

Report on Training Workshop at SRHU

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Ganga Water effective in Eradication of Human Viruses through Bioinformatics Tools

A training workshop on efficacy of Ganga Water in Eradication of Human Viruses through Bioinformatics Tools, was organized at Swami Rama Himalayan University on Monday **June 13th 2022**. In this workshop participants were trained through molecular biology for viral genome isolation and usage of bioinformatics techniques to study detailed analysis of the genome of viruses.

The four-day workshop was held under the joint aegis of Swami Rama Himalayan University and DAV PG College Dehradun in collaboration with Uttarakhand Council of Biotechnology. Chief Guest Pro Vice Chancellor Dr. Vijendra Chauhan said that the purpose of the workshop would be meaningful only when the participants make use of the knowledge learnt at the workshop.

Special guest Dr. CS Nautiyal, Principal, Himalayan School of Biosciences, informed the participants about the Corona virus. He said the slow progress in research shows that there is an urgent need for a larger number of studies. He said that Ganga water is known for its medicinal properties. But it can be used properly only when the viruses present in it will be isolated from the Ganges water.

Dr. RK Jain, Principal of DAV PG College urged the participants to take maximum benefit of the workshop. Coordinator Workshop, Dr. Prashant Singh provided detailed information about the purpose and theme of the workshop to the participants. Dr. Sanjay Gupta, Head, Himalayan School of Biosciences informed that more than 100 participants from all over the state participated in the workshop. In the four-day long workshop, the participants were given hands-on training in various computer labs, after two days of theory sessions. Registrar Dr. Sushila Sharma, Dr. Sunil Saini, Dr. Akhilesh Kumar, Dr. Vijay Kumar, Dr. Vivek Kumar were present in the inauguration program conducted by Dr. Geeta Bhandari.

Dr. Manish Prateek, Prof. Department of Computer Sciences, HSST talked about his original work and role of STRT (Set Theoretic Rajan Transform) in the field of bioinformatics. STRT has capabilities to perform Image processing, Signal Processing, Data analysis, Data Compression and Data Encryption. STRT uses the basic operations such as 'union of sets' (U), which is analogous to numeric addition (+) operation and 'symmetric difference of sets' which is analogous to numeric difference (-).



Dr. Sanjay Gupta, Prof. & Head, HSBS, delivered a detailed lecture on Immunological aspects of Virus growth management. He discussed about role of phages, phage proteins and their metabolites in controlling Coronavirus. He also enlightened the participants about phage therapy and its future aspects.

Dr. Vivek Kumar, HSBS presented a lecture on “Major Human Viruses in Ganga Water”, and talked about virus families present in Ganga water stream starting from Gaumukh and their role in Ganga water purification.

Dr. Vijay Kumar, HSBS delivered a lecture on various nucleic acid isolation strategies from Ganga water: a metagenomic approach. He discussed about the structure of viruses, their precipitation and filtration techniques and DNA/RNA isolation methods. He discussed about the metagenomic approaches to explore the diversity of viruses from environmental samples including water samples.

Dr. Akhilesh Kumar, Assistant Prof. HSBS presented an overview of PCR and PCR based molecular markers. He discussed various versions of PCR and molecular markers used in molecular biology to study plants and animals and microbes.

Dr Kumar Sachin, Asst Prof, HSBS, delivered an informative lecture on Bioinformatics tools applicable in Virology. Bioinformatics serves to facilitate the study of viral genome, analyses in a metagenomics approach as well.

On the third day “Ganga Water in Eradication of Human Viruses through Bioinformatics Tools” was the highlight. Dr. Vijay Kumar, Assistant prof. HSBS, delivered a lecture and conducted hands on training on “Viral Nucleic acid isolation from water and soil samples”. He also discussed and demonstrated the functioning of PCR.

Dr. Akhilesh Kumar, Assistant prof. HSBS, delivered a lecture and conducted hands on training on “Nucleic acid Quantification through spectrophotometer and preparation of PCR reaction mixture and PCR amplification of samples using RAPD markers.

Dr. Geeta Bhandari, Asst Prof, HSBS, delivered a lecture and demonstrated the process of “Agarose gel electrophoresis”.

Dr Vijay Kumar and Dr Akhilesh Kumar discussed and demonstrated the basic tools used in sequence search, and phylogenetic analysis, as well trained the participants on these tools.

Dr Kumar Sachin, Faculty HSBS, took a practical session on the final day on “Introductory database mining and analysis tools”. The participants were acquainted with various Bioinformatics based resources and a host of analytical tools and their interpretations. Each participant was provided with a system terminal with high-speed internet to carry out the practical session.



Dr. Vivek Dhar Diwedi, Principal Scientist and Group Leader, Centre for Bioinformatics Noida delivered a lecture on Bioinformatics-based solutions for managing Viral Infections and Sequence analysis of viral genomes.

The valedictory function was presided over by Dr. K.R. Jain, Principal, DAV (PG) College, Dr. C.S. Nautiyal, Principal, HSBS, SRHU, and Dr. H.P. Uniyal, Director WATSAN Group, Swami Rama Himalayan University.

The participants completing Phase I and Phase II of the workshop were given certificates by the dignitaries. It was further assured that the participants from different institutes, colleges, and universities of Uttarakhand will work on the translational aspects of the learning rendered to them by the experts at the workshop.

The event was attended by Dr. Prashant Singh as Coordinator Workshop, Dr. Sanjay Gupta as Convener and Resource Person, Dr. Vivek Kumar, Dr. Vijay Kumar, Dr. Akhilesh Kumar, Dr. Geeta Bhandari (Organizing Secretaries and Technical Persons), Dr. Kumar Sachin, Dr. Vishal Rajput (Technical persons).

