

TEACHER'S ACTIVITY REPORT 2018-2019

FACULTY: Science

DEPARTMENT: Biochemistry

IQAC ACTIVITY No: SVC/2018-19/BIOCHEM/AK/1

NAME OF THE ACTIVITY: Educational Visit to IISER Mohali and IMTECH

DATE	FACULTY	DEPARTMENT/COMMITTEE	COORDINATOR NAME
28 th -29 th March, 2019	Science	Biochemistry	Dr. Anju Kaicker
TIME	VENUE	NUMBER OF PARTICIPANTS	NATURE: Outdoor/Indoor
10:00 am-2:00 pm	IISER Mohali and IMTECH Chandigarh	Students : 16 PG Diploma in Molecular and Biochemical Technology Faculty members: 1	Indoor/Outdoor
SUPPORT/ASSISTANCE:	Travel Grant of P.G.Diploma		

BRIEF INFORMATION ABOUT THE ACTIVITY (CRITERION NO. - II, V, VII)

TOPIC/SUBJECT OF THE ACTIVITY	Educational field trips and visits to premier research Institutions and Industries
OBJECTIVES	<p>As part of the curriculum and to expose students to cutting edge research environment, educational field trips to premier institutes and industries in the country are annually conducted. The objective of these trips is encourage experiential learning in students and to motivate them towards a research oriented career.</p> <p>IISER Mohali nurtures the basic tenets of science education and research at undergraduate and postgraduate levels.</p> <p>IMTECH (Institute of Microbial Technology): The Institute's primary asset is a team of more than 55 highly motivated scientists who have built strong peer credibility both in basic and application-oriented broad thematic areas of molecular biology and microbial genetics, cell biology and immunology, protein science and engineering, and fermentation technology and applied microbiology.</p>
METHODOLOGY	The students were allowed to visit all the departments as well as labs in both the institutes, in small batches. They interacted with the scientists as well as the technical staff regarding research approaches being adopted to solve interesting scientific puzzles.
OUTCOMES	<p>IISERs are to science what the IITs are to engineering, so the students could see how a healthy scientific environment could boost the creativity of young minds.</p> <p>IMTECH showcases the versatility of microbes and their applications, and provided an example of how students could exploit microbes in endless ways, given sound scientific training.</p> <p>A view of the real world always serves to be an eye opener for young students. They observed how scientists in two leading institutes planned their work, how every team member in all labs played a crucial role in determining the success of any scientific venture. They could appreciate the contribution of the technical staff in both places in running and maintaining high end equipment.</p> <p>The trips also gave a glimpse of the versatility and dynamics of a research</p>

career in future.

PROOFS & DOCUMENTS ATTACHED (Tick mark the proofs attached):

Notice & Letters	Student list of participation ✓	Activity report ✓	Photos	Feedback form
Feedback analysis	News clip with details	Certificate	Any other	

IQAC Document No:	Criterion No:	Metric No:
Departmental file no	IQAC file No:	

NAME OF TEACHER & SIGNATURE	NAME OF HEAD/ COMMITTEE INCHARGE & SIGNATURE	IQAC COORDINATOR (SEAL & SIGNATURE)
Dr. Anju Kaicker	Dr. Nitika Kaushal Teacher-in-Charge Department of Biochemistry	Dr. N. Latha IQAC Coordinator Sri Venkateswara College

For Reference

Criterion I	Curricular Aspects (planning & Implementation)	Criterion V	Student Support & Progression
Criterion II	Teaching Learning & Evaluation	Criterion VI	Governance
Criterion III	Research, Innovations & Extension	Criterion VII	Institutional Values & Best Practices
Criterion IV	Learning Resources and Infrastructure		

Proofs

- **List of Participants**

Ref: BT 2018-19 phone: 011-24672196 (231)
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Sri Venkateswara College
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Benito Juarez Road, Dhaula Kuan, New Delhi-110 021

List of Teachers & students of one year P.G. Diploma course in Molecular and Biochemical Technology going for Educational Trip to IMTECH Chandigarh and IISER Mohali on 28th & 29th March 2019.

Dr. Anju Kaicker
Mr. Mitesh Kumar
Mr. Rajesh Indwar

Student:-

S. No.	Roll No.	Name of the students
1	3018001	Mr. Aman
2	3018004	Mr. Shubham Rao
3	3018007	Ms. Archana
4	3018008	Ms. Chaynika Gujela
5	3018009	Ms. Himani Makkar
6	3018010	Ms. Noopur
7	3018011	Mr. Shubham Kumar
8	3018014	Ms. Meghna Bhatti
9	3018015	Ms. Suchita Reddy E.
10	3018016	Ms. Avisha Pachauri
11	3018017	Ms. Megha Kapoor
12	3018018	Ms. Sadaf
13	3018019	Mr. Rishabh Malhotra
14	3018021	Ms. Shivangi Wafin
15	3018022	Mr. Vivek Pal

Dr. Anju Kaicker
Course Co-ordinator

28/3

- Photos



- Activity Reports

VISIT TO IISER, MOHALI 28-29 March 2019

On 28th march, 2019 the students of Post-Graduate Diploma in Molecular and Biochemical Technology visited the Indian Institute of Science Education and Research (IISER) in Mohali. The students were familiarized with the research facilities and techniques used in various laboratories in the Biological Sciences Department. Upon entering, the students were gathered in a Computer laboratory where they were shown an introductory movie of IISER, Mohali- the research that is carried on, Alumni placement and the various facilities were shown. The campus consists of students' hostels, faculty housing, one academic-cum- research block that is ready and functional, a lecture hall complex, a library which combines print and digital books and journals, an informatics center, and a central analytical facilities building, featuring large and sophisticated facilities for inter-disciplinary research, such as high-field NMR, crystallography, mass spectrometry et cetera.



Students first visited Dr Sharvan Sehrawat's lab whose research area is Immunology, molecular and cell biology. Their work includes developing novel animal models to study immunity and immunopathology, understand the function and differentiation of CD8 T-cells during infection with endemic pathogens such as dengue virus, Chikungunya virus and protozoan parasites such as Plasmodium in addition to herpes viruses, the latter being the most successful pathogen.



Dr Sharvan's Lab

The next stop was the Lab of Dr. Samarjit Bhattacharya whose research is Neuroscience and Cell biology oriented. The lab's specific interest lies in studying the cellular and molecular mechanisms that regulate the trafficking of neurotransmitter receptors in the central nervous system. Currently, the lab is studying the cellular and molecular mechanisms that regulate the trafficking of 1) Ionotropic glutamate receptors and 2) Metabotropic glutamate receptors (mGluRs). They employ multidisciplinary approaches ranging from biochemistry and molecular biology to cell biology and imaging to address these questions.



Dr Samarjit's Lab

Students were then taken to a computational biology laboratory where they plan to systematically investigate theoretical assumption by analysis of structural and sequence properties of enzymes or

substrates binding sites, which confers them promiscuity. They also visited laboratories which worked on animal models such as Zebrafish and labs which focus on Developmental and evolutionary biology by working on *Drosophila melanogaster*. Apart from this, they visited a core cell biology and genetics laboratory where they were shown live and dead cancer cell lines under bright field microscopy. Department has excellent facilities required for regular biological research as well hosts some of advanced facilities. These are available for both in-house use and scientists from other academic institute. They were also demonstrated the workings of facilities like confocal microscope, CD spectropolarimeter and various others.



At the end of the day, students came out of IISER more informed, aware and curious about the interdisciplinary aspects of research in all of biological sciences and its associated fields.

CSIR- IMTech VISIT

29-03-2019

An educational trip was organised for the students of P.G. Diploma in Molecular and Biochemical Technology to CSIR- Institute of Microbial Technology (IMTech). This institute is located in sector 39A of Chandigarh city. On reaching the institute we were welcomed by the speculative ambience of the campus followed by a brief introduction by two of the institute representations. Next we were given a short presentation on foundation of the institute, key research areas and their contribution in enhancing...country's scientific powers.

Introduction (About the institute)

Established in 1984, the CSIR-Institute of Microbial Technology (IMTech) is one among the chain of 38 national laboratories, 6 units and 39 outreach centres of the Council of Scientific & Industrial Research. The Institute in its initial years functioned from a start-up laboratory that provided a truly world-class R&D ambience. There are four main buildings in the institute namely :-

- Main R&D block
- Fermentation block
- Animal House
- Workshop, Stores and Services area

Recently another block The G.N. Ramachandran Protein Centre has been added, to cater to R&D in all aspects of Protein science and engineering.

The basic areas of working in institute are-

Molecular biology, microbial genetics, Cellbiology, immunology, Protein science and engineering, Fermentation technology and applied microbiology.

After the presentation we headed towards the

Microbial Type Culture Collection & Gene Bank (MTCC)

This area comes under the TECHNICAL UNIT of the institute. It is jointly funded by Council of Scientific and Industrial Research (CSIR) and Department of Biotechnology (DBT). The key topics we were made to understand here were-

- Institute's facility to provide authentic microbial cultures to industries as well as

academic and research institutes.

- Conservation of microbial resources of India.
- Identification, freeze drying and other microbiology related services.
- The act as a depository of patent cultures.

Most of the research organizations, academic institutes, pharmaceutical, biotech, food companies involved in microbiology and biotechnology related work depend on MTCC for their microbial cultures. The facilities for freeze-drying and storage of ampoules were also there.

FERMENTATION UNIT

Here we were shown the small scale fermenters used for experimental purposes as well as large scale fermenters used to produce products of commercial importance. The bioreactors were of stirred tank type. Also the companies for which the institute generates products were also mentioned. Units involved in downstream processing were given a gist about.

Bioinformatics Centre (BIC)

Here all of us were made to wear some specialised VR glasses and short 3 D movies were shown. A reference of how VR softwares help in studying protein modelling and interaction was also given. The bioinformatics centre is equipped with state-of-art infrastructure that includes a 3D graphics facility having immersive virtual reality system and graphics workstations. In India, this lab is the first of its kind that fosters an atmosphere of active discussions in the area of structural biology and drug design as it is used for high end visualization of protein structural data.

Instrumentation Services Division (ISD)

The Instrumentation Services Division (ISD) also maintains the Modular Instrumentation Lab (MIL) facility of the Institute. The Modular Instruments Lab (MIL) facility at the Institute offers round-the-clock instrumentation service to users for carrying out routine experiments. Eight such MILs have been set up spread across the CSIR-IMTECH campus which provide the researchers access to the state-of-the-art instruments. The facility offers normal spectrophotometric techniques such as UV/visible spectrophotometers, spectrofluorometers, ELISA readers, centrifuges, gel-doc systems, phosphorimagers, high end purification systems, sonicator etc.

Nuclear Magnetic Resonance (NMR) Spectrometer

This instrument was shown to us superficially. The superconducting magnet and allied processing unit (manufactured in Japan) was also shown.

SEQUENCING LAB

Here they were basically using the SANGER's Chain Termination Sequencing technique. High throughput, automated DNA sequencing services are currently provided by the use of Applied Biosystems 3130xL Genetic Analyzer. This capillary based instrument has the capability to run up to 16 samples in one run with read lengths of greater than 1,000 bases.

Lastly we were also shown the SURFACE PLASMON RESONANCE instrument and were also briefed about its working. The **Biacore** system exploits surface **plasmon** resonance as the detection principle to monitor the interaction between biomolecular real time without labeling. It provides binding kinetics, **affinity**, **specificity** and concentration without any needs for labels. Also the comprehensive characterization of the **biomolecular** interactions, like Quantitative kinetic analysis (rate constants), Quantitative determination of **affinity** constants, Concentration determination, is possible.

Overall this trip made all of us to get an actual and better idea of how research on vast scale takes place. The interaction with students and faculty of the institute widened the horizons of our thinking in terms of scientific knowledge and its application in various fields. The information about working of hitech instruments in the areas of scientific research has surely given lit to the spark of budding scientists within us. Hereby we would like to thank the institute CSIR- IMTech for their heart warming support and also we look forward to such more interactions in the coming years..





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(University of Delhi)

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This is to certify that the Activity report (Teacher/Department /Society/Association) has been submitted for documentation to IQAC, Sri Venkateswara College, University of Delhi.

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