



University of Alabama in Huntsville gets million dollar nanotech grant from NSF

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By **Paul Hamaker**, Birmingham Science News Examiner

The National Science Foundation awarded [University of Alabama in Huntsville](#) a \$1,176,470 grant to develop inter-campus and intra-campus cyber connectivity at the [HudsonAlpha Institute of Biotechnology \(HudsonAlpha\)](#), [Alabama A & M University \(AAMU\)](#) and [Alabama State University \(ASU\)](#) campuses.

[Dr. Sara J. Graves \(Professor, Director ITSC Ph.D., University of Alabama in Huntsville\)](#), Dr. Christopher Lawson (Center Director), University of Alabama at Birmingham), and Dr. Karen Boykin (Outreach Coordinator [EPSCoR](#)) are responsible for acquiring and administrating the grant.

This proposal will be awarded using funds made available by the American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

[Abstract at Time of Award:](#)

Proposal Title: Alabama Cyber Connections in Nanotechnology, Bioscience, and

SensorsInstitution:

University of Alabama in Huntsville

Project Director: Sara J. Graves

This Inter-campus and Intra-campus Cyber Connectivity (RII C2) project would further the goals of ConnectingAlabama and would support upgrades to existing networks as well as the development of new cyber connectivity components to better realize research potential and improve competitiveness within the state. Specific RII C2 objectives are:

Establish the ALEPSCoR RII-Industry State Nano-Bio-Sensors Database Initiative to connect the HudsonAlpha Institute of Biotechnology (HudsonAlpha), Alabama A & M University (AAMU) and Alabama State University

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(ASU) via dark fiber to the Alabama Research and Education Network (AREN) backbone for improved connectivity with schools throughout the state and to national and international research and education networks.

Establish Interactive Digital Centers at the EPSCoR RII Track-1 research Centers of Excellence to improve computational modeling capabilities, facilitate dissemination of research results, support remote Center-related virtual seminars and classes to enable non-local students to participate, allow remote access to Center instrumentation for long-distance education and research, and promote the Centers to attract the best and brightest students to Alabama for Center-related research. The proposed upgrades to the video-conferencing services and desktop video conferencing services seek to broaden participation with other universities, government laboratories, and high technology companies.

Intellectual Merit

Enhanced broadband access to AREN would permit creation of the ALEPSCoR RII Industry State Nano-Bio-Sensors Database Initiative (ISDI), a formal structure for scientific collaboration between Hudson Alpha (a biotechnology company resulting from prior RII funding (EPS-0447675) and the four RII research Centers of Excellence of Alabama's current RII Track-1 (EPS-0814131). The Centers and a brief description of their mission are: 1) The Center for Environmental and Cellular Signal Transduction (CECST) is identifying mechanisms of adaptation to natural and manmade environmental challenges and enabling development and testing of nanomaterials and devices; 2) The Center for Optical Sensors and Spectroscopy (COSS) is developing new optical and molecular sensing technologies for applications in environmental monitoring, counter-terrorism, and industrial process control; 3) The Alabama Center for Nanostructural Materials (ACNM) is developing new materials with enhanced thermal, physical, mechanical, and biodegradable properties; and 4) The Center for Interdisciplinary Discovery and Engineering (CIDEN) is applying cutting-edge nanoengineering to develop molecular sensors, regimented nanomaterials and nanostructures. The collaborative ISDI will expand and accelerate existing EPSCoR RII research areas of: Cancer, Genomics (DNA), and Scientific Nano-Bio Interface, e.g., improved DNA analysis through use of nanoscale grated biosensor chips; Homeland Defense, e.g., residual effects in water and wastewater of emerging prion contaminants, environmental impacts of byproducts from sustainable energy sources; and Advanced Materials and Nanocomposites, e.g., green bioproduct pharmaceutical delivery systems, and diet and environmental causes of cardiovascular disease. Connectivity enhancements will facilitate strategic planning and assessment; new project stimulation; rapid transfer, sharing, and analysis of data; real-time, remote participation in experiments; and delivery of courses, lectures, and demonstrations to distributed audiences.

Broader Impacts

Interactive Digital Centers (IDC) at RII centers would disseminate the latest center research advances and results more effectively, facilitate remote center-related virtual seminars and classes to enable non-local students to participate, allow remote access to center instrumentation for education and research, and promote the centers to attract the best students to Alabama for related research. Upgrades to videoconferencing services would broaden participation of universities, community colleges, government laboratories, and high technology companies.

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