



Jamia Hamdard

(Hamdard University)

Hamdard Nagar, New Delhi-110062

OFFICE OF THE VICE CHANCELLOR



MESSAGE

The Bioinformatics Infrastructure Facility (BIF) at Jamia Hamdard has been created and supported by the Department of Biotechnology, Ministry of Science and Technology, Government of India under its national infrastructure for Bioinformatics under Biotechnology Information System (BTIS) Program. The set-up has started functioning from 2009, and is working to promote bioinformatics teaching and R&D in the area of drug development and other human health related issues as well. In order to stimulate bioinformatics application in Computer Aided Drug Design, the Department of Biochemistry and the Department of Pharmaceutical Chemistry have taken the initiative to jointly organize this workshop cum hands-on training program on Computer Aided Drug Design. I am thankful to the invited speakers for accepting our invitation and support this activity by providing intellectual input and share their knowledge. I am confident that the participants will get to know more of this area, and would be able to successfully implement the knowledge in their respective places.

I wish the BIF and the workshop cum hands-on training program all success.

(Dr. G. N. Qazi)

21 Dec 2009/JH-Delhi

**BIF (BTIS, DBT)
JAMIA HAMDARD (JH)**

Inaugurated: 22-12-2009/JH-Delhi

About the Facility

The Bioinformatics Infrastructure Facility (BIF) was set up at Jamia Hamdard in 2008-09 under the BTBI program of DBT, Ministry of Science and Technology, Govt. of India with the objective of supporting teaching activities of Biology, Pharmaceutical and Medical Sciences and develop manpower as well as to carry out R&D activities in the specified areas of interest of the institute.

Area of specialization:

Currently the BIF-JH is working in the area of Computer Aided Drug Design, *In-silico* Prediction of Protein Crystallization and manpower development in these areas of Bioinformatics.

Major activities:

The BIF-JH is the backbone of bioinformatics teaching and R&D activities in JH. Since it became functional in 2009, the BIF is providing hands-on training to the PG/PhD students, and helping them in their project work. The Center is organizing a Workshop cum Training Program on Bioinformatics Applications in Computer Aided Drug Design on 21-22 Dec 2009 to familiarize the trainees with Practical Applications of Computational Chemistry in Drug Discovery, Visualizing the Intermolecular Interaction Networks in Protein/Ligand Complexes, Modeling and Docking to Flexible Receptors, QSAR/QSPR, Virtual Screening and Computer-Aided Design and Optimization. Further, efforts are in progress to design and develop new anti-malarial agents by generating a robust QSAR model of synthetic agents developed in our wet lab. Facility is also used for in silico prediction of protein crystallization. The project is based on the correlation between the surface properties of a protein and its sequence, and the available information can be used to predict the pH of the crystal growth.

Infrastructure facilities available in the center:

One Database/Application Server (high end) and one Proxy & File Server (medium end), Desktop Systems with OS and 24 hr internet connectivity in a dedicated room are available. Recently, BIF-JH has acquired molecular modeling software (vLife MDS 3.5).

Staff associated with the BIF:

1. Dr. Shakir Ali, Prof. and Head, Department of Biochemistry
2. Dr. Afshar Alam, Prof. and Head, Computer Science/IT
3. Dr. Mymoona Akhtar, Assistant Prof., Pharmaceutical Chemistry
4. Dr. Zeenat Mirza, Assistant Prof., Bioinformatics
5. Mr. Jawed Ahmad, Assistant Prof., Computer Sciences
6. Dr. Rajneesh K Gaur, Pool Officer (CSIR)
7. Ms. Rikta Saha, Project Fellow (UGC)

Future activities:

Computational biology has initiated a new revolution in life science research by providing computational solutions to biological problems, particularly in the field of drug discovery. Computer Aided Drug Design (CADD) is an exciting and diverse discipline where various aspects of applied and basic research merge and stimulate each other. It represents computational methods and resources to facilitate the design and discovery of new therapeutic solution. At BIF-Jamia Hamdard, we intend to stimulate the progress in the methods of CADD by bringing theory and practice into contact at a number of levels in order to highlight interesting and important practical problems, and to understand the role of computational methodologies in drug design and development process. Further, we wish to augment our ongoing research on prediction of protein structure and crystallization and establish support for Computational Biology and Systems Biology, establish effective academia-industry interface, while continuing developing human resource in bioinformatics and support teaching.