

Pacific Northwest National Laboratory is

# DISCOVERY *in Action*



**Pacific Northwest**  
NATIONAL LABORATORY

Proudly Operated by Battelle Since 1965

## IMPROVING LIVES FOR 50 YEARS AND COUNTING

For more than 50 years the U.S. Department of Energy's Pacific Northwest National Laboratory has pushed the boundaries of science. Our discoveries and innovations have strengthened the nation's scientific foundations and have provided solutions to some of the nation's most complex problems in energy, the environment and national security.

PNNL researchers are recognized worldwide for making fundamental discoveries in the atmospheric, biological, chemical, computational and materials sciences.

They also have pioneered CD and DVD technology that revolutionized data storage and engineered the technology used in airport scanning systems that make air travel safer. Our scientists and engineers are helping create a more reliable electric grid, and advancements we've made in catalysts are enabling industry to create engines that run cleaner and more efficiently.

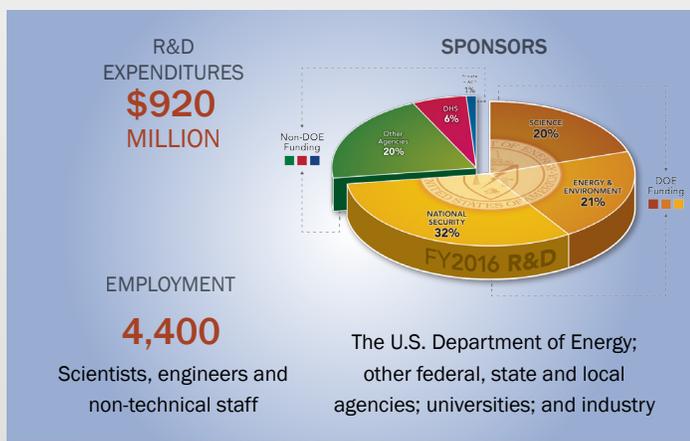
And we're just getting started. Along with our partners in academia, industry and government, PNNL will no doubt continue to enable the world to live prosperously, safely and securely.

“PNNL is DOE's premier chemistry, environmental sciences and data analytics national laboratory and home to EMSL, the Environmental Molecular Sciences Laboratory, one of DOE's scientific user facilities. We provide national leadership in four areas: deepening our understanding of climate science, inventing the future power grid, preventing nuclear proliferation and speeding environmental remediation. We also make important contributions in many other areas, including energy storage, microbial biology and cyber security.”

– Dr. Steven Ashby  
DIRECTOR



## FAST FACTS >> FISCAL YEAR 2016

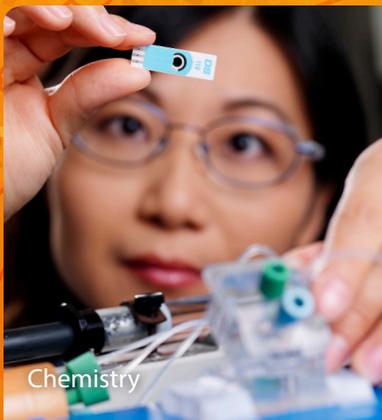


PEER-REVIEWED PUBLICATIONS  
**1,058**

PATENTS  
**104** in FY16, **2,514** U.S. and foreign since 1965

R&D 100 AWARDS  
**2** in FY16, a total of **100** since 1969

Federal Laboratory Consortium AWARDS FOR TECHNOLOGY TRANSFER  
**2** in FY16, a total of **83** awards since 1984



Chemistry

## JOIN US: TRANSFORM THE WORLD.

Our story is far from complete. We'll continue to build on our legacy, advancing science and technology that inspires and enables people around the world to live prosperously, safely and securely.

Care to make a difference and partner with us? You can learn more about our research in each mission area—science, energy, the environment and national security—by visiting [www.pnnl.gov](http://www.pnnl.gov) or contacting PNNL at 1-888- 375-PNNL (7665).



Data Analytics



Environmental Sciences

Over the years, our mission at PNNL has expanded to meet national priorities by working to transform the world through courageous discovery and innovation, focusing on four primary missions.



### **SCIENCE** – Chemistry, Data Analytics, Environmental Science

*Strengthen the U.S. scientific foundations for innovation*

Science is at the heart of all we do at PNNL. It fuels our discoveries to serve humanity, leading to knowledge that changes the way we think about the world. Our researchers are redefining the boundaries of science, advancing our understanding of nature and the cosmos, and providing scientific foundations for technological innovations. We have substantial science and technology experience in chemistry, biology, physics, computational sciences and materials science, as well as climate and earth systems science.



### **ENERGY** – Leading in Grid

*Increase U.S. energy capacity*

Finding clean and cost-effective ways to satisfy our nation's need for energy requires rapid innovation. Energy is critical to the health of our economy and our quality of life. It's essential to our productivity and mobility. Cleaner alternatives and advanced technologies are needed to reduce the nation's dependence on fossil fuels, expand the use of renewable resources and increase energy efficiency. We need to make progress in these areas without straining our economy, threatening our energy security or reducing the reliability of the electric grid and energy infrastructure. At PNNL, our strengths in chemistry, nanoscale synthesis and materials processing, as well as advanced characterization tools, are driving this change. We're focused on improving end-use efficiency in transportation, buildings and manufacturing, and increasing the use of renewable energy and storage.



### **ENVIRONMENT** – Leading in Climate and Remediation

*Reduce the environmental effects of human activities and create sustainable solutions*

We are at an environmental crossroads nationally and internationally. In the U.S., we must address day-to-day impacts of human activity, provide scientifically defensible solutions for the challenge of legacy waste at former U.S. weapons production sites, and lend expertise to emerging global issues, such as carbon emissions. At PNNL, we apply our capabilities to develop solutions that protect our air, water and land, as well as address numerous interrelated energy issues.



### **NATIONAL SECURITY** – Leading in Nonproliferation

*Prevent and counter acts of terrorism and the proliferation of weapons of mass destruction*

Protecting citizens gathered in public places from terrorism, reducing nuclear threats to our nation and the world, preventing nuclear proliferation, securing our nation's energy infrastructure, and more are all in a day's work at PNNL. Our roots in national security research and development reach back to the 1940s and the establishment of the Hanford Site to produce the plutonium for the Manhattan Project. Since then, our scientific foundation in nuclear materials and fuel cycle research, radioanalytic chemistry and environmental monitoring has expanded to include ultratrace detection and forensics, cyber intelligence and resiliency, threat signature discovery and analysis, and information analytics and visualization.