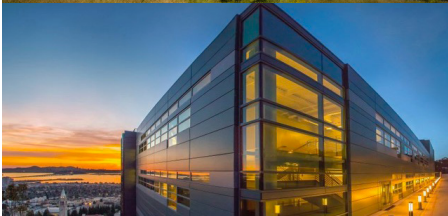
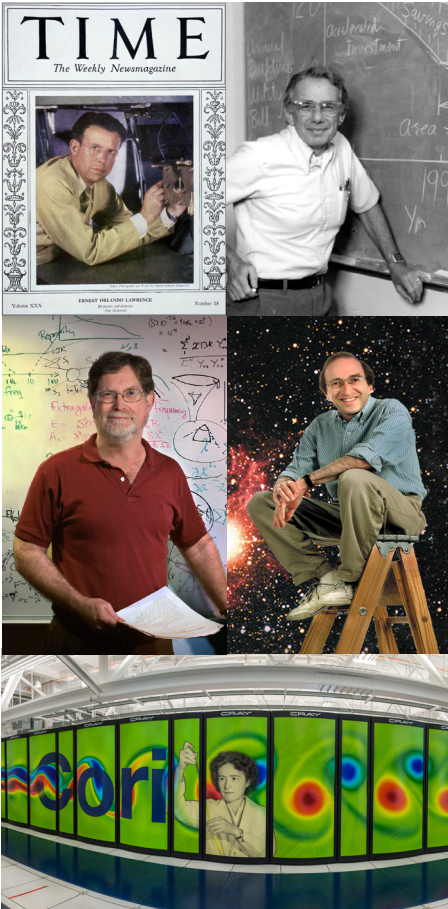


Nine decades of  
overarching commitment  
to pioneering science



# BERKELEY LAB

Bringing Science Solutions to the World

## Quick Facts

- Founded in 1931 by Ernest Orlando Lawrence
- Location: Berkeley, California
- Main campus: 94 buildings on 202 acres
- Total workforce: 3,202 employees;
  - 148 undergraduate students
  - 263 graduate students
  - 486 postdoctoral researchers
- 11,403 external scientific facility users per year
- 2,241 visiting scientists per year
- 13 Nobel Prize (1 group; 12 individuals) recipients
- 15 National Medal of Science recipients
- 70 members of the National Academies of Sciences (~20% of UC total)
- Berkeley Lab scientists discovered 16 elements of the periodic table

## Lab Budget

FY16 Total Costs: \$802.9 million

## Economic Impacts

- \$454 million in employee salary and benefits have directly impacted the regional economy.
- \$354 million in procurements were awarded to a diverse group of large and small businesses for a broad range of products and service across the nation.
- \$149 million in purchasing made directly in California.
- 1,314 active income-bearing license agreement.
- \$2.9 million in licensing and royalty income.
- 58 patents issued (45 US, 13 foreign)



Dr. Michael Withereff  
Laboratory Director

## Examples of Research Impacts

- As of 2012, the U.S. has experienced \$484 billion in cumulative primary energy savings from Berkeley Lab's Appliance Efficiency Standards Program (LBNL Report # LBNL-6217E, Energy and Economic Impacts of U.S. Federal Energy and Water Conservation Standards Adopted from 1987 through 2012)
- Berkeley Lab's research in energy efficiency has kept California's per capital energy consumption virtually flat since the early 1970s. (Source: [http://www.energy.ca.gov/commissioners/rosenfeld\\_docs/rosenfeld\\_effect/presentations/NRDC.pdf](http://www.energy.ca.gov/commissioners/rosenfeld_docs/rosenfeld_effect/presentations/NRDC.pdf))

## Major Research Areas

- Biosciences
- Computing Sciences
- Earth and Environmental Sciences
- Energy Sciences
- Energy Technology
- Physical Sciences

## Mission

Fosters groundbreaking fundamental science that enables transformational solutions for energy and environment challenges.

## Education Outreach

LBNL conducts 12 math and science K-12 programs that include outreach to school and community groups, and onsite workshops and tours for 4,000 students and 100 teachers per year. Each year, LBNL offers internships for 200 undergraduate students and faculty.

## National User Facilities

- The Advanced Light Source (ALS)
- The Energy Sciences Network (ESnet), the scientific high speed network for DOE's Office of Science
- The DOE Joint Genome Institute (JGI)
- The Molecular Foundry
- National Energy Research Scientific Computing Center (NERSC)

## Recent Scientific Discoveries at Berkeley Lab

- The Supernova Cosmology Project discovered Dark Energy
- Berkeley Lab scientists discovered the influence of the micro-environment on cancer, leading to new path for cancer treatments
- Berkeley Lab scientists developed laser plasma acceleration to >GeV in 1 cm, enabling the promise of high energies in short spaces
- Berkeley Lab scientists developed colloidal nanocrystals as a fundamental building block of nanoscience, with applications in bioimaging and display
- Berkeley Lab scientists demonstrated 3D topological crystalline material insulators that have wide-ranging practical uses, including enabling the building of more versatile and efficient technologies, and further into the future, platforms for quantum computing

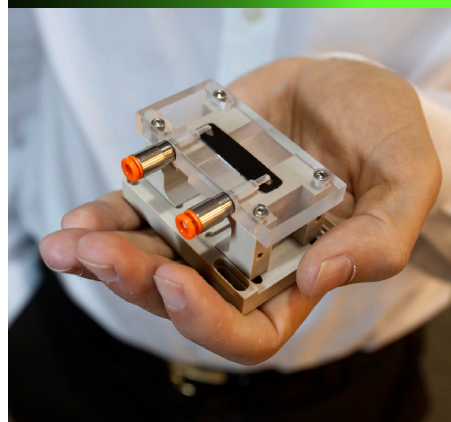
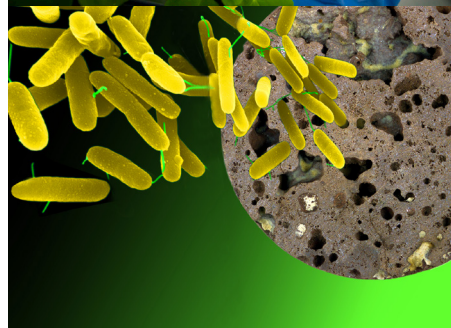
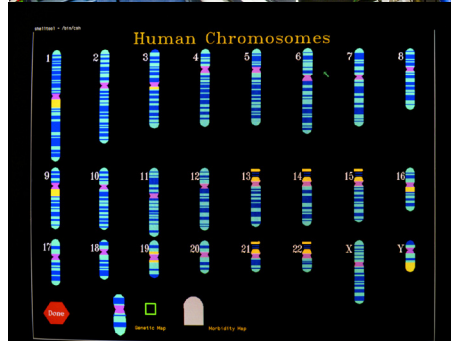
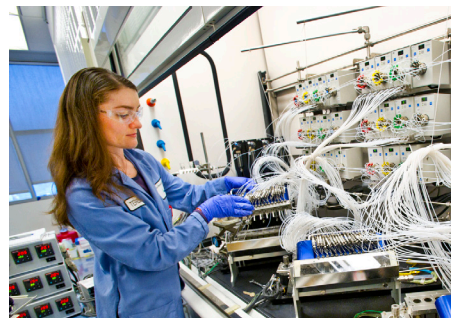
## Strategic Initiatives

- **Advanced Biogenic Chemicals and Materials.** This initiative seeks to leverage existing assets across Berkeley Lab, including JBEI, the Agile BioFoundry, the Molecular Foundry, and NERSC, to develop new soft materials that have better properties than petroleum-derived counterparts, can be made cost-effectively, and can be sustainably produced from biomass.

- **Electron Microscopy (EM).** Our EM initiative is aimed at positioning Berkeley Lab to continue its leadership in emerging areas of electron microscopy in the 21st century. We seek to enhance the scientific reach of electron beam-based characterization and leverage the Lab's technological prowess and computational capabilities.
- **Water-Energy Nexus.** Given its core competencies in energy technologies and environmental science, the Lab is in a unique position to make significant contributions to specific solutions at the nexus of water and energy. California is an ideal testbed for developing and optimizing water-energy solutions, and the Lab is exploring avenues to extend DOE-developed capabilities to California's challenges, with national benefits.
- **Next Generation Microelectronics.** This initiative addresses new paradigms of digital computing showing promise for scientific computations. NGM captures a growing interest in reimagining the digital computing paradigm starting from new materials and physical concepts, new architectures to novel technologies with new functionalities that could lead to unprecedented computing efficiency.
- **Data Analytics For Science.** This initiative will develop and deploy advanced machine learning methods to analyze complex data sets that arise in DOE science and applied energy applications. It will include statistical and mathematical methods, and deep learning methods that have proven effective on speech and image data.

## Planned New Facilities and Facility Upgrades:

- Integrated Genomics Building
- The Advanced Light Source Upgrade



17-LD-3740

For more details and the latest news, visit [www.lbl.gov](http://www.lbl.gov).

A DOE Office of Science (SC) Laboratory, managed by The University of California.



**BERKELEY LAB**

UNIVERSITY  
OF  
CALIFORNIA

National  
Laboratories

Data drawn from 2016-2017