



INDUSTRIAL VISIT REPORT
OF
DEPARTMENT OF BIO-TECHONOLGY
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
(ON 11TH APRIL 2018)



The Department of Bio-Technology , Sathyabama Institute of Science and Technology (SIST) Organised a One day Industrial visit to Eppendorf India Ltd.,Ambattur Chennai – 600050, On 11th March 2018 For B.Tech. (Bio-Technology) 3rd Year Engineering Students.

The visit was organized with the prior permission and guidance of Hon, Dr.Anima Nandha ,Dean(School of Bio and Chemical Engg), SIST, Dr. Ramesh Kumar, Head of the Dept. SIST, & Dr.Narendra Kumar, Head of the Dept.SIST, along with the Professors, Dr.Prabhavathy, Dr.Prakash, Ms.Renuga Devi. Students of 3rd Bio-Tech made the visit a grand success.

Dr.Prabhavathy, Dr.Prakash, Ms.Renuga Devi, Teaching faculty of biotech department accompanied with this industrial visit. Total of 60 Students of Biotech Dept., attended this Industrial Visit.

We started travelling from the College campus at 9:30 AM via our College Bus on 11th April 2018 along with our Co-ordinator Faculties. We reached to the Eppendorf premises at 10:45 AM. At the very beginning of our visit we were welcomed by Mr. M.Anthoni Jaikumar at the reception, who is working for Eppendorf India Ltd.,

The Students were Split into 4 groups with 15 person under each group, leaded by an Employee of Eppendorf. Our Program Schedule had totally 6 sessions.

Session 1 :

Session 1 started with the explanation on parts of a pipette. Pipettes are a type of lab equipment used to measure and transfer very small volumes of liquid. Accuracy in pipette measurement is necessary as any discrepancy in volumes dispensed can affect the results of an experiment. Then the 4 parameters-(Volume,Time,Speed,Temperature) for pipette calibration was discussed

To ensure accuracy, it is necessary to check pipette calibration every few months. The calibration process helps to check whether or not the equipment is dispensing the proper volumes so it can be fixed if it is not. This marked the end of the 1st session

Session 2 :

Session 2 was about centrifuge calibration-parameters- (Time, Speed, Temperature). Each parameter for centrifuge calibration was discussed in detail.

After 2 sessions students had a refreshing break with tea and snacks.

Session3:

Session 3 was about the bioreactors and its working phenomenon. The basic requirements of a bioreactor was explained with a live experimentation on the bioreactor. Different types of vessels were

shown to the students for better understanding and functioning of the bioreactor. At last at the end of this session different types of impellers was discussed.

Session 4:

Session 4 was about 2 main instruments-co₂ incubator and the micromanipulator (microinjection method), CO₂ incubators are key equipment for biological and medical laboratories. They enable the necessary environmental control and isolate cell cultures from external conditions and contamination.

Two main technologies exist to control temperature in a CO₂ incubator, direct heat and water jacket. The two techniques were explained in detail. **Microinjection** is the use of a glass micropipette to inject a liquid substance at a microscopic or borderline macroscopic level. The target is often a living cell but may also include intercellular space. Microinjection is a simple mechanical process usually involving an inverted microscope with a magnification power of around 200x (though sometimes it is performed using a dissecting stereo microscope at 40–50x or a traditional compound upright microscope at similar power to an inverted model).

Students got a hands on experience to handle the above mentioned instruments.

Session 5:

In session 5 the students were exposed to various types of pipettes and their appropriate uses and applications. A special note on multipurpose centrifuge was also given in this session

Session 6 :

In the last session the concept of CRISPR (gene editing technology) was explained via a presentation. CRISPR is an abbreviation of **C**lustered **R**egularly **I**nterspaced **S**hort **P**alindromic **R**epeats. A simple version of the CRISPR/Cas system, CRISPR/Cas9, has been modified to edit genomes. By delivering the [Cas9](#) nuclease complexed with a synthetic [guide RNA](#) (gRNA) into a cell, the cell's [genome](#) can be cut at a desired location, allowing existing genes to be removed and/or new ones added. The Cas9-gRNA complex corresponds with the CAS III CRISPR-RNA complex.

CRISPR/Cas genome editing techniques have many potential applications, including medicine and crop seed enhancement. The use of CRISPR/Cas9-gRNA complex for [genome editing](#) was the [AAAS](#)'s choice for breakthrough of the year in 2015. [Bioethical](#) concerns have been raised about the prospect of using CRISPR for [germline](#) editing.

It was a good experience, which has provided an exposure to the third year Biotech Students with industrial life. The Students are benefitted in terms of the Technical details provided by the Company.

Student's Feed back :

Industrial visit to Eppendorf India Ltd.,, Ambattur, Chennai, was organized by SIST for third year students of Biotech Department. The guiding staffs onsite was very supportive to all students.

We are sure that this visit will help us in Future practical life and bring a positive change in our thinking and practical behavior regarding industrial process and Career oppurtunities.

We, Students of Third Year Biotechnology Engg. of SIST are extremely thankful to Honorable Dean, HOD's and Staffs of Biotech Dept. We would like to specially thank our Co-ordinating staffs of this industrial visit for providing a full fledged support in all aspects during the entire visit.