KONERU LAKSHMAIAH EDUCATION FOUNDATION
DEPARTMENT OF BIOTECHNOLOGY

Industry Workshop on proteomics techniques

Date: 21st and 22nd October 2022

Time: 10:00 AM TO 6:00 PM

Venue: C518 and C519

Organized By: KLU-DEPT OF BIOTECH in association with HIMEDIA, MBS, KLSAMYAK,

Workshop Overview:

An industry focused workshop on Blotting and ELISA (Enzyme Linked Immunosorbent Assay) techniques was conducted, providing participants with an in depth understanding of these essential molecular biology techniques used in research and diagnostics. The event brought together professionals from biotech, pharmaceutical, and academic sectors to enhance their knowledge and hands on skills in these key immunoassay techniques. The focus was on applications, troubleshooting, and the integration of these methods into industry workflows.

Workshop Objectives:

1. To provide comprehensive knowledge on the principles and applications of blotting techniques, including Western, Southern, and Northern blotting.
2. To demonstrate the hands-on procedure and troubleshooting of blotting techniques.
3. To explore the advancements in these technologies and their relevance in various industries such as pharmaceuticals, diagnostics, and academic research.

Sessions and Topics Covered:

Session 1: Introduction to Blotting Techniques

The session began with an introduction to the various blotting techniques—Western, Southern, and Northern blotting. The following topics were covered:

1. Western Blotting: Utilized to detect specific proteins in a complex mixture. The process includes protein separation by gel electrophoresis, transfer to a membrane, and detection using antibodies.
2. Southern Blotting: Focused on DNA analysis by hybridization of a specific DNA sequence.
3. Northern Blotting: Emphasized RNA detection, where RNA samples are separated and probed for gene expression studies.

Key emphasis was placed on:

- Sample preparation techniques.
- Selection of appropriate membranes (nitrocellulose or PVDF).
- Electrophoretic transfer methods.
- Blocking and antibody selection for specific detection.
- Troubleshooting common issues like nonspecific binding and weak signals.

Session 2: Troubleshooting and Optimization

Participants were guided through common issues encountered in blotting techniques, including: Western Blotting Issues: Weak signals, background noise, nonspecific bands, and issues with transfer efficiency.

Solutions and optimization techniques were presented, emphasizing the importance of:

- Proper sample preparation.
- Antibody titration and selection.
- Stringent washing steps to reduce background.
- Optimization of enzymesubstrate incubation time for ELISA.

Resource person from Himedia and KLU faculty explaining about the scope of proteomics

Participant Feedback and Outcomes:

Participants appreciated the detailed coverage of both theoretical and practical aspects of the techniques. Many found the troubleshooting sessions particularly valuable, as it allowed them to address common issues faced in their routine workflows. The hands-on sessions helped them gain confidence in applying these techniques more efficiently in their respective fields.

Conclusion:

The workshop was successful in achieving its objectives, equipping participants with the necessary skills to implement and optimize blotting techniques in their professional settings. With an emphasis on realworld applications, troubleshooting, and emerging trends, attendees left with a deeper understanding of how to integrate these essential molecular biology techniques into their workflows for improved results in diagnostics, research, and drug development.