

Project Summary

Overview The vision of this E-CORE project, Collaboration for Optimizing Research Ecosystems in Alabama (CORAL), is to coordinate, create, and advance robust research networks across the State of Alabama to catalyze its technological development and economic growth. The CORAL project builds and expands integrated discovery ecosystems across Alabama by aligning the scientific strengths and existing investments with the jurisdiction's EPSCoR-aligned Science and Technology Plan and the State's comprehensive economic development strategy, Catalyst. CORAL's mission is to advance existing investments across the state by leveraging signature research assets, such as the Alabama Water Institute, Alabama Transportation Institute, and others, as scalable platforms for statewide collaboration to create new opportunities in priority research domains, including water resilience, biosciences and health, advanced materials, manufacturing, information technology and cybersecurity, while incorporating emerging technologies, such as Artificial Intelligence (AI), Quantum Computing (QC) and High-Performance Computing (HPC) as multi-disciplinary drivers and discovery accelerators. CORAL's networks will span Alabama's R1s, R2s, HBCUs, PUIs, community colleges, and non-academic partners including industry, nonprofits, and K-12 systems. With broad statewide participation and guided by Alabama's Science and Technology Plan and Catalyst Innovation Framework, CORAL will create a distributed, multidisciplinary platform for research, education, and workforce development.

Intellectual Merit CORAL E-CORE will expand Alabama's research ecosystem by enabling collaborative discovery and integration into large-scale R&D initiatives across all Alabama institutions including HBCUs, PUIs, and two-year colleges. Through a federated digital infrastructure and resource-sharing platform, CORAL will facilitate equitable access to emerging technologies such as AI, Quantum, and HPC for researchers across all institutional types. The project will launch seed grant programs, graduate fellowships and summer academies that will stimulate cross-institutional collaborations and expand capacity in under-resourced areas of health disparities, water resilience, transportation optimization, and cybersecurity. CORAL will develop and deploy innovative methods for data integration, virtual research environments, and inclusive credentialing systems, contributing new models for research coordination across the state. These activities will generate measurable improvements in research output, grant competitiveness, and faculty retention across Alabama's academic landscape, while enabling evidence-based study of networked capacity-building and workforce alignment throughout the Alabama EPSCoR jurisdiction.

Broader Impacts CORAL's main programmatic cores - Research Facilities and Infrastructure, Higher Education Pathways, Broadening Participation, and Workforce Development will ensure statewide, equitable impact. The Research Facilities Core will make AI/Quantum-enabled resources accessible across more than 25 academic institutions through a shared digital portal, inter-institutional access agreements, and coordinated infrastructure upgrades. The Higher Education Pathways Core will enhance student and early-career faculty success and develop credentialed training pathways to retain talent in-state. The Broadening Participation Core will engage rural learners, women, and all Alabama communities with targeted research training, faculty exchanges, and science outreach programs that broaden participation in the STEM enterprise. The Workforce Development Core will align training with Alabama's innovation economy by co-developing microcredentials, regional job hubs, and industry-integrated learning experiences. All activities will be enhanced with the Administrative Core that will ensure strategic alignment, sustainability, and rigorous external evaluation. CORAL's long-term sustainable impact will be a durable and connected research ecosystem that drives innovation and opportunity across the state of Alabama.