

A report
on Academic Institution Visit to
**Institute of Himalayan Bioresource
Technology (CSIR-IHBT) & Agriculture
University Palampur**



On 16th November 2022 by M.Sc. & B. Tech 2nd & 3rd Year
(Biotechnology-Students) Organized by Department of
Biotechnology and Bioinformatics Jaypee University of
Information Technology Waknaghat , H.P.



An academic visit was carried out to Institute of Himalayan Bioresource Technology (CSIR-IHBT) & Agriculture University Palampur on 16th November 2022 for M.Sc. and B.Tech. Biotechnology second & third year students. The purpose of the visit was to enlighten students to various research activities undertaken in the prestigious research institution, and to give students a chance to interact with scientists and scholars working on cutting-edge biotechnology research. It was also an opportunity for the students to see the latest infrastructure used in the biotechnology sector.

The institute has a mission “to discover, innovate, develop and disseminate the processes, products and technologies from Himalayan bioresources for society, industry, environment and academia”.

Dr Sudhir Kumar and Dr Jitendraa Vashistt along with 34 students visited IHBT, On reaching the institute, we were received by Dr. Ashish Rambhau Warghat (Sr. Scientist in Biotechnology Division) and Dr. Girish Nadda (Senior Scientist). Dr. Ashish addressed the students and explained major research divisions at IHBT. He majorly explained about the processes of plant cell & tissue engineering, aeroponics, hydroponic & aquaponic farming. He told us about the major researches being carried out such as formulation of Waterhyssop (Brahmi) plant in a capsule form used to improve memory, anxiety issues & various other high altitude Himalayan medicinal plants for sustainable production of secondary metabolites & production of metabolite enriched plant biomass & understanding of mechanism of nutrients towards growth & development. For e.g., *Rhodiola* a herb found at 8000 feet of Ladakh mountains. Students’ visited the media preparation room & algae culture facility learnt about the development of methods for microalgal metabolites products under the guidance of Dr. Vidyashankar Shrivatsan.

Students’ visited genetics & genomics study lab headed by Sr. Principal Scientist Dr. R.K. Sharma, where we were briefed about reversed and forward genetics along with sequencing technologies for identification of molecular markers & genome mapping in tea, Stevia & other targeted plant species of North Western Himalayan region.

There was a visit to Plant & Molecular Biology Lab & our team was introduced to next Generation sequencing instruments which they used to sequence whole genome of *Picrorhiza kurroa* along with various other equipment.

The Food lab headed by Dr. Shashi Bhushan Sr. Principal Scientist, was also visited where the main research was utilization of traditional low value local food bioresources for development of high end products of international standards (tea). Team was introduced to various instruments used for phytochemical analysis such as water activity motor, rheometer, sonicator, ashing machine & freeze dry packaging of food products.

Students got knowledge about structural bioinformatics under the guidance of Dr. Rituraj Purohit where analysis of biological systems such as 3D structure of proteins, Protein drug complex & nucleic acid were being carried out.

Molecular microbial genetics laboratory was equally interesting where students’ were introduced to various strategies such as whole genome sequencing, proteomics, genetics & bioinformatics to develop a bioprocess for the industrial use (such as bioplastics). The IHBT

team also study higher altitude microbes with major focus on the enzymes of industrial use while studying the adaptation of microbes to extreme Himalayan niches.



On 17th November 2022, the team we also visited Himachal Pradesh Krishi Vishvavidyalaya. The University imparts education in agriculture and other allied branches, furthering the advancement of learning, research and undertaking extension of such branches, especially to the rural population of Himachal Pradesh.

Dr. Chaudhary of University facilitated our visit. Dr. Parmar took the students to University Museum and introduced various equipments developed to help farmers in agriculture. Students were curious to see new type of seeds such as Maize varieties, Saffron bulbs, Barley & paddy varieties. Polyhouses visit was also knowledgeable where we saw the cultivation of cauliflower variety (Megha) , cucumber & tomato & learnt the various environmental conditions under which they grow.

Prof. Sudhir Kumar and Dr. Jitendraa Vashitt extended gratitude to the management of, IHBT & Himachal Pradesh Krishi Vishvavidyalaya for their permission and support to make this visit possible and achieving our objectives for the students. Dr. Abhishek Chaudhary arranged for all the necessary permissions required for this visit.