The chart to the right shows NSF awards to Arkansas and NSF SBIR awards to Arkansas from 1988-2018.

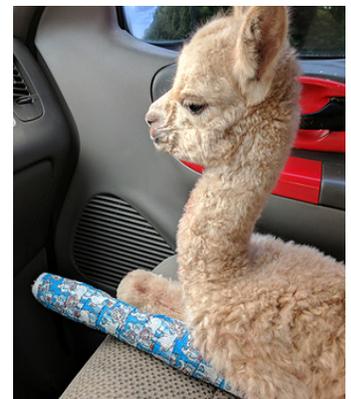
The y-value is the cumulative dollar amount and the bubble size is the number of awards.



Current Projects

The Center for Advanced Surface Engineering (CASE)

The goal of CASE is to research and develop novel surfaces and materials that can impact manufacturing, aerospace and defense, agriculture, forestry, food packaging, oil and gas, and healthcare industries. In just over two years, the team has filed 10 patents and provided technology for two startup companies, NuShores Biosciences and Surftec. NuShores recently received a \$5M DOD grant for its innovative bone regeneration scaffold technology, which was recently used to successfully treat a baby alpaca (pictured right, with his leg cast) with severe bone injuries. Surftec has been awarded NSF SBIR funding to commercialize its extremely low-friction, durable coating that will lower the cost and environmental impact of manufacturing. CASE researchers have also developed the world's smallest laser (spaser) with super-bright stimulated emission.



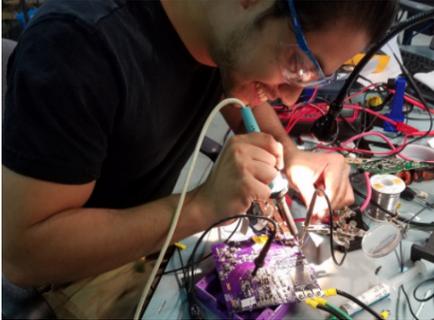
Bridging The Divide: Undergraduate to Graduate Bridge Program

Arkansas secured an EPSCoR Track-3 award that supports Bridging The Divide, a program that aims to increase the number of scientists from underrepresented groups in STEM fields (racial and ethnic minorities, first generation college students, students with disabilities and veterans) by providing an intensive training and mentoring environment. The initial award period is for five years and \$750,000. In the past three years, the Bridge Program has provided summer research experiences for 24 students from all over the state, with plans to expand in the coming years.



Updates From Previous Projects

The Vertically Integrated Center for Transformative Energy Research (VICTER)



The goal of VICTER (2010-2015) was to develop a strong team with research expertise to accelerate the adoption and insertion of power electronics into the electric grid in order to improve system stability, flexibility, and robustness. This team then established an NSF Industry-University Cooperative Research Center (IUCRC), GRid-connected Advanced Power Electronics Systems (GRAPES), with 15 industrial partners including Southwest Power Pool, Eaton, Electric Power Research Institute, and Electric Cooperatives of Arkansas. Together with the University of South Carolina and the University of Wisconsin at Milwaukee, GRAPES is looking to engineer the power grid of the future.

Plant-Powered Production (P3)

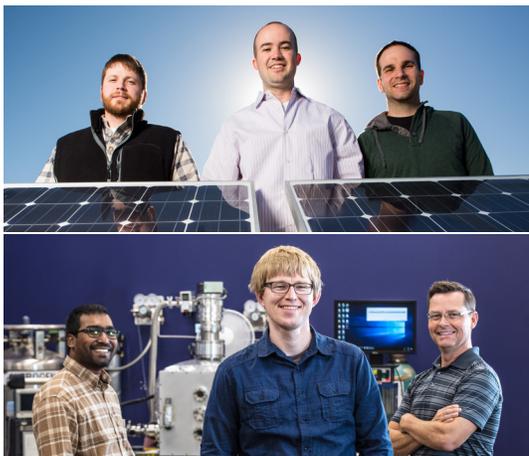
The P3 Center (2010-2015) aimed to take advantage of the unique biosynthetic capacity of plants as scalable biofactories for proteins, chemicals, and biomaterials, critical to addressing global challenges in energy, human health, climate change and food security. Since 2010 BioStrategies has received an additional \$5.8M in NIH SBIR funding to commercialize their innovative therapies. The treatments are for metabolic diseases generally affecting children that are not being researched by the commercial pharmaceutical industry. Several of the P3 team continued the research through a Track-2 collaborative grant with Missouri researchers, the Plant Imaging Consortium (described below).

The Plant Imaging Consortium (PIC)

PIC (2014-2017) brought together experts in plant biology, radiochemistry, phenomics, imaging, and computational biology to apply innovative imaging techniques to the study of plant stress biology. PIC researchers secured a grant from the Arkansas Corn and Grain Sorghum Board that will allow them to collaborate with researchers from 18 other states on the Genomes-to-Field (G2F) project. This project is expected to expand on the work of the Plant Imaging Consortium and will place Arkansas at the forefront of research to enhance agricultural production of corn.



Arkansas GREEN Solar Cells Research Center (GREEN)



The research goal of the GREEN Center (2010-2015) was to increase the efficiency of solar cells while keeping production costs as low as possible. This effort resulted in a number of innovative technologies and patents, and provided the foundation for two successful startup companies, Wattglass (left, top) and Picasolar (left, below). Picasolar was the first company to receive three rounds of SunShot funding from the US DOE for their technology that extracts energy from solar cells more efficiently. WattGlass is commercializing an innovative coating that virtually eliminates reflection, glare, and fogging on glass and other transparent materials using a proprietary nanoparticle coating. Together the two companies have received \$1.2M in NSF SBIR funding, and in 2017 both companies partnered with Yingli Solar, a global leader in the solar market, to bring these technologies to mass market.