

The project work is compulsory for every student comprising 200 marks, as 150 on Project Report and 50 on presentation and viva thereafter.

| Session | | 2023-24 | 2022-23 | 2021-22 |
|--------------------|----------|---------|---------|---------|
| Number of Students | | 24 | 24 | 25 |
| 1. Project Work | In-House | - | 4 | 4 |
| | External | 24 | 20 | 20 |
| 2. Internship | | 15 | 5 | 3 |

Internship Report
“Molecular Techniques”
 At
Central India Institute of Medical Sciences (CIIMS) Nagpur
(25.12.2023 to 30.12.2023)

The PG students of Microbiology Completed their 06 Days onsite Internship at Central India Institute of Medical Sciences (CIIMS) Nagpur on Molecular techniques. The funds provided by PM-USHA scheme has been instrumental in ensuring a robust and enriching internship experience of the students.

Altogether, 15 students of M.Sc. Sem III Microbiology completed the internship at advanced instrumentation lab of CIIMS, Nagpur.

| S. No. | Name of Student | S. No. | Name of Student |
|--------|--------------------|--------|-----------------|
| 1 | Anisha | 9 | Monisha |
| 2 | Danish Vinod Patil | 10 | Pragya Sakhare |
| 3 | Esha Nag | 11 | Sanket Kumar |
| 4 | Falita Kunjam | 12 | Saroj |
| 5 | Kajal Dhritlahare | 13 | Uzma Khatoon |
| 6 | Kedarnath | 14 | Vandana Sidar |
| 7 | Madhvi Sahu | 15 | Vani Thakur |
| 8 | Mansi Shrivastava | | |

Brief Report

The purpose of the internship in molecular techniques was to provide valuable hands-on experience to students and to create way to reaching out to research labs, biotech companies or academic institutions. This also offer to investigate into the fascinating realm of molecular techniques, motivation to pursue further education and research in molecular biology.

Technical support provided by:

| | |
|---|--|
| 1 | Dr. Rajpal Singh Kashyap; Director Research, CIIMS, Nagpur |
| 2 | Dr. Amit Nayak; Scientist, CIIMS, Nagpur |
| 3 | Dr. Ali Abbas Husain; Scientist, CIIMS, Nagpur |
| 4 | Roshni Sharma; HR, CIIMS, Nagpur |
| 5 | Jayshree, Prachi, Riddhi, Sneha; Research Scholars |

Objectives:

- Basics of Molecular Biology
- Methods of Nucleic acid extraction (DNA/RNA) from different body fluids
- PCR and its downstream applications
- Targeting the 16s universal gene for bacterial and viral infections
- Real time PCR, RT-PCR, Nested PCR and their applications
- Statistical data analysis in terms of clinical approach

Outcome:

A significant portion of the internship focused on DNA extraction from blood and other biological samples. The internship began with an introduction to the laboratory setup and essential safety protocols. This fundamental knowledge ensured a secure working environment and a clear understanding of the importance of precision in molecular experiments. The students improved their skills in isolation of high-quality DNA, employing both manual and automated spin column extraction methods. Extraction of DNA from bacterial cultures and cerebrospinal fluids was also demonstrated by boiling method. The application of PCR in amplifying specific DNA sequences was a key aspect and the students became proficient in designing PCR primers, setting up reactions and optimizing conditions for efficient DNA amplification. The internship involved hands on training in gel electrophoresis techniques for visualizing and analysing DNA fragments followed by interpretation of gel results and discussions on troubleshooting. The students gained insight in to advance technology through DNA sequencing experiments and participated in the analysis of sequencing data. Understanding the principles of quantitative PCR and its applications in gene expression analysis for quantifying gene expressions levels was integral part of internship. The internship emphasized the significance of proficient data analysis. Utilizing software tools for analysis of PCR and sequencing results enhance the ability to draw meaningful conclusions. The students actively contributed to ongoing research projects, collaborating with experienced scientists and fellow interns.

