Lawrence Berkeley National Laboratory

Kathy Yelick
Associate Laboratory Director for Computing Sciences
Berkeley Lab Changes Science

Lawrence introduces big team science 1931

LBNL the first National Lab

13 Nobel Prizes
- 4200 employees
- $820M in funding
- Operated by UC
- 1000 student
- 250 faculty
Berkeley Lab’s enduring approach: teams and tools for scientific discovery

~30% of SC users
Berkeley Lab’s strategic initiatives help define a common vision, mission and culture.

- **MICROBES TO BIOMES**
- **EXTREME SCIENCE DATA INITIATIVE**
- **DIFFRACTION-LIMITED ALS FOR MATERIALS & BIOLOGY**
- **ENERGY INNOVATION**
- **DIVERSITY & INCLUSION**
- **SERVICE TECHNOLOGIES FOR SCIENCE**
Real world impact from the lab-wide science initiatives

Plan for lab of the future

- Extreme Science Data Initiative
- Microbes to Biomes
- Diffraction-Limited ALS for Materials & Biology
- Energy Innovation
Laboratory Directed Research and Development (LDRD)

“The purpose of the LDRD program is to encourage innovation, creativity, originality, and quality to keep the Laboratory’s research activities and staff at the forefront of science and technology.”

$20+M at Berkeley Lab; two proposal types:
- Institutional strategic initiatives (20-30% of total)
- Area/Division strategic initiatives
Leverage Berkeley Lab talent in math, computer science, interdisciplinary team science, networking, software engineering and our new infrastructure to enable new modes of inquiry and discovery from scientific data sets.
Extreme Data Scientific Facility (XDSF) Concept

- MS-DESI
- ALS
- LHC
- JGI
- APS
- LCLS
- Other data-producing sources
Energy innovation: Berkeley Lab’s history of success

Technologies and Policies

• Efficiency standards (CA vs. US) and policy assistance
• Buildings, lighting technology
• Foundational work in lithium ion batteries

Startups

• 30 Berkeley Lab spinoffs contribute $695M to Bay Area and $2.8B nationally each year