RCSB PDB
PROTEIN DATA BANK

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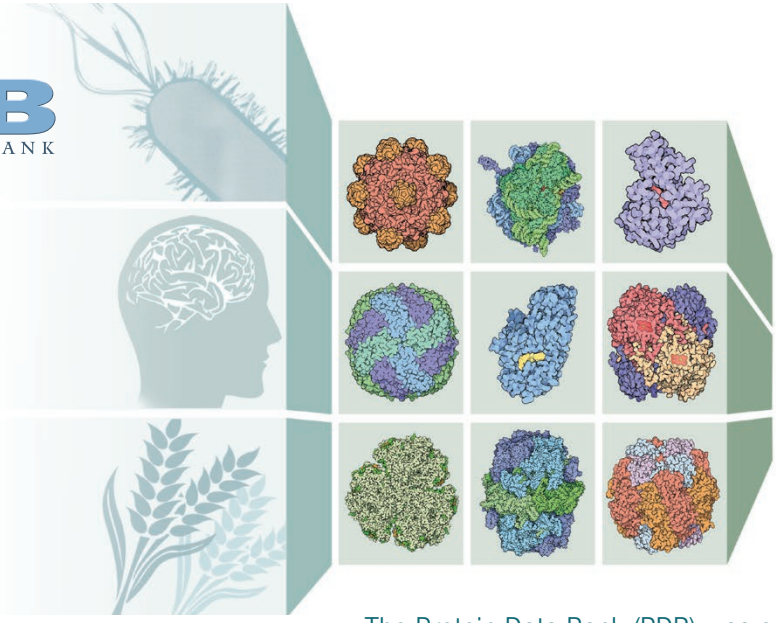
Celebrating PROTEIN DATA BANK Years



PROTEIN DATA BANK AND 50 YEARS OF MOLECULAR STRUCTURES

The Protein Data Bank (PDB) was established in 1971 as the 1st open access digital data resource in all of biology and medicine. Today, it is central to scientific discovery and teaching, and provides validated information and analysis tools to the nation's researchers, policy makers, federal, state, and local health authorities, and elected representatives.

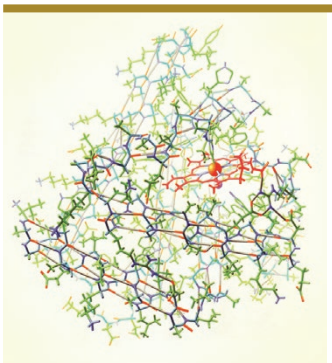
PDB HISTORY HIGHLIGHTS

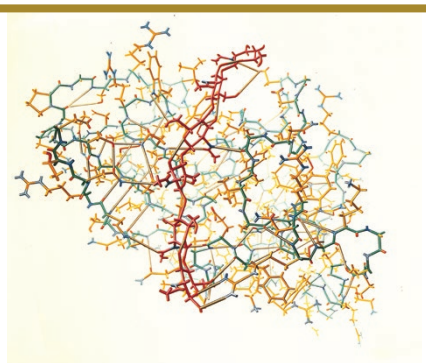
Structural biology as a scientific discipline was born **in 1958** with Sir John Kendrew's ground-breaking atomic level three-dimensional (3D) structure of myoglobin, the protein responsible for storing oxygen in our muscles and making it available whenever we need to move.

By the **early 1970's,** researchers had produced more than a dozen 3D structures of other biologically and medically important proteins. They found themselves sitting on a goldmine of information that was very difficult to share in the pre-internet era. The computer files for these structures were huge, and extremely challenging for individual structural biologists to share with many thousands of interested researchers around the globe.

Creation of the open-access PDB archive **in 1971** solved this problem. Depositors freely contribute their computer files to the PDB, which in turns distributes them to interested users without cost and without limitations on usage.

As PDB enters **2021**, the archive contains and supports online access to >175,000 of biomacromolecular structures determined via macromolecular crystallography, Nuclear Magnetic Resonance spectroscopy, and 3D Electron Microscopy by researchers from around the world.





Myoglobin (left) and Lysozyme (right) belong to the early structures revealed by X-ray crystallography. Illustrations by Irving Geis.

PROTEIN DATA BANK Years

EVENTS AND RESOURCES ARE BEING PLANNED FOR 2021 TO CELEBRATE THIS LANDMARK RESOURCE.

VISIT WWPDB.ORG/PDB50 AND RCSB.ORG/PDB50 FOR COMPLETE INFORMATION

Molecular illustrations from the Molecule of the Month *features available on PDB-101 (pdb101.rcsb.org)*

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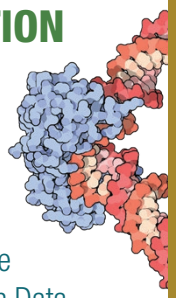
PROTEIN DATA BANK:
CELEBRATING 50 YEARS OF ENABLING BREAKTHROUGHS IN RESEARCH AND EDUCATION



WORLDWIDE PDB PROTEIN DATA BANK

The PDB archive is managed by the Worldwide Protein Data Bank (wwPDB), a consortium of organizations that act as deposition, data processing, and distribution centers in America (RCSB PDB), Europe (PDBe), and Asia (PDBj).

Through **RCSB.org**, RCSB PDB provides access to the PDB data along with tools for search, visualization, and analysis. Structural data on RCSB.org are also enriched through integration of related information from other scientific resources. PDB-101 maintains educational resources for students and non-experts (**pdb101.rcsb.org**).

PEOPLE BEHIND THE PDB

An international collaboration of scientists and educators work behind the scenes, carefully curating data and developing tools to facilitate use of these important data.

PDB ARCHIVE:
>175,000 STRUCTURES OF PROTEINS, DNA, AND RNA

- Grows at the rate of nearly 10% per year
- Used to download > 2 million structure data files per day
- Manages "Big Data" as global Public Good

PDB STRUCTURES:
- Enable research in subject areas from Agriculture to Zoology
- Contributed data to >1 million published research papers
- Used by >400 biological data resources

* As of October 2020

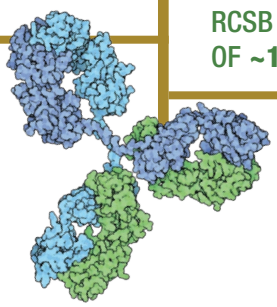
THE COST TO REPLICATE THE CONTENTS OF THE PDB ARCHIVE IS ESTIMATED AT $18 BILLION

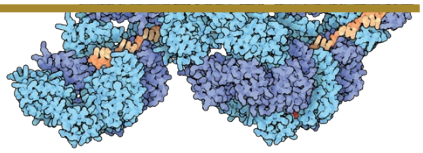
RCSB.ORG AND PDB DATA IMPACT:

Each year, RCSB.org serves millions of researchers, scientists, educators, students, curious public, medical professionals, patients, patient advocates as well as pharmaceutical and biotechnology companies heavily impacting:

- Basic and applied research
- Patent applications
- Discovery of lifesaving drugs
- Innovations that can lead to new product development and company formation
- STEAM education: PDB-101 provides curricula and online tools for teachers and students

IN SUPPORTING RESEARCH AND EDUCATION, RCSB PDB GENERATES RETURN ON INVESTMENT OF ~1,500 TIMES FEDERAL FUNDING





RCSB PDB is managed by

Rutgers

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