

## Report on Workshop

### Five Days Hands on Workshop on “Next generation sequencing data analysis”

(20-24, March 2023)

The Department of Biotechnology and Bioinformatics, Jaypee University of Information Technology, Waknaghat, Solan (H.P.) has organized a five Day Hands on Workshop “Next generation sequencing data analysis” between 20<sup>th</sup> - 24<sup>th</sup> March 2023.

The Workshop was successfully completed under the auspices of

- Prof. Rajendra Kumar Sharma – Vice Chancellor, JUIT Waknaghat and Patron of the organized Workshop.
- Prof. Ashok Kumar Gupta – Dean of Academics, JUIT Waknaghat.
- Maj. General Rakesh Bassi (Retd.) - Registrar and Dean of Students, JUIT Waknaghat
- Prof. Sudhir Kumar – HOD of Biotechnology & Bioinformatics Department, JUIT Waknaghat
- Dr. Jata Shankar – Associate Professor in Department of Biotechnology and Bioinformatics, JUIT Waknaghat and Program Convener of organized Workshop.
- Dr. Shikha Mittal – Assistant Professor in Department of Biotechnology and Bioinformatics, JUIT Waknaghat and Program Convener of organized Workshop.

The Workshop on “Next generation sequencing data analysis” comprised mainly of invited and guest lecturers from eminent speakers of renowned institutes. Table 1 highlights the program schedule of the conducted Workshop including the names and organizations of the speakers along with the title of lectures (talks) delivered by them.

**Table 1: Program schedule for 5-days hands on workshop on Next-generation data Analysis**

<b>PROGRAM SCHEDULE</b>			
<b>Time</b>	<b>Activity</b>	<b>Resource person</b>	<b>Title</b>
<b>DAY 1: Monday, 20.03.2023</b>			
<b>9:00 - 10:00</b>	Arrival and Registration		
<b>10:00 - 11:00</b>	Inaugural Session		
<b>11:00 - 11:30</b>	High Tea		
<b>11:30 - 13:00</b>	<b>Lecture Session-1</b>	<b>Dr. Amit Kumar Singh</b> Senior Scientist, Division of Genomic Resources, ICAR-NBPGR, Pusa campus, New Delhi	Genomics Assisted Characterization of germplasm and trait mapping in crops
<b>13:00 - 14:00</b>	Lunch		
<b>14:00 - 15:00</b>	<b>Practical Session-1</b>	<b>Dr. Raj Kumar, Dr. Shikha Mittal</b> Assistant Professor, Department of Biotechnology and Bioinformatics, JUIT	Basics of Linux System & Installation, Basic Linux Commands, Handling of files/data with shell commands
<b>15:00 - 16:00</b>	<b>Practical Session-1</b>		
<b>16:00 - 16:15</b>	Tea break		
<b>16:15 - 17:15</b>	<b>Practical Session-2</b>		
<b>DAY 2: Tuesday, 21.03.2023</b>			
<b>10:00 - 11:15</b>	<b>Lecture Session-1</b>	<b>Mr. Pawan Verma</b> Senior Bioinformatics Engineer, Elucidata Data Consulting Pvt. Ltd	NGS Data Processing at Scale: Perspectives from Academia and Industry

11:15 – 11:45	High Tea		
11:45 – 13:00	Lecture Session -2	<b>Mr. Sachin Kumar Gupta</b> Senior Bioinformatics Scientist Elucidata Data Consulting Pvt. Ltd	NGS Data Processing at Scale: Perspectives from Academia and Industry
13:00 – 14:00	Lunch		
14:00 – 15:15	Practical Session -1	<b>Dr. Shikha Mittal</b> Assistant Professor, Department of Biotechnology and Bioinformatics, JUIT	Quality Check and trimming of NGS data
15:15 - 15:30	Tea break		
15:30 - 17:00	Practical Session -2		
<b>DAY 3: Wednesday, 22.03.2023</b>			
10:00 - 11:15	Lecture Session-1	<b>Dr. Jata Shankar</b> Associate Professor, Department of Biotechnology and Bioinformatics, JUIT	RNA-Seq data analysis of Aspergillosis in mice model
11:15 – 11:45	High Tea		
11:45 – 13:00	Lecture Session -2	<b>Dr. Tiratha Raj Singh</b> Associate Professor, Department of Biotechnology and Bioinformatics, JUIT	Computational genomics and fragment assembly
13:00 – 14:00	Lunch		
14:00 – 18:00	Trip to Shimla		
<b>DAY 4: Thursday, 23.03.2023</b>			
10:00-11:30	Practical session - 1	<b>Dr. Shikha Mittal</b> Assistant Professor, Department of Biotechnology and Bioinformatics, JUIT	denovo and reference based assembly
11:30 – 11:45	High Tea		
11:45 – 13:00	Lecture Session-1	<b>Dr. Manoj Kumar</b> Senior Principal Scientist and Head Virology Unit, Bioinformatics Centre CSIR-IMTECH, Chandigarh	Viral next-generation sequencing data analysis
13:00 – 14:00	Lunch		
14:00 – 15:15	Practical Session -2	<b>Dr. Manoj Kumar</b> Senior Principal Scientist and Head Virology Unit, Bioinformatics Centre CSIR-IMTECH, Chandigarh	Viral next-generation sequencing data analysis
15:15 - 15:30	Tea break		
15:30 - 17:00	Practical Session -3		
<b>DAY 5: Friday, 24.03.2023</b>			
10:00 - 11:15	Lecture Session-1	<b>Dr. Jitendraa Vashistt</b> Associate Professor, Department of Biotechnology & Bioinformatics, JUIT	Bacterial identities identification using Miseq technique
11:15 – 11:45	High Tea		
11:45 – 13:00	Practical Session -1	<b>Dr. Shikha Mittal</b> Assistant Professor, Department of Biotechnology and Bioinformatics, JUIT	Genome annotation and KEGG pathway analysis
13:00 – 14:00	Lunch		
14:00 – 15:30	Valedictory Session & High Tea		

This workshop was organized with the aim of providing in-depth knowledge about Next Generation Sequencing (NGS) techniques and data analysis. NGS methods are highly

parallelized enabling to sequence thousands to millions of molecules simultaneously. Due to its wide area of applications, it attracts students, researchers, and faculty from various prestigious institutes. This technology results into huge amount of data, which need to be analyzed to conclude valuable information. Analysis of NGS data unravels important clues in quest for the treatment of various life-threatening diseases; improved crop varieties and other related scientific problems related to human welfare.

Workshop was conducted in Offline Mode. All the lectures were delivered remotely by keynote speakers, whereas hands-on sessions were conducted by experts in the Lab. A total of 26 participants had registered for this workshop. A total of 26 students participated from various prestigious insitute such as AIIMS-New Delhi, IIT- Dhaward, HFRI-Shimla, Graphic Era University, Singhania University, DAV College- Chandigarh, JIIT-Noida, Sharda University-NOIDA, Chandigarh University, SHUATS-Prayagraj.

In the workshop, **26 participants** i.e., UG/PG (13 participants), Ph.D/Research fellows (09 participants), Faculty (4 participants) registered in the workshop.

**Other Salient Features**

- Presentation slides of all lectures by the speakers for the Workshop available with the organizing committee and has been distributed to participants
- Certificates of participation issued to all registered participants.
- Certificates of resource persons issued to all the listed speakers
- Feedback collected from participants for further improvement in conducting such future Workshops

Summary Statistics of Feedback received from Participants are summarized below in Table

<b>Total number of participants feedback</b>	<b>25</b>
Overall average feedback score	Excellent (80%); Very Good (16%); Good (4%) Based on a 5 point scale rating system ( 1- 5; [poor to excellent])





