# Infosys Advanced Chemical Biology Laboratory

## Instrumentation Details



FESEM




SC-XRD




NMR




Imaging Mass Cytometry




Spatial Genomics

# Field Emission Scanning Electron Microscopy Facility (FESEM)



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|---|---|
| Category of Instrument | Field Emission Scanning Electron Microscope (FESEM) |
| Company | **ZEISS** |
| Instrument Model | **Gemini 360 FESEM** |
| Lab Location | Lab B05, Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Chemistry, Physics, Biology, Environmental Studies |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities, Govt. Labs, Industries |

## Instrument Details:

### Overview

The Gemini SEM 360 is a state-of-the-art Field Emission Scanning Electron Microscope (FESEM) based on ZEISS's patented Gemini electron optics. Designed for ultra-high resolution, surface sensitive imaging, and analytical versatility, the system supports a wide range of materials science, nanotechnology, life sciences, and semiconductor research applications. Its combination of Schottky field emission source, advanced vacuum architecture, flexible detector suite, and comprehensive software environment enables both routine characterization and advanced research workflows.

### Applications

**Life Sciences and Biology:** Cell, tissue, and microorganism surface morphology, Biofilms, plant tissues, and insect structures, Biomaterials and biocompatibility studies, Hydrated and non-conductive biological samples using VP/NanoVP modes.

**Chemistry and Chemical Sciences:** Nanoparticles, catalysts, and functional materials, Polymer surfaces, coatings, and composites, Corrosion, surface reactions, and degradation studies, Elemental analysis using integrated EDS.

**Physics & Materials Science:** Nanostructures, thin films, and 2D materials, Semiconductor and electronic material morphology, Cathodoluminescence studies of optical materials, STEM-in-SEM imaging of nanoscale samples, metals, alloys, ceramics, and composites, grain structure, fracture surfaces, and defects, additive manufacturing and coating characterization.

## Single Crystal X-Diffractometry Facility (SC-XRD)



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|---|---|
| Category of Instrument | Single Crystal X-Ray Diffractometer |
| Company | **Bruker, Singapore** |
| Instrument Model | **D8 Venture SC-XRD** |
| Lab Location | Lab B03, Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Chemistry, Physics, Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 6 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities, Govt. Labs, Industries |

### Instrument Details:

#### Overview

The Bruker D8 VENTURE is a latest-generation, floor-mounted Single Crystal X-ray Diffractometer (SC-XRD) designed for high-precision crystal structure determination across small molecules, coordination compounds, inorganic materials, and macromolecular systems. The system integrates dual microfocus X-ray sources, advanced HELIOS Montel optics, a high-precision Kappa goniometer, and the PHOTON III CPAD area

detector, delivering exceptional data quality, speed, and reliability for modern crystallographic research. Its spacious radiation-safe enclosure, fully automated alignment architecture, intelligent path planning, and comprehensive software environment enable both routine crystallographic analysis and advanced structural investigations with high reproducibility and user safety.

### Applications

**Chemistry and Chemical Sciences:** Organic and inorganic crystal structure determination, Metal–organic frameworks, coordination complexes, and catalysts, Polymorphism, solvate and hydrate identification, Absolute configuration and chirality determination, Charge density and high-resolution electron density studies

**Materials Science and Solid-State Physics:** Functional crystalline materials and superconductors, Ferroelectric, piezoelectric, and magnetic materials, Phase transitions and structural distortions, Modulated and incommensurate structures, Defect and disorder analysis

**Biological and Pharmaceutical Sciences:** Protein and macromolecular crystallography, Drug molecules and pharmaceutical polymorphs, Hydrogen bonding and intermolecular interactions, Low-temperature structure stabilization

**Interdisciplinary and Advanced Studies:** Twinned and intergrown crystal analysis, Diffuse scattering and weakly diffracting samples, Powder diffraction in transmission mode from single crystal data, Variable temperature crystallography

## Nuclear Magnetic Resonance Spectroscopy Facility (NMR)




| | |
|---|---|
| Category of Instrument | Nuclear Magnetic Resonance Spectrometer |
| Company | **Bruker** |
| Instrument Model | **Avance Neo + Ascend Eco 600MHz Magnet** |
| Lab Location | Lab B03, Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Chemistry, Biology |

| | |
|---|---|
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 4 |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities, Govt. Labs, Industries |

## Instrument Details:

### Overview

The Bruker AVANCE NEO 600 MHz NMR spectrometer is a high-performance, research-grade nuclear magnetic resonance system designed for advanced solution-state and solid-state NMR applications. Built around the AVANCE NEO digital console and the ASCEND EVO 600 MHz superconducting magnet, the system offers exceptional spectral resolution, sensitivity, stability, and automation. It is ideally suited for cutting-edge research in chemistry, structural biology, materials science, metabolomics, pharmaceuticals, and interdisciplinary applications.

### Applications

**Chemistry and Chemical Sciences:** Molecular structure elucidation of organic and inorganic compounds, Reaction monitoring and mechanism studies, Conformational and stereochemical analysis, Quantitative NMR (qNMR) for purity and concentration determination, Heteronuclear NMR ($^{13}C$, $^{19}F$, $^{31}P$ and other X-nuclei)

**Structural Biology and Biochemistry:** Protein, peptide, and nucleic acid characterization, Ligand–biomolecule interaction studies, Conformational dynamics and folding analysis, Metabolite identification in biological extracts, Metabolomics and Systems Biology, Metabolic profiling of cells, tissues, and biofluids, Comparative metabolomics using multivariate analysis

**Materials Science and Polymers:** Polymer structure, composition, and dynamics, Solution-state NMR of functional materials, Composite and network polymer characterization

**Pharmaceutical and Medicinal Chemistry:** Drug molecule structure confirmation, Impurity and degradation analysis, Formulation and excipient studies, Stability and compatibility investigations

# Imaging Mass Cytometry Facility (Hyperion XTi + CyTOF XT)



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|---|---|
| Category of Instrument | Imaging Mass Cytometer |
| Company | **Standard Biotools (SpincoTech)** |
| Instrument Model | **Hyperion XTi + CyTOF XT** |
| Lab Location | Lab B05, Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 2 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Instrument Details:

### Overview

The Standard BioTools Hyperion™ XTi Imaging System and CyTOF® XT Mass Cytometer together constitute a state-of-the-art mass cytometry platform for high-dimensional, single-cell and spatial proteomics analysis. By combining time-of-flight mass spectrometry with metal-tagged antibodies, the platform enables simultaneous quantification of over 40 biomarkers per cell without spectral overlap, offering unparalleled resolution for complex biological systems.

The Hyperion XTi extends this capability into spatial biology by enabling imaging mass cytometry of tissue sections, preserving spatial context while delivering multiplexed protein expression maps at subcellular resolution. The CyTOF XT provides high-throughput suspension cell analysis with exceptional sensitivity, stability, and reproducibility.

Together, these systems support cutting-edge research in immunology, cancer biology, developmental biology, neuroscience, infectious disease, and translational medicine.

### Applications

**Immunology and Inflammation:** Deep immune phenotyping and immune profiling, T-cell, B-cell, NK cell, and myeloid subset characterization, Immune checkpoint and activation marker analysis, Vaccine and immunotherapy response studies.

**Cancer Biology and Oncology:** Tumor microenvironment profiling, Immune-tumor interaction mapping, Biomarker discovery and validation, Heterogeneity and clonal population analysis, Spatial mapping of tumor architecture.

**Stem Cell and Developmental Biology:** Lineage tracing and differentiation pathways, Signaling network analysis, Cellular plasticity and fate decisions.

**Neuroscience and Tissue Biology:** Spatial proteomics of brain and neural tissues, Cell–cell interaction mapping, Regional protein expression patterns.

**Infectious Disease and Clinical Research:** Host–pathogen immune responses, Disease progression and severity biomarkers, Translational and clinical cohort studies.

### Principle of Operation

Mass cytometry replaces fluorophores with stable metal isotopes conjugated to antibodies. Cells or tissue pixels are atomized and ionized in an inductively coupled plasma, and the resulting ions are analyzed by time-of-flight mass spectrometry. This eliminates spectral overlap, enabling highly multiplexed, quantitative, and reproducible measurements.

### CyTOF® XT Mass Cytometer

The CyTOF XT is a next-generation suspension mass cytometer designed for high-throughput, high-dimensional single-cell analysis.

### Hyperion™ XTi Imaging System

The Hyperion XTi enables imaging mass cytometry (IMC), providing spatially resolved, multiplexed protein imaging directly from tissue sections.

## Spatial Genomics Platform Facility (Merscope)




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|---|---|
| Category of Instrument | Spatial Genomics Platform |
| Company | **Vizgen (SpincoTech)** |
| Instrument Model | **Merscope Ultra** |
| Lab Location | Lab B05, Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 2 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Instrument Details:

### Overview

The Vizgen MERSCOPE Ultra™ is a fully integrated, end-to-end spatial transcriptomics platform designed to generate highly multiplexed, quantitative, and spatially resolved gene expression maps using MERFISH

(Multiplexed Error-Robust Fluorescence *In Situ* Hybridization) technology. The system combines high-resolution fluorescence imaging, automated fluidics, image processing, and advanced visualization software into a single, automated hardware ecosystem.

The MERSCOPE Ultra platform enables simultaneous detection of up to 1000 RNA targets at single-cell and subcellular resolution while preserving tissue architecture. It supports fresh frozen tissues, fixed frozen samples, and cultured cells, making it suitable for a wide range of biological and biomedical research applications.

### Applications

**Biology and Life Sciences:** Cell type and tissue atlas generation, Developmental biology and organogenesis studies, Stem cell niche characterization, Spatial heterogeneity analysis.

**Clinical and Biomedical Research:** Tumor microenvironment profiling, Immune cell spatial mapping, Biomarker discovery, Disease progression and therapeutic response studies.

**Neuroscience:** Spatial organization of neuronal subtypes, Brain region-specific transcriptomic profiling, neurodegenerative disease research.

**Genetics and Molecular Biology:** Gene regulatory network mapping in spatial context, RNA localization studies, Cell-cell interaction analysis.

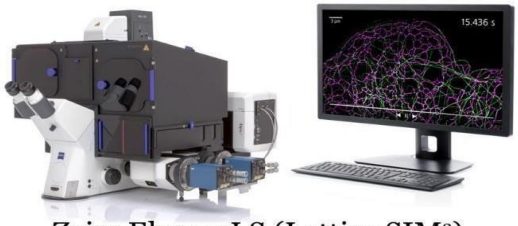
**Computational Biology and Data Science:** Spatial omics integration, AI-based tissue classification, Systems-level modeling of tissue architecture.

# Infosys Advanced Chemical Biology Laboratory

## Zeiss Core Imaging Facility



Zeiss Lattice Lightsheet 7



Zeiss Elyra 7 LS (Lattice SIM²)



Zeiss LSM 980



Zeiss Cell Discoverer 7

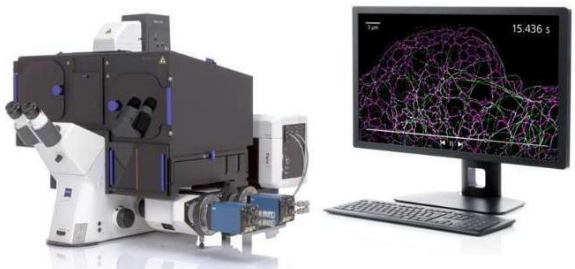
## Zeiss Lattice Lightsheet 7



Zeiss Lattice Lightsheet 7

**Zeiss Lattice Lightsheet 7** is a game-changer in terms of imaging live cells at subcellular resolution. This microscope allows the researcher to perform light sheet fluorescence microscopy using standard sample carriers for live cells. This offers long-term volumetric imaging (over hours and days) of live cell samples without the risks of photodamage to the cells. The automated, easy-to-use system in this microscope helps to conduct 3D cell imaging with true size proportions, which is ideal for research involving live cell imaging, 3D cell culture, and small evolving organisms.

## Zeiss Elyra 7




Zeiss Elyra 7 LS (Lattice SIM²)

**Zeiss Elyra 7** is a super-resolution microscope that can be used to observe beyond the diffraction limit of conventional microscopes. With Lattice SIM², the resulting resolution will be twice that of conventional structured illumination microscopy (SIM) resolution. This microscope enables researchers to combine super-resolution and high-dynamic imaging without the need for special sample preparation or expert knowledge of complex microscopy techniques. Elyra 7 LS can resolve structures down to 60 nm and observe cell dynamics at up to 255 fps (frames per second)

## Zeiss LSM 980



Zeiss LSM 980

**Zeiss LSM 980 NLO** is a laser scanning microscope that provides a unique confocal experience for fast and gentle multiplex imaging. The LSM 980 is optimized for simultaneous spectral detection of multiple weak labels with the highest light efficiency. This is a great advantage in observing biological samples with low labeling density since lower the labeling density, lower will be the disturbance to the biological system or life that we observe in our sample. This microscope can accommodate a wide range of fluorescent labels from 380 nm to 900 nm and the addition of nonlinear optical microscopic features enables this microscope to extend its capacities in research.

## Zeiss Cell Discoverer 7



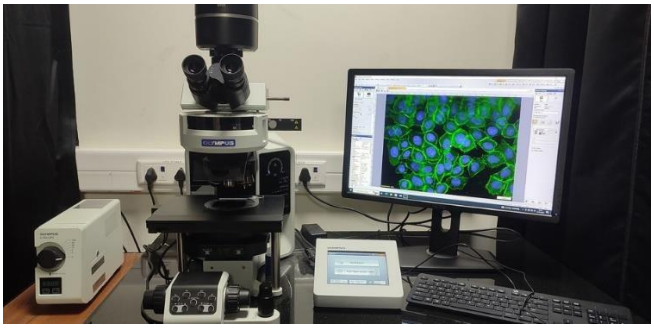
Zeiss Cell Discoverer 7

**Zeiss Cell Discoverer 7** combines the ease of use of an automated microscope with the image quality and flexibility of a research microscope. This automated live cell imaging platform will provide better data in shorter time and it is very versatile for working with 2D or 3D cell cultures, tissue, or small model organisms. Adding LSM 900 with Airyscan 2 to this microscope helps to gently image dynamic processes with the highest framerates in super-resolution. During the imaging process, its automatic calibration routines take over to ensure reproducible results.

# Ashoka Central Imaging Facility

## Instrumentation Details

## Widefield Fluorescence Microscope (BX63 Olympus)

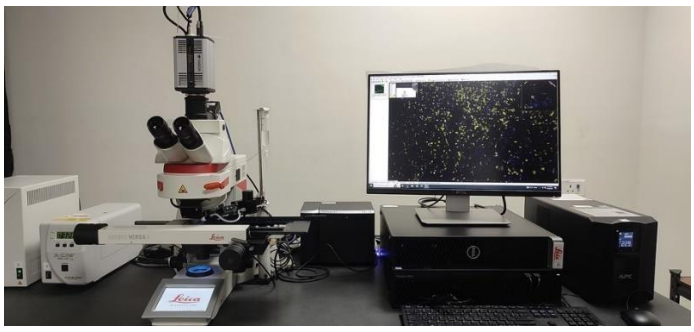


| | |
|---|---|
| Category of Instrument | Widefield Fluorescence Microscope |
| Company | **Olympus** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Psychology, Environmental Sciences, Chemistry, Physics |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

**Applications:**

- Routine fluorescence 2D & 3D imaging of fixed cells and thin tissue sections
- Multi-color fluorescence imaging using standard filter sets
- Low-complexity live-cell imaging (cell morphology, slow processes)
- Checking transfection efficiency (GFP/RFP reporters)
- Rapid screening of large numbers of samples
- Validation of immunofluorescence staining quality

## Slide Scanning Microscope (Aperio Versa 8)

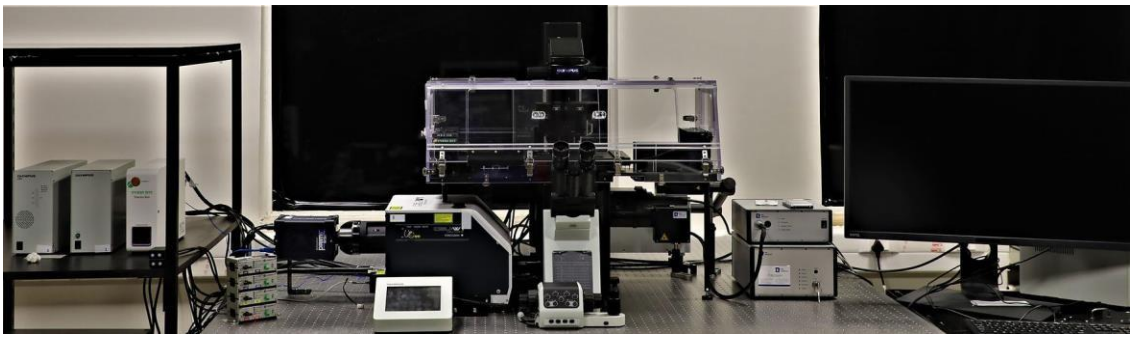


| | |
|---|---|
| Category of Instrument | Slide Scanning Microscope |
| Company | **Leica** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Psychology, Environmental Sciences, Chemistry, Physics |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Applications:

- Whole-slide imaging of H&E, IHC, and immunofluorescence slides
- Scanning multiplex whole tissue–slides of up to 8 fluorescent channels
- High-throughput acquisition of multiple slides (upto 8 slides)
- Fluorescence in situ hybridization (FISH) imaging
- Remote slide sharing for collaboration and teaching using eslide manager
- Widely used for biomarker expression studies in Cancer patient tissue samples

## Spinning Disk Confocal Microscope



| | |
|---|---|
| Category of Instrument | Spinning Disk Confocal Microscope |
| Company | **Olympus** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Psychology, Environmental Sciences, Chemistry, Physics |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 1-2 |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Applications:

- 2D & 3D imaging with optical sectioning

- Live cell time lapse imaging
- Capturing upto 500 frames/sec using CSU-W1 Yokogawa disc
- Highly sensitive sCOMS camera for QE upto 90%
- Used for acquiring fast dynamics in living systems (Worms, Flies, Cells)

## Laser Scanning Confocal Microscope (LSM 900)



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|---|---|
| Category of Instrument | Laser Scanning Confocal Microscope (LSM 900) |
| Company | **Zeiss** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Psychology, Environmental Sciences, Chemistry, Physics |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

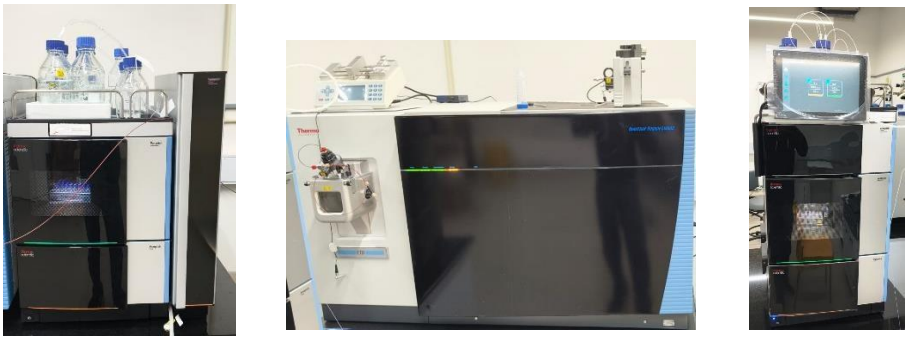
### Applications:

- 3D acquisitions using Z-stacks.
- Simultaneous and sequential multi-color acquisitions.
- Tiles canning for increased FOV.
- Fast time-series tracking real-time events.
- super-resolution imaging using airyscan detector
- Advanced techniques: FRAP, FRET, spectral imaging
- Live cell imaging with stage-top environmental control (37C, CO2)

# Ashoka Mass Spectrometry Facility

## Instrumentation Details

## Orbitrap Fusion Lumos with Vanquish UHPLC & Vanquish Neo nanoLC



Orbitrap Fusion Lumos with Vanquish UHPLC & Vanquish Neo nanoLC

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|---|---|
| Category of Instrument | Orbitrap Fusion Lumos with Vanquish UHPLC & Vanquish Neo nanoLC |
| Company | **Thermo Fisher Scientific** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Chemistry |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Overview

The Thermo Scientific Orbitrap Fusion Lumos Mass Spectrometer is a high-resolution mass spectrometer that is capable of collecting high quality MS and tandem MS data for both non-targeted and targeted analysis. Orbitrap Fusion Lumos with Vanquish UHPLC and Vanquish Neo nanoLC is used for discovery omics, high-resolution mass analysis.

### Applications:

- Molecular Proteomics (Top-down, bottom-up, PTM analysis)
- Metabolomics/Lipidomics (Untargeted and targeted)
- Intact Protein Characterization

# TSQ Altis Triple Quadrupole with Vanquish UHPLC





TSQ Altis Triple Quadrupole with Vanquish UHPLC

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|---|---|
| Category of Instrument | TSQ Altis Triple Quadrupole with Vanquish UHPLC |
| Company | **Thermo Fisher Scientific** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology, Chemistry |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The Thermo Fisher TSQ Altis is an inline triple quadrupole mass spectrometer coupled with an ultra-high-performance liquid chromatograph (UHPLC/MS/MS) for separation and analysis of synthesized bio-derived monomers. The system is ideal for targeted metabolite analysis, targeted quantitation and high-sensitivity detection.

## Applications:

Targeted and absolute Quantitation of small molecules, Peptides and Proteins in

- Metabolomics, Lipidomics and Proteomics (Targeted)
- Clinical research and Pharmaceuticals (Biomarker validation, phamacokinetics)
- Food safety, pesticide and environmental toxins, etc.
- Method development for targeted assays

# ACQUITY UPLC H-Class Series Systems



ACQUITY UPLC H-Class Series Systems

| | |
|---|---|
| Category of Instrument | ACQUITY UPLC H-Class Series Systems |
| Company | **Waters Corporation** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 2-3 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The ACQUITY UPLC H-Class Series Systems are advanced liquid chromatography (LC) platforms designed for high-resolution, sensitive, and fast separations, blending traditional HPLC flexibility with true UPLC performance, featuring a quaternary solvent manager for easy method transfer and compatibility with existing HPLC methods.

## Applications:

Routine analysis, method development, and high-performance separations of pharmaceutical, biotech, environmental, chemical and food samples, especially in protein characterization (peptide mapping, SEC, IEX), trace impurity analysis, and general quality control (QA/QC), offering superior resolution, sensitivity, and throughput with multi-solvent blending and flow-through-needle injection for robust, reliable, and faster analyses.

# Datla Human Immunocore Facility

## Instrumentation Details

## Rhopsody Single-Cell Analysis System



Rhopsody Single-Cell Analysis System

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|---|---|
| Category of Instrument | Rhopsody Single-Cell Analysis System |
| Company | **BD Biosciences** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 2-3 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Overview

The Rhapsody Single-Cell Analysis System enables single-cell to capture and barcoding of hundreds to thousands of single cells for analysis of genomic and proteomic information, using proprietary, gentle, robust microwell-based single-cell partitioning technology.

### Applications:

It allows high-throughput capture of multi-omics information from single cells using a simple cartridge workflow and a multitier barcoding system. The resulting captured information can be used to generate various types of next- generation sequencing (NGS) libraries.

# Olink Q100



Olink Q100

| | |
|---|---|
| Category of Instrument | Olink Q100 |
| Company | **Thermo Fisher Scientific** |
| Lab Location | Basement, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 2-3 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The Olink Q100 Proteomics Flex Panel is a customisable product that allows researchers to select and combine protein targets from a list of human proteins.

## Applications:

The assay allows measurement of 15-30 protein biomarkers simultaneously and provides readout in absolute units (pg/mL) or as normalised protein expression (NPX).

# Ashoka Sequencing Facility

## Instrumentation Details

## iSeq 100




iSeq 100

| | |
|---|---|
| Category of Instrument | iSeq 100 |
| Company | **Illumina** |
| Lab Location | 3rd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

### Overview

The iSeq 100 sequencing system is a rapid benchtop sequencer powered by CMOS technology and SBS chemistry.

### Applications:

The iSeq 100 is used to efficiently fetch public sequencing data from multiple bioinformatics databases, including GSA, SRA, ENA, and DDBJ for targeted sequencing applications.

# Nanopore GridION



Nanopore GridION

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|---|---|
| Category of Instrument | Nanopore GridION |
| Company | **Oxford Nanopore Technologies** |
| Lab Location | 3rd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Operator based service mode system |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

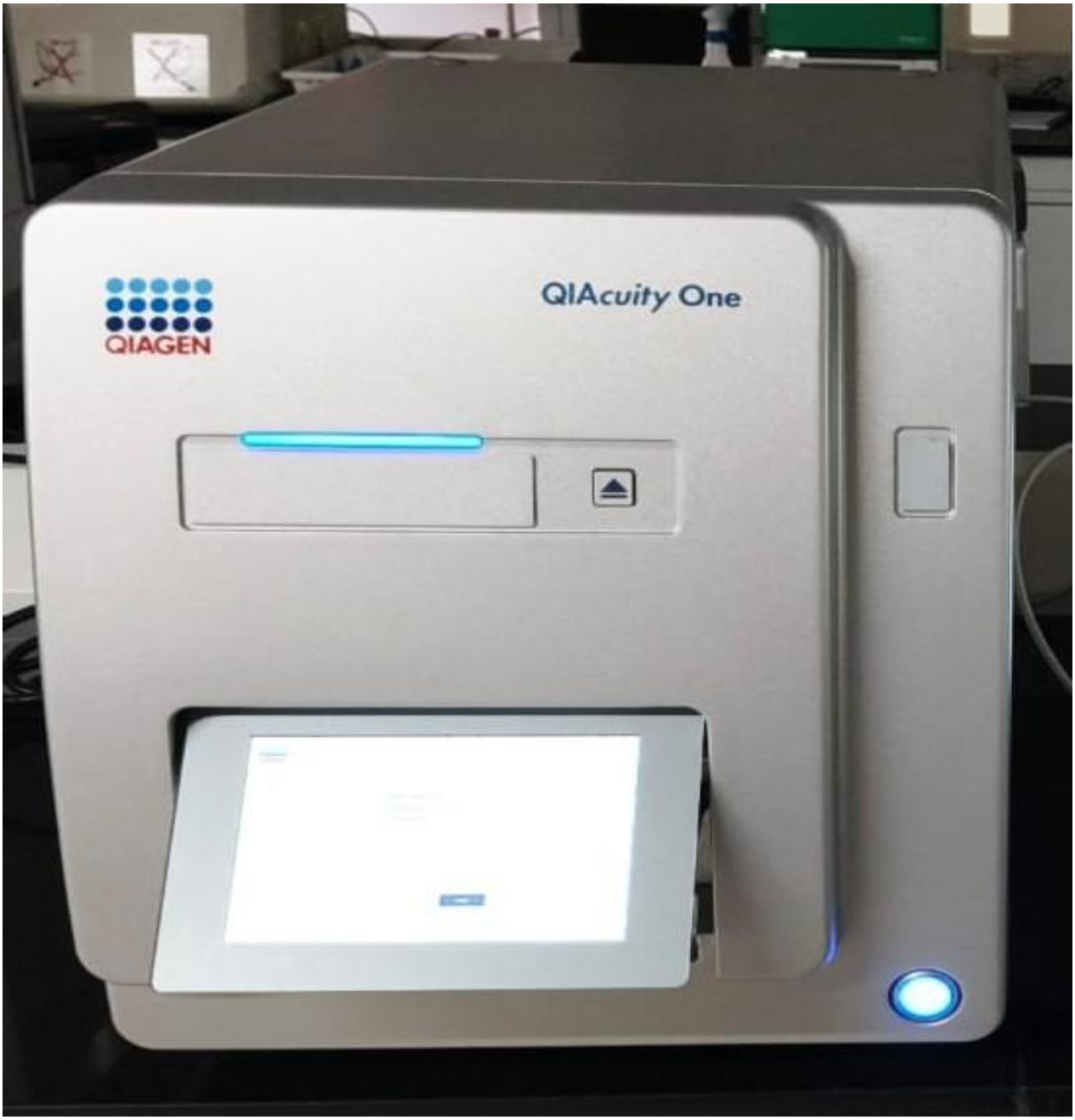
## Overview

The Nanopore GridION is a flexible, medium-throughput sequencing device with five integrated flow cell positions and onboard high performance compute.

## Applications:

The Nanopore GridION is suitable for multiplexed sequencing of small whole genomes, such as viruses, bacteria or small eukaryotic genomes, metagenomics and targeted sequencing.

# Digital PCR System




Digital PCR System

| | |
|---|---|
| Category of Instrument | **QIAcuity Digital PCR System** |
| Company | QIAGEN |
| Lab Location | 1st Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The **QIAcuity Digital PCR System** is QIAGEN's "all-in-one" platform designed to make digital PCR (dPCR) as simple and fast as standard qPCR. Its standout feature is the use of **microfluidic nanoplates** rather than the traditional oil-droplet method, which streamlines the entire process into a single machine.

- Scalability: The system comes in three configurations to fit different lab needs:
    - QIAcuity One: 1-plate capacity (up to 384 samples/day).
    - QIAcuity Four: 4-plate capacity (up to 672 samples/day).
    - QIAcuity Eight: 8-plate capacity with two independent thermocyclers (up to 1,248 samples/day).
- Advanced Multiplexing: The system supports up to 12-plex reactions

## Application

- Rare mutation detection
- Copy number variation analysis
- Gene expression analysis
- Pathogen detection
- Genotyping
- miRNA research
- Cell and gene therapy

# Seahorse XF Analyzer



Seahorse XF Analyzer

| Category of Instrument | **Seahorse XF Analyzer** |
|---|---|
| Company | Agilent |
| Lab Location | 2nd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The **Agilent Seahorse XF Analyzer** is the gold-standard instrument for measuring **cellular metabolism** in real time. Unlike traditional assays that give a "snapshot" of a dead cell, the Seahorse

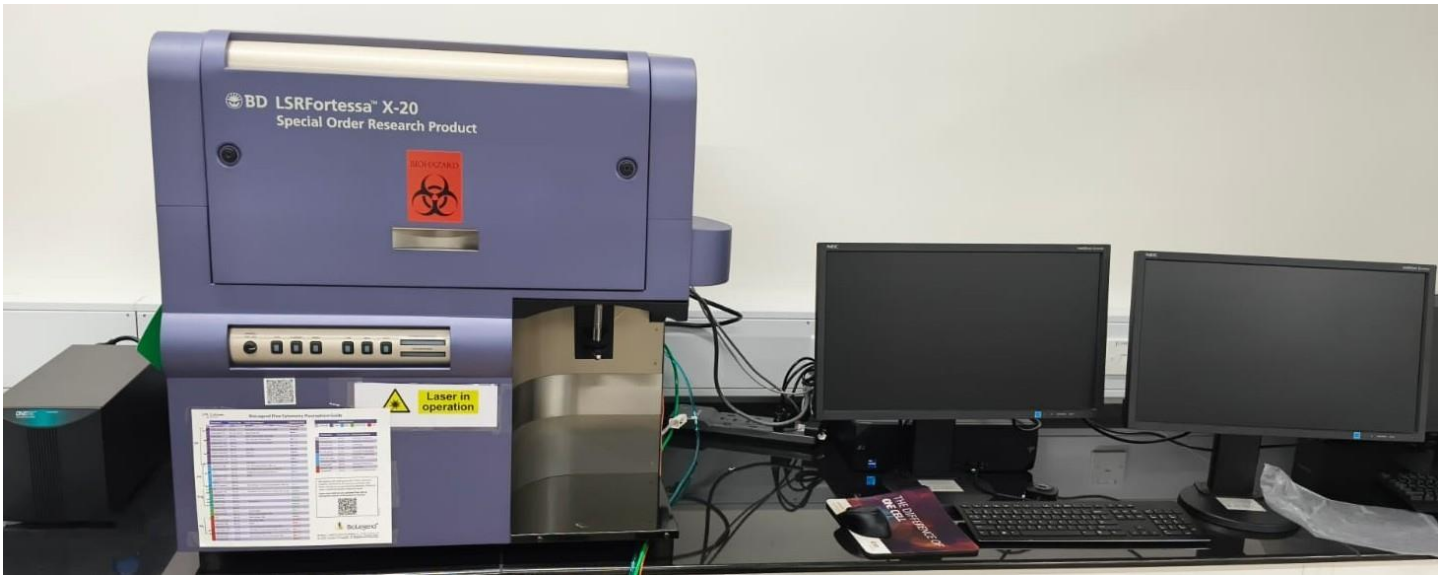
allows you to watch live cells breathe and generate energy as they respond to drugs or environmental changes.

The instrument simultaneously measures two primary metabolic pathways by monitoring the "exhaust" of the cells:

### Application

- It measures basal respiration, ATP production, and maximal respiratory capacity.
- It measures the protons coming from glycolysis, subtracting those from the TCA cycle for a pure reading.
- Quantifies exactly how much ATP is coming from mitochondria vs. glycolysis simultaneously.

## LSRFortessa Flow Cytometer




**BD LSRFortessa Flow Cytometer**

| | |
|---|---|
| Category of Instrument | **BD LSRFortessa** |
| Company | BD |
| Lab Location | B10, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |

| | |
|---|---|
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The **BD LSRFortess** is a high-performance, benchtop flow cytometer designed for multicolor analysis. Known for its flexibility, it is a staple in research laboratories for applications ranging from immunophenotyping to rare cell population analysis.

## Fast Protein Liquid Chromatography

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|---|---|
| Category of Instrument | **Fast Protein Liquid Chromatography** |
| Company | Cytiva |
| Lab Location | 3rd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

**Fast Protein Liquid Chromatography (FPLC)**, These systems are designed to automate the purification of proteins, peptides, and nucleic acids using various techniques like affinity (AC), ion-exchange (IEX), and size-exclusion chromatography (SEC).

**Key Components of an FPLC System**

FPLC systems generally operate at moderate pressures ($1-5$ MPa) to preserve the native structure of biomolecules. A standard setup includes:

- **System Pumps:** Usually dual-piston pumps for precise gradient elution.
- **Mixer:** Ensures homogeneous buffer composition during runs.

- **Detectors:** Monitors UV absorbance (typically at **280 nm** for proteins), conductivity (to track salt gradients), and pH.
- **Fraction Collector:** Automatically collects purified protein into tubes or 96-well plates.

## High Speed Centrifuge CR22N




**Centrifuge CR22N**

| | |
|---|---|
| Category of Instrument | **Eppendorf Centrifuge CR22N** |
| Company | Eppendorf |
| Lab Location | 2nd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |

| | |
|---|---|
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The **Eppendorf Centrifuge CR22N** is a high-speed, refrigerated floor-standing centrifuge designed for large-scale bioprocessing tasks like biomass harvesting and protein purification.

**Core Performance Specifications**

The CR22N balances high capacity with high centrifugal force, making it a "harvest centrifuge" staple for biological research.

# Tape Station 4150



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| Category of Instrument | **Tape Station 4150** |
| Company | Agilent |
| Lab Location | 3rd Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |

| | |
|---|---|
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

The 4150 TapeStation system is an economic, low-throughput automated electrophoresis platform for nucleic acid sample quality control. Building on the success of the proven ScreenTape technology, it allows a quick, easy, and reliable analysis of DNA and RNA samples for up to 16 samples per run. This affordable, entry-level system is the ideal solution for the quality control (QC) of RNA and DNA samples in next-generation sequencing (NGS), biobank, or vaccine development workflows.

- Implified workflow with the established, ready-to-use Screen Tape technology
- Nucleic acid analysis with excellent reproducibility for size, concentration, and integrity
- Full compatibility with all available RNA and DNA ScreenTape assays, including assays for genomic and cell-free DNA
- Easy switching between DNA and RNA ScreenTape assays for excellent application flexibility
- Full sample scalability from 1 to 16 samples with constant cost-per-sample
- Minimized time to results with as little as 1 to 2 minutes per sample or less than 20 minutes for 16 samples
- Reduced sample consumption with as little as 1 to 2 µL of DNA and RNA samples, even for high-sensitivity assays
- No risk of cross contamination with individual ScreenTape lanes
- Reliable integrity standards for RNA (RNA integrity number equivalent, RIN$^e$), genomic DNA (DNA integrity number, DIN), and cell-free DNA (%cfDNA)
- Lower bench space requirement in the laboratory with a small instrument footprint
- Optimized cost of ownership and maximized instrument uptime with the option for self-maintenance tasks
- Seamless switching to the 4200 TapeStation system, possible by complete assay compatibility
- Certified with My Green Lab's ACT (Accountability, Consistency, Transparency) label for environmental impact

# Confocal Fluorescence Correlation Spectrometer




| | |
|---|---|
| Category of Instrument | Confocal Fluorescence Correlation Spectrometer |
| Company | Holmarc |
| Lab Location | 3rd$^{nd}$ Floor, Trivedi School of Biosciences |
| Internal Users (Departments) | Biology |
| Approx. No. of Internal Research Groups/Labs as Users | Approx. 8-10 and expected to increase in near future |
| Mode of operation | Self-operated |
| Access to External Users | Yes |
| External User Types | External Collaborators, External Universities/Institutes |

## Overview

Holmarc Confocal Fluorescence Correlation Spectrometer is a microscope with fluorescence correlation spectroscopy (FCS) attachment for capturing molecular dynamics processes in cells, solutions and nano structures. This innovative product is developed with technology from Tata Institute of Fundamental Research (TIFR), Mumbai, a laboratory world-renowned for innovation in the area of FCS. We have used two DPSS lasers in the instrument which are 532nm & 405nm with variable power output. Single laser

configuration is also available.

# Ashoka Molecular Biology Research Lab

Ashoka Molecular Biology Research Labs are equipped with all high-end general biology equipment required for molecular biology research including the work on highly sensitive samples inside BSL2/2+ level Clean Rooms. These instruments include Digital PCR, RT PCR, Sea Horse, Flow Cytometer, FPLC, Centrifuges, Cell disruptors, Thermomixer, Bioanalyzer, Shaker incubators, Weighing Balances, pH meters, Gel Doc, Transblot, SDS PAGE & Electrophoresis gel apparatus, Autoclave, Hot air oven, -20/-30 freezers, -80 freezers, 4C freezers, liquid nitrogen, stereo & compound microscopes, milliQ water, Ice flaker machine etc. The open lab in Ashoka provides interactive scientific environment for the researchers.

# Central Imaging Facility (CIFA)

CIFA is an open-access centralized facility where end users receive support to carry out conventional and advanced imaging techniques. The unit has combined resources to provide state-of-the-art equipment that is open to all researchers.

Microscopy facilities at Ashoka University offer a comprehensive suite of technologies, ranging from basic light microscopy to cutting-edge super-resolution systems. Our core imaging portfolio includes basic microscopes (fluorescence and confocal imaging, tissue slide scanning) & to advanced (high-content microscopy, multiphoton microscopy, and lattice light-sheet microscopy, along with super-resolution structured illumination microscopy) techniques. For ultrastructural studies, we have recently added a Field-Emission Scanning Electron

Microscope (FE-SEM) to our electron microscopy facility, enabling high-resolution nanoscale analysis. Additionally, we have further strengthened our capabilities by integrating spatial-omics platforms, including Hyperion Imaging Mass Cytometry for situ analysis of cells in their native microenvironment within the preserved single tissue section and spatial transcriptomics (MERSCOPE).

# Datla Immunocore Facility

The Datla Human Immunome Lab core facility comprises a set of integrated platforms supporting molecular, proteomic, and cellular analyses. Key instrumentation includes the BD Rhapsody Single-Cell Analysis System for high-resolution single-cell profiling, Olink affinity-based proteomics based on Proximity Extension Assay (PEA) for multiplexed and targeted protein quantification, and quantitative PCR systems for gene expression analysis and validation. These platforms enable coordinated analysis of gene and protein expression across different biological scales.

# High Resolution Mass Spectrometry Facility

The Mass Spectrometry Facility provides advanced analytical capabilities for the identification, characterization, and quantification of biomolecules and small molecules across diverse research areas. The facility houses an Orbitrap Fusion Lumos Tribrid Mass Spectrometer coupled with both Vanquish UHPLC and Vanquish Neo Nano Flow LC, supporting high-resolution untargeted metabolomics, lipidomic, intact protein analysis, and advanced bottom-up proteomics through both Data-Dependent Acquisition (DDA) and Data-Independent Acquisition (DIA) workflows. Complementing this is a TSQ Altis Triple Quadrupole Mass Spectrometer coupled with a Vanquish UHPLC, enabling highly sensitive and robust targeted quantification of small molecules. The facility offers comprehensive support in experimental design, method development, data acquisition, and data analysis, enabling high-quality research across multiple disciplines.

Evolutionary Immunology Facility
AR/VR Lab
Cohort Lab
Axis Zebra Fish Facility
Cell culture facility

Below mentioned write up will be added once the layout is finalized