Lectinomics and Glycan-Receptor Interactions — Hands-on

Learn how lectins recognize specific glycan motifs and how these interactions can be systematically profiled and quantified. This module covers lectin families, lectin panel design, lectin blot/ELISA and cell based assays, along with data analysis strategies for mapping glycan–receptor interactions in immunity, host–pathogen biology and cancer research.

Lectinomics and Glycan-Receptor Interactions

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Session Index

Session 1

Fee: Rs 8800 Apply Now

Lectin Families and Binding Specificity

Overview of lectins and glycan recognition

definition and basic properties | **monovalent vs multivalent binding** | **affinity vs avidity concepts**

Major lectin families and exemplar ligands

C type, galectins, siglecs | **plant lectins (ConA, PNA, WGA)** | **host and microbial lectins**

Glycan motifs and structural determinants

terminal residues and linkages | branching, fucosylation, sialylation | influence of presentation and density

Session 2

Fee: Rs 11800 Apply Now

Experimental Assays for Lectin–Glycan Interactions

Classical lectin based detection methods

lectin blotting and staining | lectin ELISA and plate assays | flow cytometry with fluorescent lectins

Designing and using lectin panels

selecting lectins for key motifs | controls and specificity checks | competition and inhibition experiments

Quantitative binding readouts and Kd estimation basics

signal vs concentration curves | simple binding models | limitations of semi quantitative assays

Session 3

Fee: Rs 14800 Apply Now

Data Analysis, Motif Calling & Network Views

Processing lectin signal matrices

background correction and normalization | replicate handling and QC | thresholding and z scores

Motif level interpretation of lectin patterns

mapping lectins to glycan features | co binding and motif co occurrence | linking to underlying glycan classes

Visualizing glycan–lectin interaction networks

heatmaps and clustering of samples **bipartite network views** **basic enrichment and pathway overlays**

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Lectinomics Interaction Map

Designing a small lectin panel experiment

Theory plus Practical

From raw signals to glycan interaction signatures

assembling a sample × lectin matrix **normalization and motif calling** **identifying distinct glycan phenotypes**

Deliverables: interaction map and interpretive summary

CSV or XLSX lectin response table **heatmaps / network plots** **short PDF or PPTX report**