

ABOUT THE RCSB PROTEIN DATA BANK (PDB)

The RCSB PDB is an information portal for researchers and students interested in structural biology. At its center is the PDB archive – the sole international repository for 3-dimensional structure data of biological macromolecules. The RCSB PDB integrates a variety of production-level data and software resources, and shares research results and software. The RCSB PDB is dedicated to fostering new scientific advances by providing accurate, consistent, and well-annotated 3-D structure data that is delivered in a timely and efficient way to a wide audience.

The contents of the PDB archive contain the structural coordinates and related information about proteins, nucleic acids, and protein-nucleic acid complexes. These structures hold significant promise for the pharmaceutical and biotechnology industries in the search for new drugs, and in researcher's efforts to understand the mystery of human disease. The understanding of what a structure looks like aids in understanding how it functions.

RCSB PDB Partners

Operated by
two members
of the RCSB



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In citing the PDB please refer to:

H.M. Berman, J. Westbrook, Z. Feng, G. Gilliland, T.N. Bhat, H. Weissig, I.N. Shindyalov, P.E. Bourne (2000): The Protein Data Bank. *Nucleic Acids Research* 28, pp. 235-242.

H.M. Berman, K. Henrick, H. Nakamura (2003): Announcing the worldwide Protein Data Bank. *Nature Structural Biology* 10 (12), p. 980

F.C. Bernstein, T.F. Koetzle, G.J. Williams, E.E. Meyer Jr, M.D. Brice, J.R. Rodgers, O. Kennard, T. Shimanouchi, M. Tasumi (1977): The Protein Data Bank: a computer-based archival file for macromolecular structures. *J. Mol. Biol.* 112, p. 535.

Statement of Support

The RCSB PDB is supported by funds from the National Science Foundation, the National Institute of General Medical Sciences, the Office of Science, Department of Energy, the National Library of Medicine, the National Cancer Institute, the National Center for Research Resources, the National Institute of Biomedical Imaging and Bioengineering, and the National Institute of Neurological Disorders and Stroke.

RCSB **PDB**
PROTEIN DATA BANK

www.pdb.org • info@rcsb.org

Translocating Protein

Mustard
Family Protein

tRNA

Common
Cold Virus

Green
Fluorescent
Protein

Prion

RESEARCH COLLABORATORY FOR STRUCTURAL BIOINFORMATICS

Rutgers, The State University of New Jersey
San Diego Supercomputer Center & Skaggs School of
Pharmacy & Pharmaceutical Sciences,
University of California, San Diego



DATA DEPOSITION

Data from X-ray crystallographic, NMR and cryo-electron microscopic experiments are deposited by scientists from all over the world.

Annotators at the RCSB then work with these data to make sure they are represented in the PDB archive in the best possible way. They run a series of checks, make corrections, and correspond with the depositors in an effort to make the data public as quickly and accurately as possible.

The RCSB also develops and releases software to improve the process of deposition and annotation.

DATA QUERY AND REPORTING

Visitors to the RCSB PDB website can perform simple and complex queries on the structures in the PDB archive and explore more than 800 curated web pages.

Whether searching for individual or multiple structures, users have a variety of options for searching and viewing structures. Each individual entry has a page that provides summary information, static and interactive images of the molecule, and links to other sources.

A variety of reports can be created for a group of structures resulting from any query. Options to refine the query or create tabular reports from the search results are also available. A PDB or mmCIF format file for any structure can be downloaded as plain text or in one of several compressed formats from the PDB web site. Files may also be downloaded from the PDB FTP server.

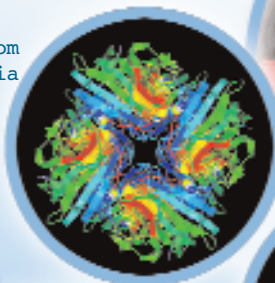
PDB entries can be downloaded from the RCSB PDB website or by ftp in mmCIF, PDB, and PDBML/XML formats.

RCSB PDB FEATURES

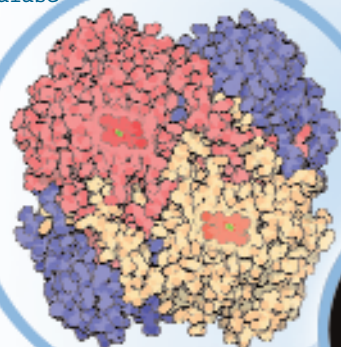
Molecule of the Month

The Molecule of the Month series creates a detailed portrait of an important biological molecule found in the PDB archive. Using distinctive illustrations and generalized descriptions, each installment describes the structure and function of the molecule and relates it to human health and welfare for students of all ages.

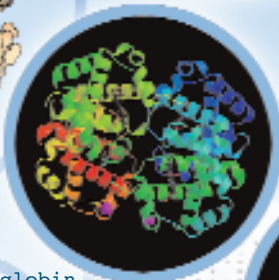
Protein from
Soil Bacteria



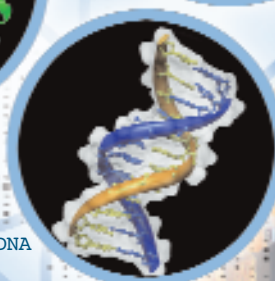
Catalase



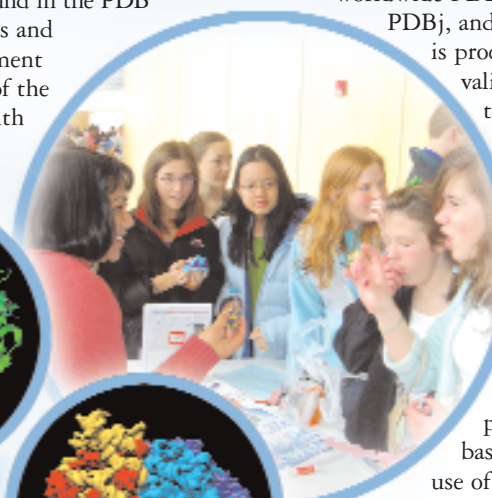
Hemoglobin



DNA



Ribosome



wwPDB

The PDB archive is maintained by the members of the worldwide PDB (wwPDB) – the RCSB PDB, EBI-MSD, PDBj, and the BMRB. Data deposited to the archive is processed using agreed-upon standards for full validation of the data. These data are forwarded to the RCSB PDB for release into the archive. wwPDB members also maintain websites that provide different views to the data.

wwPDB members collaborate on projects to ensure the uniformity of the PDB archive. The PDB Exchange Dictionary consolidates content from a variety of dictionaries and includes extensions to describe NMR, cryo-EM, and protein production data. PDB data processing, exchange, annotation, and database management operations all make heavy use of the content of this dictionary.

Outreach and Education

The RCSB PDB has a diverse user community of depositors, data users, students, teachers, and the general public. Through exhibits, publications, and an active help desk, we gain feedback for further development of the RCSB PDB while providing materials that promote a broader understanding and scientific literacy of structural biology.

The quarterly newsletter offers news, tutorials, interviews with the PDB community, and descriptions of how the resource is used in the classroom.

A number of tools are available online for finding and visualizing proteins, making connections with the related information found in journals, and performing keyword queries that can locate specific proteins.

Structural Genomics

Worldwide structural genomics efforts are focused on quickly determining a large number of novel protein structures identified by genomics. As the PDB is the repository for all of these structures, the RCSB PDB is actively involved in developing informatics, tools, and resources for these data.

Online databases provide a centralized resource for collecting and providing information about the progression of a target from protein production through structure solution for the structural genomics efforts.