C-CAMP

Centre for Cellular and Molecular Platforms

A Dept. of Biotechnology (DBT, Govt. of India) Initiative

Glycomics & Glycoproteomics Unit

of Mass Spectrometry Facility

Member of the Bangalore BioCluster

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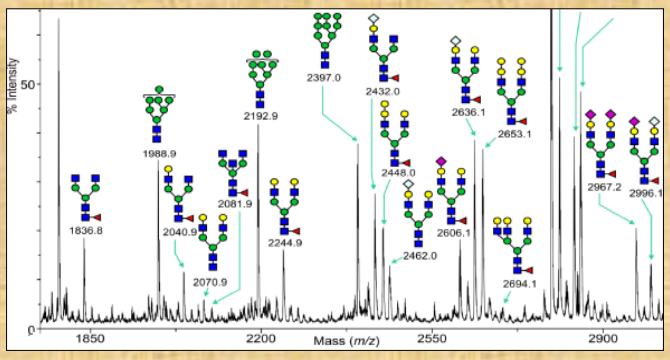
Glycomics & Glycoproteomics

Glycomics is the comprehensive study of the *Glycome*. This includes the entire repertoire of sugars of an organism such as glycans attached to proteins and lipids, glycosaminoglycans and polysaccharides. The rapid advancement of technologies such as high-throughput mass spectrometry, glycan microarrays and carbohydrate chemistry are helping to unravel the complexity resulting from these diverse molecules and eventually the **'glycan code'**.

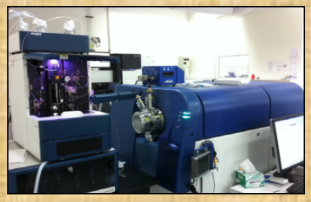
The Glycomics and Glycoproteomics Unit of the Mass Spectrometry Facility at C-CAMP will cater to a comprehensive structural characterization of the complex carbohydrates present in proteins, cells, tissues and an organism. This is the first laboratory to provide niche technology service in India and aims to be one of the best in the world.



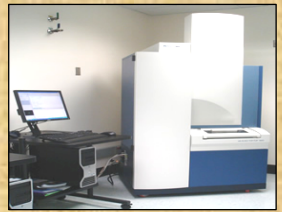
Instrumentation

UPLC with Diode Array and Fluorescence Detectors (Shimadzu)

GC-MS-FID with Head Space Trap (Perkin Elmer)



Nano LC with Triple TOF 5600+ (AB Sciex)



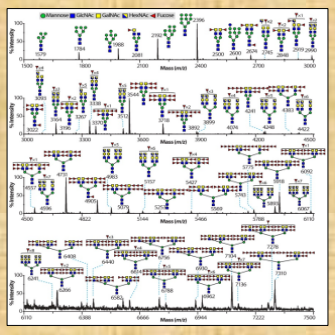
5800 MALDI-TOF/TOF (AB Sciex)

glycomics@ccamp.res.in

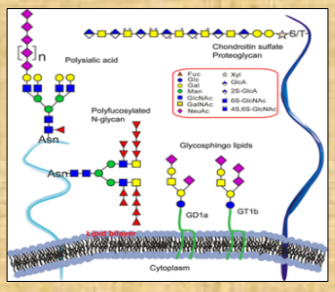
Services Offered

The following services are being offered through our Glycomics and Glycoproteomics facility:

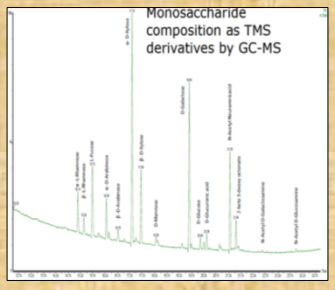
- **Glycomics of Proteins, Cells, Tissue and Whole Organism**
  - Structural characterization of N- and O-glycans attached to proteins, using ultra sensitive **MALDI-TOF/TOF MS** in conjunction with chemical and enzymatic sample preparation techniques.
  - The linkage between different sugar units will be ascertained using **GC-MS**, exoglycosidases and glycosyltransferases depending upon the requirement.
  - N-glycan profiling of 2-AB derivatized glycans using **UHPLC** with fluorescent detector.



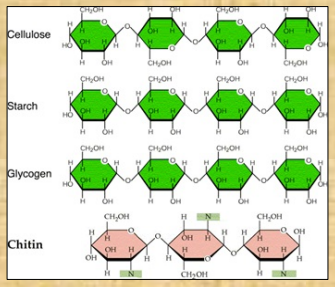
- **Glycoproteomics**
  Identification of the nature of glycans and their attachment site in a glycoprotein using a combination of conventional glycan analysis (**MALDI-TOF/TOF**) and glycopeptide analysis by **NanoLC-ESI-MS/MS** and **offline-LC-MALDI-TOF/TOF.**



- **Monosaccharide Composition Analysis**
  This analysis will provide information about relative intensities of various saccharides (sugars) of glycans, polysaccharides, etc. This study will be performed using acetylation and/or trimethylsilyl derivatization followed by **GC-MS analysis**



- **Polysaccharide Analysis**
  Involves determining the composition of various oligosaccharides from complex hydrolysates using **HPLC** and fluorescence detection followed by **Mass Spectrometry** analysis.



- **Glycans attached to Lipids**
  MALDI-TOF/TOF analysis will be done to obtain information about the lipids and bound glycans.

- *Glycosaminoglycans (coming soon)*
  We intend to use a combination of **enzyme digestion** and **HPLC, LC-MS/MS** and **capillary electrophoresis with LIF detection** to characterize the structure of Glycosaminoglycans (GAGs) and quantify them.

glycomics@ccamp.res.in

Core Facility Users

inStem

IISc

Bose Institute

ncbs

CELLWORKS

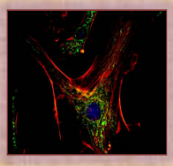
L'ORÉAL INDIA

MSD · Wellcome Trust Hilleman Laboratories

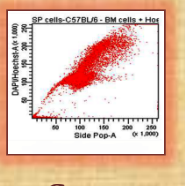
Institute of Microbial Technology (A Council of Scientific & Industrial Research)

SEA6 ENERGY

Our Technology Platforms



Confocal Imaging Facility

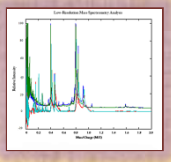


Flow Cytometry Facility

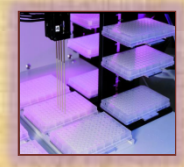
Fly Facility

Next Generation Genomics Facility

Protein Technology Core



Mass Spectrometry Facility



High Throughput Screening Facility

Contact

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