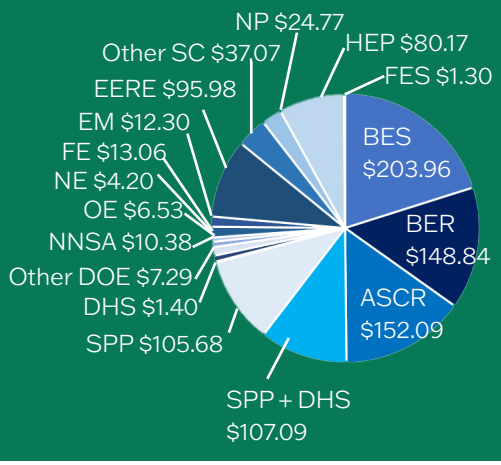
AT A GLANCE: LAWRENCE BERKELEY NATIONAL LABORATORY

Berkeley Laboratory creates useful new materials, advances the frontiers of computing, develops sustainable energy and environmental solutions, and probes the mysteries of life, matter and the universe. Deep integration of basic and applied science, advanced instrumentation, large-scale team science, and collaboration with the international scientific community enhance the laboratory's strengths, which lie in materials, chemistry, physics, biology, Earth and environmental science, mathematics, and computing. Berkeley's five national user facilities provide 14,000 researchers each year with capabilities in high-performance computing and data science, materials synthesis and characterization, and genomic science. Founded in 1931, Berkeley Laboratory's research and its scientists have been recognized with 14 Nobel Prizes.

FUNDING BY SOURCE

FY 2019 Costs (in $M)
Total Laboratory Operating Costs: $907.07
DOE/NNSA Costs: $800
SPP (Non-DOE/Non-DHS) Costs: $105.68
SPP as % of Total Laboratory Operating Costs: 11.7%
DHS Costs: $1.4



FACTS

Location: Berkeley, CA
Type: Multiprogram Laboratory
Contractor: University of California
Site Office: Bay Area Site Office
Website: lbl.gov

PHYSICAL ASSETS

202 acres and 97 buildings
1.7M GSF in DOE-owned and operated buildings
Replacement plant value: $1.49B
16,449 GSF in excess buildings
315,471 GSF in leased facilities
20,363 GSF in three excess facilities

HUMAN CAPITAL

3,398 FTE employees
1,699 scientists and engineers
245 joint faculty
513 postdoctoral researchers
332 graduate students
159 undergraduates
13,990 facility users
1,611 visiting scientists and engineers

CORE CAPABILITIES

Accelerator S&T
Advanced Computer Science, Visualization, and Data
Applied Materials Science and Engineering
Applied Mathematics
Biological and Bioprocess Engineering
Biological Systems Science
Chemical Engineering
Chemical and Molecular Science
Climate Change Science and Atmospheric Science
Computational Science
Condensed Matter Physics and Materials Science
Cyber and Information Sciences
Decision Science and Analysis
Earth Systems Science and Engineering
Environmental Subsurface Science
Large-Scale User Facilities/Advanced Instrumentation
Mechanical Design and Engineering
Nuclear and Radio Chemistry
Nuclear Physics
Particle Physics
Power Systems and Electrical Engineering

MISSION UNIQUE FACILITIES

Advanced Biofuels Process Demonstration Unit
Advanced Light Source (ALS)
BELLA (Berkeley Laboratory Laser Accelerator)
Joint Genome Institute (JGI)
Energy Sciences Network (ESnet)
FLEXLAB (Integrated Building and Grid Technologies Testbed)
Joint BioEnergy Institute (JBEI)
The Molecular Foundry
National Energy Research Scientific Computing Center (NERSC)
88-Inch Cyclotron

U.S. DEPARTMENT OF ENERGY

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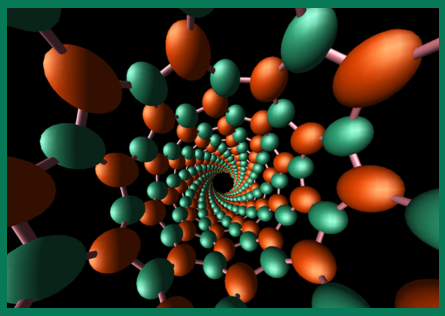
ACCOMPLISHMENTS

Unique Facility: Integrative Genomics Building - The Integrative Genomics Building (IGB) at Lawrence Berkeley National Laboratory is a four-story research and office building that accommodates three DOE research programs: the Joint Genome Institute (JGI), the Systems Biology Knowledgebase (KBase), and the National Microbiome Data Collaborative (NMDC). JGI provides integrated high-throughput sequencing, DNA design and synthesis, metabolomics, and computational analysis that enable systems-based scientific approaches to these challenges. KBase, a collaboration with laboratories including Argonne, Oak Ridge, and Brookhaven, gives users data and tools designed to help build increasingly realistic models for biological function. The NMDC empowers the research community to harness microbiome data exploration and discovery through a collaborative integrative data science ecosystem. By uniting experts and world-class technologies under one roof—to increase resource efficiencies and scientific synergies for these programs—the IGB will help transform plant and microbial genomics research into solutions for today's most pressing environmental and energy issues. or material design and qualification.



Tech-to-Market Highlight: Next-generation Boron Nitride Nanotubes - The boron nitride nanotube (BNNT) is a breakthrough material for energy, aerospace, electronics, and medicine applications. Invented by Lawrence Berkeley National Laboratory, the technology allows the quality scale-up of a material that is 100 times stronger than steel, heat resistant to 900°C, radiation-absorbing, hydrophobic, and capable of hydrogen storage. Additional advantages of BNNTs include high functionalization and thermal conductivity as well as band gap tunability, lending them as superior to carbon nanotubes. The patented technology is now being manufactured by EPIC Advanced Materials. Notably, one potential application is a breathalyzer to detect the COVID-19 virus.

Research Highlight: PDK: The First Truly Recyclable Plastic - Even the most recyclable plastic, PET, or polyethylene terephthalate is only recycled at a rate of 20 to 30 percent, with the rest typically going to incinerators or landfills, where the carbon-rich material takes centuries to decompose. Lawrence Berkeley National Laboratory has designed a recyclable plastic that, like a Lego playset, can be disassembled into its constituent parts at the molecular level, and then reassembled into a different shape, texture, and color again and again, without loss of performance or quality. The new material, called polydiketoenamine (PDK) was reported in the journal Nature Chemistry.