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# A community-driven portal to accurate, high-quality bioscientific 3D models

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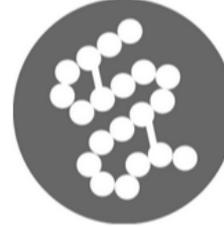
MEDICAL &  
ANATOMICAL



CUSTOM  
LABWARE



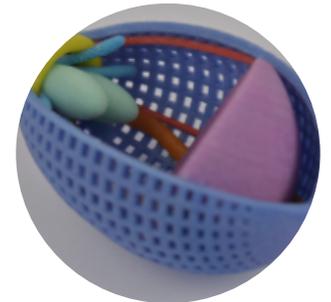
SMALL  
MOLECULES,  
CHEMICALS



PROTEINS,  
MACROMOLECULES,  
& VIRUSES



BACTERIA,  
ORGANELLES,  
CELLS, & MORE



# A community-driven portal to accurate, high-quality bioscientific 3D models

Click an image below to share your 3D-printable model



MEDICAL &  
ANATOMICAL



CUSTOM  
LABWARE



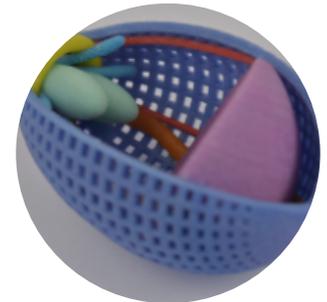
SMALL  
MOLECULES,  
CHEMICALS



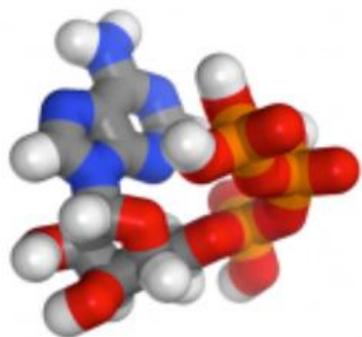
PROTEINS,  
MACROMOLECULES,  
& VIRUSES



BACTERIA,  
ORGANELLES,  
CELLS, & MORE



# Small Molecules



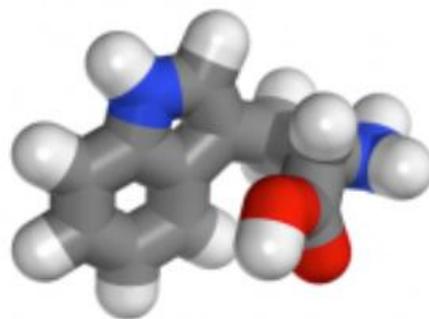
**3DPX-001186**



Adenosine  
Triphosphate



**Meghan Coakley**

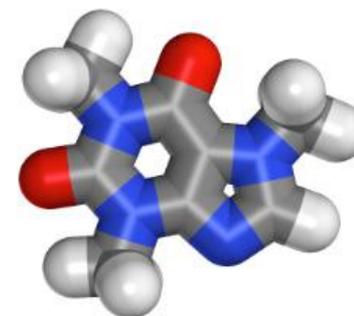


**3DPX-001264**



Tryptophan

**Because\_Science**



**3DPX-001005**

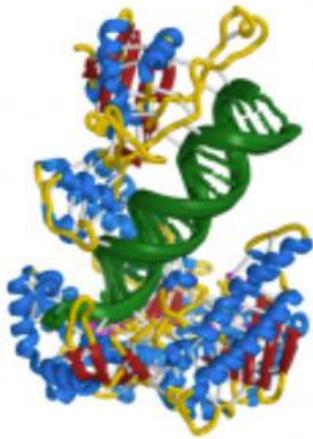


Caffeine



**Darrell Hurt**

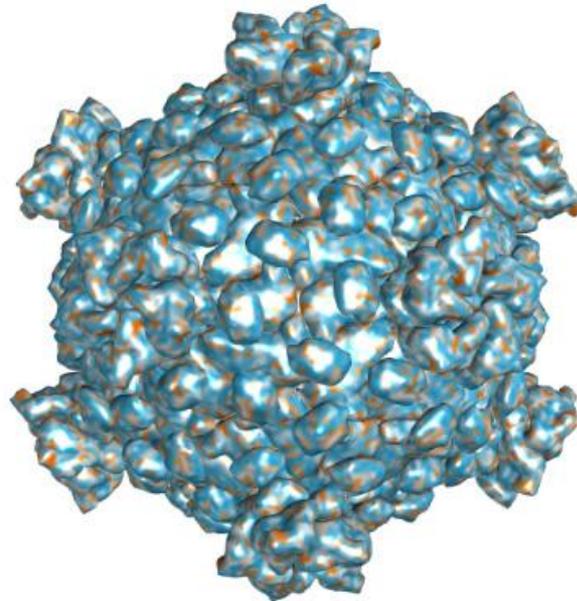
# Proteins, Macromolecules, and Viruses



**3DPX-001192**

DNA polymerase  
(E.C.2.7.7.7)/thioredoxin...

dnand

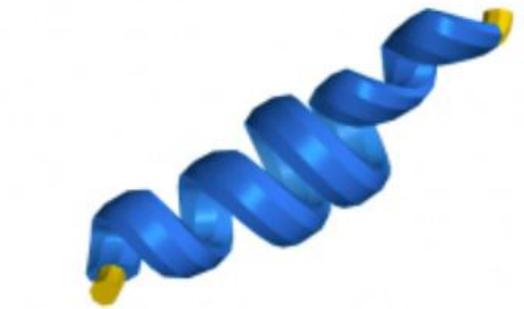


**3DPX-001279**

REOVIRUS CORE



Nick Weber



**3DPX-001191**

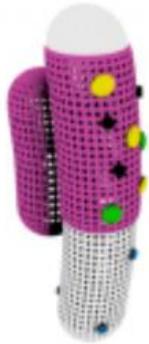
Helix variations -  
Secondary Structure



phil.cruz



# Bacteria, Cell, Tissue, Organism



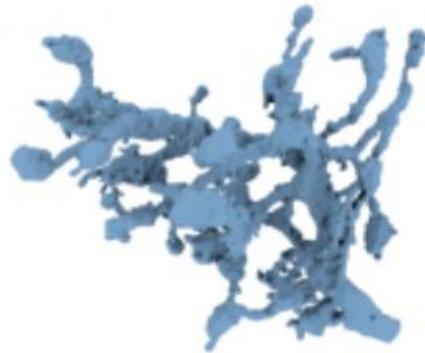
**3DPX-000004**



Cartoon of  
Mycobacterium tuberculosis



**Darrell Hurt**

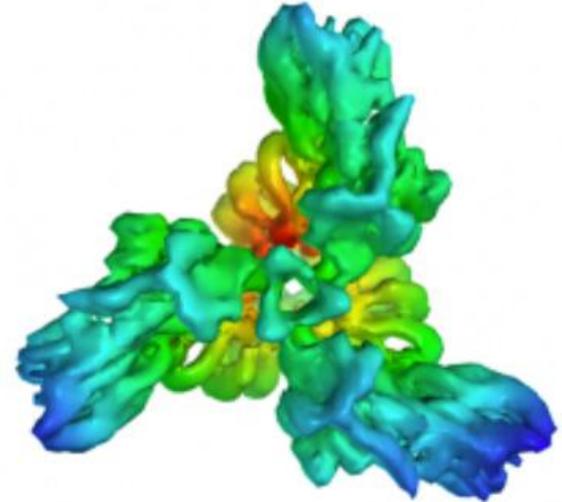


**3DPX-000911**



Bipolar Cell 60001  
from EyeWire

**James Tyrwhitt-Drake**



**3DPX-001222**



Molecular  
Architecture of the  
Unliganded...



**Meghan Coakley**

# Anatomical Models



**3DPX-001296**

Hypoplastic Left Heart  
Syndrome s/p Font...

**Kevin Gralewski**

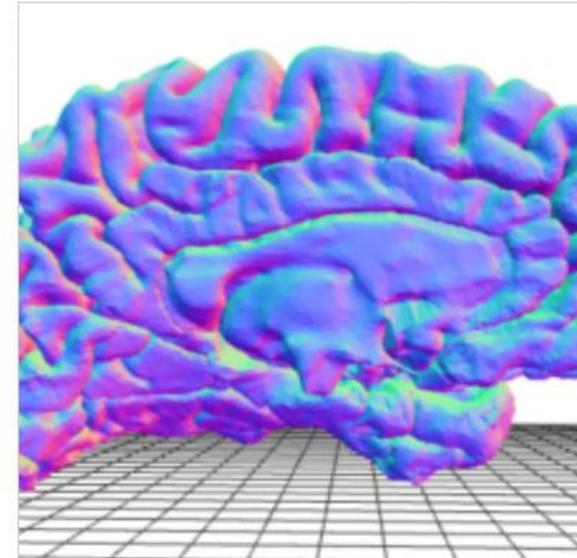


**3DPX-001277**

Partial Brain Vascular  
Network



**cleggett**



**3DPX-001193**

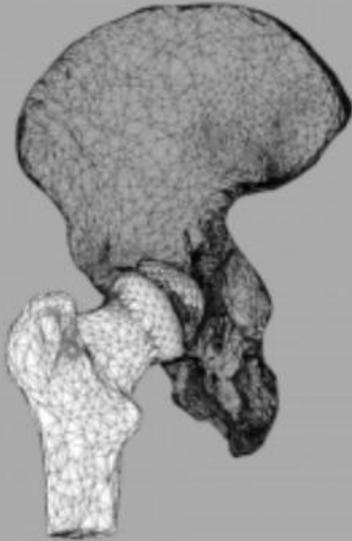
Peter Bryan's brain  
reconstruction...



**Peter Bryan**



# Anatomical Models



**3DPX-001334**



Femoral Head &  
Acetabular Fossa Repa...



**cleggett**



**3DPX-000803**



Lumbar Spine



**bgobbato**



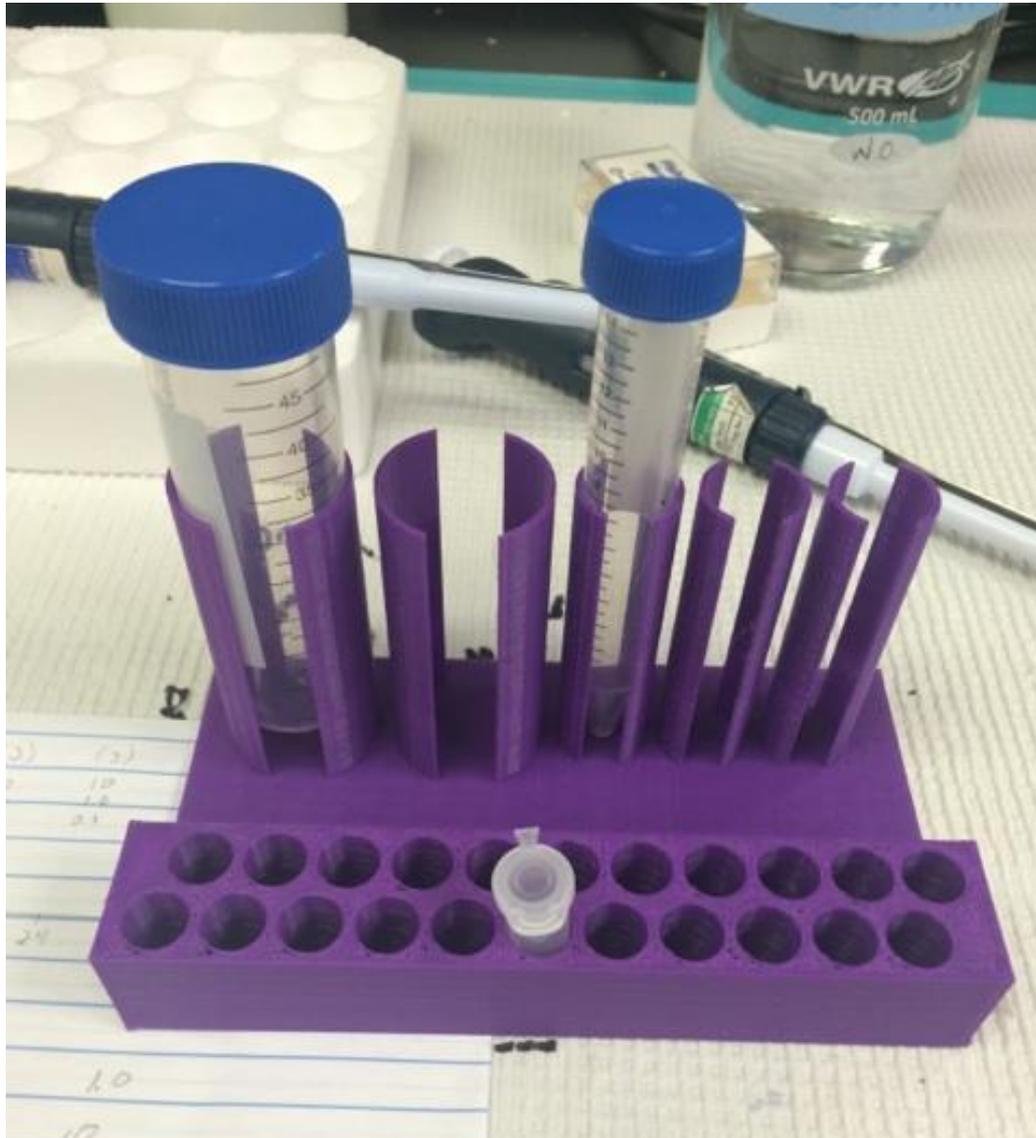
**3DPX-001014**



Short Gauntlet  
(Karuna's Cyborg Bea...

**Frankie Flood**

# Labware



# Where do the models come from?

- Doctors and patients uploading anonymized medical data
- Scientists uploading their own data
- 3D modellers who create and upload objects
- Integration with large repositories of 3D scientific data



**EMDataBank**  
Unified Data Resource for 3DEM

**PubChem**

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## A Structural View of Biology

This resource is powered by the Protein Data Bank archive-information about the 3D shapes of proteins, nucleic acids, and complex assemblies that helps students and researchers understand all aspects of biomedicine and agriculture, from protein synthesis to health and disease.

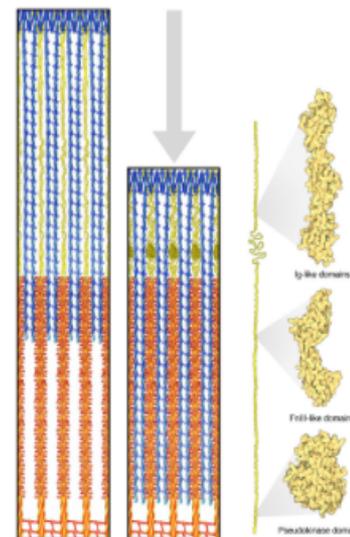
As a member of the wwPDB, the RCSB PDB curates and annotates PDB data.

The RCSB PDB builds upon the data by creating tools and resources for research and education in molecular biology, structural biology, computational biology, and beyond.

### Structure and Health Focus: HIV



## May Molecule of the Month



Titin

✓ **2N03****Solution NMR Structure plectin repeat domain 6 (4403-4606) of Plectin from Homo sapiens, Northeast Consortium (NESG) Target HR6354E****Authors:** Pulavarti, S. , Eletsky, A. , Huang, Y. , Janjua, H. , Xiao, R. , Acton, T. , Everett, J. , Montelione, G. , Szyperski, T.   
Consortium **Release:** 2015-05-13**Experiment:** SOLUTION NMR**Residue Count** 215**Compound:** 1 Polymer [ [Display Full Polymer Details](#) | [Display for All Results](#) ]**Citation:** PubMed ID is not available.✓ **2N18****Dominant form of the low-affinity complex of yeast cytochrome c and cytochrome c peroxidase****Authors:** Volkov, A. , Van de Water, K. **Release:** 2015-05-13**Experiment:** SOLUTION NMR**Residue Count** 510**Compound:** 3 Polymers [ [Display Full Polymer Details](#) | [Display for All Results](#) ]2 Ligands [ [Display Full Ligand Details](#) | [Display for All Results](#) ]**Citation:** PubMed ID is not available.**Molecule of the Month:** **Myoglobin, Bacteriophage phiX174**✓ **3J9T****Yeast V-ATPase state 1****Authors:** Zhao, J. , Benlekbir, S. , Rubinstein, J.L. **Release:** 2015-05-13**Experiment:** ELECTRON MICROSCOPY with resolution of 6.90 Å**Residue Count** 8469**Compound:** 11 Polymers [ [Display Full Polymer Details](#) | [Display for All Results](#) ]**Citation:** PubMed ID is not available.✓ **3J9U****Yeast V-ATPase state 2****Authors:** Zhao, J. , Benlekbir, S. , Rubinstein, J.L. **Release:** 2015-05-13

- Summary
- 3D View
- Sequence
- Annotations
- Seq. Similarity
- 3D Similarity
- Literature
- Biol. & Chem.
- Methods
- Links

# Crystal structure of insulin degrading enzyme in complex with macrophage inflammatory protein 1 beta

4RAL

- Display Files
- Download Files
- Download Citation

DOI:10.2210/pdb4ral/pdb

Entry 4RAL supersedes 4QLD

### Primary Citation

Structures of human CCL18, CCL3, and CCL4 reveal molecular determinants for quaternary structures and sensitivity to insulin-degrading enzyme.

Liang, W.G., Ren, M., Zhao, F., Tang, W.J.

Journal: (2015) J.Mol.Biol. 427: 1345-1358

PubMed: 25636406

PubMedCentral: PMC4355285

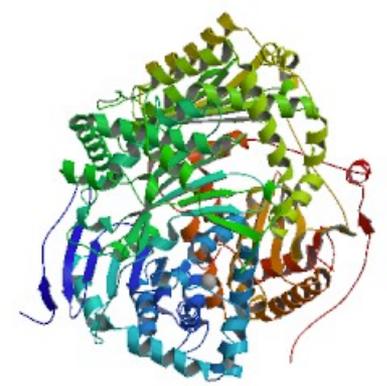
DOI: 10.1016/j.jmb.2015.01.012

Search Related Articles in PubMed

### PubMed Abstract:

CC chemokine ligands (CCLs) are 8- to 14-kDa signaling proteins involved in diverse immune functions. While CCLs share similar tertiary structures, oligomerization produces highly diverse quaternary structures that protect chemokines from proteolytic degradation and modulate their functions. CCL18 is closely... [ Read More & Search PubMed Abstracts ]

### Biological Assembly 1



3D View: JSmol or PV More Images

Stoichiometry: **Monomer**  
Biological assembly 1 assigned by authors and generated by PISA (software)

- Downloadable viewers:
- Simple Viewer
  - Protein Workshop
  - Kiosk Viewer

### Molecular Description

<b>Classification:</b>	Hydrolase/cytokine		
<b>Structure Weight:</b>	244904.36		
<b>Molecule:</b>	Insulin-degrading enzyme		
<b>Polymer:</b>	1	<b>Type:</b>	protein
<b>Length:</b>			990

### MyPDB Personal Annotations

# Create

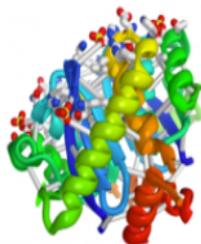
Converting a digital model into a printable format to generate a solid object requires specialized skills. Creating a model can take hours, even for an experienced user. We have created novel, web-based tools that allow you to generate high-quality and scientifically-relevant 3D-printable models in only minutes, simply by uploading a file or typing in a database accession code.

Click [here](#) to learn more about our web-based 3D modeling tools.

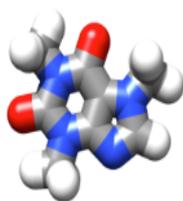
Click an image below to submit a data file.



MEDICAL IMAGING  
Help



MOLECULAR DATA  
Help



SMALL MOLECULES  
Help

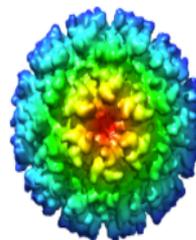
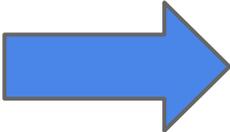


IMAGE STACKS  
Help

Quick Submit



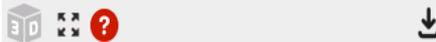
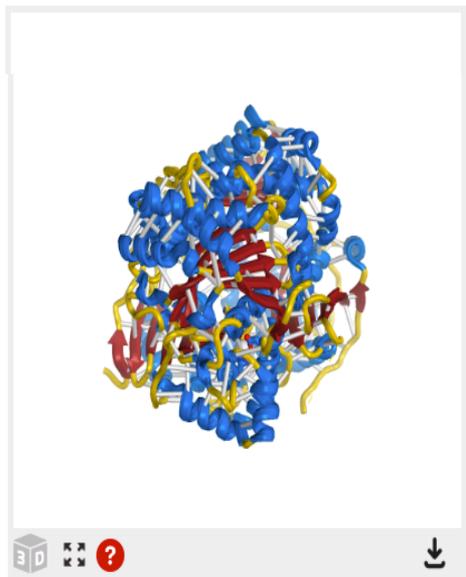
Select a database from the drop-down list ([EMDB](#), [PDB](#), or [PubChem](#)), and enter the database accession code to generate a 3D-printable model.

# Insulin-degrading enzyme (E.C.3.4.24.56), C-C motif chemokine 4

View Edit Manage display Track

Autogenerated by  for **James Tyrwhitt-Drake**  
Fri, 2015-05-15 10:16

e-NABLE + EyeWire + JUMP +     
Remix It I Printed This



**GENERAL INFORMATION**

 This Model was autogenerated from the "Quick Submit" tool.

**Model ID** 3DPX-001262

**Category**  
Proteins, Macromolecules and Viruses

**Protein Data Bank ID** [4RAL](#)

**Keyword(s)**  
[IDE](#)  
[MIP1 alpha](#)  
[Metal-binding](#)  
[metalloprotease](#)  
[chemotaxis](#)  
[inflammatory response](#)

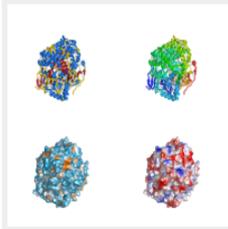
**MODEL DETAILS**

**ATTRIBUTION**

[E complex](#)

[um color](#)

[ne](#)



- STL/VRML FILES**
- [PDB-4RAL-ribbon.stl](#)
  - [PDB-4RAL-surf.stl](#)
  - [PDB-4RAL-ribbon-secondary.wrl](#)
  - [PDB-4RAL-ribbon-rainbow.wrl](#)
  - [PDB-4RAL-ribbon-bychain.wrl](#)
  - [PDB-4RAL-surf-hydrophathy.wrl](#)
  - [PDB-4RAL-surf-coulombic.wrl](#)
  - [PDB-4RAL-surf-bychain.wrl](#)
  - [PDB-4RAL.zip](#)

-  **X3D FILES**
- [PDB-4RAL-ribbon-secondary.x3d](#)
  - [PDB-4RAL-ribbon-rainbow.x3d](#)
  - [PDB-4RAL-ribbon-bychain.x3d](#)
  - [PDB-4RAL-ribbon.x3d](#)
  - [PDB-4RAL-surf-hydrophathy.x3d](#)
  - [PDB-4RAL-surf-coulombic.x3d](#)
  - [PDB-4RAL-surf-bychain.x3d](#)
  - [PDB-4RAL-surf.x3d](#)

RATING ☆☆☆☆  
No votes yet

PUBLIC DOMAIN



Copy or Save the code to share others to find model



**EM Resources**

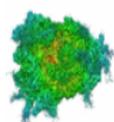
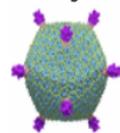
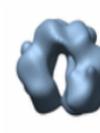
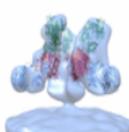
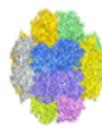
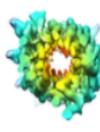
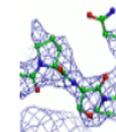
- Home
- Statistics
- Validation
- EMDataBank
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- Test data

**EMDB**

- Latest maps
- Latest headers
- Latest updates
- Search
- Browse
- FTP archive
- Deposit EM map/model
- EMDB data model

**The Electron Microscopy Data Bank (EMDB) at PDBe****Quick access**

Click on one of these categories:

**Ribosome****Virus****Phage****GroEL****Microtubule****Polymerase****Helicase****Human****HIV****Entries with fitted models****Single particle****Tomography****Helical reconstruction****<5Å resolution**or enter 4-digit EMDB entry number: [Entry summary](#)[Visual analysis of map](#)[Volume viewer](#)**Introduction**

The Electron Microscopy Data Bank (EMDB) is a public repository for electron microscopy density maps of macromolecular complexes and subcellular structures. It covers a variety of techniques, including single-particle analysis, electron tomography, and electron (2D) crystallography.

The EMDB was founded at EBI in 2002, under the leadership of Kim Henrick. Since 2007 it has been operated jointly by the [PDBe](#), and the [Research Collaboratory for Structural Bioinformatics \(RCSB PDB\)](#) as a part of [EMDataBank](#) which is funded by a joint NIH grant to PDBe, the RCSB and the [National Center for Macromolecular Imaging \(NCMI\)](#).

**EMDataBank**

A wealth of additional resources can be found at [EMDataBank](#) including:

[FAQ](#)

[Dictionaries](#)

[Conventions and formats](#)

# Electron cryo-microscopy of T7 bacteriophage tail after DNA ejection

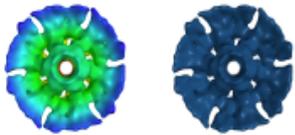
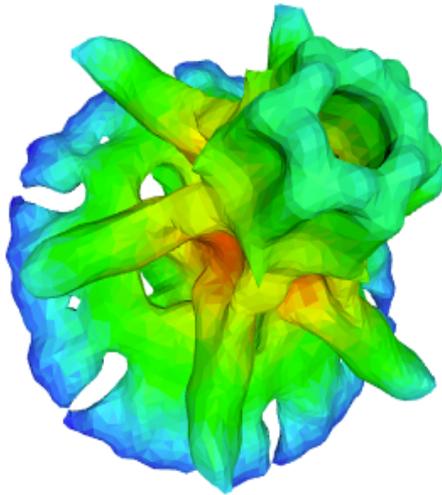
Autogenerated by  for [James Tyrwhitt-Drake](#)

Tue, 2015-05-05 19:03



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LICENSING  
License type

GENERAL INFORMATION



This Model was autogenerated from the "[Quick Submit](#)" tool.

**Model ID** 3DPX-001333

**Category**

Bacteria, Cell, Tissue, Organism

**Electron Microscopy Data Bank ID** [2717](#)

**Keyword(s)**

[bacteriophage](#)

[virus infection](#)

[DNA ejection](#)

[tail](#)

**Model Color** Monochrome

Full spectrum color

MODEL DETAILS

ATTRIBUTION

**Display Settings:**  Summary, 20 per page, Sorted by Default order

**Send to:**

**Filters:** [Manage Filters](#)

**Results: 1 to 20 of 2126161**

<< First < Prev Page  of 106309 Next > Last >>

- 1.

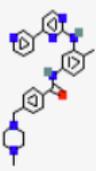


[Benzamide; Benzoic acid amide; Benzoylamide ...](#)

MW: 121.136580 g/mol MF: C<sub>7</sub>H<sub>7</sub>NO  
 IUPAC name: **benzamide**  
 Create Date: 2005-03-25  
 CID: 2331

[Summary](#) [Similar Compounds](#) [Same Parent, Connectivity](#) [Mixture/Component Compounds](#) [PubMed \(MeSH Keyword\)](#) [Active](#)

[in 8 of 1013 BioAssays](#)
- 2.

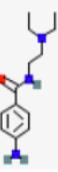


[Imatinib; 152459-95-5; sti-571 ...](#)

MW: 493.602740 g/mol MF: C<sub>29</sub>H<sub>31</sub>N<sub>7</sub>O  
 IUPAC name: 4-[[4-methylpiperazin-1-yl)methyl]-N-[4-methyl-3-[(4-pyridin...  
 Create Date: 2005-03-25  
 CID: 5291

[Summary](#) [Similar Compounds](#) [Same Parent, Connectivity](#) [Mixture/Component Compounds](#) [PubMed \(MeSH Keyword\)](#) [Active](#)

[in 459 of 2861 BioAssays](#)
- 3.

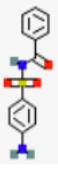


[PROCAINAMIDE; Biocoryl; Novocainamide ...](#)

MW: 235.325340 g/mol MF: C<sub>13</sub>H<sub>21</sub>N<sub>3</sub>O  
 IUPAC name: 4-amino-N-[2-(diethylamino)ethyl]benzamide  
 Create Date: 2005-03-25  
 CID: 4913

[Summary](#) [Similar Compounds](#) [Same Parent, Connectivity](#) [Mixture/Component Compounds](#) [PubMed \(MeSH Keyword\)](#) [Active](#)

[in 13 of 775 BioAssays](#)
- 4.



[sulfabenzamide; Sulfabenzid; Sulfabenzide ...](#)

MW: 276.310980 g/mol MF: C<sub>13</sub>H<sub>12</sub>N<sub>2</sub>O<sub>3</sub>S  
 IUPAC name: N-(4-aminophenyl)sulfonylbenzamide  
 Create Date: 2005-03-25  
 CID: 5319

[Summary](#) [Similar Compounds](#) [Same Parent, Connectivity](#) [Mixture/Component Compounds](#) [PubMed \(MeSH Keyword\)](#) [Active](#)

[in 3 of 1104 BioAssays](#)
- 5.



[3-\(Trifluoromethyl\)benzamide; 1801-10-1; 3-Trifluoromethylbenzamide ...](#)

MW: 189.134550 g/mol MF: C<sub>8</sub>H<sub>6</sub>F<sub>3</sub>NO  
 IUPAC name: 3-(trifluoromethyl)benzamide

**Actions on your results**

- 

**BioActivity Analysis**  
Analyze the BioActivities of the compounds
- 

**Structure Clustering**  
Cluster structures based on structural similarity
- 

**Structure Download**  
Download the structures in various formats
- 

**Pathways**  
Analyze pathways containing the compounds

**Refine your results** • What's this?

- Chemical Properties**  
Rule of 5 (1,553,766)
- BioActivity Experiments**  
 BioAssays, Probes (10)   
 BioAssays, Active (38,647)   
 BioAssays, Tested (79,692)   
 Protein 3D Structures (567)  
 Structure Of Melk In Complex With Inhibitors (3)
- BioMedical Annotation**  
 Pharmacological Actions (192)  
 Dopamine Antagonists (18)  
 BioSystems (31)
- Depositor Category**  
 Biological Properties (907,771)  
 Chemical Vendors (1,910,909)  
 Journal Publishers (91,898)  
 NIH Molecular Libraries (15,684)

**Find related data**

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for [tyrwhittdrakejm](#)

Wed, 2015-05-13 12:30

e-NABLE +

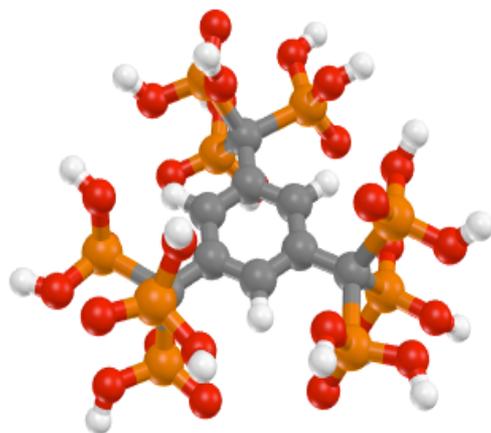
EyeWire +

JUMP +



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## GENERAL INFORMATION



This Model was autogenerated from the "[Quick Submit](#)" tool.

**Model ID** 3DPX-001251

**Category**

Small Molecules

**Keyword(s)**

[SCHEMBL8824566](#)

**Model Color** Monochrome

Multicolor (2-3 shades)

Full spectrum color

**PubChem CID** [54139756](#)

**Molecular Weight** 840.010698 g/mol

**Molecular Formula** C<sub>9</sub>H<sub>21</sub>O<sub>27</sub>P<sub>9</sub>

**IUPAC**

[[3,5-bis(tri-phosphonomethyl)phenyl]-diphosphonomethyl]phosphonic acid

# Curated Collections



Prosthetics

Curated by e-NABLE



Neuroscience

Curated by EyeWire



Heart Library

Sponsored by Jump Simulation



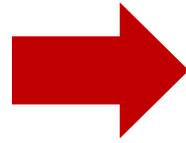
Molecule of the Month

by the RCSB Protein Data Bank



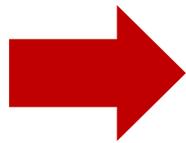
Prosthetics

Curated by e-NABLE



Heart Library

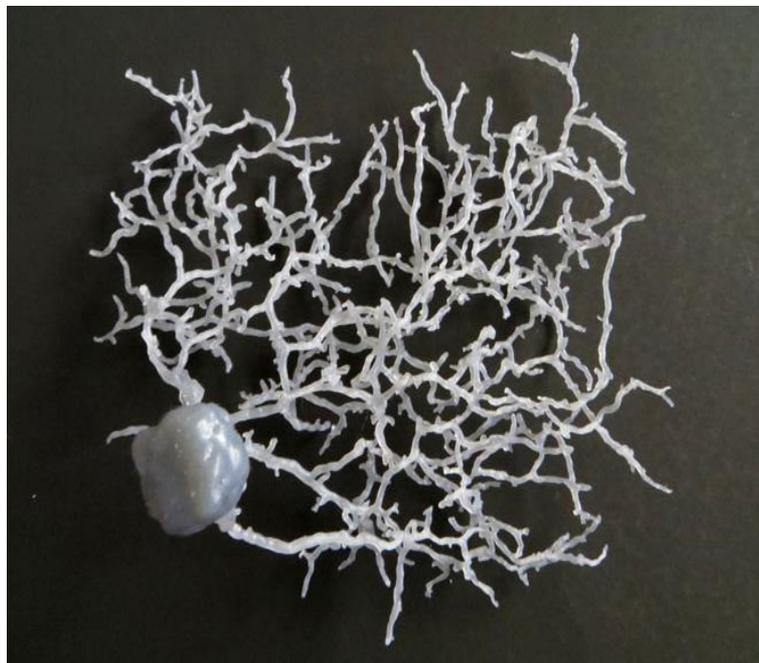
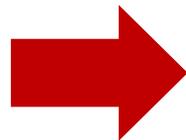
Sponsored by Jump Simulation





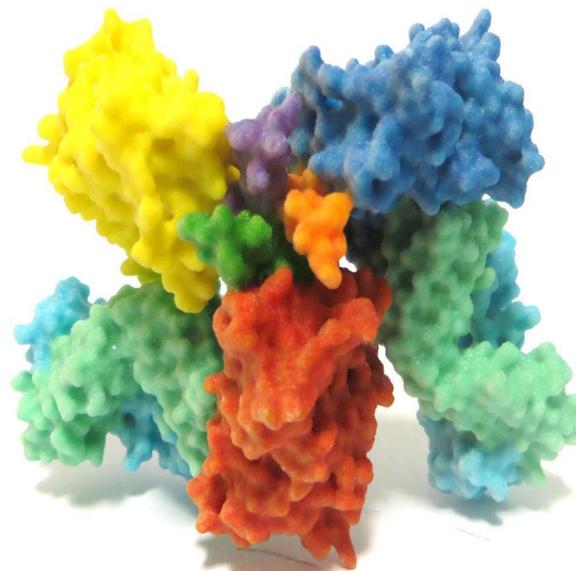
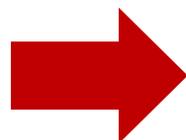
Neuroscience

Curated by EyeWire



Molecule of the Month

by the RCSB Protein Data Bank



# Hacking science; Customized labware

Submitted by:



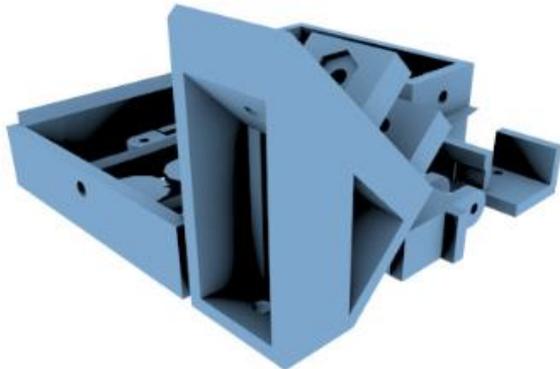
[backyardbrains](#)



Fri, 2014-12-19 01:25

Remix It

I Printed This



RATING ✖☆☆☆☆  
*No votes yet*

LICENSING  
License type

GENERAL INFORMATION

## The BYB Manipulator

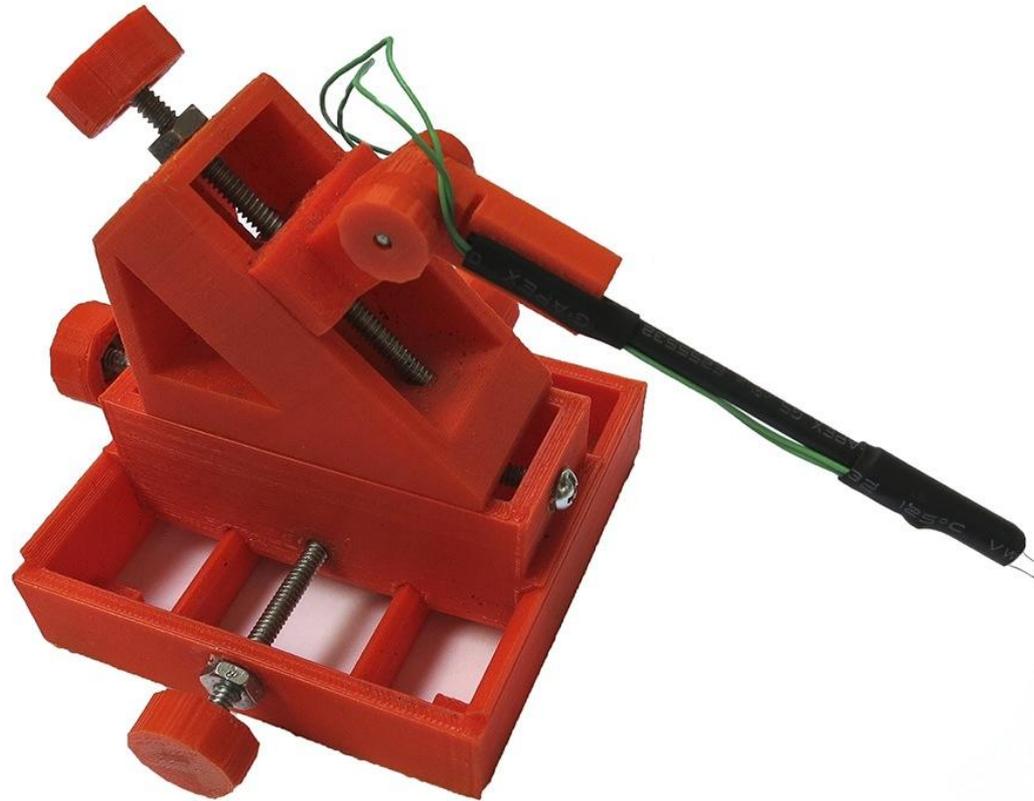
Our 3D printed Manipulator allows you to precisely place your electrodes or probes on tiny things like cockroach leg hairs, a worm nerve fiber, or a fly muscle.



## Specifications

- Offers 4 degrees of freedom for electrode placement
- Occupies a total volume (without electrode attached) of 10.5 cm (4.1 inch) long by 7.9 cm (3.1 inch) wide by 9.5 cm (3.8 inch) high
- Each full turn of a knob moves an axis 0.8 mm (0.03 inch)
- Range of Motion of x-axis = 37 mm (~1.4 inch)

# Hacking science; Customized labware



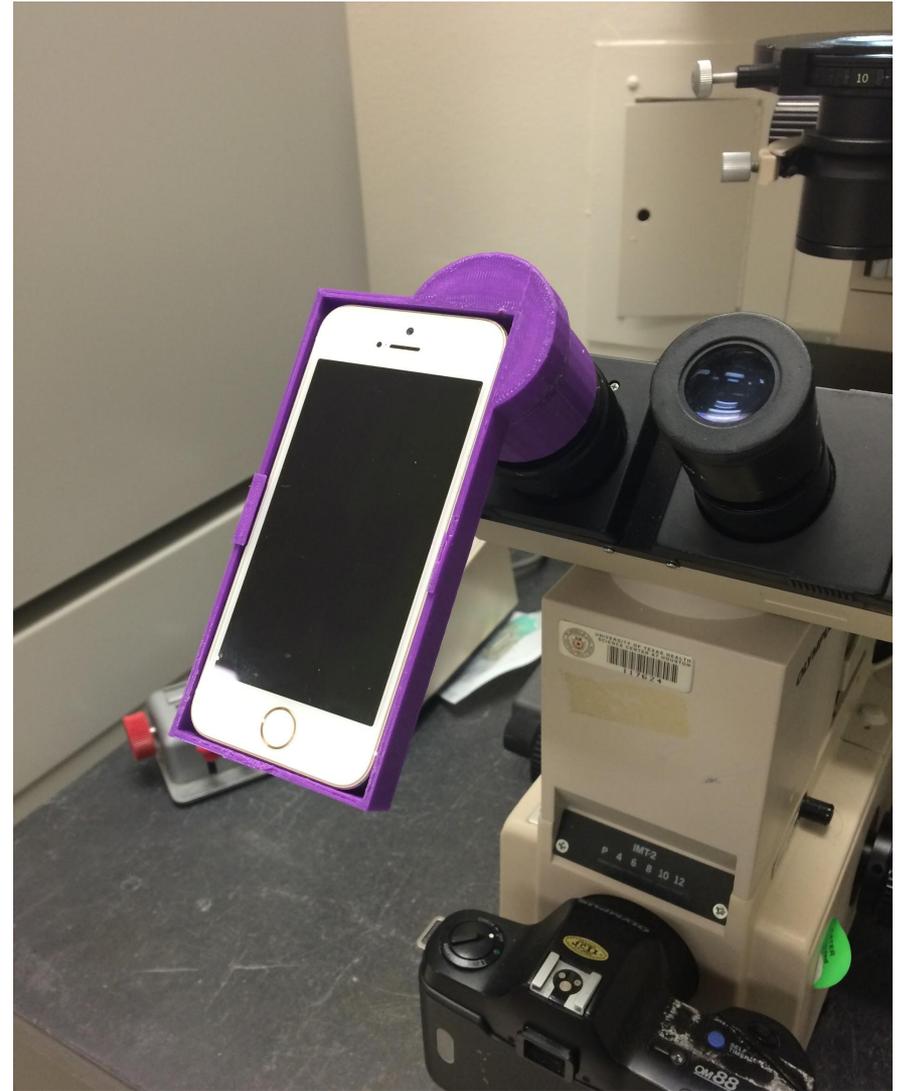
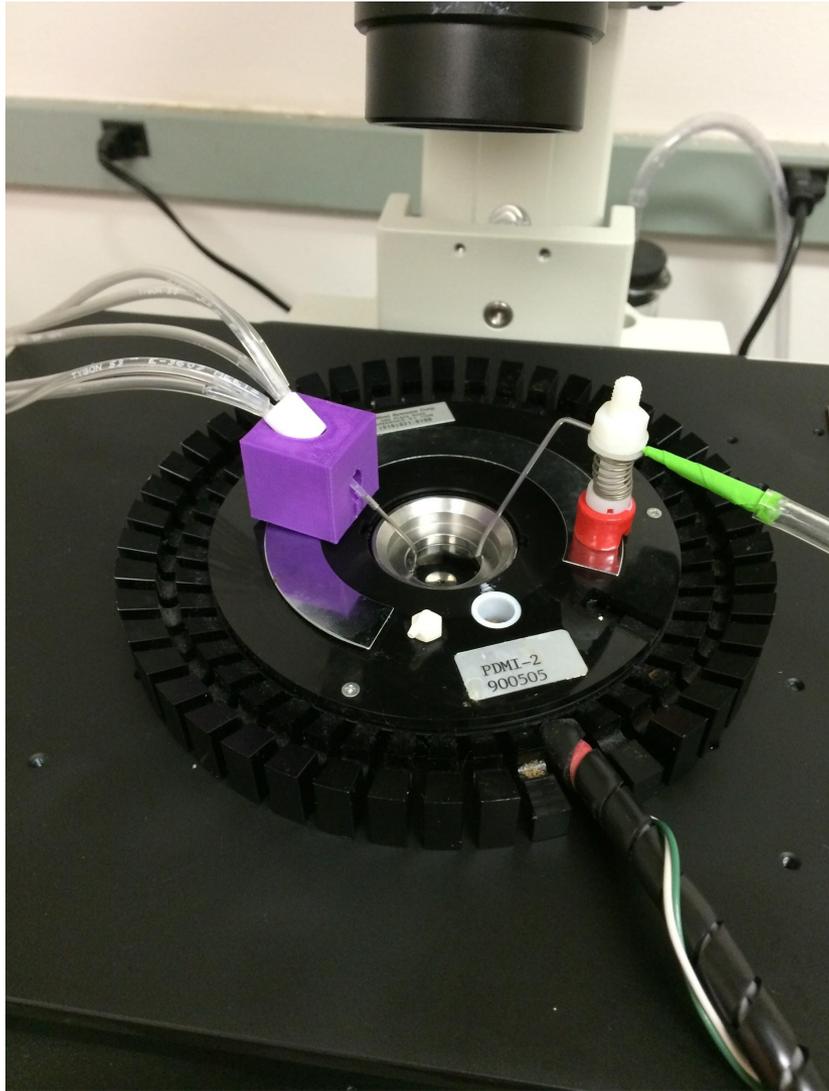
Backyard Brains micromanipulator

# Hacking science; Customized labware

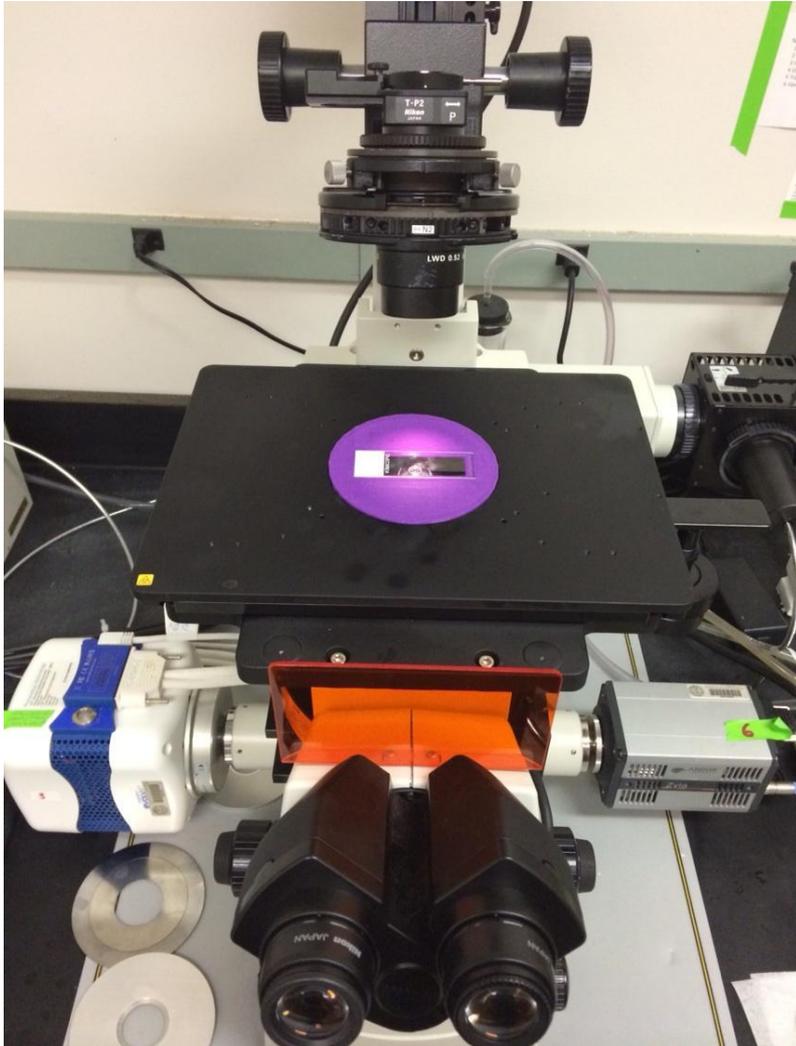


Coverslip spinner holder

# Hacking science; Customized labware



# Hacking science; Customized labware



# Hacking science; Customized labware

## Overview

Vanilla version  
"expunger = 0"



Full version



Cross-section  
"cross-section = 1"



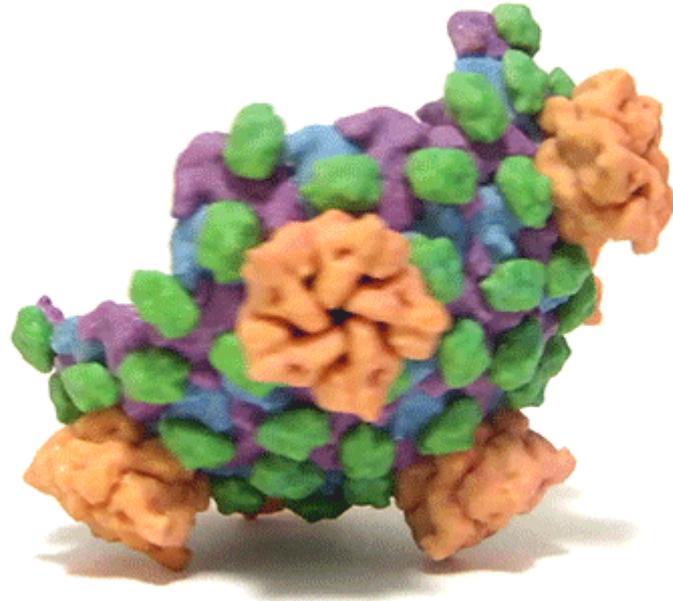
Printed on Felix printer  
normal quality, no supports: ~3 hrs



# What can you do with the NIH 3D Print Exchange?

- Share models you have produced
- Upload medical or scientific data to be rendered as 3D models
- Download models of biological material, labware, or prosthetics
- Use the models for 3D printing or digital visualization

# Thank you!



3Dprint@nih.gov



@NIH3DPrint



NIH 3D Print  
Exchange

# Acknowledgements

## **NIAID**

Anthony Fauci, M.D.  
J.J. McGowan, Ph.D.  
CIO Mike Tartakovsky  
CTO Alex Rosenthal  
Joe Croghan  
James Ashton

## **NICHD**

Jeremy Swan  
Chandan Sastry, Ph.D.  
Jennifer Lippencott-Schwartz, Ph.D.  
Harold Burgess, Ph.D.

## **NLM**

Michael Ackerman, Ph.D.  
Terry Yoo, Ph.D.

## **NCATS**

Eric Jones



## **DHHS**

Deputy Secretary  
Bill Corr  
Bryan Sivak  
Read Holman  
Will Yang  
Damon Davis

## **NIH OD**

Francis Collins, M.  
D., Ph.D.  
Scott Prince  
Marin Allen, Ph.D.

## **NIH Library**

James King  
Ben Hope  
MaShana Davis

## **NIH CIT**

Dan Luxenberg