

Maine EPSCoR & IDeA Programs



**Maine EPSCoR
at University of Maine:**

**National Science
Foundation EPSCoR**

Department of Energy EPSCoR



NIH IDeA:

**Maine INBRE at Mount Desert Island
Biological Laboratory**

**Maine COBRE at Maine Medical
Center Research Institute**



**Maine Space
Grant Consortium:**

NASA EPSCoR

The Experimental Program to Stimulate Competitive Research (EPSCoR) is a federal program directed at states that have historically received lesser amounts of federal R&D funding. Through this program, states receive support to develop partnerships between their higher education institutions, industry, government, and others in order to effect lasting improvements in their R&D infrastructure, capacity, and national competitiveness. Maine has been an EPSCoR state since 1980, and competes for funding from the following programs: NSF EPSCoR, DOE EPSCoR, NASA EPSCoR, and NIH IDeA. Maine has received over \$155 M in awards to date.



Overview of Maine NSF EPSCoR



Maine EPSCoR at the University of Maine oversees and implements the state's NSF EPSCoR programs. Since 1980, Maine has received over \$62 M in NSF EPSCoR funding. These statewide programs advance Maine's research capacity and competitiveness for a sustainable future through:

CUTTING-EDGE SCIENCE

Advance scientific knowledge and understanding in target areas of importance to Maine.



STEM EDUCATION

Provide innovative K-20 education programs in science, technology, engineering, and mathematics for students and teachers.



Overview of Maine NSF EPSCoR



WORKFORCE DEVELOPMENT

Integrate research and education to train the next generation of scientists, technology experts, engineers, and mathematicians.



CYBERINFRASTRUCTURE

Enhance research collaborations through improved connectivity, data analysis capabilities, high performance computing, and visualization.



ECONOMIC DEVELOPMENT

Innovative research leads to technology transfer and commercialization.



Maine's Sustainability Solutions Initiative (SSI)

**\$30 M Project
FY 2010-2014**



This five-year project is a multi-disciplinary, multi-institutional effort that will lead to the creation of the Center for Sustainability Solutions at the University of Maine. Research will address the intersecting ecological, social, and economic dimensions of sustainability science, with an emphasis on making connections between knowledge and action. A multi-faceted approach to problems related to drivers of landscape change – urbanization, forest ecosystem management, and climate variability – will enable innovative science, education, and economic and workforce development in an area of critical importance to Maine's future.

Forest Bioproducts Research Initiative (FBRI)

**\$10.35 M Project
FY 2006-2009**



This project supported the creation of the Forest Bioproducts Research Institute at the University of Maine, and fostered a university/industry partnership that resulted in major private investment for the state and a new technology center. The research focus was three-fold: 1) retaining forest health while providing wood bioproducts; 2) separation of wood components into chemicals and extracts for new uses; and 3) creating and commercializing new wood bioproducts for existing and new industries.

Institute for Molecular Biophysics (IMB)

**\$9 M Project
FY 2003-2006**



This project supported the creation of the Institute for Molecular Biophysics, with a focus on the development and deployment of the biological imaging technologies of the future. It is an interdisciplinary and multi-institutional program that brought together expertise in biophysics and engineering, cell biology, genetics and genomics, and created vibrant research programs in biological applications of ultra-high resolution microscopy, the development of novel probes for microscopy and in vivo imaging, biocomputing, and bioengineering.



Creating Maine's Future through NSF EPSCoR RII Projects (cont.):



Biosensor Technology & Intelligent Spatial Technology

\$6 M Project
FY 2000-2003

Biosensor project established new research expertise and infrastructure that allowed for the ability to design, fabricate, and test biosensor prototype devices that can have a huge impact in safeguarding public health, protecting the military, and saving the environment. Spatial project advanced GPS, remote sensing, field surveying, and data management technologies.



Advanced Engineering Wood Composites (AEWC) & Marine Aquaculture

\$8.1 M Project
FY 1996-1999

Supported the creation of the Advanced Engineered Wood Composites Center (AEWC) at the University of Maine, the construction of a new Marine Culture Laboratory at the University's Darling Marine Center.



Maine DOE EPSCoR



Forest Bioproducts Research Initiative

\$2.9 M Project
FY 2008-2011

FBI's DOE EPSCoR research cluster is implementing new catalyst R&D infrastructure and addressing fundamental science and engineering pathways for thermochemical conversion of woody biomass to fuels and chemicals, an area of increasing importance to Maine's forest products industry.



Maine's Cyberinfrastructure Investments:

NSF EPSCoR & NIH IDeA support has contributed significantly to Maine's implementation of its overall cyberinfrastructure plan:

- NSF EPSCoR RII Track 1: support provided for enhanced communications and collaboration tools such as videoconferencing, visualization portals, and fiber interconnections.
- NSF EPSCoR RII Track 2: \$1,350,000 award (FY2010-2012) for high-speed fiber networks that will allow researchers greater access to regional and national compute, analysis, and visualization resources.
- NIH INBRE supplemental awards: over \$2M supported new high speed fiber networks, and bioinformatics infrastructure and expertise.



Maine INBRE



Maine INBRE is a network of 12 scientific and educational institutions working together to increase scientific collaboration and capacity statewide. The network enhances Maine's biomedical research capacity and competitiveness by expanding opportunities for Maine science students, supporting renovations and upgrades to laboratory facilities and equipment, as well as funding the scientific research of faculty and students. Over \$48 M has been awarded to date.



Specifically, Maine's INBRE provides:

- Research support to faculty, research assistants and graduate students;
- Investments in core facilities and equipment;
- Academic year and summer research training for undergraduate students at participating institutions;
- Outreach and enrichment programs for Maine high school students;
- A pipeline for students to pursue careers in science and health-related fields while enhancing the scientific and technical knowledge of Maine's future workforce.

Participating Institutions

There are 12 Maine research and educational institutions participating in the INBRE program. Member institutions are:

- Mount Desert Island Biological Laboratory (Lead institution)
- The Jackson Laboratory
- Bates College
- Bowdoin College
- Colby College
- College of the Atlantic
- Southern Maine Community College
- The University of Maine
- The University of Maine, Farmington
- The University of Maine, Fort Kent
- The University of Maine, Machias
- The University of Maine, Presque Isle



Maine COBRE



Center of Biomedical Research Excellence in Vascular Biology

\$10.5 M Project FY 2005-2010

Reveal the molecular mechanisms that regulate vascular development and remodeling after injury, mechanisms of inflammation, and angiogenesis. Individual projects are aimed at basic discoveries that have translational potential.

Center of Biomedical Research Excellence in Stem and Progenitor Cell Biology

\$10.5 M Project FY 2007-2012

Advance an understanding of key molecular mechanisms that govern stem and progenitor cell renewal, lineage fate, and directed differentiation.



NASA EPSCoR



NASA EPSCoR provides seed funding for eligible states to develop an academic research enterprise directed toward long-term, self-sustaining, nationally-competitive capabilities in aerospace-related research. Maine became eligible for funding in 2000 the [Maine Space Grant Consortium](#) is responsible for administering the NASA EPSCoR programs. Over \$3M has been awarded to date.

Real-time Wireless Shape Monitoring of Space Structures

\$1.5 M Project
FY 2008-2011

Principal Investigator: Dr. Ali Abedi,
University of Maine

The research objectives for this project are to develop robust 3D estimation techniques, implement effective techniques for embedding sensors, develop specialized dynamic shape analysis techniques to capture the non-linear response of structures, and simplify collected data into a 3D model to facilitate human interface.



Toxicology of Metal and Lunar Particles in Biological Systems

\$1.5 M Project
FY 2007-2010

Principal Investigator: Dr. John Wise,
University of Southern Maine

This project focuses on understanding the aspects that make lunar dust particles toxic to different organ systems and mechanisms by which they exert this toxicity. Cytotoxicity, genotoxicity, and neoplastic transformation are all being examined.



Maine STEM Collaborative



The Maine STEM Collaborative, begun in 2007, is a statewide partnership of education, research, business, government, and non-profit sectors. These partners have come together to help build a strong educational foundation in science, technology, engineering, and mathematics (STEM) in order to help propel the state of Maine's future economic prosperity. The Collaborative's vision is that Maine will have a strong educational foundation in science, technology, engineering, and mathematics (STEM) that will propel the state toward economic prosperity, and this will be accomplished by increasing the quality of STEM education, aspirations, and awareness through integration, coordination, and promotion of efforts.



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