

SCFBio: An Overview (2002 -2019)

SCFBio, IIT Delhi was created in 2002 with funding from Department of Biotechnology under the guidance of Principal Investigator, Prof. B. Jayaram with a vision to develop novel scientific methods and new softwares for genome analysis, protein structure prediction, *in silico* drug design and for human resource training. The facility was inaugurated on 31st July, 2002 by Hon'ble Minister of Science and Technology and Human Resource Development Shri Murlu Manohar Joshi. IITD adopted SCFBio as a Central Facility of National Importance in March, 2003.



In Dec 2013, SCFBio was recognized as a "Centre of Excellence (CoE) in the area of Bioinformatics & Computational Biology" by Dept. of Biotechnology, Govt. of India.

Up gradation to multi-tera facility

SCFBio was upgraded to a multi Teraflop facility under the Programme Support from DBT and inaugurated on 17th Sept., 2009 by Hon'ble Secretary, DBT, Dr. M. K. Bhan. The aggregate compute power of the facility was over 6 Teraflops with a data storage of ~50 Terabytes. A modern data center was created to host the infrastructure.

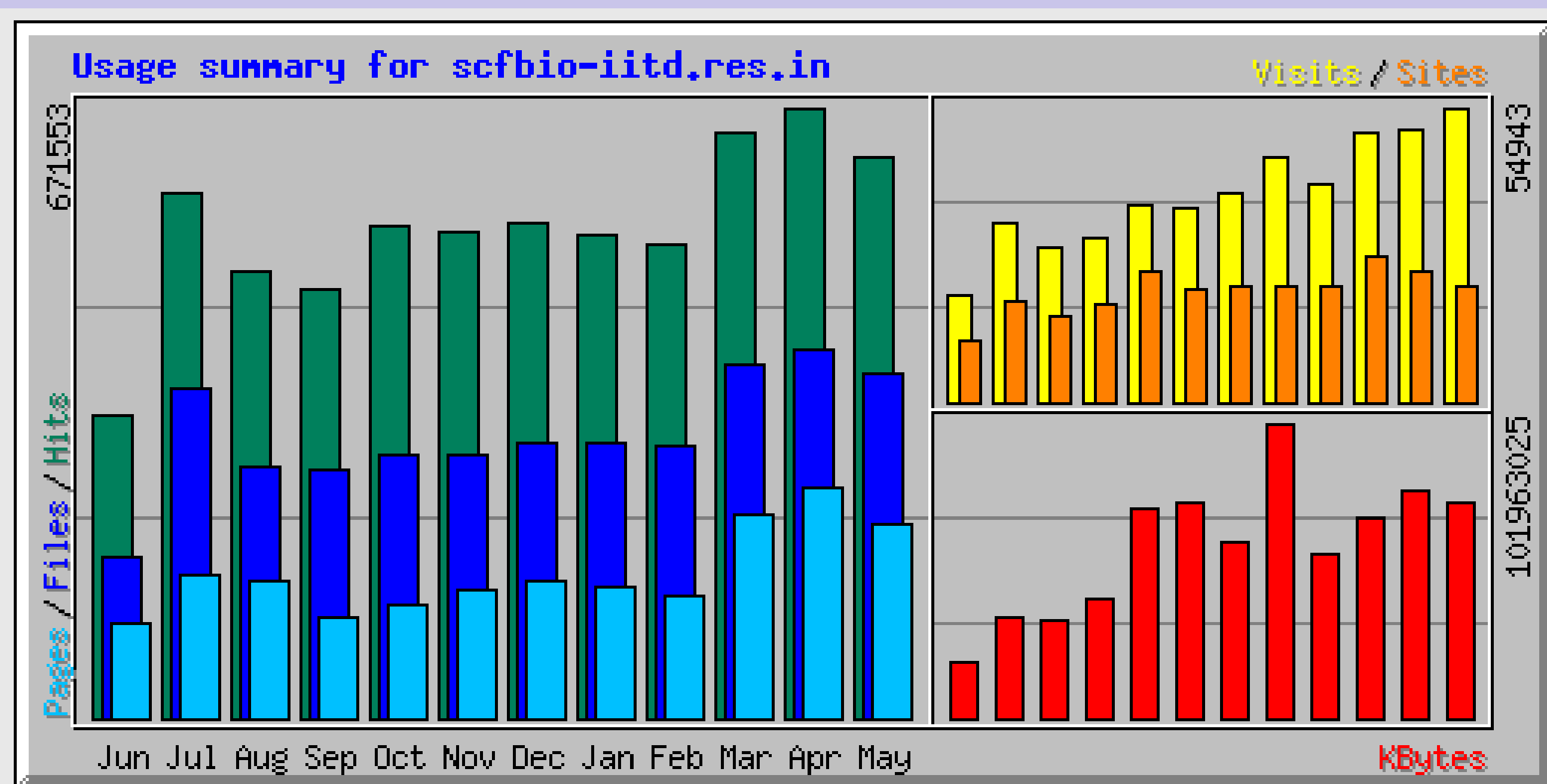
Subsequently, the facility was augmented with 10 Tera Flops of GPU based Cluster along with 150 Terabytes of Parallel File System Storage. The facility is connected via a 2 Mbps dedicated line which is upgraded recently to 30 Mbps.



The facility has been recently augmented by a Liquid immersed cooling based system which is first of its kind in the country taking the overall compute capacity of the facility to around 60 Teraflops.

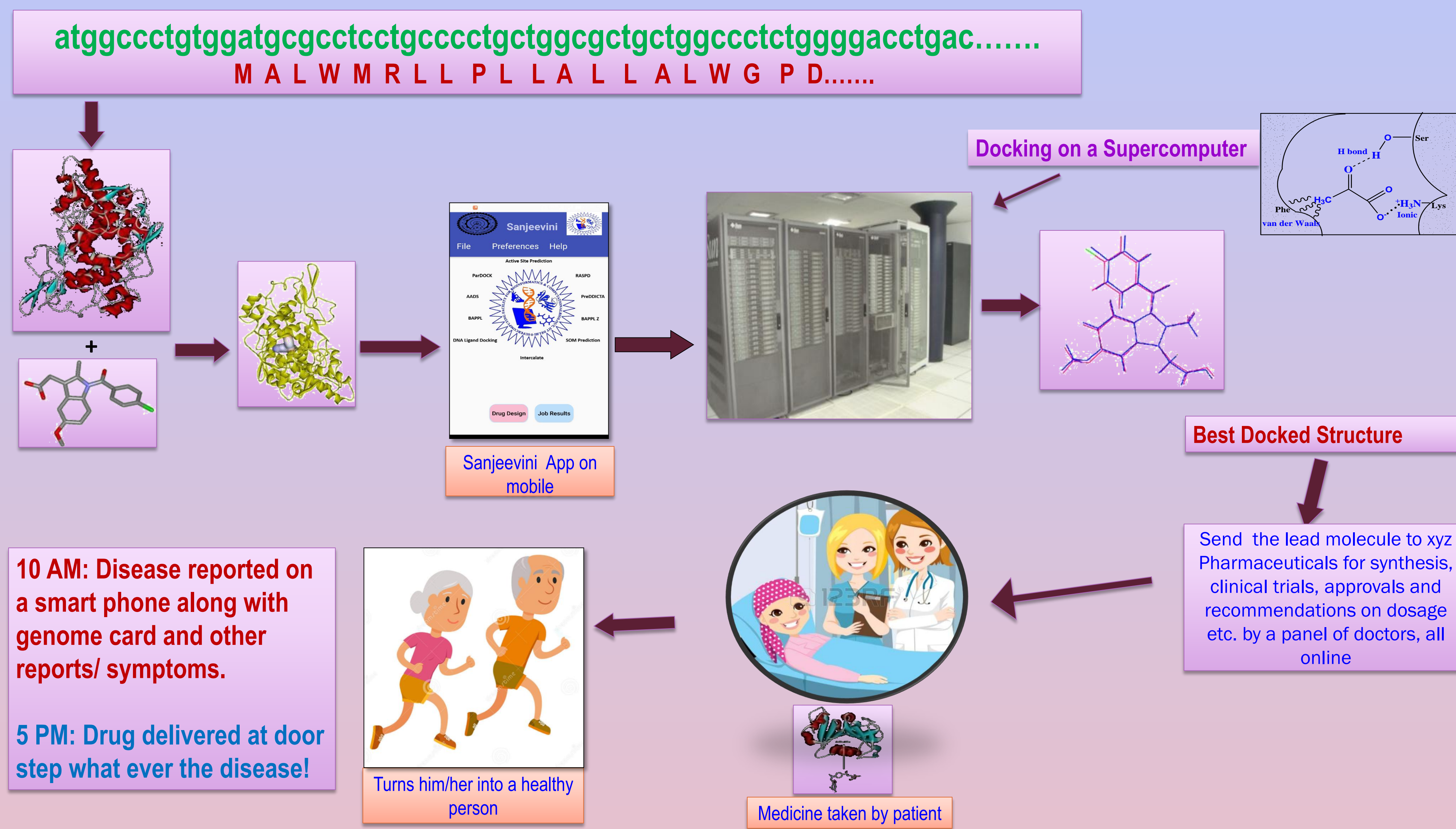
Usage statistics for SCFBio

Approximately 20000 users per day from ~30 countries access the freely available software and hardware facilities provided by SCFBio.



Month	Daily Avg					Monthly Totals				
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
May 2019	20521	12629	7144	1831	21626	74592360	54943	214321	378898	615635
Apr 2019	22385	13498	8434	1694	24205	78166982	50828	253037	404969	671553
Mar 2019	20798	12527	7252	1616	27260	68697533	50108	224827	388362	644754
Feb 2019	18595	10639	4842	1442	21824	57182732	40377	135584	297908	520666
Jan 2019	17114	9794	4637	1473	21681	101963025	45680	143749	303629	530551
Dec 2018	17578	9725	4869	1259	21855	60964485	39058	150939	301496	544927
Nov 2018	17818	9626	4674	1214	20768	74015984	36422	140221	288787	534548
Oct 2018	17500	9287	4011	1177	24227	72756012	36506	124352	287922	542530
Sep 2018	15691	9140	3681	1011	18088	41170216	30352	110458	274209	470755
Aug 2018	15803	8861	4883	935	15968	33505044	29011	151401	274698	489913
Jul 2018	18648	11680	5029	1077	18797	34435866	33400	155929	362101	578109
Jun 2018	19617	10442	6077	1160	11478	19728504	19728	103323	177515	333503
Totals						717178743	466413	1908141	3740494	6477444

A Few Accomplishments of SCFBio



Goal: Personalized medicine:

Tools: Genomics + Proteomics + Information Technology + Chemistry

SCFBio is addressing the Grand Challenge problem of protein tertiary structure prediction. SCFBio is the only Participant from India in server category in the global Protein structure prediction Olympics called CASP. SCFBio is among the best for low resolution models. For high resolution models, Bhageerath-Star is ranked at 13 out of 97 groups globally in the recently concluded event in July 2018. Availability of protein structures leads to drug targets and function annotation. Availability of software suites such as Bhageerath enables development of a comprehensive Computational Protein Databank (CO-PDB) for various organisms. Under this initiative Plasmodium Vivax Structural Databank (PvaxDB) for Malaria has already been developed and published. <http://www.scfbio-iitd.res.in/PvaxDB>.

SCFBio is interpreting the language of Genomic DNA from a new physico-chemical perspective (Chemgenome). Energetics & Structure of DNA sequences conveyed their functional destiny! [Goal: One should be able to read genomes (including human) like Harry Potter novels!]

SCFBio developed a complete, freely accessible, indigenous, software suite for computer aided Drug Discovery (Sanjeevini). SCFBio is called upon to implement Sanjeevini on National Supercomputing Mission (NSM) platform. A few molecules against Malaria, Alzheimer's, Breast Cancer, HAV & HBV infections have been developed & published/patented.

SCFBio developed over 45 webservers (Complete list of software developed at SCFBio is available at <http://www.scfbio-iitd.res.in/bioinformatics/bioinformaticssoftware.htm>)

SCFBio has over ~100 publications with an average impact factor of 4+ and one Nature paper. (Complete list of publications is available at <http://www.scfbio-iitd.res.in/publication/publication.htm>)

SCFBio organized an international conference (INCOB-2006), two Indo-Japan workshops (2010) and five national conferences (2002, 2011, 2012, 2017, 2018).

Start-up Companies from SCFBio and Collaborations

Two start-up companies have evolved (Leadinvent and Novoinformatics) so far from SCFBio. SCFBio also had fruitful collaborations with Dabur, HCL Life Sciences and NIIT. Also SCFBio forms the computational backbone to Kusuma School of Biological Sciences at IIT Delhi creating a strong collaboration between computational and experimental biology.

Human Resource Training at SCFBio

Ph.Ds Completed

N. Latha, Pooja Narang, Tarun Jain, Saher Afshan Shaikh, Kumkum Bhushan, Poonam Singhal, Garima Khandelwal, Goutam Mukherjee, Priyanka Dhingra, Tanya Singh, Avinash Mishra, Hirdesh Kumar, Suhas Vasaikar, Ashutosh Shandilya, Anjali Soni, Rahul Kaushik, Debarati DasGupta, Abhilash Jayaraj, Ankita Singh, Pradeep Pant

Ph.D.s In Progress

Ruchika Bhat, Amita Pathak, Akhilesh Mishra, Shashank Shekhar, Geetika Pareek

Staff Members

Mr. Shashank Shekhar, Mr. A. Mohan Rao, Mrs. Vandana Shekhar, Dr. Abhilash Jayaraj, Dr. Ankita Singh, Mr. Manpreet Singh, Ms. Puneeta.

Approximately 1100 students have been trained in various aspects of Bioinformatics through training programmes at SCFBio as of 2018.