

Science Serving the Nation

Science is about service—about a commitment to expanding human knowledge and driving discovery—and can drive innovation, technology development, and economic progress. This commitment, coupled to unique, world-class capabilities, is what makes the Department of Energy’s (DOE’s) Office of Science an indispensable pillar of America’s leadership in science and technology. We are the nation’s largest supporter of basic research in the physical sciences, the steward of ten national laboratories, and the lead federal agency supporting fundamental research for energy.

Front Cover: A 3D visualization of the combined data from over 15,000 Linac Coherent Light Source (LCLS) crystal diffraction snapshots of a protein complex called Photosystem I that helps plants convert sunlight to fuel. (courtesy Thomas White, DESY)

Above Image: The undulator hall of the LCLS, the world’s most intense X-ray laser. Researchers use the LCLS’s X-rays to reveal the structure of individual molecules that play important roles in energy, materials, and health research. (courtesy SLAC National Accelerator Laboratory)

50 states

65+ years

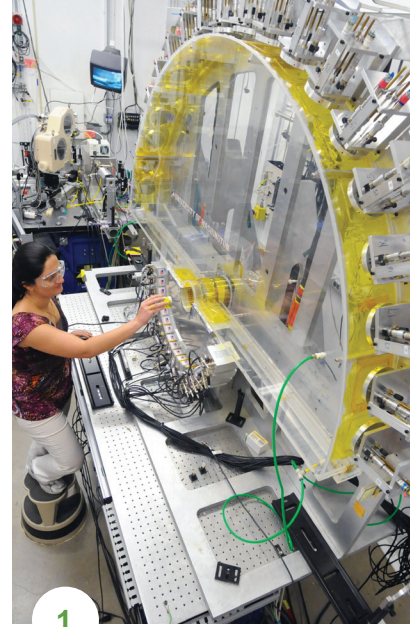
115 Nobel prizes

800+ R&D 100 awards

25,000+ researchers

29,000+ facility users

Our researchers have won 115 Nobel Prizes and more than 800 R&D 100 Awards over the past six decades, highlighting our impact on discovery and innovation. We support more than 25,000 researchers—scientists, engineers, and students—at national laboratories and in more than 300 universities and institutions of higher learning in all 50 States and the District of Columbia through competitive awards. Each year more than 29,000 researchers from universities, government laboratories, and industry conduct research at our national scientific user facilities.



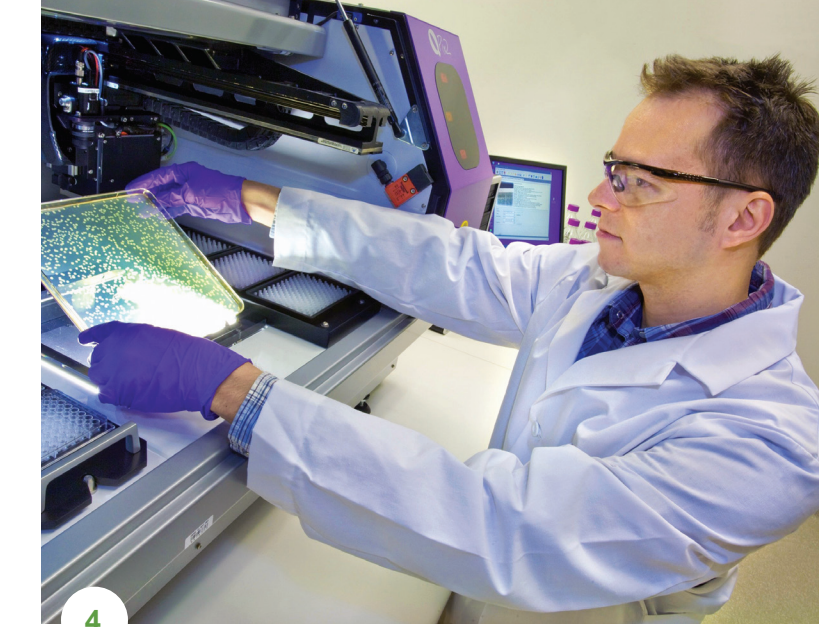
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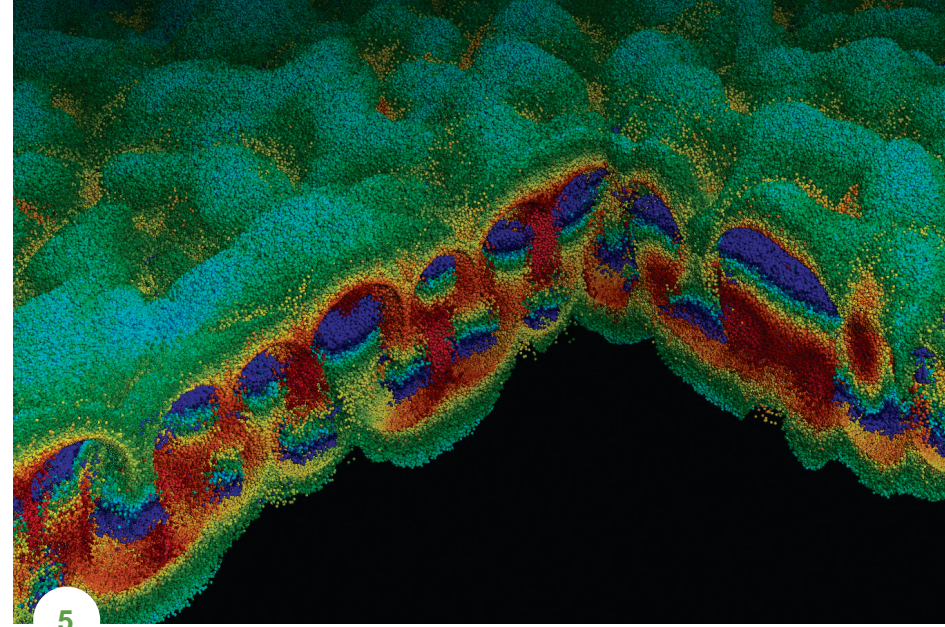
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4



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Discovery

Office of Science researchers are at the forefront of discovery. They are unveiling secrets of the basic building blocks of matter, such as quarks, neutrinos, and the Higgs boson. They are also peering deep into space, seeking understanding of the dark matter and dark energy that seem to dominate the universe and yet remain mysterious.

World-class scientific tools can drive world-shaping discoveries. The Office of Science accelerates discovery with the world’s largest array of major scientific user facilities including particle colliders, large-scale X-ray light sources, and sophisticated facilities for nanoscience research. Users have access to some of the world’s most

powerful supercomputers, which are enabling technological innovation while speeding insights into everything from the fundamental chemistry of combustion to the geophysics of earthquakes.

Innovation

Discovery science provides an enduring foundation for technological innovation. Over forty Fortune 500 companies and dozens of small businesses use our facilities each year, leveraging these unique capabilities to enable advances in areas ranging from drug discovery to the design of vehicles, aircraft, and jet engines.

Our intensely bright X-ray light sources proved crucial in the development of a drug against

malignant melanoma, and have revealed insights into illnesses such as Alzheimer’s disease, hepatitis, and the common cold.

Our researchers have unlocked a genetic key to understanding mercury contamination in the food chain, invented novel 3D-printed microbatteries that hold promise for device miniaturization, and created new materials including super-tough glasses and super-strong steels. They have coaxed microbes to create biofuels and cut hazardous lead from common solder. Their innovations in accelerator science and technology have yielded tools that improved airport security, redefined cancer therapy, and brought safe water to millions. Today they are focused on pushing computing speeds to an

extreme scale, creating batteries with radically better performance, and unlocking the promise of fusion energy, among many other goals.

Learn More

Office of Science researchers are working on lasting solutions to our most complex challenges in energy, national security, and the environment. Learn more about our achievements so far, and what is yet to come, at science.energy.gov.

1. Loading a prototype battery into an X-ray scattering instrument (courtesy Argonne National Laboratory)
2. Satellite view of the Relativistic Heavy Ion Collider (courtesy Brookhaven National Laboratory)
3. Work at the NOvA neutrino detector (courtesy Fermilab)

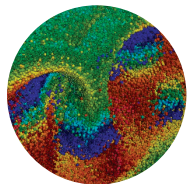
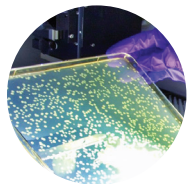
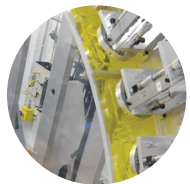
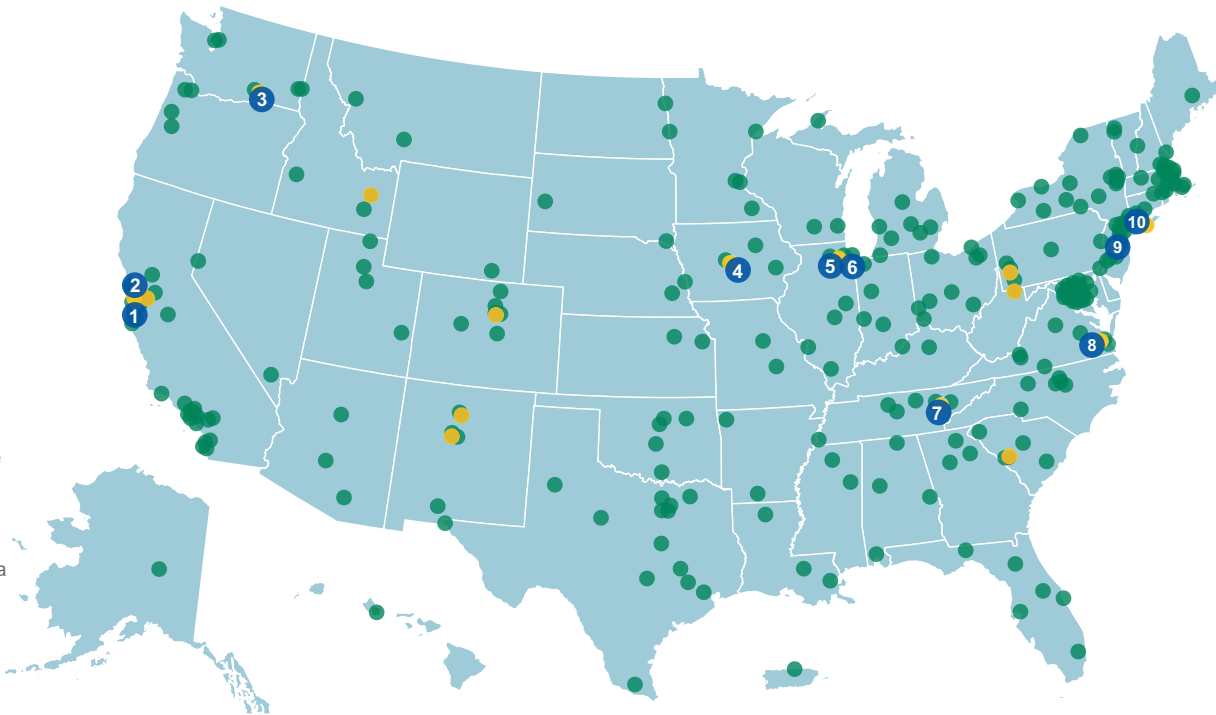
4. Evaluating microbial colonies for biofuels research at the Joint Bioenergy Institute (courtesy Lawrence Berkeley National Laboratory)
5. Supercomputer visualization of velocity shears in plasma streams, of interest in fusion energy as well as astrophysics research (courtesy Oak Ridge National Laboratory)

Office of Science Laboratories

1. **SLAC National Accelerator Laboratory**
Menlo Park, California
2. **Lawrence Berkeley National Laboratory**
Berkeley, California
3. **Pacific Northwest National Laboratory**
Richland, Washington
4. **The Ames Laboratory**
Ames, Iowa
5. **Fermi National Accelerator Laboratory**
Batavia, Illinois
6. **Argonne National Laboratory**
Argonne, Illinois
7. **Oak Ridge National Laboratory**
Oak Ridge, Tennessee
8. **Thomas Jefferson National Accelerator Facility**
Newport News, Virginia
9. **Princeton Plasma Physics Laboratory**
Princeton, New Jersey
10. **Brookhaven National Laboratory**
Upton, New York

Funding Recipients and Laboratories

- Grant Recipient Institution
- Other DOE Laboratory
- Office of Science Laboratory



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Office of Science



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