WVEPSCOR

Science and Engineering

With a $20 million grant to West Virginia from the National Science Foundation (NSF), EPSCoR researchers are delving into bionanotechnology – the intersection of nanotechnology and biology – focused on applications in public security and environmental safety.

At West Virginia University (WVU), EPSCoR researchers are studying biomolecular sensing elements for health (early disease detection and drug detection and discovery) and environmental threat detection applications using single biomolecules and integration with multifunctional materials. EPSCoR researchers also are developing "lab-on-a-chip" devices that require low power and provide high accuracy for identifying potential environmental threats, pollutants and even diseases.

At Marshall University (MU), EPSCoR researchers are studying nanobiology to develop novel sensors and produce nanomachines that will facilitate early and sensitive detection of environmental insults and hazardous conditions. Researchers also are studying cellular development to discover new sources of adult stem cells for neurological disorders, and to understand the role of genes in development and the relation between cell biology and the environment.

At West Virginia State University (WVSU), EPSCoR researchers are focusing on biotechnology applications in environmental remediation, crop improvement, biomedical research and animal biodiversity. EPSCoR funding has provided for the acquisition of cutting-edge research equipment.

Biotechnology/Commercialization

From 2006-2010, four patent applications and two invention disclosures resulted from NSF EPSCoR-funded activities. EPSCoR funding has provided support for joint research projects with biotechnology companies in West Virginia (Protea Biosciences) and California (Labsmith). Protea Biosciences research started with EPSCoR support and a patent application for a method for detecting small amounts of cancer-marker proteins.

Workforce Development

At WVU, NSF EPSCoR programs supported more than 90 summer undergraduate and 25 graduate students from 2006-2010. At MU, state matching support for EPSCoR graduate student stipends and tuition led to 32 master's degrees in biology from 2007-2010. At WVSU, EPSCoR funding has made it possible for more than 30 under-represented students per year to continue their STEM education.

Energy

A Department of Energy EPSCoR-supported research team at WVU is developing advanced materials for solid oxide fuel cells operating on coal-generated syngas to improve performance and extend the useful life of the cells, while WVU's Advanced Power & Electricity Research Center is working to improve the operation of our nation's electricity grid.

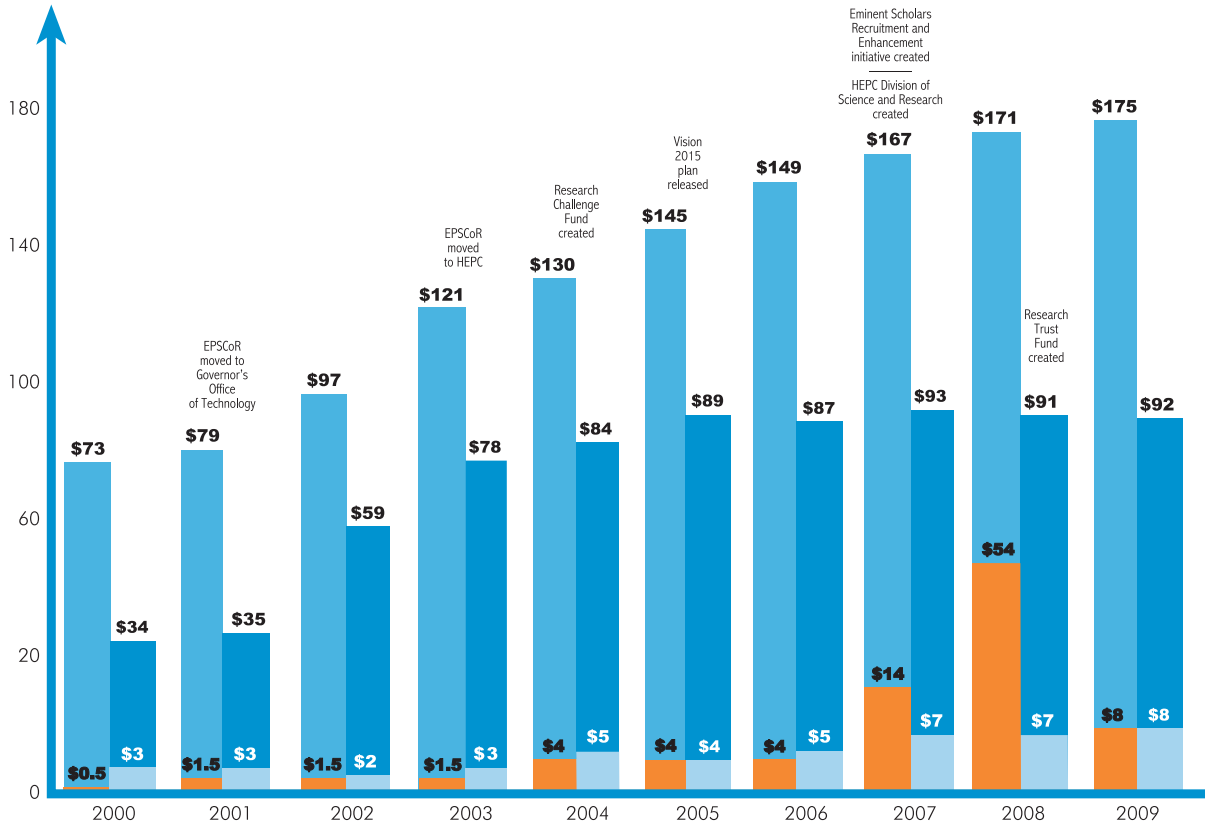
Space

Over the past five years, support from NASA EPSCoR in West Virginia has resulted in nearly $4.3 million in funding, support for 121 graduate students and 111 undergraduate students, seven patents approved or pending approval, and five new courses developed in STEM fields at West Virginia higher education institutions.

Growing State Support

As EPSCoR has grown in West Virginia, so has state support for science and research. The Higher Education Policy Commission's Division of Science and Research, which directs EPSCoR in West Virginia, administers the state's $4 million (annual) Research Challenge Fund and $50 million Research Trust Fund.

Federal and State Research Investments in West Virginia Higher Education



Expenditures by West Virginia Academic Institutions and State R & D Investments in Academic R & D

- Federal Academic R & D Expenditures
- State R & D Investments Academic R & D
- State and Local Government Academic R & D Expenditures
- Total R & D Expenditures (includes federal, state and local government, industry, institution funds and other sources)

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