

**Brief Report
On**

**Pre-Conference Workshop
on**

*“Hands-on to Computational Biology for Genomics and
Proteomics Analysis for Beginners”*

In

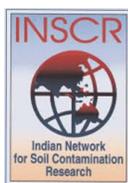
**6th Annual International Conference of Indian Network for Soil
Contamination Research**

“Microbes in Sustainable Development”

(November 14, 2021)

Sponsored by

**International Society for Microbial Ecology
(ISME)**



Hands on Pre-conference workshop on “Hands-on to Computational Biology for Genomics and Proteomics Analysis for Beginners”

Time	(14th November, 2021)
10:00-10:45	Welcome Address: Prof. Rup Lal “Role of Microbiology in Society: Our Journey & Experiences”
10:45-12:15	Module I -Introduction Introduction to Linux/Ubuntu with Hands on exercise
12:15-12:30	Break
12:30-13:30	Module II- Genomics Genomic Assembly using Paired End Data (Introduction)
13:30-14:00	Lunch Break
14:00-15:00	Genomic Assembly using Paired End Data (Hands-On)
15:00-16:00	Basic of Assembly Validation Genomic Annotations using RAST
16:00-16:30	Break
16:30-18:00	Module -III-Proteomics Protein modelling

Workshop Organizers:

Prof. Rup Lal, ISME Ambassador, Indian Ocean Region.

Resource Persons:

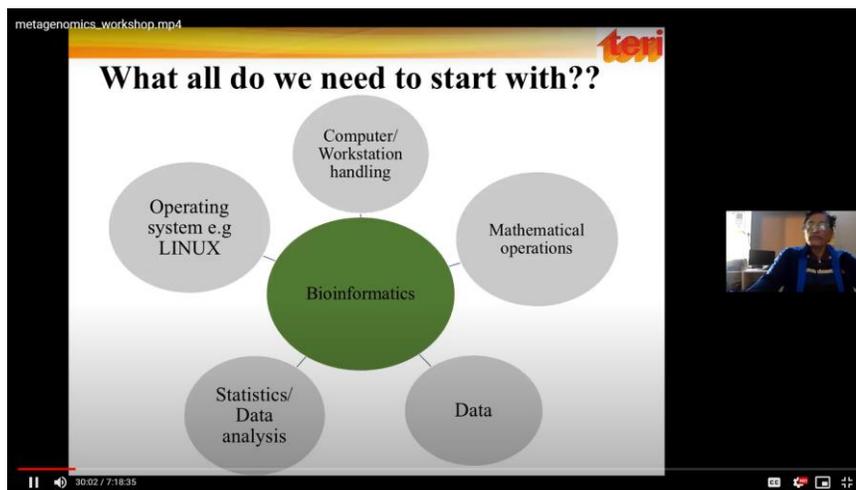
Dr. Roshan Kumar, Magadh University, Bihar.

Dr. Utkarsh Sood, The Energy Resources Institute, New Delhi-110003.

Dr. Princy Hira, PhiXGen Pvt. Ltd.

Dr. Nirjara Singhvi, PhiXGen Pvt. Ltd.

Pre-conference Workshop was held on November 14, 2021 with a total number of 42 participants where various bioinformatics tools were taught and familiarized to students during hands-on session. This workshop was organized with the motive to upskill young minds who are keen on learning Bioinformatics. E-platform (Zoom) was used as a mean of online conducting workshop sessions. The workshop began with the brief introduction to ISME and the efforts made by Prof. Rup Lal and his team to organize this important workshop under the umbrella of ISME. The scientific session started with the talk by Prof. Lal where he emphasized the importance of bioinformatics and role of microbiology in society in this current situation. Further, he mentioned the aim and objective of this workshop and importance of computational biology in microbiology and introduced the basic work flow. He motivated students to start venturing into the computational tools that will become very important in coming years to do good science.



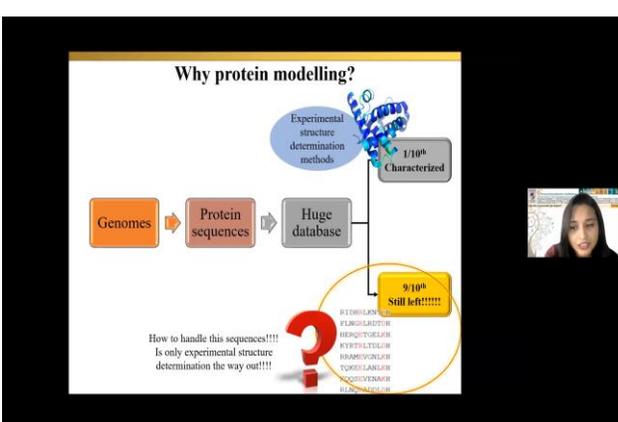
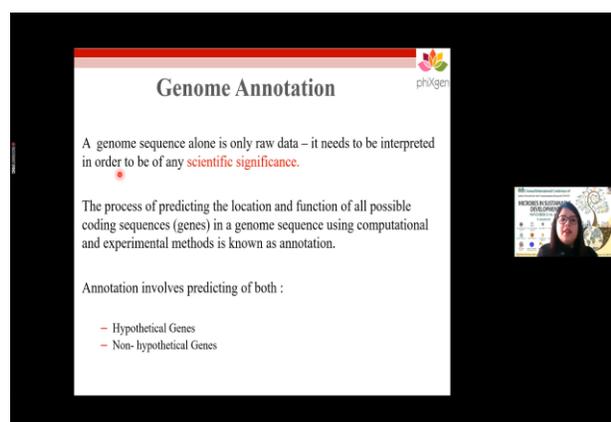
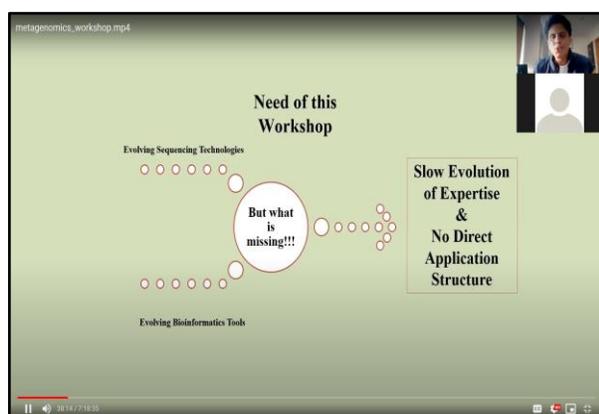
Pic 1: Welcome Address and talk by Prof. Rup Lal, ISME Ambassador on importance of microbiology and bioinformatics tools

Further, hands on session began with the introductory session by **Dr. Roshan Kumar** (Assistant Professor, Magadh University). He gave a detailed account of software and hardware in computers and how to assess your machine's potential for a particular bioinformatic analysis. Along with this, he also taught the participants to download and install Linux operating system (command line) with which most of the computational tools are compatible. Additionally, a list of common commands were given to the participants for practice.

This was followed by **Dr. Utkarsh Sood's** (Director, PhiXgen Pvt. Ltd.) session on genome assembly where the participants learned how to assemble raw data using de novo assemblers

(ABySS). Also, assembly statistic parameters to obtain an optimal genome assembly were explained like k-mer, N50, L50, coverage etc. Further, **Dr. Princy Hira** (PhiXgen Pvt. Ltd.) explained validation and annotations mainly focusing on using different bioinformatics tools to add scientific information to genomic sequences with specific examples using RAST for predicting coding sequences, metabolic modelling and closest neighbors; PHAST for prediction of prophages sequences in a genome; AMPHORANet for deciphering the bacterial single copy marker genes (31). The students performed the annotation exercises simultaneously and were very enthusiastic to observe the exciting results.

In the last session, **Ms. Nirjara Singhvi** introduced students to structural biology and its importance in data science. She explained about types of modelling and tools used in protein docking and simulation studies with specific examples.



Pic 2-5: Talk and hands on session by resource persons (Dr. Roshan Kumar, Dr. Utkarsh Sood, Dr. Princy Hira, Dr. Nirjara Singhvi) in pre-conference workshop dealing with Linux operating system, genome assembly, annotations and proteomics, respectively.

A healthy discussion between the participants and trainers for clearing all the doubts of the participants succeeded the sessions followed by formal closing of the workshop. This report also includes the participants list for the workshop (Annexure I).