

Poster Presentation

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Proteopedia: Bridging the Rift Between 3D Structure & Function of Biomacromolecules

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Proteopedia is a wiki web resource, <http://proteopedia.org>, which aids in understanding of the structure/function relationship of biomacromolecules. The '3D' images on each page are surrounded by descriptive text containing hyperlinks that change the appearance (view, representations, colors or labels) of the adjacent 3D structure to reflect the concept discussed in the text (see figure below). This makes the complex structural information readily accessible and comprehensible, even to non-structural biologists. Using Proteopedia, scientists and students can easily create descriptions of biomacromolecules linked to their 3D structure, e.g., a page on the way inhibitors block HIV Protease, http://proteopedia.org/w/HIV-1_protease. Pages can be viewed on computers and tablets via the molecular viewer JSmol. Content is being added by ~2,600 Proteopedia's users from more than 50 countries, in a dozen different languages, including Arabic, Russian & Chinese. Members of the scientific community are invited to request a Proteopedia user account, at no cost, to create and edit pages, see: <http://proteopedia.org/w/Special:RequestAccount>.

[1] E. Hodis, J. Prilusky, E. Martz et al *Genome Biol.*, 2008, 9, R121, [2] J. Prilusky, 2011, *PDB Newsletter*, 48, 6-7, [3] R.M. Hanson, J. Prilusky, Z. Renjian et al 2013, *Israel J Chem*, 53, 207-16.

The screenshot displays the Proteopedia website interface. At the top right, there is a 'Log in / request account' link. Below it are navigation tabs for 'article', 'discussion', 'edit this page', and 'history'. A welcome message reads: 'First time at Proteopedia? Click on the green links: they change the 3D image. Click and drag the molecules. Proteopedia is a 3D, interactive encyclopedia of proteins, RNA, DNA and other molecules. With a free user account, you can edit pages in Proteopedia. Visit the Main Page to learn more.'

The main content area is titled 'Welcome to Proteopedia' and includes the text 'The free, collaborative 3D-encyclopedia of proteins & other molecules' and 'ISSN 2310-6301'. On the left side, there is a 'navigation' menu with links to Main Page, Table of Contents, Structure Index, Random, Recent Changes, and Help. Below that is a 'search' box with 'Go' and 'Search' buttons. A 'toolbox' section includes links for What links here, Related changes, Upload file, Special pages, Printable version, and Permanent link.

The featured article is titled 'HIV-1 protease' by David Canner. It features a 3D ribbon diagram of the HIV-1 protease structure, colored in blue and green. The text describes the X-ray structure, noting it is composed of two symmetrically related subunits of 99 amino acid residues each. It highlights the formation of a tunnel where the subunits meet, which is critical for the active site. The active site contains two Asp-Thr-Gly conserved sequences. The article also mentions that two aspartyl protease family members, the two Asp's, are essential catalytic residues that either interact with the incoming water or protonate the carbonyl to make the carbon more electrophilic for the incoming water. A 'more...' link is provided at the end of the text.

On the right side, there is a 'Browse Proteopedia' section with a search box for finding proteins or biomolecules. It lists options to view all PDB entries (over 97,000) and provides a search box with 'Go' and 'Search' buttons. Below this, there are links to 'Table of Contents', 'Editing', 'Video Guide', 'Structure Index', and 'Help'.

At the bottom right, there is a 'Proteopedia News' section and a link to 'Proteopedia on iPads!'.

Keywords: Proteins, Wiki, crowd sourcing