

**Alabama Research and Development
Enhancement Fund
Annual Report
Presented June 2020**



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The Alabama Innovation Act (AIA) was established by Legislative Act #2019-404 and became effective June 6, 2019. The Act designated the Alabama Department of Economic and Community Affairs (ADECA) as the state agency to establish and administer the Alabama Research and Development Enhancement Fund (ARDEF) Program.

The purpose of the ARDEF Program is to encourage new and continuing efforts to conduct research and development activities within the state. The Fund is designated to receive appropriations from the legislature, or from the receipt of gifts, grants, or federal funds to be expended for the purpose of increasing employment opportunities and products and services available to the citizens of Alabama.

Overview of 2020 Program Year

Applications Received Under 2020 Round One Grant Period

- 4 Applications were received by the deadline
- All 4 applications met the goals and requirements of the program
- The 4 successful applications were announced May 18, 2020

Funded Projects (as of June 2020)

Applicant	Amount
Auburn University - Removal of Per- and Polyfluoroalkyl Substances (PFAS) in Water and Landfill Leachate in Alabama	\$193,960.00
Auburn University - Knitting Micro-Resolution Mosquito Bite Blocking Textiles	\$868,145.00
Auburn University - Advanced Biosensors from Forestry Products and Agricultural Resources	\$245,864.77
HudsonAlpha Institute for Biotechnology - Advancing Genomic Health in Community Clinics and Employee Wellness Settings	\$969,409.00

Auburn University - Removal of Per- and Polyfluoroalkyl Substances (PFAS) in Water and Landfill Leachate in Alabama

This project addresses a class of emerging contaminants, known as PFAS, which have been widely detected in chemical manufacturing wastes and landfill leachate in Alabama, and have caused serious cases of drinking water contamination in the state. Ongoing health concerns and regulatory development related to PFAS are threatening the sustainable development of business, which can substantially hurt the economy and thousands of jobs in the state. This research aims to develop an innovative “Concentrate-&-Destroy” technology to cost-effectively remove and degrade PFAS in water and landfill Leachate. The new remediation technology will provide the affected industries and water utilities with a powerful remediation means to mitigate the PFAS-related issues, thereby assuring sustainable development of the economy and the wellbeing of Alabama citizens.

Auburn University - Knitting Micro-Resolution Mosquito Bite Blocking Textiles

Insects transmit crippling diseases to humans. Nearly a half million people die of malaria each year. In Alabama, citizens encounter Dengue and Zika virus invasions as well as a multitude of encephalitis variants. The worse vector borne diseases are transmitted in the hottest climates like Alabama, and it is uncomfortable to wear the thickest clothing. This project will research different textile and weave patterns to create clothing that is cool in heat and capable of blocking mosquito bites and develop prototypes based on this research. Beyond the prototype phase, research will be done to measure the effectiveness this product will have on the Alabama economy.

Auburn University - Advanced Biosensors from Forestry Products and Agricultural Resources

This project will focus on nanotechnology research and development efforts seeking to leverage Alabama's forestry products and agricultural resources to produce advanced biosensors comprised of nanocellulose. Nanocelluloses are contained in all biomass including forestry products and agricultural resources. States like Alabama that have significant timberland are the most likely to benefit from the projected growth in nanocellulose demand. This demand is contingent on ongoing research and development of nanocellulose applications such as biosensors. Regardless of the biomass source, nanocelluloses' high strength, absorbency and specific surface area make them attractive for a broad range of applications including packaging, specialty papers, composites, paints, pharmaceuticals, and biosensors. The research in this project will use nanocellulose obtained from forestry operations for biosensor production.

HudsonAlpha Institute for Biotechnology - Advancing Genomic Health in Community Clinics and Employee Wellness Settings

Genomic medicine is a form of precision medicine that uses approaches customized to each patient to treat disease and optimize prescription medicine based on a genetic profile. This project will test and develop a genomic health complete delivery system for Alabama patients and physicians at healthcare systems and community hospitals with limited expertise in genomics. This system includes 1) Partnering with Auburn University to develop community-based models for health programs, 2) Refining and optimizing the process including insuring access by rural areas that are underserved, and 3) Developing the health IT infrastructure needed to fully integrate genetic test reporting and education into electronic health records system. The proposed development of new products and services will result in improved health outcomes for Alabamians, opportunities for employers to increase competitiveness and reduce costs, and modernization of health care in an equitable way for Alabama communities, large and small, regardless of socioeconomic status.