

# LAB AT A GLANCE

# LAWRENCE LIVERMORE NATIONAL LABORATORY

**Science and technology on a mission** is the hallmark of Lawrence Livermore National Laboratory (LLNL). In service to the Department of Energy/National Nuclear Security Administration and other federal agencies, LLNL develops and applies world-class **science and technology (S&T)** to ensure the safety, security, and reliability of the nation's nuclear deterrent. LLNL also applies S&T to confront dangers ranging from nuclear proliferation and terrorism to energy shortages and climate change that threaten national security and global stability.

As a national security laboratory, LLNL harnesses operational excellence and strategic partnerships to meet its mission and applies the talents of our multidisciplinary staff, premier facilities, and core competencies to the nation's pressing issues. Through strategic support of S&T, LLNL translates innovations into national security and global stability.

## FACTS

- **Location:** Livermore, California
- **Type:** Multidisciplinary national security laboratory
- **Year Founded:** 1952
- **Director:** Kimberly S. Budil
- **Contractor:** Lawrence Livermore National Security, LLC (LLNS)
- **Responsible Site Office:** Livermore Field Office
- **Website:** [www.llnl.gov](http://www.llnl.gov)

## CORE COMPETENCIES

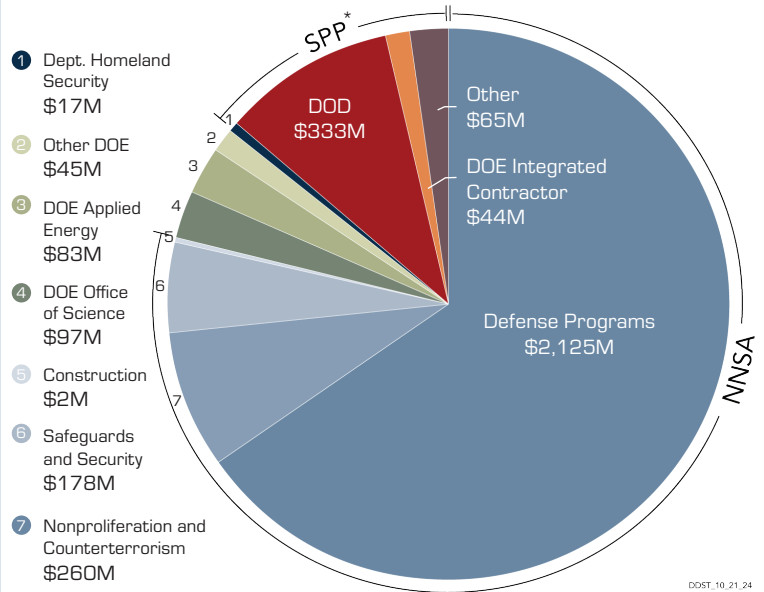
- Advanced Materials and Manufacturing
- Bioscience and Bioengineering
- Earth and Atmospheric Sciences
- High-Energy-Density Science
- High-Performance Computing, Simulation, and Data Science
- Lasers and Optical Science and Technology
- Nuclear, Chemical, and Isotopic Science and Technology

## MISSION-SPECIFIC FACILITIES

- Advanced Manufacturing Laboratory
- Center for Micro-and Nanotechnology
- Center for Accelerator Mass Spectrometry
- Contained Firing Facility
- Electron Beam Ion Trap
- Forensic Science Center
- High Explosives Applications Facility
- Livermore Computing
- Polymer Enclave
- National Atmospheric Release Advisory Center
- National Ignition Facility
- Select Agent Center

## FY2024 FUNDING BY SOURCE

(Total: \$3,250,066,355)



DOE 10.21.24  
Source: CFO 10.21.24

\*SPP: Strategic Partnership Projects

## FY2024 COSTS

- FY24 LLNL operating costs: \$3.52 billion
- FY24 DOE/NSA costs (includes DOE/IC): \$3.1 billion
- FY24 SPP costs (excludes DHS and DOE/IC): \$442 million
- FY24 SPP as a % of operating costs: 12.6%
- FY24 DHS costs: \$24 million

## PHYSICAL ASSETS (FY24)

- 7,617 acres (DOE owned) and 511 buildings/trailers
- 6.7 million GSF\* in operational buildings
- 52 non-operational buildings/trailers with 0.59 million GSF
- 45,706 GSF leased
- Replacement plant value: \$32.8 billion

## HUMAN CAPITAL (FY24)

- 9,563 LLNL employees, including:
  - 11 joint faculty
  - 311 postdoctoral researchers
  - 133 undergraduate interns
  - 172 graduate students
- 473 contractors (non-LLNS employees)

\*Gross Square Feet



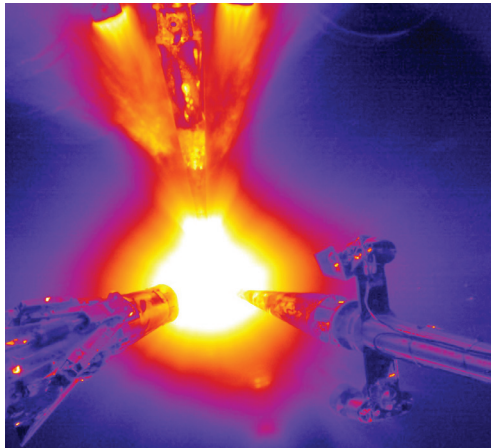
# LABORATORY HIGHLIGHTS



## UNIQUE FACILITIES

### One of the World's Premier High-Performance Computing Facilities

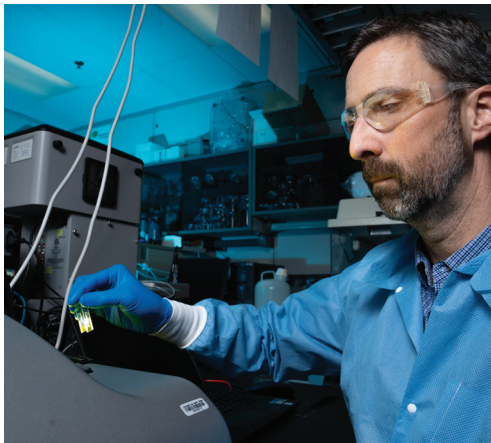
Lawrence Livermore is home to Livermore Computing (LC), a premier high-performance computing facility. LC boasts more than 3.28 exaflops of peak computing power and numerous TOP500 systems, including the #1-ranked, 2.79-exaflop El Capitan system, the 294+-petaflop Tuolumne system, and the 125-petaflop Sierra system. These flagship supercomputers are GPU-enabled and produce multiphysics simulations in 3D at never-before-seen resolutions for a variety of mission-critical needs. LLNL is also working with industry partners, including Cerebras Systems and SambaNova, to integrate cutting-edge artificial intelligence hardware with top-tier high-performance computers to improve the fidelity of models and manage the growing volumes of data for speed, performance, and productivity gains. LC platforms are supported by our LEED-certified, innovative facilities for infrastructure, power, and cooling; a storage infrastructure including three varieties of file systems and the world's largest TFinity tape archive; and highest-quality customer service. Our software ecosystem showcases our leadership of many large open source efforts, from TOSS with Lustre and ZFS to the R&D 100 Award-winning Flux, SCR, and Spack.



## CUTTING-EDGE RESEARCH

### Achieving Fusion Ignition

LLNL is home to the National Ignition Facility (NIF), the world's highest-energy laser system. NIF's 192 lasers can fire 2.2 megajoules (MJ) of ultraviolet energy into a hohlraum—a cylinder the size of a pencil eraser—compressing and heating a tiny hydrogen-filled capsule suspended in the hohlraum until the hydrogen atoms fuse and release an immense amount of energy. As the premier facility creating conditions relevant to understanding the operation of modern nuclear weapons, NIF is a crucial element of the United States Stockpile Stewardship Program, producing experimental data that validates 3D weapon simulation codes, improving understanding of important weapon physics, and investigating questions remaining from underground nuclear tests. On Dec. 5, 2022, NIF made scientific history with an experiment that achieved fusion ignition in a laboratory for the first time. The shot generated 3.15 MJ of fusion energy from an input of 2.05 MJ of laser energy. This feat has been repeated four times, most recently setting a record fusion yield of 5.2 MJ. Fusion ignition provides new opportunities for stockpile stewardship applications and lays the groundwork for laser fusion energy. LLNL scientists and engineers are pushing on all fronts to increase NIF's capabilities to address challenges, including higher energy and power limits, next-generation optics, improved targets with tighter specifications, and better diagnostics.



## TECHNOLOGY TO MARKET

### EVOQ and LLNL: Innovating Autoimmune Disease Treatment

EVOQ Therapeutics has harnessed advanced biomedical technology developed at LLNL to create innovative treatments and vaccines for autoimmune diseases. Their work focuses on using nanolipoprotein particles (NLPs) technology and has been shown to be 30 times more effective at delivering antigens to the lymph nodes. This technology has garnered industry recognition, with LLNL researchers receiving multiple awards for their contributions to technology transfer and collaboration.

EVOQ's partnerships with major pharmaceutical companies highlight the importance of innovation in healthcare, demonstrating how cutting-edge research can lead to real-world applications. By leveraging LLNL's expertise, EVOQ is not only advancing medical treatments but also setting a precedent for successful collaborations between research institutions and the biotech industry. This partnership is crucial for accelerating the development of new therapies, ultimately improving patient outcomes and showcasing the vital role of technology in addressing complex health challenges.