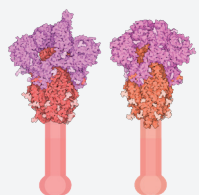


Supporting the NIH *Turn Discovery into Health*¹

PDB data and RCSB PDB Services expand fundamental scientific knowledge and improve health

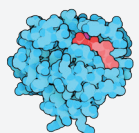
[rcsb.org](https://www.rcsb.org)

Tackling Our Biggest Health Challenges



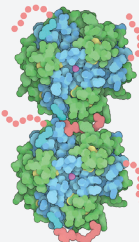
COVID-19

Free access to ~3000 related PDB structures is key for the discovery and development of safe and effective new drugs and vaccines²



Cancer

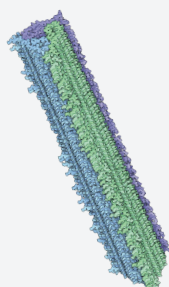
Mutation of the growth-controlling ras protein leads to many human cancers



Diabetes

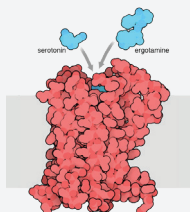
Engineered insulins have been developed to improve treatment of diabetes

Understanding the Healthy Mind



Alzheimer's Disease

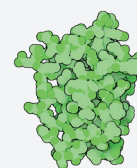
Alzheimer's disease and prion diseases both involve unnatural aggregation of proteins into amyloid fibrils



Mental Health

Serotonin receptors control mood, emotion, and other behaviors, and are targets for important neuropsychiatric drugs

Research for Healthy Living



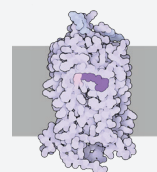
Obesity/ Nutrition

Problems with the appetite-controlling hormone leptin can lead to obesity



Oral Health

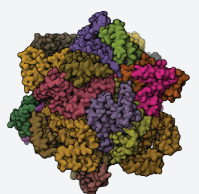
Bacteria use the enzyme glucanucrase to build sticky sugar chains that help them adhere to our teeth



Vision

All animals use the eye protein rhodopsin to detect light and see the outside world

Access to Transformative Technologies

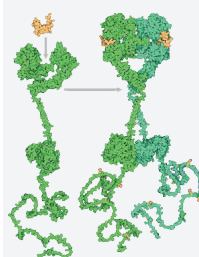


Electron Microscopy

Groundbreaking structures are being captured at extremely high resolution at NIH centers and around the world

cryoem.slac.stanford.edu

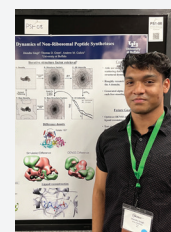
The Promise of Precision Medicine



Precision Oncology

Our evolving understanding of cancer has led to the discovery of new approaches to cancer therapy that directly target cancer cells

Securing the Future of Biomedicine



Tomorrow's Scientists

RCSB PDB capacity building and training resources support the next generation of NIH researchers

Value for NIH

- PDB safeguards 3D biostructure data generated using NIH research funding, NIH-funded synchrotron beamlines, and Cryo-EM facilities supported by the NIH Common Fund >\$5.4 Billion worth of NIH data over the lifetime of the PDB
- PDB structures have contributed data to >1 million published research papers
- 2nd most heavily used online data resource after ClinicalTrials.gov for the NIH-funded researchers³
- Connects NIH-funded research and scientists with worldwide structural biology data from public and private sector research
- Links all relevant PDB structures to NIH Common Fund Resources
- Enables structure-guided drug discovery
- Ensures rigor and reproducibility across biomedical research

References

1. www.nih.gov/about-nih/what-we-do/nih-turning-discovery-into-health
2. A.S. Fauci (2022) It Ain't Over Till It's Over ... but It's Never Over - Emerging and Reemerging Infectious Diseases *N Engl J Med* **387**: 2009-2011 doi: 10.1056/NEJMp2213814
F.S. Collins et al. (2022) The NIH-led research response to COVID-19 *Science* **379**: 441-444 doi: 10.1126/science.adf5167
3. K.B. Read et al. (2015) Sizing the Problem of Improving Discovery and Access to NIH-Funded Data: A Preliminary Study. *PLoS One* **10**: e0132735 doi: 10.1371/journal.pone.0132735