

# Combine Report on

## **Event-1**

### **ISME-INSCR Conference Workshop**

On

“Hands on to Computational Biology for (Meta) Genomics Analysis”

At

International Conference – 2019 (CTM-2019)

**CURRENT TRENDS IN MICROBIOLOGY AND  
MICROBIOME RESEARCH: A GLOBAL PERSPECTIVE  
(CTM 2019)**

Date: 12<sup>th</sup> October, 2019

## **Event-2**

### **AMI-ISME Pre Conference Workshop**

On

“Hands on to Computational Biology for (Meta) Genomics Analysis”

At

60<sup>th</sup> Annual Conference of Association of Microbiologist of India

&

International Symposium on

**MICROBIAL TECHNOLOGIES IN SUSTAINABLE DEVELOPMENT OF ENERGY,  
ENVIRONMENT, AGRICULTURE AND HEALTH**

Date: 15<sup>th</sup>-18<sup>th</sup> November, 2019

## Report: Event-1

### ISME-INSCR Conference Workshop

On

**“Hands on to Computational Biology for (Meta) Genomics Analysis”**

At

International Conference – 2019 (CTM-2019)

### **CURRENT TRENDS IN MICROBIOLOGY AND MICROBIOME RESEARCH: A GLOBAL PERSPECTIVE (CTM 2019)**

**Date:** 12<sup>th</sup> October, 2019 at 09:00 AM

**Venue:** Swaraj Sadan, Committee Room, Maharshi Dayanand University

<b>Time</b>	<b>Program</b>
09:00-09:10	Welcome Address: Prof. P. K. Seth, Past President
09:10-09:15	Introductory remarks: Prof. H. C. Agarwal
09:15-09:20	Introductory Remarks: Dr. Rajendra Prasad
09:20-09:50	<b>Inaugural Talk: Prof. Rup Lal</b> <b>“Role of Microbiology in Society: Our Journey &amp; Experiences”</b>
09:50-10:30	<b>Tea Break</b>
10:30-12:00	<b>Module I -Introduction</b> Introduction to Linux/Ubuntu Introduction to Cloud Platform
12:00-01:30	<b>Module II-Genomics</b> Genomic Assembly using Paired-End Data Set Basic of Assembly Validation using Quast
01:30-02:00	Lunch
02:00-02:20	Talk: Dr. Roshan Kumar, PG Department of Zoology Magadh University “Cultroumics: Rebirth of culture technique and it’s implementation from animals to environment”.
02:20-04:00	<b>Module III-Metagenomics</b> Metagenomic Diversity assessment Functional analysis of a metagenome
04:00-04:10	Vote of Thanks
04:10- 04:30	Certificate Distribution
04:30 onwards	Tea

The Conference Workshop entitled “Hands on to Computational Biology for (Meta)Genomics Analysis” under the aegis of INSCR-ISME was conducted on 12/10/2019 at Maharshi Dayanand University . 20 research students participated to learn genomics and metagenomics data analysis. The workshop was inaugurated by Prof Rup Lal, Ambassador, ISME, Indian Ocean Region. In his welcome address he mentioned about the “Importance of computational biology in microbiology” and introduced the work flow of Genomics and Metagenomics data analysis. Workshop Faculty Dr. Vipin Gupta gave the detailed introduction of computer hardware part needed to designed a high computing machine. It was followed by the details of linux based distributions like Ubuntu and others. Students were briefed about the difference in command line interface (CLI) and graphical user interface (GUI). After the detailing of linux kernels a basic hand on experience was given to students where a set of 10 basic commands were practiced by each student. There were many questions by the student about the core functionality of a ubuntu operating system and thus it went as a highly interactive session. The next module focused on the use of computational biology by google genomics. It was performed by Dr. Utkarsh Sood where he demonstrated the use of cloud computing technology in an affordable manner. Student also created a free demo account over the cloud services to perform the hands-on over it. Complete guidelines were explained to student for creating virtual servers online over the google cloud services. The next expert Dr. Roshan Kumar focused about the presence-absence gene count method for genomic annotations for Anti-Microbial Resistance (AMR) profiling in genome and metagenome datasets. He performed the application of standalone tool using cloud computing for the annotations of AMR genes using various databases like Comprehensive Antibiotic Resistance Database (CARD), ResFinder, VFDB etc. The participants learned the installation of the tools and executing the program in cloud space. Later a brief application of metagenomic approaches in environment specific annotations were discussed by Prof. Lal. A healthy discussion between the participants and trainers for clearing all the doubts succeeded the modules. In the end, it can be concluded to be a successful event during IIC-2019.

## Highlights of the event



Image 1: Prof. Lal with workshop faculties Dr. Roshan Kumar, Dr. Vipin Gupta & Dr. Utkarsh Sood (standing) along with the workshop participants.



Image 2: Workshop faculties performing the hand-on training to students and student carefully following the steps

Report: Event-2

**AMI-ISME Pre Conference Workshop**

On

**“Hands on to Computational Biology for (Meta) Genomics Analysis”**

At

**60<sup>th</sup> Annual Conference of Association of Microbiologist of India**

**&**

**International Symposium on**

**Microbial Technologies in Sustainable Development of Energy, Environment, Agriculture and Health (November 15-18, 2019)**

**Date:** 14<sup>th</sup> Nov. 2019 at 09:00 AM

**Venue:** Computer Lab, Academic Block 4,

<b>Time</b>	<b>Program</b>
09:00-09:10	Welcome Address: <b>Prof. Pawan Kumar</b> <b>Head &amp; Dean - School of Life Sciences</b>
09:10-09:35	Keynote Lecture: <b>Prof. R. C. Kuhad</b> <b>Vice-Chancellor, Central University of Haryana</b>
09:35-09:50	Lecture: <b>Prof. Rup Lal</b> <b>“Importance of computational biology in Microbial Ecology”</b>
09:50-10:30	<b>Tea Break</b>
11:30-12:40	<b>Module I -Introduction</b>  Introduction to Linux/Ubuntu  Introduction to Cloud Platform
	<b>Module II-Genomics</b>  Genomic Assembly using Paired-End Data Set

	Basic of Assembly Validation using Quast
02:00-02:30	Lunch
02:30-03:20	Module III- <b>Basics of Proteomics</b> Protein structure prediction Protein-Protein Interaction
03:20-05:00	Module III- <b>Metagenomics</b> Metagenomic Diversity assessment Functional analysis of a metagenome
04:30:04:40	Vote of Thanks:
04:40: 05:00	Certificate Distribution
05:00 onwards	Tea

The Pre-Conference Workshop entitled “Hands on to Computational Biology for (Meta)Genomics Analysis” under the aegis of ISME-AMI was conducted on 14/11/2019 at Central University of Haryana. 69 research students participated to learn genomics and metagenomics data analysis. The inauguration began with the introductory addressal by Prof. Pawan Kumar where he detailed about the University expansion phase. He also highlights the effort made by the faculties toward the development of University since its inception in 2015 at Mahendergarh, Haryana. This was followed by welcome address by Prof. R. C. Kuhad (Vice-Chancellor, Central University of Haryana). He welcomed all the participant into the Pre conference workshop and conference. He detailed about the conference theme and sub-themes. Later Prof. Rup Lal, Ambassador, ISME, Indian Ocean Region gave his talk. In the lecture he mentioned about the “Importance of computational biology in microbiology” and introduced the work flow of Genomics and Metagenomics data analysis.

Workshop Faculty Dr. Vipin Gupta introduced the different hardware part of a computing machine and how their synchronism is important during the parallel computing. Then he gave a comparison between Graphical User Interface (GUI) and Command Line Interface (CLI) operating system usage. Students were then introduced to linux distributions like Ubuntu and others. After the detailing of linux kernels a basic hand on experience was given to students where a set of 10 basic commands were practiced by each student. The next module focused on the use of computational biology by google genomics. It was performed by Dr. Utkarsh Sood where he demonstrated the use of cloud computing technology in an affordable manner. Complete guidelines were explained to student for creating virtual servers online over the google cloud services along with the pros & cons of this technology over the conventional one. After that a detailed hands-on session was conducted for bacterial genome assembly using AbySS, a de-novo assembler. This was followed by importance comparing different bacterial assemblies and their validation using Quast tool. The next expert Ms. Nirjara Singhvi focused about 2D and 3D protein structure prediction. Student performed hands-on for *in-silico* protein structure prediction using homology based modelling softawres. Structure validation using Ramachandran plots and QMEAN server was also performed. This was followed by introduction to protein-protein interaction studies and a brief hand-on to creating and analyzing the interactome using Cytoscape. Later a brief application of metagenomic approaches in environment specific annotations were discussed by Prof. Lal. A healthy discussion between the participants and trainers for clearing all the doubts succeeded the modules. Two cash prizes were awarded for best interjectors followed by certificate distributions.

## Highlights of the event



Image 1: AMI-ISME Workshop Inaugural Ceremony. Prof. Kuhad, Vice Chancellor, CUH, welcoming the participants for the workshop. Prof. Lal Delivering lecture on Role of Computational Biology in Microbiology at the with workshop.



Image 2: Workshop faculties performing the hand-on training to students and student carefully following the steps





Image 3: Certificate distribution for the participants of the AMI-ISME workshop by the organizers



Image 4: Program Faculty with the Organizing team after successful completion of the workshop.