

PENNSTATE



Annual Report of Research Activity

Office of the Vice President for Research | Fiscal Year 2013

“The public and private sectors have confidence and trust in our faculty and students, and in the importance of their work to society.”

PENN STATE'S RESEARCH EXPENDITURES CLIMBED TO A RECORD HIGH OF \$848 MILLION FOR THE 2012-13 FISCAL YEAR. STEADY ADVANCES IN THE UNIVERSITY'S RESEARCH PORTFOLIO HAVE ENABLED EXPENDITURES TO GROW BY \$241 MILLION OVER THE LAST TEN YEARS—A 40 PERCENT INCREASE. WITHIN THE PAGES OF THIS BOOKLET, YOU WILL FIND INFORMATION ABOUT THE SOURCES OF FINANCIAL SUPPORT FOR PENN STATE RESEARCH, AND HOW THAT SUPPORT WAS ALLOCATED AMONG THE MAJOR UNITS THAT CONDUCT RESEARCH. REPORTING THESE DATA IS AN IMPORTANT ASPECT OF OUR RESPONSIBILITY AS ONE OF THE NATION'S PREMIER RESEARCH INSTITUTIONS.

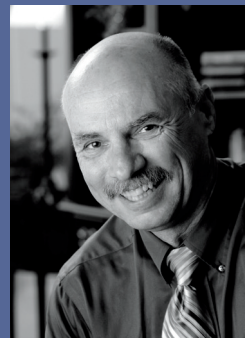
The people and the organizations that support our research and creative endeavors often indicate they want to work with Penn State because of the emphasis we place on collaboration across traditional disciplines. Centrally supported entities such as the Social Science Research Institute, the Huck Institutes for the Life Sciences, and the Institute for Cyberscience bring together faculty and students from dozens of academic departments to devise new approaches and new technologies aimed at solving some of the world's most pressing problems.

As indicated by our steady growth, Penn State is widely recognized as a good steward of the resources it receives. The public and private sectors have confidence and trust in our faculty and students, and in the importance of their work to our society. The fiscal data presented in these pages are a convenient measure of research activity and growth, but they cannot adequately illuminate the broad scope of resident talent at Penn State and the real-world application of the work undertaken. Ultimately, it is the impact of that work, not dollars spent, that is most important. The last page of this report includes just a few examples of the many studies receiving major support in 2012-13 that demonstrate the true value of Penn State research.



NEIL SHARKEY

Interim Vice President for Research



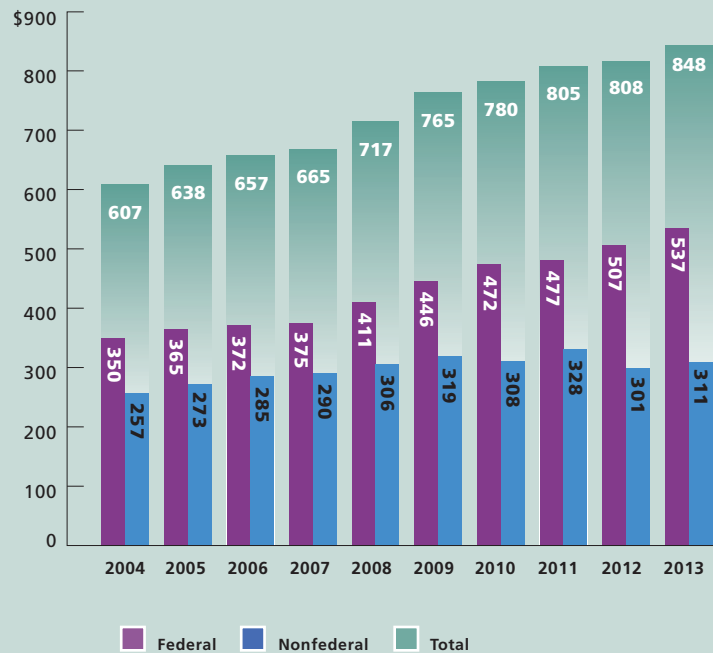
Total Research Expenditures, 2004–2013 (Federal and Nonfederal)

Expenditures totaled an all-time high of \$848 million, with federal support leading the way at \$537 million.

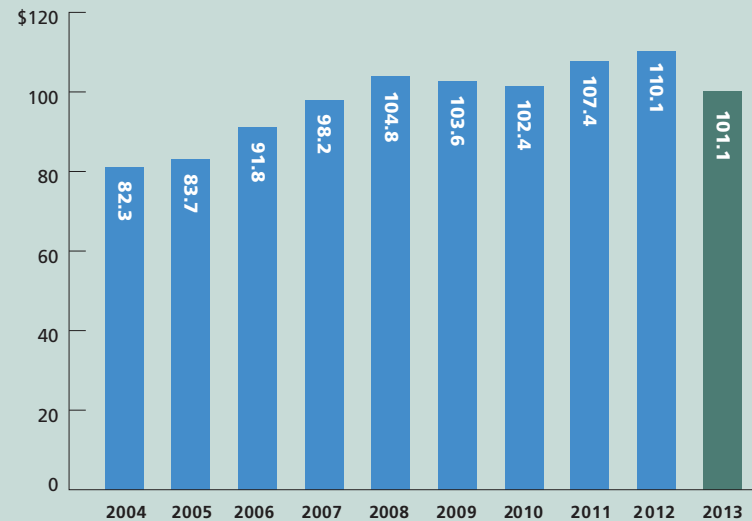
Research sponsored by industry, private foundations, and related sources, 2004–2013

Penn State typically partners with more than 400 companies annually.

In millions of dollars



In millions of dollars



Expenditures from Federal Agencies

1 **Department of Defense \$187,384,000**

2 **Department of Health and Human Services \$129,847,000**

3 **National Science Foundation \$63,609,000**

4 **DOE \$50,513,000**

5 **USDA \$24,165,000**

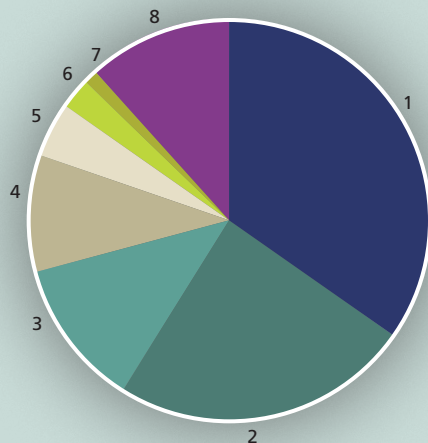
6 **NASA \$13,482,000**

7 **Education \$5,748,000**

8 **Other \$62,550,000**

Transportation \$6,779,000
Commerce \$5,698,000
Interior \$1,506,000
EPA \$1,084,000
Other Federal \$47,483,000

Total \$537,298,000



Expenditures by Performing Unit

1 **Defense-Related Research Units \$204,868,000**

Applied Research Lab \$178,258,000
Electro-Optics Center \$26,610,000

2 **Engineering \$145,063,000**

3 **Agricultural Sciences \$111,733,000**

4 **Eberly College of Science \$102,499,000**

5 **Medicine \$100,429,000**

6 **Earth and Mineral Sciences \$64,970,000**

7 **Health and Human Development \$42,967,000**

8 **Liberal Arts \$29,334,000**

9 **Education \$11,795,000**

10 **Information Sciences and Technology \$7,828,000**

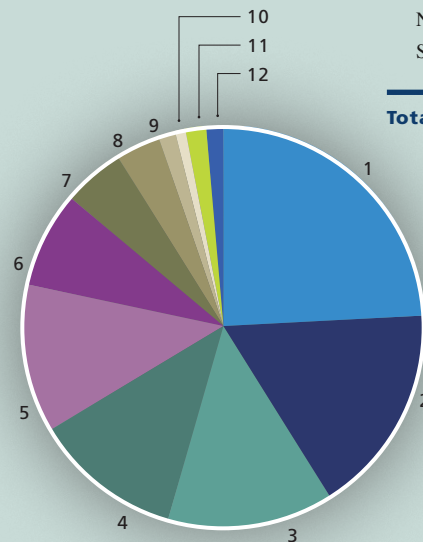
11 **Other \$15,464,000**

Altoona College \$1,227,000
Behrend College \$4,924,000
Berks College \$188,000
Capital College \$2,490,000
Great Valley \$260,000
Other Commonwealth Campuses \$4,121,000
Penn College \$2,162,000
International Programs \$92,000

12 **Other Schools and Colleges \$11,265,000**

Arts and Architecture \$1,439,000
Communications \$1,359,000
Dickinson School of Law \$636,000
Nursing \$2,706,000
Smeal College of Business \$5,125,000

Total \$848,215,000



Sources of Research Funding

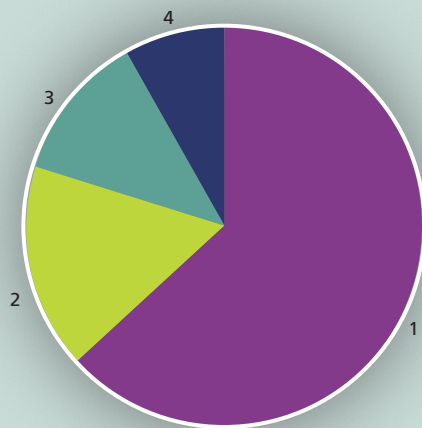
1 Federal \$537,298,000

2 University \$140,811,000

3 Industry and other \$101,035,000

4 Commonwealth of Pennsylvania
\$69,071,000

Total \$848,215,000



Penn State derives its research funding from a broad base of sources, depicted at left, reflecting a diversity of initiatives across academic disciplines. The \$537.3 million in federal support is especially noteworthy because it represents public dollars flowing back to Pennsylvania. Federal support for Penn State research in fiscal 2013 increased by 6 percent over the previous year and by 54 percent over the last decade.

Federal and all other research funding provides an important economic boost to the Commonwealth, having direct and indirect impacts of approximately \$2 billion annually, according to a 2009 University-sponsored report, in such forms as new technologies, job creation and retention, and state and local tax revenues.

THE BREADTH AND DEPTH OF RESEARCH AND DISCOVERY AT PENN STATE

A sampling of major grants and awards received in 2012–13

An award from the Bill and Melinda Gates Foundation supported research aimed at improving scent-based diagnostic methods for malaria infection in humans—malaria infects more than 300 million people worldwide each year. . . . A National Science Foundation grant bolstered ongoing studies intended to expand knowledge about the genesis of tornadoes in supercell thunderstorms. . . . Another NSF grant supported research into the trade-offs associated with choosing various climate-risk management strategies. . . . Funds from the National Institute of Mental Health assisted researchers looking at the interplay between genetic and prenatal and postnatal environmental influences in order to better understand early emotional and behavioral symptoms in children. . . . The U.S. Department of Agriculture advanced Penn State's efforts to control disease and insect pests on commercial mushroom farms, an issue of critical importance to Pennsylvania—the nation's leading mushroom producer—as environmental concerns increasingly limit the use of certain fungicides and pesticides. . . . National Cancer Institute funds are helping scientists improve therapies aimed at combating the spread of cancer cells from primary tumors—metastasized cancers account for more than 90 percent of all cancer-related deaths. . . . A U.S. Department of Transportation award facilitated continued evaluation of the reliability, safety, energy efficiency, and emissions of new bus models as part of lower cost, environmentally friendly public transportation systems. . . . The Robert Wood Johnson Foundation backed researchers' efforts to improve the quality and equity of community-based healthcare services, and to generate knowledge that will inform decision-making about healthcare reform. . . . Funding from the Pennsylvania Department of Public Welfare helped researchers develop and evaluate community-based nutrition education programs for individuals and families eligible to receive benefits from the Supplemental Nutrition Assistance Program (formerly known as food stamps). . . . A National Science Foundation grant supported development of a scanning probe microscope system for fundamental investigations at the forefront of nanostructured materials research.

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