

Overview:

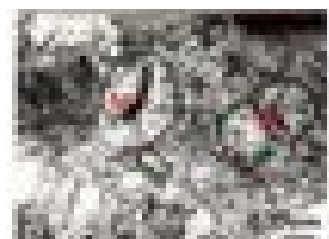
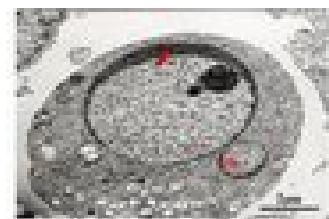
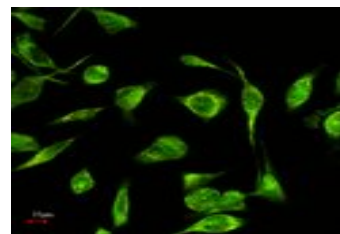
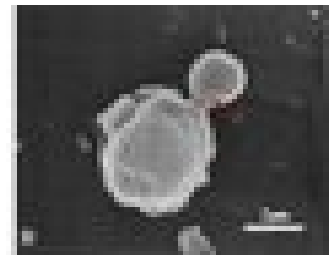
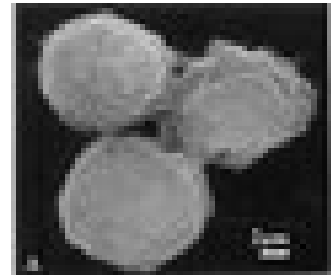
Cancer is a major cause of morbidity and mortality world over. In 1996, anticancer programme was initiated as the national facility at the Institute with the objective to develop anticancer therapeutics from natural sources such as plants, fungi and bacteria. Later, semi-synthetic and synthetic molecules were also included. We have state of art facilities for *in vitro* cytotoxicity studies against human cancer cell lines, *in vivo* murine tumor models for *in vivo* anticancer studies and *in vitro* mechanistic studies for carrying out the target based diverse studies for the discovery of novel anticancer chemotherapeutics. Interest is growing in the posttranslational modifications that comprise mainly the evaluation of histone code and their relationship to cancer development. This is because; the perturbation of normal histone modifications has been associated with undesirable cellular phenotypic changes in cancer.

Mission and goals:

- Development of anticancer therapeutics form natural products.
- Conducts and supports research, training, and other programs with respect for cancer research.

Competencies:

- *In vitro* cytotoxicity against human cancer cell lines.
- *In vivo* anticancer activity against murine models such as Ehrlich Ascites Carcinoma, Ehrlich Tumor (solid), Sarcoma-180 Ascites, Sarcoma-180 (solid), Methyl cholanthere induced ascites, L1210 Lymphoid leukemia, P388 Lymphocytic leukemia.
- Event based mechanistic studies
 - Detection of nuclei condensation
 - Detection of apoptosis / necrosis
 - Cell cycle analysis
 - ROS estimation
 - Nitric oxide estimation
 - Mitochondrial membrane potential
 - Tunnel Assay for apoptosis
 - Intracellular Calcium measurement
 - DNA fragmentation
 - Genotoxicity COMET Assay
- Target based mechanistic studies
 - Apoptotic Signaling Cascades
TNF-R1, Fas, DR4, Bcl-2, Bcl-xL, Bax, Cyt C, Bid, Nf-kB, IκB, Survivin, HSP70, HSP-90, STAT-3, Akt, PI-3, Telomerase, iNOS, DRP-1, Smac/Diablo, AIF etc.
 - Determination of Caspases activity



Area of Research: Anticancer Drug Discovery & Development

Facilities:

- Cell Culture Facilities
- *In Vivo* Facilities in Animal Isolators
- Cytometer with Cell Sorter
- Confocal & Electron Microscope
- Gel Documentation System
- ELISA Reader
- Multiplate Detection Reader (UV-visible, Fluorescence, Illuminance)
- Robotic Liquid Handling System Aided MTS
- Electroblogger
- PCR Machine
- Other Accessories [Deep Freezers (-20°C,-80°C); Refrigerated Centrifuges; Protein, RNA & DNA Electrophoretic Apparatus; Magnetic Stirrer; pH Meter; Water Bath; High Precision Weighing Balance etc]

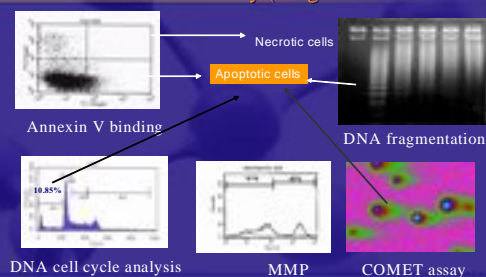
• Current Research: Cancer Drug Discovery

Plant extracts, microbial extracts, fungal extracts, semi-synthetic molecules, synthetic molecules are being evaluated for their *in vitro* cytotoxicity against human cancer cell lines. The promising extracts are subjected to bio-assay guided fractionation for isolation of active fraction(s)/molecule(s). The active isolates / compounds are subjected to *in vivo* anticancer activity using murine models to determine their real potential. The isolates / compounds active *in vivo* are further subjected to target / event based mechanistic studies to determine their mode of action.

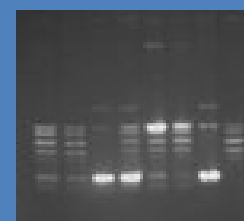
People:

Sr. No.	Name	Expertise	Email ID
1	AK Saxena	<i>In Vitro</i> Anti-cancer Screening	aksaxena@iiim.res.in
2	DM Mondhe	<i>In Vivo</i> Anti-cancer Screening	dmmondhe@iiim.res.in
3	Shashank K Singh	Mechanistic Based Anti-cancer Studies	sksingh@iiim.res.in
4	Shashi Bhushan	Apoptotic Cell Signaling & Formulation Development	sbhushan@iiim.res.in
5	Fayaz A Malik	Cell Signaling and Tumor Immunology in Cancer Drug Discovery	fmalik@iiim.res.in
6	Abid Hamid Dar	Epigenetics, Nutrigenomics & Posttranslational Therapeutic Targets in Cancer	ahdar@iiim.res.in
7	P. R. Sharma	Cellular Morphological Changes During Anti-cancer Activity	prsharma@iiim.res.in
8	B. K. Chandan	Hepato Protection and Metabolism	bkchandan@iiim.res.in

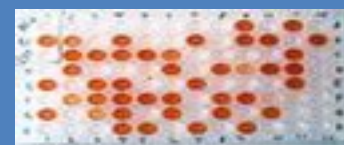
Battery of Drug Mechanistic Assays Established at IIIM Jammu to study (Programmed Cell Death)



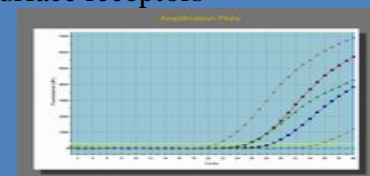
Annexin V binding studies to differentiate between apoptosis and necrosis



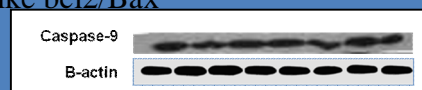
Target based studies against DNA topoisomers



ELISA based expression studies of TNFR1, Fas etc cell surface receptors



Real Time expression analysis of pro and anti apoptotic genes like bcl2/Bax



Proteomic expression analysis of various signaling molecules involved in cancer progression