National Training on Bioinformatics

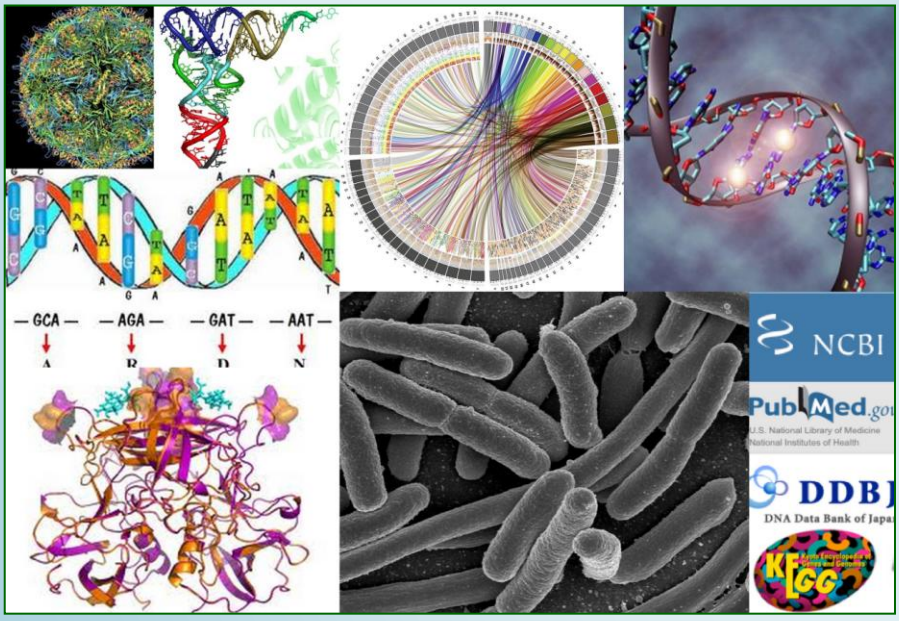
Nov., 19 to 30, 2013

Computational Tools for Microbial Research

Organized by

National Bureau of Agriculturally Important Microorganisms

Kusmaur, Maunath Bhanjan, 275101



National Agricultural Bioinformatics Grid (NABG)

National Agricultural Innovation Project (NAIP)

National Agricultural Bioinformatics Grid (NABG)

Establishment of "*National Agricultural Bioinformatics Grid* (NABG)" in ICAR is a National initiative taken by the Indian Council of Agricultural Research (ICAR) to strengthen bioinformatics research and development programs in NARS system. The project entails the creation and advancement of databases, algorithms, computational and statistical techniques and theory to solve formal and practical problems arising from the management and analysis of biological data. The field of bioinformatics focuses on developing and applying computationally intensive techniques (e.g., pattern recognition, data mining, machine learning algorithms, and visualization) which gives the opportunity to quickly and efficiently study heap of genomic information, chemical structure and other biological data. Bioinformatics has already started showing its profound impact on agricultural research and development. NABG will help Indian scientists to solve the problems of uncovering wealth of biological information truly uncovered within the biological system in various subject domains including microbial research.

Objectives of NABG

1. Development of agricultural bioinformatics grid for the country
2. Creation of local databases and Bioinformatics Data Warehouse (BinDW) for genomic resources
3. Human resource development in agricultural bioinformatics
4. Create and promote inter-disciplinary research groups with focus on agricultural bioinformatics

NABG @ NBAIM

A supercomputing environment has been developed for high performance computing in the field of agricultural bioinformatics and computational biology. The supercomputing hub consists of hybrid architecture of high performance computing with 256 nodes Linux cluster and two masters with 3072 cores and 38 Tera Flops computing power at Centre for Agricultural Bioinformatics, IASRI, New Delhi along with 16 node Linux clusters and one master with 40 TB storage at NBAIM, Mau (and other ICAR Bureaux). A number of computational biology and agricultural bioinformatics softwares, workflows and pipelines along with National Biological Computing Portal are being developed to provide seamless access of the biological computing resources to the biological researchers across the country.

Activities at NBAIM under NABG

- ↠ Establishment of supercomputing infrastructure and environment
- ↠ Capacity building programs
- ↠ Research and development
- ↠ Development of linkages with National and International organizations

Bioinformatics resources at NBAIM

- ↠ Linux cluster 16 node with each node 96 GB
- ↠ Master node – one with 40 TB storage
- ↠ Total storage capacity - 126 TB
- ↠ Workstations connected – three
- ↠ Software support- CLC Genomics workbench, Discovery Studio, other software- >100


Data Center, NABG

About the training

Agricultural research in modern scientific arena is being represented by proper integration among various research fields of biological, chemical and physical sciences, because this field encompasses many more complexities of biology in nature. In the era of fast accumulating biological data coming out from the research on many crop plants, live stocks and microbes and the impact of changing climate, habitat and other interrelations on these biological entities, bioinformatics has come forward across the globe to solve the problems of analysis, prediction, storage, management, pattern recognition, submission, retrieval and storage of the data to find out a fruitful outcome. This area is becoming increasingly important in the context of systems biology approach where a holistic approach is required to understand the biology and chemistry of the biological entities and their behavior during environmental interactions to resolve the harmful impact of biotic or abiotic causes on crop plants, animals, fishes, livestock sector, beneficial insects as well as microbes. The National Training program on 'Computational Tools for Microbial Research" is an initiative for the capacity building of NARS scientists/researchers in this most emerging area and fast developing area of i.e. agricultural bioinformatics.

Objectives

° To strengthen skills of NARS researchers in analyzing and interpreting biological data coming from genome and proteome projects
° To generate a better understanding of bioinformatics resources for microbial data analysis
° To support strategic research planning for integrating bioinformatics tools and databases

Themes

- Analysis of microbial gene sequences for functional readouts
- Microbial Genome annotation
- Tools for comparative genomics
- Tools and techniques for proteomic data analysis
- Genomic, proteomic and metabolomics databases

NBAIM: *A journey towards mainstream*

National Bureau of Agriculturally Important Microorganisms (NBAIM) started its journey from old building of NBPGR in 2001 at New Delhi and then the Bureau was shifted to Kusmaur village at Maunath Bhanjan, Uttar Pradesh in 2004 where a completely unfinished, marginalized and almost abandoned the-then NIST (National Institute of Sugarcane Technology) building was waiting for it. The Bureau then traveled a long journey within a very short span of only 8-9 years to acquire all the infrastructural facilities, greenery, instrumental sophistication and scientific and technical skill to establish itself as a premier institution of Indian Council of Agricultural Research (ICAR). ***N***ow the Bureau has raised itself from a *margin* of merely a culture collection of agriculturally important microorganisms (AIMs) to the *mainstream* of microbial biotechnology and bioinformatics.

Microbial Research at NBAIM

Microbial research at NBAIM focuses in the areas of microbial diversity from normal, sub-normal and extreme habitats, microbe-mediated biocontrol of crop diseases, plant growth promotion, stress tolerance, plant-microbe interactions, microbial genomics and proteomics, implication-based microbial biotechnology and bioinformatics.

The Bureau has a well equipped "*National Agriculturally Important Microbial Culture Collection*" (*NAIMCC*) established with most modern facilities for culture deposition, conservation and preservation for long- and short term duration. It also holds an advanced '*Microbial Genomic Resource Repository*' (*MGRR*) for collection and storage of different genetic materials of agriculturally important microorganisms (AIMs).

Who can attend?

Researchers/Research scientists/faculty members from NARS system and departments working with biological sciences from various Universities

How to apply?

Scientists/researchers working in the area of microbiological research with NARS system/ Universities/SAUs may send their applications/nominations through proper channel to the Director, NBAIM along with their RESUME **on or before Oct., 15, 2013**. Selected candidates will be informed regarding their participation.

Total number of participants

A maximum of *25* candidates will be considered for this training. Preference will be given to those candidates who have prior knowledge of the subject in the theme areas of this training.

Fee

There is no fee for the candidates for the training program. Boarding and lodging will also be provided by the organizer. Only limited second-class AC fare (both side) will be available for the faculty members of ICAR institutions/SAUs and other NARS system researchers.

Contact

The Director, National Bureau of Agriculturally Important Microorganisms, Kusmaur, Maunath Bhanjan-275101 (U.P.); Phone: 0547-2530080, Fax: 0547-2530358, e mail: nbaimicar@gmail.com; website: www.nbaim.org.in

OR

Dr. Dhananjaya P. Singh, Senior Scientist & CCPI, NABG project, NBAIM, Maunath Bhanjan, 275101; Mob.- 09415291703; e mail - dpsfarm@rediffmail.com, nabg.nbaim@gmail.com

Please provide following information for your candidature along with the application duly forwarded by the competent authority :

APPLICATION FORM (sample copy)

Name of the Applicant	:……
Designation	:……
Affiliation/ official address	:……
	……
	:……
Contact details (Phone, fax, email)	:……
Research area	:……
	……
Bioinformatics related experience	:……
Expectation from the training	:……

Signature of the applicant

Forwarding form competent authority

INSTRUCTIONS TO CANDIDATES

1. The complete application should reach the Director, NBAIM at nbaimicar@gmail.com latest by **15 Oct., 2013**.
2. The applications should be submitted through proper channel.
3. Training details are available online at http://www.nbaim.org.in/