Glycan Biosynthesis Pathways & Glycosyltransferases — Hands-on

Learn how complex glycan structures are generated inside the cell. This module walks through N- and O-glycosylation pathways, glycosyltransferase families, compartmental organization and regulatory logic, preparing you to interpret glycan patterns, pathway defects and engineering strategies in research and biopharma settings.

Glycan Biosynthesis Pathways & Glycosyltransferases

Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

Cellular Glycosylation Landscape

Overview of glycosylation types and locations

N glycosylation **O glycosylation** **GPI anchors & glycolipids**

Organelle organization of glycan biosynthesis

ER vs Golgi roles **cis to trans Golgi progression** **luminal vs cytosolic steps**

Activated sugar donors and transport

nucleotide sugars (UDP, GDP, CMP) | dolichol linked intermediates | sugar nucleotide transporters

Session 2

Fee: Rs 11800 Apply Now

N-Linked & O-Linked Glycosylation Pathways

N linked glycosylation pathway

dolichol linked core assembly | OST transfer to Asn sequon | trimming and processing in ER

Golgi processing and branching of N glycans

high mannose to hybrid | complex multiantennary structures | fucosylation and sialylation

O linked glycosylation pathways

mucin type GalNAc initiation | core 1, 2 and extended cores | other O linkages overview

Session 3

Fee: Rs 14800 Apply Now

Glycosyltransferases, Glycosidases & Regulation

Glycosyltransferase families and specificities

GT family classification | donor and acceptor recognition | localization signals

Glycosidases and quality control

ER glucosidases and mannosidases | Golgi trimming steps | ERAD and folding cycles

Regulation and pathway rewiring

enzyme expression changes | Golgi pH and trafficking

nutrient and disease driven shifts

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Pathway Mapping & Defect Analysis

Map full biosynthetic routes for key glycans

from activated sugars to final glycan structure

Explore congenital disorders of glycosylation at pathway level

enzyme defects | predicted structural changes | clinical phenotype connections

Deliverables and documentation

pathway diagrams | enzyme and gene tables | short PDF or HTML summary