Facilities in the Department

The Department of Biochemistry, Biotechnology and Bioinformatics spans over an area of 11,000 sq. ft with ICT enabled class rooms, two undergraduate and five post graduate laboratories, Computer Centre and Instrument Rooms housing state-of-the-art scientific instruments and equipment. The Department has a very well established Animal Tissue Culture, Plant Tissue Culture, Enzymology and Immunology and Advanced Research Laboratories. These facilities are also extended for Consultancy projects.

UG Biochemistry Laboratory

This laboratory is equipped with all necessary basic instruments to carry out practical classes for analytical biochemistry, enzymology, clinical biochemistry and food analysis for 60 UG students. Apart from them, students of Chemistry and Food Science and Nutrition utilize this laboratory to learn basic biochemical analysis and students of Physician Assistant acquire clinical biochemistry skills in this laboratory.

UG Biotechnology Laboratory

UG Biotechnology laboratory caters to 60 students. This laboratory is equipped with spectrophotometer, laminar chambers, semi- autoanalyser, distillation units, light microscopes, colorimeters, deep freezers and incubators. Biotechnology practical such as molecular biology, microbiology and cell biology are conducted here. UG students and research scholars utilize this facility to carry out independent projects.

I PG Biochemistry Laboratory

This laboratory can house 25 students. Equipment including high precision balance, refrigerated centrifuge, autoclave, laminar air flow chamber, rotary evaporator, sonicator, Kjeldahl and Soxhlet apparatus are used to learn advanced techniques in clinical biochemistry, analytical biochemistry, molecular biology and microbiology.

II PG Biochemistry Laboratory

Students utilize centrifuge, refrigerated centrifuge, gel documentation system, laminar air flow chamber, thermal cycler, deep freezer, rotary shaker, autoclave and spectrophotometer to learn advanced techniques leading to research. This laboratory is also used by the students for carrying out the project work in their final semester.

I PG Biotechnology Laboratory

This laboratory can house 25 students. Apart from the basic instruments, students have access to sonicator, cell disruptor, nanophotometer, ELISA reader, ultrasonicator, lyophiliser, ice flaking machine and transilluminator to improve their skills in cell biology, analytical chemistry, microbiology and recombinant DNA technology.

II PG Biotechnology Laboratory

PG biotechnology students use this laboratory for their regular practical classes such as immunotechnology, plant biotechnology, enzymes and bioprocess technology. This laboratory isalso furnished to carry out their project work during the final semester.

Animal Tissue Culture Laboratory

We have a well established animal tissue culture laboratory with state-of-the-art facilities to carry out research using cell lines. The basic facilities include anteroom, primary cell culture facility, incubators, incubator room and cell line culturing facility. The equipment includes phase contrast and fluorescence microscope, CO_2 incubator and ordinary incubator. Facilities for cryopreservation of cells are also available. Active research using cell lines of different origin – oral, lung, breast and leukemic cell lines are carried out.

Plant Tissue Culture Laboratory

Culture of plant tissues has become a routine and essential technique in all genetic manipulation or metabolic engineering work. In our lab, we have an excellent facility to culture plants, organ culture like adventitious roots and shoots in suspensions and bioreactors and culture of endangered medicinal plants. This is an essential method wherein rare and endangered plants can be propagated and preserved at the same time. A well-established culture room with controlled temperature, preparation room with water purification system, autoclave, high precision balance and clean air cabinets. This facility caters to the needs of all researchers and masters students of the university.

Enzymology and Immunology Laboratory

This laboratory has been recently established to carry out advanced research on enzymes with specialized equipment like protein concentrator, protein chemiluminescence, cell disruptor and thermostable UV-Visible spectrophotometer focusing on production and characterization of commercially important enzymes from animal, plant and microbial sources. Enzyme technology is also used in green chemistry and bioremediation.

Instrumentation Room

This common facility is open to all PG students and research scholars of the department to perform regular practical activities and project work.

Bioinformatics Laboratory

The Bioinformatics laboratory is outfitted with essential hardware to carry out advanced projects in Computational Biology. Our hardware facilities include Windows Server - Intel Xeon 2.33 GHz, 4GB RAM, 250GB HDD, Linux server - Intel Xeon quade Core Processor, 1.6 GHz, 4GB RAM, 2x200 GB HDD and Desktops - Intel Core2 Duo, 2.66GHz, 4GB RAM, 500GB HDD. The state-of-the-art Schrodinger software caters to the needs of the PG students and research scholars of our institution as well as other institutions with the following licensed modules.

Phase - Pharmacophore modeling and QSAR
IFD - Induced Fit Docking
QikProp - ADME prediction
Glide - Ligand receptor docking
Sitemap - Protein binding site prediction
Prime Comparative modeling and threading

Computer Centre

Basic computing classes for all post graduate students are provided in this centre. It is opened to all students of the department for carrying out basic browsing and literature review. Post graduate students use this centre exhaustively to carry out the documentation part of their dissertation. E-library resources of the institution can be accessed through the computers of this centre.

Cold Room

Cold room facility is available for post graduate students and research scholars to perform research under temperature controlled conditions.

Trinocular Phase Contrast Microscope with Imaging software

Used by post graduate students, research scholars and faculty members to assess routine animal cell culture, especially for the assessment of anti-cancer activity of phytochemicals and toxicological studies.

Automated Hematology Analyser

This is a three part analyzer which gives results of 18 hematological parameters in a minute. Used to estimate blood cell counts of subjects in clinical studies.

Auto Analyser

This instrument is capable of analysing 40 different markers in serum and urine samples. Clinical markers of cardiovascular diseases, diabetes, liver marker enzymes, kidney and hormone functions can be assessed. Used by post graduate students and research scholars for research.

Fermenter

Bioneer fermentor vessel, 5 litre capacity is used for large scale culture of microorganisms for the production of different metabolites.

Phase Contrast Flourescent Microscope

Used in animal tissue culture laboratory for observation of cultured cells. Photographs of cells in culture can be obtained using computer attached camera.

Flow cytometer

Used by research scholars for cancer biology and toxicology experiments. Flow cytometry workshops are conducted frequently for research scholars and scientists working in that field.

High Performance Liquid Chromatography

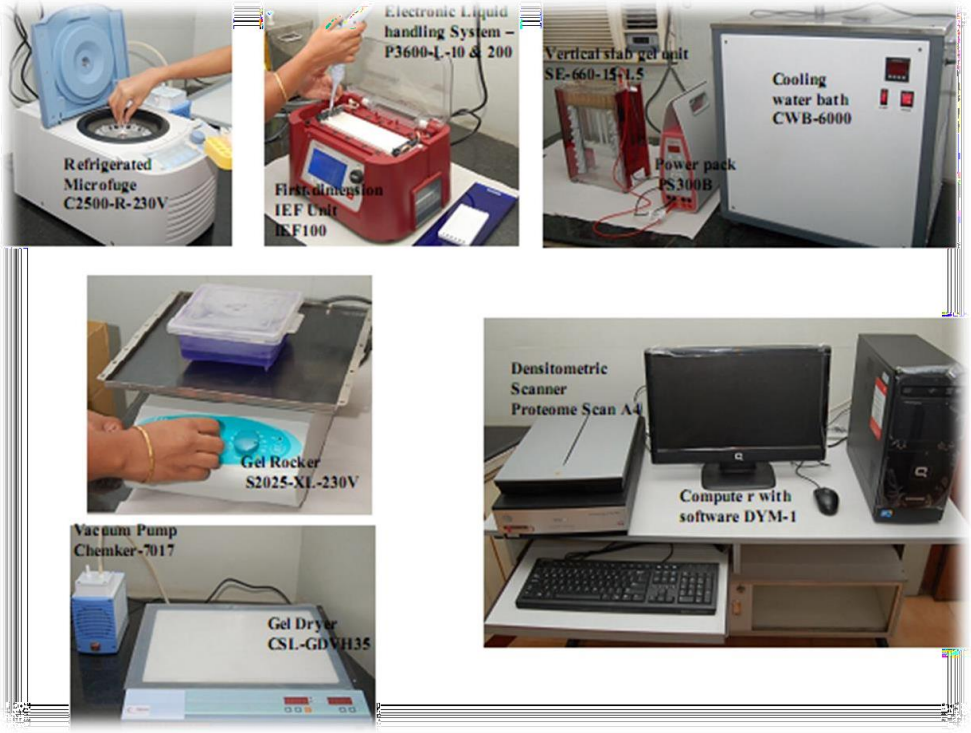
Used as a teaching tool for post graduate students of Biochemistry and Biotechnology. Caters to the needs of research scholars for separation of molecules from plant, microbial and animal sources, their identification and characterization. HPLC training sessions are conducted to enhance the skills and analytical capabilities of students (Schimadzu).

Microplate Reader

Helps to analyze micro-quantities of large number of samples at a time.

Two Dimensional Gel Electrophoresis

Two Dimensional Gel Electrophoresis is used for separation and characterization of proteins in research.



Nanospectrophotometer

Helpful in checking the concentration of biomolecules such as DNA, RNA and protein in volumes as low as 0.5 µl.

Bone densitometer

Quickly and accurately measures the density of bone. It is used primarily to detect osteopenia or osteoporosis, diseases in which the bone's mineral and density are low and the risk of fractures is increased.

ImageQuant LAS 500

ImageQuant LAS 500 chemiluminescence CCD camera is a compact, fast, easy-to-use CCD camera imaging system for chemiluminescence Western blotting, colorimetric, and UV fluorescence image capture.

High Performance Thin Layer Chromatography

HPTLC is used for developing methods and validation of small molecules for herbal drugs, food and cosmetics.

Real Time PCR

Used for plant and animal tissue culture experiments in genetic characterization and comparison of tissue cultured cells. Also useful in clinical diagnostic studies.