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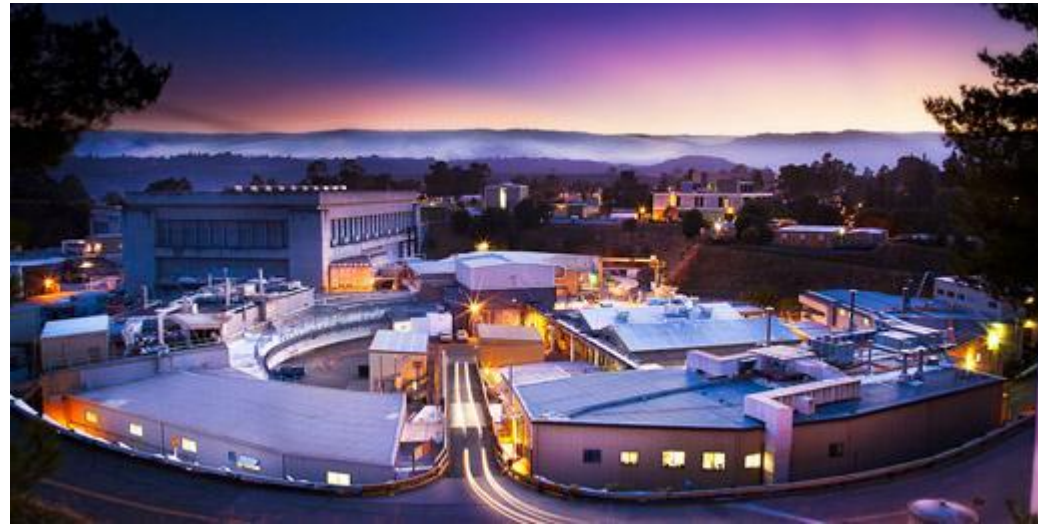
April 20, 2023

# The NIH, SSRL and Structural Molecular Biology

50 Years of Biomedical Research Support

# SSRL at 50

From high energy physics parasite to a premier center for beamline experiments



1973

SSRP: 1 Beamline, 5  
experimental stations

2023

SSRL: 24 active  
Beamlines 33  
experimental stations

<https://www-ssrl.slac.stanford.edu/content/spear3/spear3-accelerator>

# NIH Support of SSRL

## I. User and Technology Development Resources

- Division of Research Resources and NCRR  
1980-2011 P41: Research Resource
- National Institute of General Medical Sciences (NIGMS)  
2012-2020 P41: Research Resource  
2020-present P30: Mature Synchrotron Resource

## II. Additional Support

- NIGMS  
1999-2015: Support through Interagency Transfers to DOE
- NIGMS & NCRR  
1999-2001: SPEAR3 Upgrades

1973

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# Current SSRL Resources for Structural Molecular Biology

- **SSRL**

- MX: Macromolecular x-ray crystallography
- SAXS: Small angle X-ray scattering
- X-ray absorption (XAS) and emission spectroscopy (XES)

- **SLAC**

- LCLS-x-ray Free Electron Laser
- CryoEM and CryoET

# SSRL: One of 9 Synchrotron Resources supported, by NIH/NIGMS in Partnership with DOE and others



**Advanced Light Source (ALS)**

Lawrence  
Berkeley  
National  
Laboratory



**Advanced Photon Source (APS)**

Argonne  
National  
Laboratory



**Cornell High Energy Synchrotron Source (CHESS)**

Cornell University



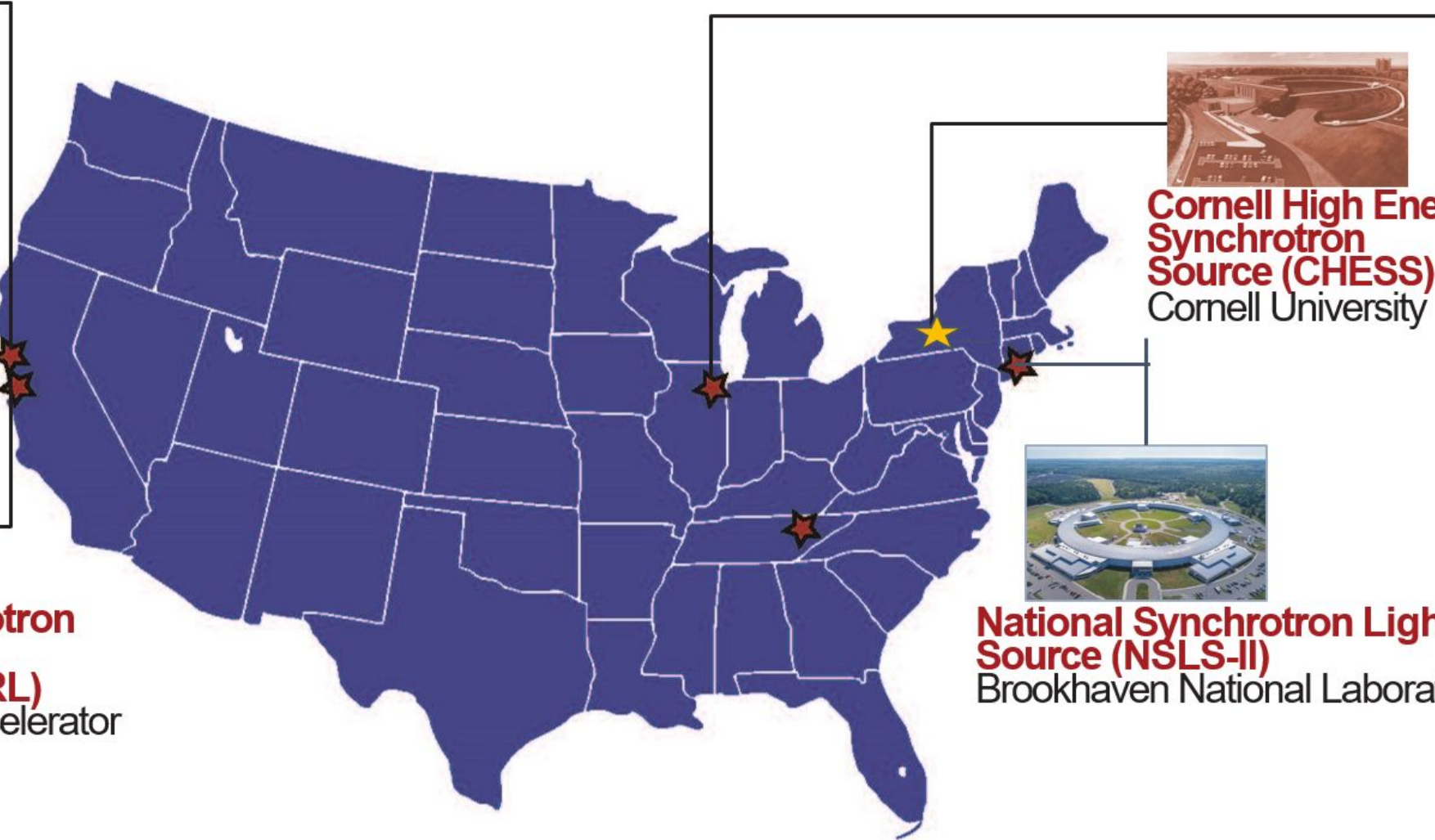
**Stanford Synchrotron Radiation Lightsource (SSRL)**

SLAC National Accelerator  
Laboratory



**National Synchrotron Light Source (NSLS-II)**

Brookhaven National Laboratory



# **SSRL Successes in Structural Molecular Biology**

## **Productivity**

**Protein Data Bank Depositions of Protein Structure Coordinates (April 16, 2023):**

**8028**

## **Nobel Prize Research: Chemistry**

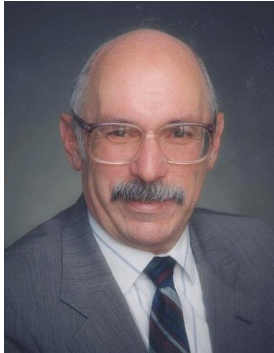
**Roger Kornberg 2006, Brian Kobilka (with Robert Lefkowitz) 2012,  
Frances Arnold 2018**

## **Valuable User Resource**

**2022: 1120 Users, 295 Projects, 204 Publications**

# The NIH, SSRL and the Protein Structure Initiative: 2000-2015

**Marvin Cassman**  
NIGMS Director  
1996-2002



## SSRL and the PSI

U54, NIGMS, 2005-2009,  
Tools for High Throughput Structural  
Biology

U54, NIGMS, 2010-2014, TransportPDB,  
Center for X-ray Structure determination of  
Human transporters



**Charles Edmonds**  
NIGMS Program  
Director

**John Norvell**  
NIGMS Protein  
Structure Initiative  
Director



## PSI-Related Technological Advances “Democratization of Macromolecular X-ray Crystallography”

High throughput structure determination:  
automation, remote data acquisition etc.



**Catherine Lewis**  
Director, CBB  
Division, NIGMS

# NIH Program Staff and SSRL



Dr. Amy Swain  
DOE, BER

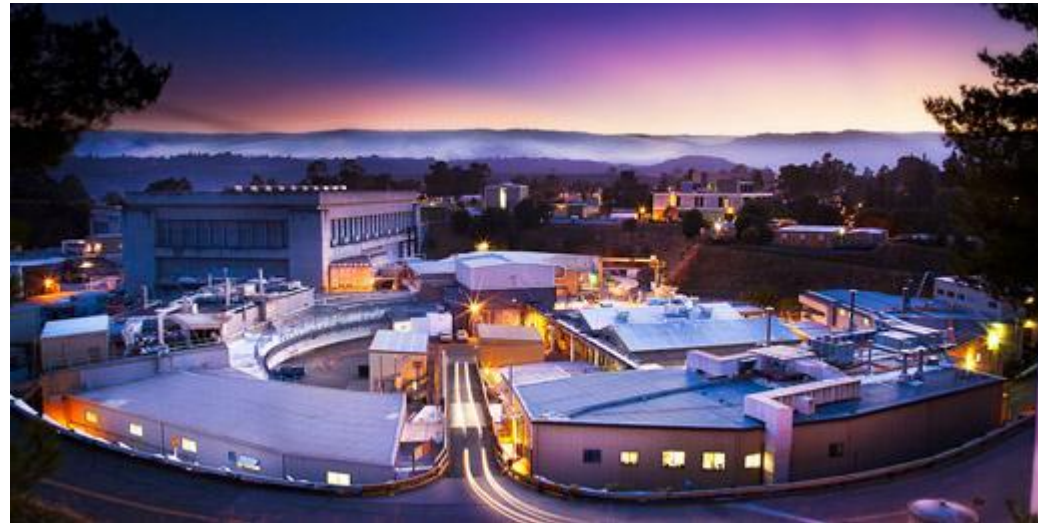


Dr. Ward Smith  
NIGMS Program  
Director



Dr. Mary Ann Wu  
NIGMS Program  
Director

# SSRL: The next 50 years and the NIH



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5 experimental  
stations



2023  
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2073  
?