

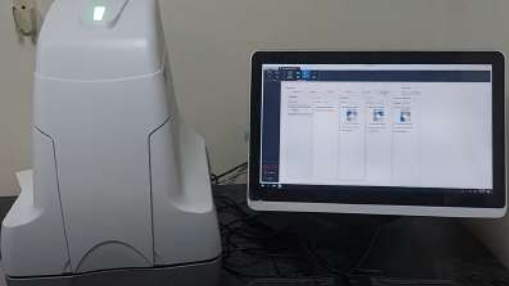







**LIST OF COMMON EQUIPMENTS HOUSED
AT THE DEPARTMENT OF
BIOTECHNOLOGY, IIT Madras**

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| Part A | Bio-SAIF (Bio-Sophisticated Analytical Instrumentation Facility) |
| Part B | Cell & Molecular Biology Related |
| Part C | Protein characterization & Biomaterials Related |
| Part D | Other common Equipments |

Part A - Bio-SAIF (Bio-Sophisticated Analytical Instrumentation Facility)

| Sr. No | Name of the equipment | Photo | Brand/Model Number | Functionality of the equipment | Location |
|--------|--|---|--|---|-----------------------|
| 1 | Liquid Chromatography Mass Spectrometry (LCMS) |  | Thermoscientific/ Exploris 240 | <p>The Thermo Scientific Exploris 240 LC-MS is a high-performance liquid chromatography-mass spectrometry system that provides ultra-high resolution and sensitivity, enabling precise detection and quantification of trace compounds in complex samples for applications in proteomics, metabolomics, and environmental analysis.</p> | Room No: 007, Block 1 |
| 2 | FACS |  | Beckton Dickinson / 1. Canto II 2. Symphony A1 3. Discover S8 | <p>The BD FACS (Fluorescence-Activated Cell Sorting) system enables rapid, high-precision sorting and analysis of individual cells based on their fluorescence characteristics, supporting applications in cell biology, immunology, and cancer research.</p> | Room No: 007, Block 1 |
| 3 | Metabolic Gas Analyzer |  | Agilent/ Seahorse XF Pro | <p>The Agilent Seahorse XF Pro is a high-throughput metabolic analysis platform that measures cellular bioenergetics in real-time, enabling detailed study of cellular metabolism, mitochondrial function, and metabolic shifts in health and disease.</p> | Room No: 007, Block 1 |






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| 4 | UHPLC |  | Shimadzu | <p>The Shimadzu UHPLC system offers advanced separation efficiency, speed, and sensitivity for demanding applications such as protein analysis, pharmaceutical testing, and environmental monitoring, utilizing high-pressure capabilities and cutting-edge detection technologies.</p> | Room No: 007, Block 1 |
| 5 | Inverted fluorescence microscope |  | Olympus/IX83 | <p>The Olympus IX83 is a fully automated inverted microscope designed for advanced live-cell imaging, offering high-resolution imaging, precise stage control, and versatile fluorescence capabilities for cellular and molecular research.</p> | Room No: 007, Block 1 |
| 6 | Confocal microscope |  | Olympus Fluoview/3000 | <p>The Olympus Fluoview 3000 Confocal Microscope provides high-resolution, multi-color imaging with advanced optical sectioning capabilities, enabling detailed 3D visualization of live and fixed samples for cellular and molecular research.</p> | Room No: 007, Block 1 |
| 7 | Inverted fluorescence microscope - semiautomated |  | Olympus/IX51 | <p>The Olympus IX51 is a versatile inverted microscope designed for high-quality imaging in cell culture, offering flexible configurations for brightfield, fluorescence, and phase contrast applications in life sciences research.</p> | Room No: 007, Block 1 |





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| 8 | Upright fluorescence microscope |  | Leica | The Leica upright fluorescence microscope provides superior optical performance with advanced imaging technologies like LED fluorescence illumination etc. | Room No: 007, Block 1 |
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PART B: Cell & Molecular Biology Related Equipments

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| 1 | RT-PCR |  | Qiagen/ QIAquant 965 plex | The QIAquant 965 Plex is a real-time PCR system by Qiagen designed for high-throughput quantification of nucleic acids, offering precise and reliable detection across multiple targets in a single run. It is particularly useful in applications such as gene expression analysis, viral load monitoring, and pathogen detection, providing fast results with minimal sample input. | Room No: 114, Block 2 |
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| 2 | Nanodrop |  | Thermoscientific | The NanoDrop spectrophotometer provides rapid, highly accurate measurement of nucleic acids and proteins with minimal sample volume, enabling precise quantification for molecular biology and biochemistry applications. | Room No: 007, Block 1 |
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| 3 | Thermal cycler |  | Eppendorf | The Eppendorf Thermal Cycler offers precise temperature control and fast cycling for PCR applications, ensuring reliable amplification of DNA for research in genetics, diagnostics, and molecular biology. | Room No: 007, Block 1 |
| 4 | ChemiDoc MP Imaging System |  | BIO-RAD | The Bio-Rad ChemiDoc MP Imaging System is a versatile platform used for capturing high-resolution images of chemiluminescent, fluorescence, and colorimetric assays in molecular biology research. | Room No: 114, Block 2 |
| 5 | PCR |  | BIO-RAD/ T100 Thermal Cycler | The BIO-RAD T100 Thermal Cycler is a compact, reliable PCR machine designed for high-precision amplification of DNA. | Room No: 114, Block 2 |
| 6 | NanoDrop spectrophotometer |  | Thermoscientific/ NanoDrop One | The Thermo Scientific NanoDrop One is a highly sensitive spectrophotometer designed for quick and accurate quantification and quality assessment of nucleic acids, proteins, and other biomolecules using just a small sample volume. | Room No: 114, Block 2 |
| 7 | Gel Doc |  | BIO-RAD / XR imaging system | The Gel Doc XR+ by Bio-Rad is a digital imaging system used to capture high-quality images of DNA, RNA, and protein gels for analysis and documentation. | Room No: 214, Block 1 |

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| 8 | Gel Doc (molecular imager) |  | BIO-RAD/ Gel Doc™ XR+ with image lab software | The Gel Doc XR+ by Bio-Rad is a digital imaging system used to capture high-quality images of DNA, RNA, and protein gels for analysis and documentation. | Room No: 318, Block 2 |
| 9 | Sonicator |  | Sonics/vibra-cell | The Sonics Vibracell Sonicator is used to apply ultrasonic energy to samples for processes like cell disruption, homogenization, and protein extraction in biological and chemical research. | Room No: 214, Block 1 |
| 10 | Sonicator (2 Nos) |  | Sonics/vibra-cell | The Sonics Vibracell Sonicator is used to apply ultrasonic energy to samples for processes like cell disruption, homogenization, and protein extraction in biological and chemical research. | Room No: 318, Block 1 |
| 11 | ChemiDoc |  | BIO-RAD | The Bio-Rad ChemiDoc MP Imaging System is a versatile platform used for capturing high-resolution images of chemiluminescent, fluorescence, and colorimetric assays in molecular biology research. It enables precise quantification and analysis of protein, nucleic acid, and cell-based experiments, offering advanced image processing and data analysis tools for a wide range of applications. | Room No: 318, Block 1 |



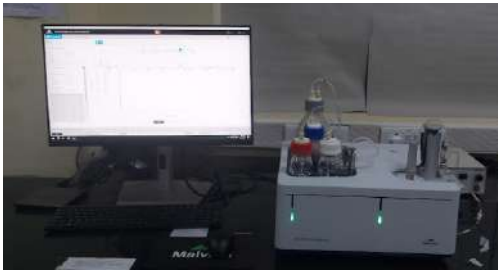

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| 12 | qPCR |  | Applied biosystems/ Quant Studio flex | The QuantStudio Flex by Applied Biosystems is a real-time PCR system used for high-precision gene expression analysis, genotyping, and other molecular biology applications. | Room No: 318, Block 1 |
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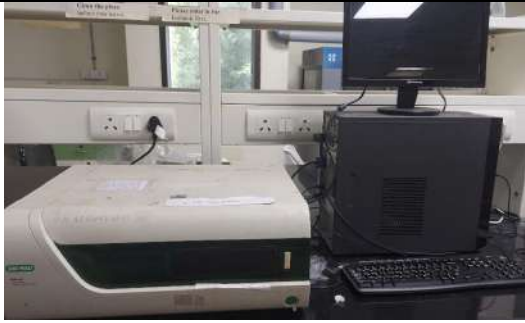



Part C - Protein characterization & Biomaterials Related Equipments





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| 1 | UV-Vis Spectrophotometer |  | Jasco/V-760 | The Jasco V-760 UV-Vis Spectrophotometer is used for precise absorbance and transmittance measurements across the ultraviolet and visible light spectra, facilitating the analysis of molecular concentration, chemical composition, and reaction kinetics. | No: 318, Block 1 |
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| 2 | Microplate reader |  | BioTEK/synergy H1 | The BioTek Synergy H1 is a multi-mode microplate reader used for a wide range of applications, including absorbance, fluorescence, and luminescence assays, providing versatile and high-throughput detection in research and diagnostics. | Room No: 318, Block 1 |
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| 3 | Spectrofluorometer |  | Jasco/FP6500 | The Jasco FP-6500 Spectrofluorometer is used for measuring fluorescence emission and excitation spectra, enabling sensitive analysis of fluorescent molecules in applications like protein studies etc. | Room No: 318, Block 1 |
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| 4 | DLS – Zetasizer Ultra |  | Malvern | <p>The Malvern Zetasizer DLS (Dynamic Light Scattering) measures the size distribution, zeta potential, and molecular dynamics of nanoparticles and colloidal suspensions, aiding in material characterization and stability analysis.</p> | Room No: 318, Block 1 |
| 5 | FT-IR |  | Perkin Elmer | <p>The PerkinElmer FTIR (Fourier Transform Infrared) spectrometer is used to identify chemical compounds and analyze molecular structures by measuring the absorption of infrared light across different wavelengths.</p> | Room No: 318, Block 1 |
| 6 | ITC |  | Malvern/ Microcal PEAQ | <p>The MicroCal PEAQ Malvern ITC (Isothermal Titration Calorimeter) measures the heat released or absorbed during molecular interactions, providing detailed insights into binding affinity, stoichiometry, and thermodynamics.</p> | Room No: 318, Block 1 |
| 7 | CD Spectrophotometer |  | Jasco/J-815 | <p>The Jasco J-815 CD (Circular Dichroism) spectrophotometer is used to analyze the secondary structure of proteins and nucleic acids by measuring their chiral optical activity in the ultraviolet range.</p> | Room No: 318, Block 1 |




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| 8 | Microplate spectrophotometer |  | BIO-RAD/X Mark | <p>The Bio-Rad XMark Microplate Spectrophotometer is used for high-throughput absorbance measurements in 96-well or 384-well plates, enabling applications such as enzyme assays, protein quantification, and cellular analysis.</p> | Room No: 214, Block 1 |
| 9 | UV/Vis spectrophotometer |  | Jasco | <p>The Jasco UV/Vis spectrophotometer is used to measure the absorbance of samples in the ultraviolet and visible light range, enabling the analysis of concentrations and properties of biomolecules etc.</p> | Room No: 214, Block 1 |
| 10 | DLS – particle size analyzer |  | Zetatrak Microtrac | <p>The Zetatrak DLS (Dynamic Light Scattering) system is used to measure the size distribution and zeta potential of nanoparticles and colloidal suspensions, providing insights into their stability and behavior in solution.</p> | Room No: 214, Block 1 |
| 11 | Ultracentrifuge |  | Beckman Coulter/Optima XPN 100 | <p>An ultracentrifuge uses extremely high rotational speeds to separate subcellular components, proteins, and macromolecules based on their size and density for advanced biological and chemical analysis.</p> | Room No: 218, Block 2 |

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| 12 | Lyophilizer |  | | <p>A lyophilizer, or freeze dryer, removes moisture from samples by freezing them and then applying a vacuum, preserving delicate biological and pharmaceutical materials.</p> | Room No: 214, Block 1 |
| 13 | Chromatography refrigerator |  | | <p>A chromatography refrigerator is used to store chromatography columns, solvents, and reagents at controlled low temperatures to maintain their stability and prevent degradation.</p> | Room No: 214, Block 1 |
| 14 | Dissolution test apparatus |  | Lab India/D5 8000 | <p>A dissolution test apparatus is used to assess the rate at which a drug dissolves in a liquid medium, simulating the conditions of the gastrointestinal tract to evaluate the release and bioavailability of pharmaceutical formulations.</p> | Room No: 218, Block 2 |
| 15 | Nanofiber electrospinning unit |  | Holmarc | <p>The Holmarc Nanofiber Electrospinning Unit is used to fabricate nanofibers from polymers through electrospinning, enabling applications in tissue engineering, drug delivery, and filtration.</p> | Room No: 214, Block 1 |

Part D - Other common equipments






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| 1 | Centrifuge |  | Thermoscientific/ Sorvall STPlus series | A centrifuge rapidly spins samples at high speeds to separate components based on their density, allowing for the isolation of cells, proteins, nucleic acids, and other particles in biological and chemical research. | Room No: 318, Block 1 |
| 2 | Centrifuge |  | Thermoscientific/ Sorvall ST 16R | A centrifuge rapidly spins samples at high speeds to separate components based on their density, allowing for the isolation of cells, proteins, nucleic acids, and other particles in biological and chemical research. | Room No: 218, Block 2 |
| 3 | Laminar air flow (vertical) |  | | A laminar airflow cabinet provides a sterile working environment by circulating HEPA-filtered air in a smooth, unidirectional flow, preventing contamination during experiments. | Room No: 218, Block 2 |
| 4 | Laminar air flow (horizontal) |  | | A laminar airflow cabinet provides a sterile working environment by circulating HEPA-filtered air in a smooth, unidirectional flow, preventing contamination during experiments. | Room No: 218, Block 2 |

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| 5 | Shaker incubator (double deck) (Lab no: 113) |  | ORBITEK/ Scigenics biotech | The ORBITEK Shaker Incubator by Scigenics is a compact, automated system that combines gentle shaking and controlled temperature for optimal growth of cell cultures, bacteria, and yeast. | Room No: 114, Block 2 |
| 6 | Shaker incubator |  | LABZEE/EIS45 | The LABZEE EIS45 Shaker Incubator provides precise temperature control and continuous agitation, making it ideal for cultivating microorganisms and growing cell cultures in research and laboratory settings. | Room No: 114, Block 2 |
| 7 | Sonicator (faculty lab's) |  | | An ultrasonic cleaner uses high-frequency sound waves to generate microscopic bubbles in a cleaning solution, which effectively removes dirt, debris, and contaminants from delicate instruments and surfaces. | Room No: 318, Block 2 |
| 8 | Sonicator (Lab no: 113) |  | | An ultrasonic cleaner uses high-frequency sound waves to generate microscopic bubbles in a cleaning solution, which effectively removes dirt, debris, and contaminants from delicate instruments and surfaces. | Room No: 114, Block 2 |






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| 9 | Shaker incubator |  | ORBITEK/ Scigenics biotech | <p>The ORBITEK Shaker Incubator by Scigenics is a compact, automated system that combines gentle shaking and controlled temperature for optimal growth of cell cultures, bacteria, and yeast.</p> | Room No: 218, Block 2 |
| 10 | RO plant (big) |  | | <p>An RO (Reverse Osmosis) plant purifies water by removing dissolved salts, contaminants, and impurities through a semi-permeable membrane, ensuring clean and safe water.</p> | Room No: 218, Block 2 |
| 11 | Iceflaker |  | Scotsman/AF 80 | <p>An ice flaker quickly produces small, flaky ice used for preserving biological samples and carrying out certain experiments.</p> | Room No: 218, Block 2 |

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| 12 | Fume hood |  | XGEN-GD Lab Solutions Pvt. Ltd | A fume hood provides a ventilated workspace to safely contain and exhaust hazardous fumes, vapors, and airborne particles during experiments. | Room No: 218, Block 2 |
| 13 | -80°C deep freezer |  | Thermoscientific/ TDE40086FV- ULTS | A -80°C deep freezer is used to store biological samples, such as cells, enzymes, and DNA, at ultra-low temperatures to preserve their integrity over long periods. | Room No: 218, Block 2 |
| 14 | BOD incubator |  | Rays Scientific Instruments/ Model No: BO01 | A BOD incubator provides a controlled environment with specific temperature conditions. | Room No: 318, Block 2 |

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| 15 | Autoclave (Lab no: 204) |  | | An autoclave sterilizes equipment and materials by applying high-pressure steam at elevated temperatures to eliminate microorganisms and ensure aseptic conditions. | Room No: 318, Block 2 |
| 16 | Milli-Q system & RO |  | | The Milli-Q system produces ultrapure water by removing organic, inorganic, and microbial contaminants, making it essential for sensitive laboratory applications like molecular biology. | Room No: 318, Block 2 |
| 17 | Iceflaker |  | Labman Scientific Instruments | An ice flaker quickly produces small, flaky ice used for preserving biological samples and carrying out certain experiments. | Room No: 318, Block 2 |
| 18 | Autoclave (Lab No: 311) |  | Labtech Instruments | An autoclave sterilizes equipment and materials by applying high-pressure steam at elevated temperatures to eliminate microorganisms and ensure aseptic conditions. | Room No: 318, Block 2 |

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| 19 | Autoclave |  | Equitron/SLEFA | <p>The Equitron Slefa autoclave provides efficient sterilization of laboratory instruments and materials using high-pressure steam, ensuring the elimination of bacteria, viruses, and other pathogens.</p> | Room No: 318, Block 2 |
| 20 | Centrifuge |  | Thermoscientific/Sorvall ST8R | <p>A centrifuge rapidly spins samples at high speeds to separate components based on their density, allowing for the isolation of cells, proteins, nucleic acids, and other particles in biological and chemical research.</p> | Room No: 318, Block 2 |
| 21 | Iceflaker (2 Nos) |  | Scotsman/AF 80 | <p>An ice flaker quickly produces small, flaky ice used for preserving biological samples and carrying out certain experiments.</p> | Room No: 215, Block 1 |
| 22 | -80°C deep freezer |  | Thermoscientific | <p>A -80°C deep freezer is used to store biological samples, such as cells, enzymes, and DNA, at ultra-low temperatures to preserve their integrity over long periods.</p> | Room No: 214, Block 1 |
| 23 | Refrigerator |  | Labtech Instruments | <p>A refrigerator in a biology lab is used to store temperature-sensitive samples, reagents, and biological materials to maintain their stability and prevent degradation.</p> | Room No: 214, Block 1 |

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| 24 | Hot air-drying oven |  | Labman | A hot air oven is used in laboratories to sterilize equipment and dry materials by circulating hot air at controlled temperatures. | Room No: 214, Block 1 |
| 25 | Water bath |  | Equitron | A water bath provides a controlled temperature environment for incubating samples, gently heating them for experiments such as enzyme reactions or DNA denaturation. | Room No: 214, Block 1 |
| 26 | Milli Q system |  | | The Milli-Q system produces ultrapure water by removing organic, inorganic, and microbial contaminants, making it essential for sensitive laboratory applications like molecular biology. | Room No: 214, Block 1 |
| 27 | Hot air oven (Lab no: 208) |  | AUSCO | A hot air oven is used in laboratories to sterilize equipment and dry materials by circulating hot air at controlled temperatures. | Room No: 214, Block 1 |
| 28 | Centrifuge |  | | A centrifuge rapidly spins samples at high speeds to separate components based on their density, allowing for the isolation of cells, proteins, nucleic acids, and other particles in biological and chemical research. | Room No: 014, Block 1 |

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| 29 | RO plant 1 |  | | | An RO (Reverse Osmosis) plant purifies water by removing dissolved salts, contaminants, and impurities through a semi-permeable membrane, ensuring clean and safe water. | Room No: 014, Block 1 |
| 30 | RO plant 2 |  | | | An RO (Reverse Osmosis) plant purifies water by removing dissolved salts, contaminants, and impurities through a semi-permeable membrane, ensuring clean and safe water. | Room No: 014, Block 1 |
| 31 | - 80°C deep freezer |  | | | A -80°C deep freezer is used to store biological samples, such as cells, enzymes, and DNA, at ultra-low temperatures to preserve their integrity over long periods. | Room No: 014, Block 1 |
| 32 | Invivo imaging system |  | | Perkin Elmer/ IVIS Spectrum | The IVIS Spectrum is an in vivo imaging system that enables non-invasive, high-sensitivity detection of bioluminescent and fluorescent signals, ideal for preclinical research in oncology, drug development, and molecular biology. | Animal House, Block 2 |
| 33 | Echocardiography system |  | | Fujifilm/ultrasound system | The Echocardiography System provides high-resolution, real-time imaging of the heart, enabling accurate assessment of cardiac function, structure, and blood flow for clinical diagnostics and patient monitoring. | Animal House, Block 2 |