BCB Lecture

Time: Tuesday, February 10, 10:30 - 11:30 (s.t.)

Place: Institute of Computer Sciences, Humboldt University, Rudower Chaussee 25, John-von-Neumann Haus, Humboldt-Kabinett (Haus 3), 12489 Berlin

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The IMB Jena Image Library of Biological Macromolecules

The IMB Jena Image Library of Biological Macromolecules (www.imb-jena.de/IMAGE.html) is aimed at a better dissemination of information on three-dimensional biopolymer structures with an emphasis on visualization and analysis [1]. It consists of two parts. A division on Basic Information on Biological Macromolecules includes, for example, the Amino Acid Repository, the Base Pair Directory and information on Nucleic Acids Nomenclature and Structure as well as on Structural Elements in Proteins. Also introductions to X-ray Crystallography, NMR Spectroscopy, Fourier Transform Infrared Spectroscopy and Circular Dichroism are available. On the other hand, the Atlas of Macromolecule Structures provides access to all structure entries deposited at the Protein Data Bank (PDB) and the Nucleic Acid Database (NDB). It offers many tools for an in-depth analysis of individual structures with an emphasis on visualization. Analysis tools are designed both for complete structures and for structure parts such as domains, ligands, active sites, cis-peptide and SS bonds.

Given the increasing number of known three-dimensional biopolymer structures and with the data explosion in other fields of biology there is an urgent need for classification systems and for up-to-date and reliable cross-referencing schemes to other databases. To fulfil these needs the Image Library includes among other classification schemes the Hetero Components and Site Databases, a Comprehensive Bending Classification of Nucleic Acid Structures and a Genus/Species Classification. Databases that cannot directly be accessed by the PDB code are linked via a SWISS-PROT/PDB cross reference scheme. The most recent additions to the Image Library features are a Gene Ontology (GO) interface to the PDB and a SCOP domain viewer.

The atlas pages include links to about 30 other databases. More recently disease-related information resources such as OMIM have been included. Finally, there are ongoing efforts to link PDB structure to genomics resources. Examples that are already operational are GeneCensus, PRESAGE and the eukaryotic genome browser Ensembl. Many leading biological databases such as the PDB and Swiss-Prot, for example, reference the Image Library.

The IMB Jena Image Library now serves the scientific community for about 10 years. In addition to this scientific usage, the database is also of value as an educational resource and has received attention by the general public. Images from the database have been used in many books, journals, newspapers and exhibitions. The database has been featured as Site of the Month by Science in April 2001 and is also included in the listing of The Web's Best Sites of the Encyclopedia Britannica.

[1] Reichert, J., Sühnel, J. The IMB Jena Image Library of Biological Macromolecules 2002 Update. Nucleic Acids Res. 2002, 30, 253-254.

Guests are welcome!

For further information, please visit http://www.bcbio.de