Two Days Hands on Training on
Molecular Biology Techniques and Applications
(22 -23 August 2023)

Organized BY

BIOTECH CLUB
Department of Biotechnology
Guru Ghasidas Vishwavidhyalaya, Chattishgarh

Convener
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Molecular Biology Techniques and Application

- **Program Date**: 22 – 23rd August 2023
- **Venue**: Department of Biotechnology, Guru Ghasidas Vishwavidhyalaya, Chatishgradh
- **Time**: 10.00 AM to 06:30 PM
- **Audience**: Students, PhD Scholars and Faculty members of Department of Biotechnology, Guru Ghasidas Vishwavidyalaya, Chhattishgarh

- **Programme details:**

A workshop on "***Molecular Biology Techniques and Applications***" was organized by the BIOTECH CLUB, Department of Biotechnology, Guru Ghasidas Vishwavidhyalaya, Chatishgradh. The session was started with an introduction to the general overviews, aims and objectives of this workshop by Dean, IER, Prof. Rajendra Mehta and Prof. Harit Jha Head, Department of Biotechnology. After the inauguration session, brief presentation was delivered by Dr. Mangesh Ku Mankar (Product Specialist) Himedia laboratories Pvt. Ltd. He elaborated on innovations and novel practices at HIiMedia laboratory and subsequently discussed role of molecular biology techniques such as automation extraction system, PCR amplification and electrophoresis in the field of Biotechnology.

Technical Sessions

Day 1 Activities aims & adjectives:

1. To amplify a specific DNA fragment by Polymerase Chain Reaction (PCR).

2. To visualize separated DNA fragments according to their molecular size by applying an electric current to the gel matrix (Electrophoresis).

First Exercise:

Introduction to equipment's and accessories like thermal cycler, electric module and power supply role. Further, technical details of the experiment were discussed and arranged all consumables, instruments and equipment. Accordingly, sample size master mix was prepared for PCR & simultaneously PCR template file created in the PCR by each group of students and started the run.

Second Exercise:

After completion of the PCR, performed agarose gel electrophoresis for that agarose gel were cast in mold and loaded the sample by group wise students and the samples were run. After gel run, illumination of a stained gel under UV light (254–366 nm) was performed for DNA bands visualization against a background of unbound dye. The gel image was recorded by a gel documentation system.

Observation and Result:

The amplified product was compared with the DNA ladder and its size was determined.

Lane 1: DNA Ladder (1kb)

Lane 2: PCR product control

Lane 3: PCR product control

Lane 4: Plasmid DNA

Lane 5: Plasmid DNA

Lane 6: DNA Ladder

Fig 2: Gel Picture of PCR product

Interpretation:

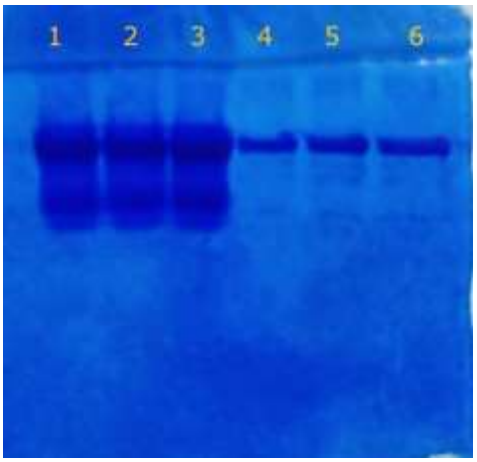
Agarose gel electrophoresis analysis confirmed the yield and purity of DNA. Genomic DNA being of larger molecular size migrates at a lower speed than the plasmid DNA of smaller molecular size.

Day II Activities aims and objectives:

- To learn the technique of SDS-PAGE.

Exercise:

Introduction to equipment accessories such as glass plates (spacer & short plate) electric module with tank and power supply with role in the experiment. Student group prepared separating and stacking gel and loaded the protein samples into well & started the Run. After gel run, for the visualization of protein bands, gel were kept for staining & distaining.



Results and observation:

Lane 1: Protein Sample 1

Lane 2: Protein Sample 2
Lane 3: Protein Sample 3
Lane 4: Protein Sample 4
Lane 5: Protein Sample 5
Lane 6: Protein Sample 6

Fig 2: Gel Picture of Protein samples after SDS-PAGE

Interpretation:

After staining and distaining the gel compared the molecular weight of the samples with that of the protein marker. Protein sample 1, 2 & 3 contains serum seen multiple bands. Protein Sample 4, 5 & 6 is a purified protein seen major one band.

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[Harit Jha]

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