

ALABAMA EPSCoR

2021 HIGHLIGHTS

\$20 MILLION PROPOSAL SUBMISSION

Alabama EPSCoR performed an 8-month competition and review process for the next statewide proposal to the National Science Foundation (NSF) \$20 Million EPSCoR RII Track 1 Grant program. After this statewide process, of many impressive submissions, “Future Technologies Enabled by Plasma Processes” was selected to represent Alabama in this competition.

36

**Funded Graduate
Research
Scholars
Program students
in FY20**

NEW SCIENCE & TECHNOLOGY ROADMAP

With the submission of the \$20M NSF EPSCoR Track 1 proposal, ALEPSCoR jointly submitted to NSF a newly developed ALEPSCoR 2021 Research Infrastructure Improvement (RII) Science and Technology (S&T) Plan that aligns with economic development goals of the Alabama Innovation Corporation (AIC) and establishes new R&D priorities to develop successful new industries in the state. The ALEPSCoR 2021 S&T Plan included a comprehensive analysis of statewide research capability strengths and weaknesses confirming plasma science as Alabama’s strongest statewide priority area of research. See alepscor.org/roadmap for more information.

6

**NASA EPSCoR
R3 Awards**

24

**New 2021 NSF
Co-Funded
Awards**

1

**DOE EPSCoR
Lab Partnership
Awards**

3

**New NSF
EPSCoR RII
Awards as lead
for 2021**

WORKFORCE DEVELOPMENT & OUTREACH

Alabama EPSCoR’s ongoing NSF EPSCoR Track 1 grant entitled, “CPU2AL: Connecting the Plasma Universe to Plasma Technology in Alabama” incorporated innovative outreach encouraging diversity and workforce development in STEM fields through the International Space Weather Camp (ISWC) and the Alabama Plasma Internship Program (ALPIP). These were accomplished through virtual communication platforms and online courses

Alabama EPSCoR Award History 2011-2021

Agency	Type of Award	QTY	Awards
NSF	Infrastructure (Tracks 1,2,3 and 4)	28	52M
	Co-funding (EPSCoR and Directorate)	176	85M
DOE	Total	12	9.275M
NASA	Total	26	4.9M
USDA	Total	29	12.7M
Total		271	164M

Established Program to Stimulate Competitive Research

Alabama A&M University | Alabama State University | Auburn University | Tuskegee University | University of Alabama | University of Alabama at Huntsville | University of Alabama at Birmingham | University of South Alabama

IMPACT & RESEARCH IN ALABAMA

NSF EPSCoR TRACK 2

The Integrated Ground Water Management (IGM) project team was awarded an additional \$600K from NSF to encourage strategic partnerships with Alabama A&M University and Alabama State University for working towards workforce development in the ground water area.

University of Alabama's Dr. Prabhakar Clement will be hosting a national NSF EPSCoR Water Security Planning Workshop at UA in March 2022 to discuss and develop ideas for solving water security problems relevant to EPSCoR states.

NSF EPSCoR CO-FUNDING

The US imports 90% of the #1 rated herbal supplement turmeric. An Alabama A&M University researcher is investigating atmospheric pressured plasma to support the growth and sustainability of this potentially important medicinal plant.

NASA EPSCoR

A University of Alabama researcher and newly awarded GRSP student are conducting research to develop a wearable sensor device to track astronaut's fluid movement toward the head. Currently difficult to track, this sensing device will monitor fluid shifts and provide feedback as microgravity (very weak gravity) poses a health challenge impacting vision during and after space flight.



COMMERCIALIZATION

The CPU2AL program formed a commercialization committee, called the Industry Liaison Board (ILB), to assess and develop individual projects within CPU2AL for their commercialization potential. In particular, the Artificial Vascular Graft Project was awarded a \$906,458 grant by the Alabama Department of Commerce focussing on developing plasma engineered vascular grafts for dialysis patients with end-stage kidney disease.

An ALEPSCoR computer scientist is developing a computer software toolkit that can be used for city transportation and mobility planning to efficiently determine the best allocation of financial resources and assess trade-offs between traditional road building, investments in mass transport, and bus route updates with newer carsharing travel modes and apps, e-scooter rentals, and other emerging travel options. These efforts were recently awarded over \$350,000 from an Alabama Research Development Award.



To address chronic global food shortages from population growth and decreases in farmable land, genetically engineered (GMO) tougher crops have been previously developed that are more resistant to environmental stresses like extreme temperatures, insects, or herbicides. In contrast, UAB researchers are studying new alternate RNA (Ribonucleic acid) plant pathways to regulate plant stresses, to eventually develop non-GMO stress-resilient crops for a more sustainable future.