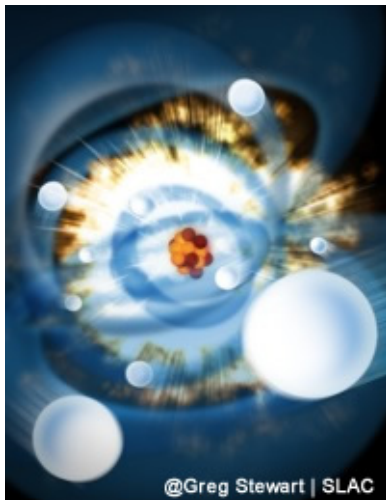


Life at a DOE National Laboratory

Linda Young
Argonne National Laboratory



Where are the DOE national laboratories

Office of Science Laboratories

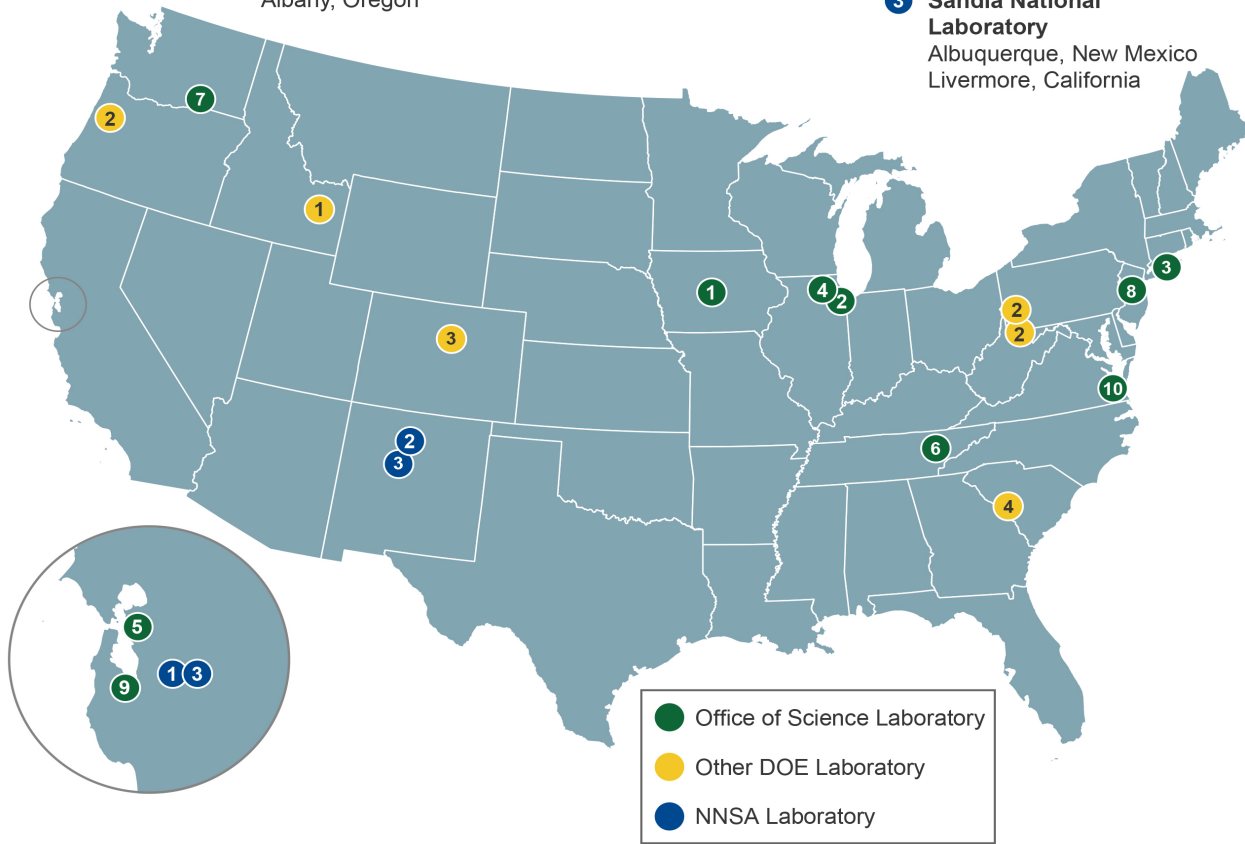
- 1 Ames Laboratory
Ames, Iowa
- 2 Argonne National Laboratory
Argonne, Illinois
- 3 Brookhaven National Laboratory
Upton, New York
- 4 Fermi National Accelerator Laboratory
Batavia, Illinois
- 5 Lawrence Berkeley National Laboratory
Berkeley, California
- 6 Oak Ridge National Laboratory
Oak Ridge, Tennessee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

Other DOE Laboratories

- 1 Idaho National Laboratory
Idaho Falls, Idaho
- 2 National Energy Technology Laboratory
Morgantown, West Virginia
Pittsburgh, Pennsylvania
Albany, Oregon
- 3 National Renewable Energy Laboratory
Golden, Colorado
- 4 Savannah River National Laboratory
Aiken, South Carolina

NNSA Laboratories

- 1 Lawrence Livermore National Laboratory
Livermore, California
- 2 Los Alamos National Laboratory
Los Alamos, New Mexico
- 3 Sandia National Laboratory
Albuquerque, New Mexico
Livermore, California



Who's in charge?



Patricia Dehmer

Deputy Director
Office of Science

Office of Science

Advanced Scientific Computing Research

Basic Energy Sciences

Biological and Environmental Research

Fusion Energy Sciences

High Energy Physics

Nuclear Physics



National Labs provide vital ecosystems for major DOE scientific user facilities

Protein facility
Nanoscience

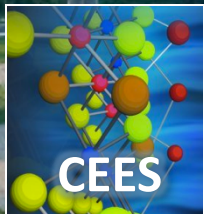
Chemical engineering

Chemistry

Accelerator physics

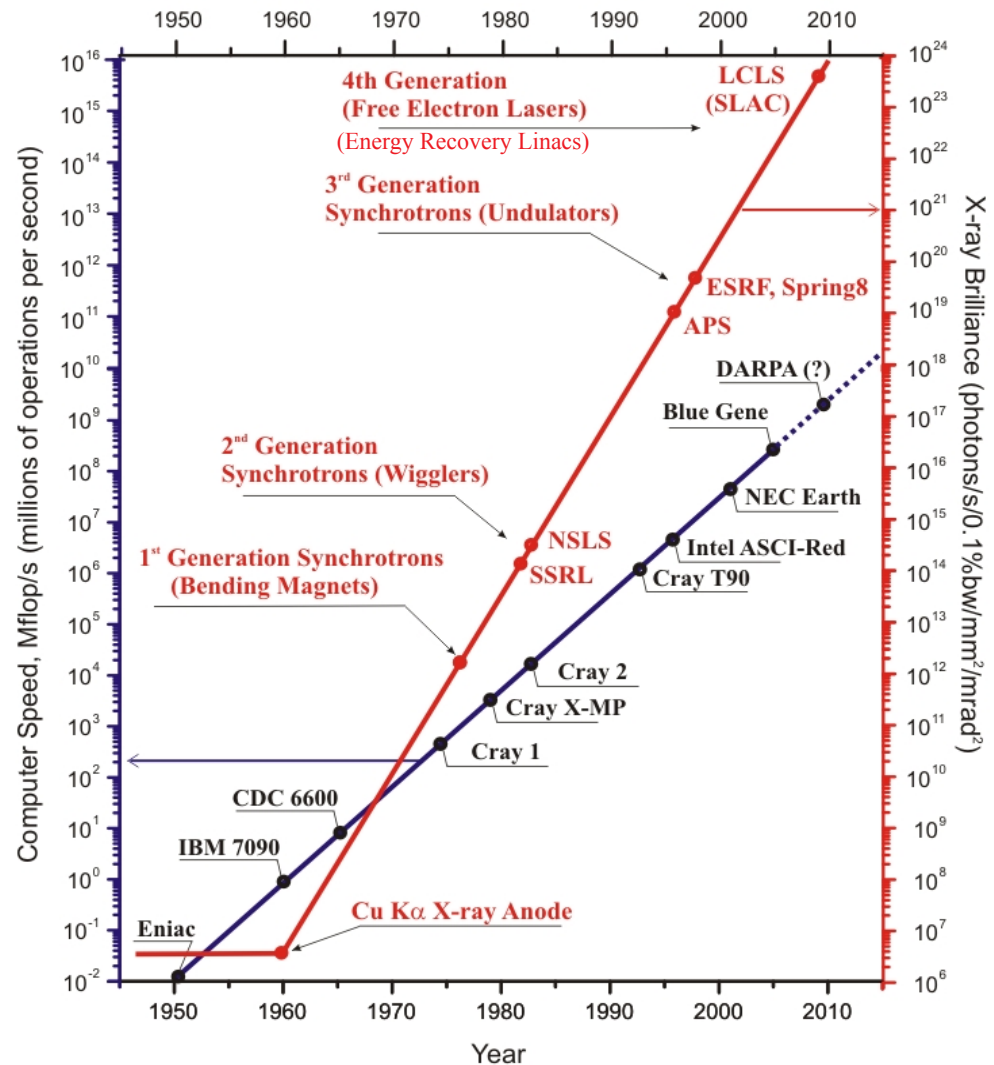
Materials and
energy sciences

High performance
computing & data



Biology

Moore's law for X-ray Sources



12 orders of magnitude in 6 decades

18 orders of magnitude in 5 decades!



Linac Coherent Light Source at SLAC

X-FEL based on last 1-km of existing 3-km linac

Proposed by C. Pellegrini in 1992

1.5-15 Å
(14-4.3 GeV)

Injector (35°
at 2-km point

Existing 1/3 Linac (1 km)

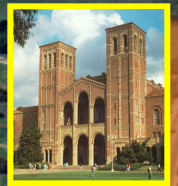
New e⁻ Transfer Line (340 m)

X-ray Transport
Line (200 m)

Undulator (130 m)

Near Experiment Hall

Far Experiment
Hall



UCLA



LLNL



The Advanced Photon Source

7 GeV, 100 mA, 3 nm-rad

Dedicated 1996

- 66 simultaneously operating beamlines
 - 45 ID, 21 BM
- 60% physical science
- 40% biological science
- ~5000 unique users/year



Jo Frisch analogy: XFELs are to synchrotrons as



F22 Raptor
356 M\$
Seats 1
Mach 2.25



Boeing 747
330 M\$
Seats 400-600
Mach 0.855



International opportunities here and on the horizon

SACLA
Image Gallery



SwissFEL





Family at National Labs

Three female staff members in XSD had children in the past 4 months

Family leave: accrued sick leave + vacation + 12 weeks w/o pay

Argonne Day Care Center



Family time

