



NATIONAL LAB DAY IN MISSISSIPPI

November 8, 2012

National User Facilities – Driving American Innovation

Horst Simon

Deputy Laboratory Director

Lawrence Berkeley National Laboratory

Oxford, Mississippi

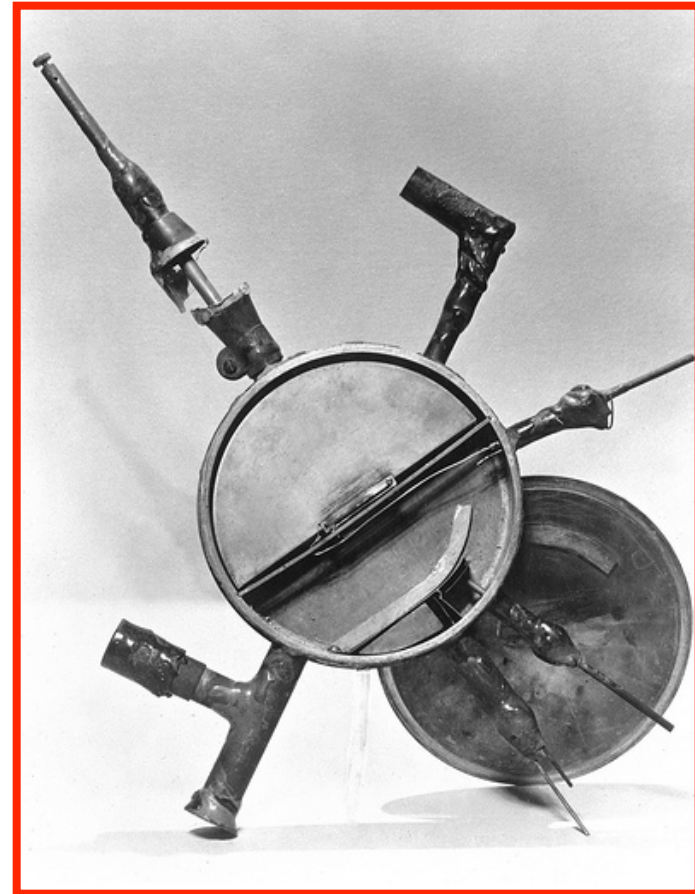
November 8, 2012



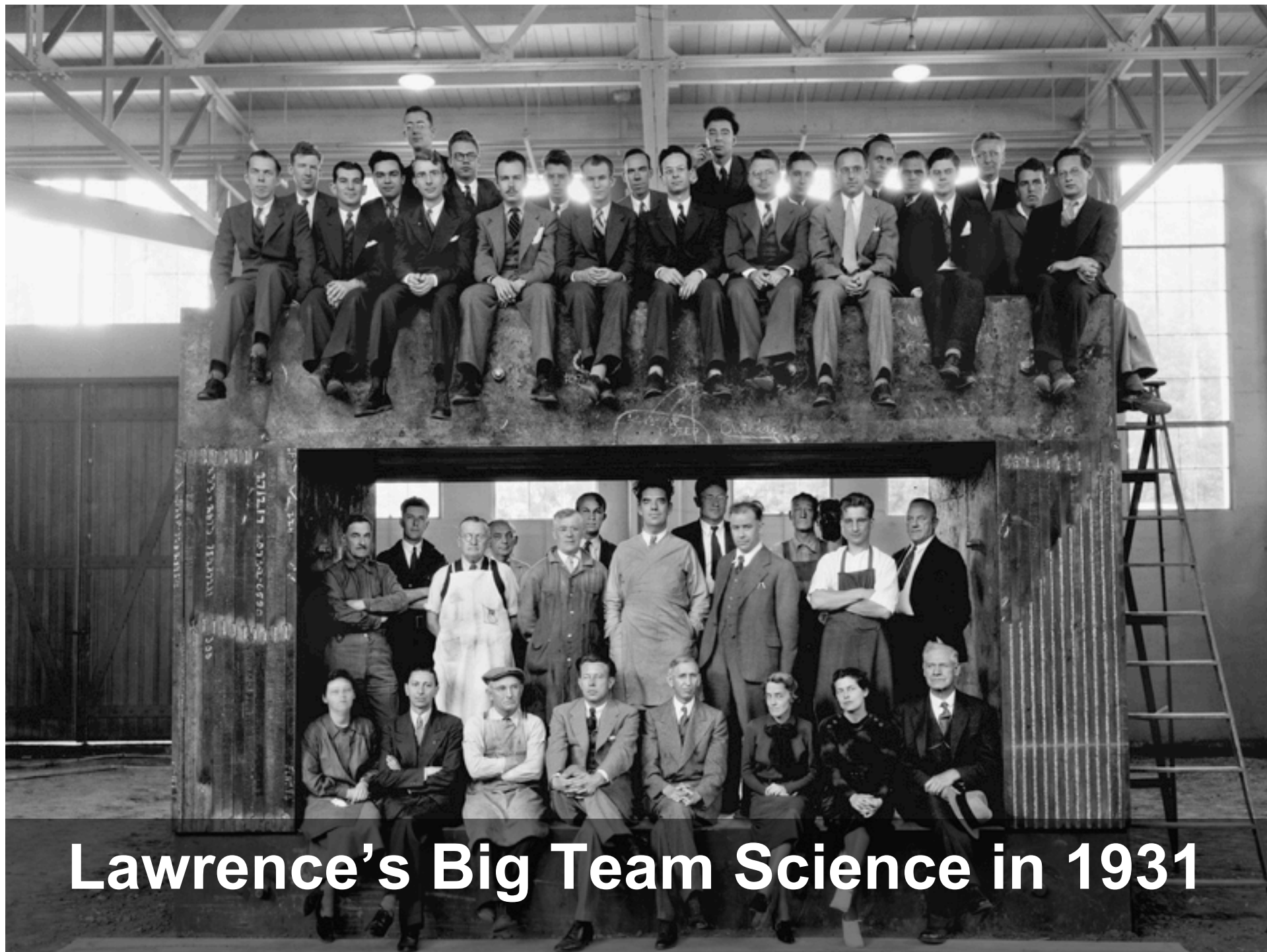
Origins of the First User Facilities



Ernest O. Lawrence
November 1, 1937



Lawrence's original
5-inch cyclotron, 80 keV, 1931

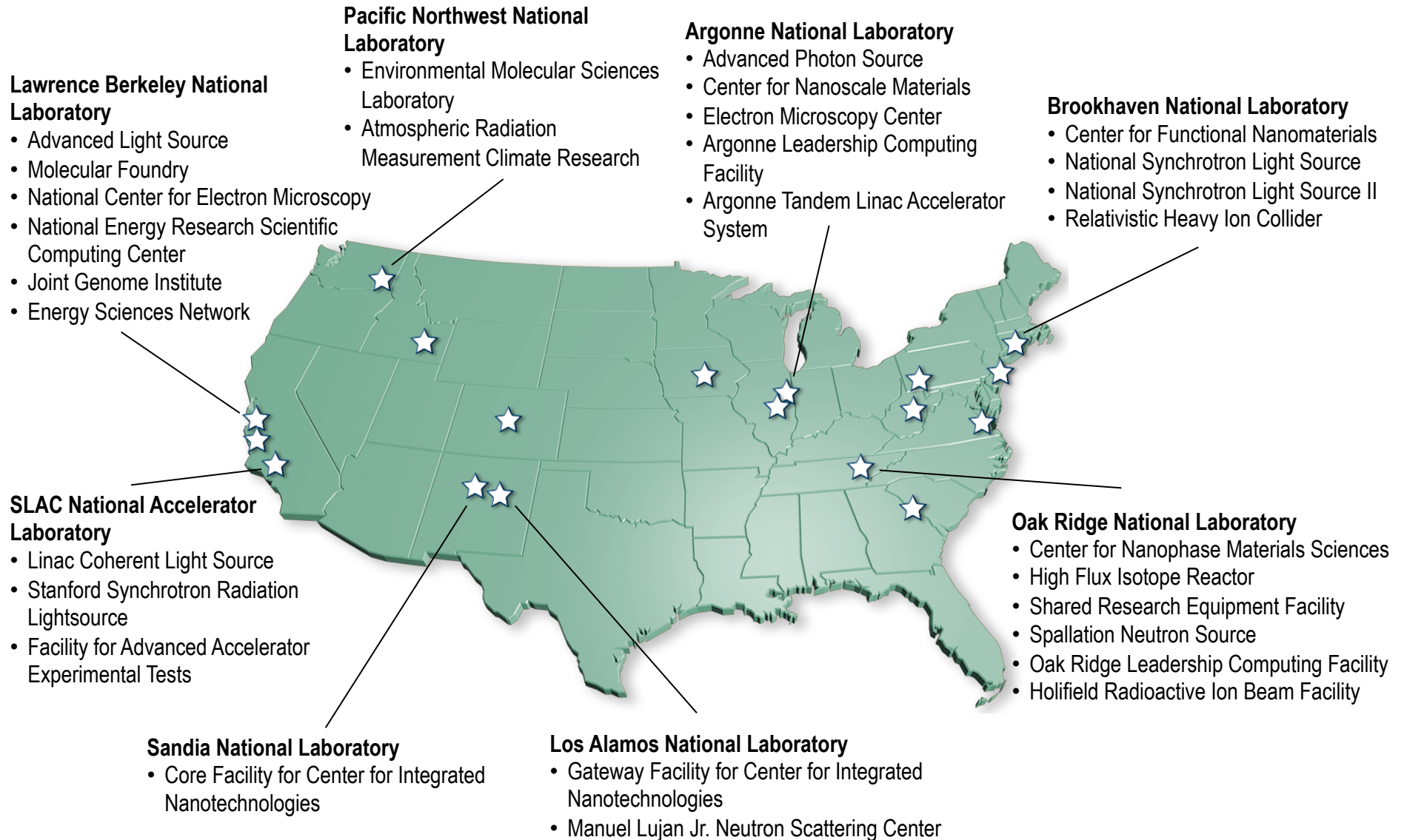


Lawrence's Big Team Science in 1931

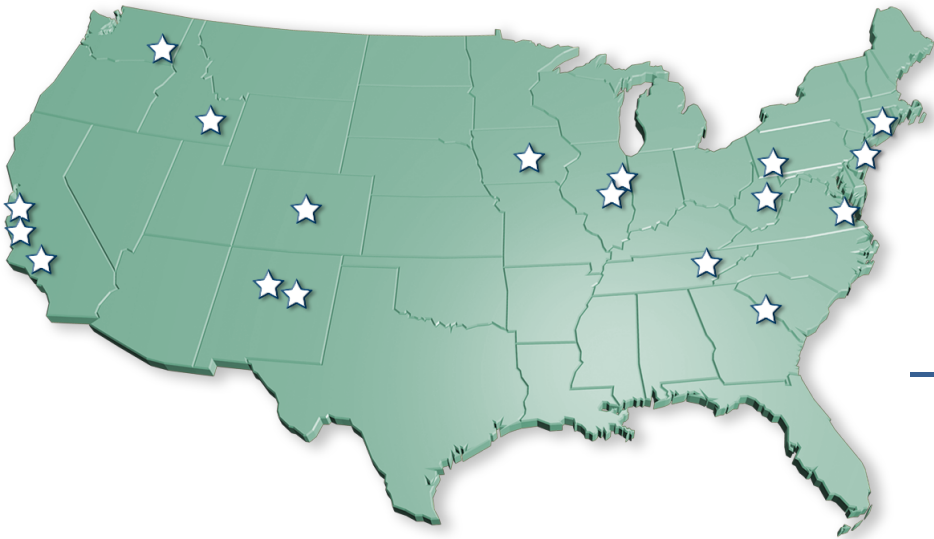
DOE National Scientific User Facilities Today



World Class User Facilities at the National Labs




DOE's Office of Science, by the Numbers



- **\$5B budget, annually supporting:**
 - 25,000 Ph.D. scientists, graduate students, under-graduates, engineers, and technical staff at more than 300 institutions in all 50 States and DC through competitive awards
 - 26,000 users at 32 national scientific user facilities
- **100 Nobel Prizes during the past 6 decades—more than 20 in the past 10 years**

Using National Scientific Facilities

 **U.S. DEPARTMENT OF ENERGY** | Office of Science

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Atmospheric Radiation Measurement station at Barrow, Alaska. ARM Climate Research Facility

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The Office of Science national scientific user facilities provide researchers with the most advanced tools of modern science including accelerators, colliders, supercomputers, light sources and neutron sources, as well as facilities for studying the nanoworld, the environment, and the atmosphere. In Fiscal Year 2011 over 26,500 researchers from academia, industry, and government laboratories, spanning all fifty states and the District of Columbia, utilized these unique facilities to perform new scientific research.

A user facility is a federally sponsored research facility available for external use to advance scientific or technical knowledge under the following conditions:

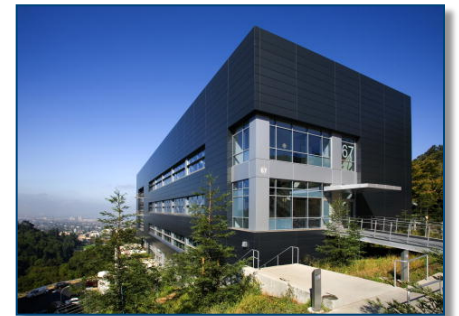
- The facility is open to all interested potential users without regard to nationality or institutional affiliation.
- Allocation of facility resources is determined by merit review of the proposed work.
- User fees are not charged for non-proprietary work if the user intends to publish the research results in the open literature. Full cost recovery is required for proprietary work.
- The facility provides resources sufficient for users to conduct work safely and efficiently.
- The facility supports a formal user organization to represent the users and facilitate sharing of information, forming collaborations, and organizing research efforts among users.
- The facility capability does not compete with an available private sector capability.

[Learn More](#)
[Click here](#) to learn more about the Office of Science User Facilities, including how to gain access.

science.energy.gov/user-facilities/

Using National Scientific Facilities

- **Open to all**
- **Time competitively awarded**
- **No user fees for non-proprietary work**
- **Support for users**
- **User organizations to facilitate collaborations**
- **Does not compete with private sector**



Structural Biology Users

4 Nobel Prizes in 9 Years with Light Sources

- **2012 Prize in Chemistry:** Robert Lefkowitz and Brian Kobilka, “for studies of G-protein-coupled receptors.” *Used Stanford Synchrotron Radiation Lightsource, the Advanced Photon Source and the Advanced Light Source.*
- **2009 Prize in Chemistry:** Venkatraman Ramakrishnan, Thomas Steitz, and Ada Yonath) “for studies of the structure and function of the ribosome.” *Used all four light sources.*
- **2006 Prize in Chemistry:** Roger Kornberg “for his studies of the molecular basis of eukaryotic transcription.” *Used Stanford Synchrotron Radiation Lightsource and the Advanced Light Source.*
- **2003 Prize in Chemistry:** Roderick MacKinnon for “structural and mechanistic studies of ion channels.” *Used National Synchrotron Light Source.*

Industrial Users: X-ray, Neutron, Electron Scattering and High-Performance Computing



Maintaining U.S. Innovation Leadership

