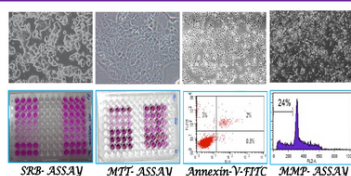


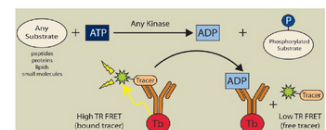
ANTI-CANCER DRUG DISCOVERY PROGRAMME AT NIPER-HYDERABAD

In-Vitro Cell-Based Assay

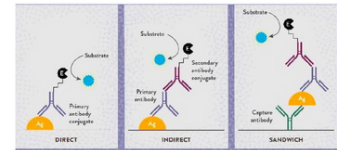


Cell-Free/ Cell-Based Assay

Kinase Inhibitor Screening

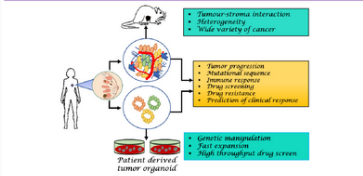


ELISA/ FRET/ TRFRET ASSAY

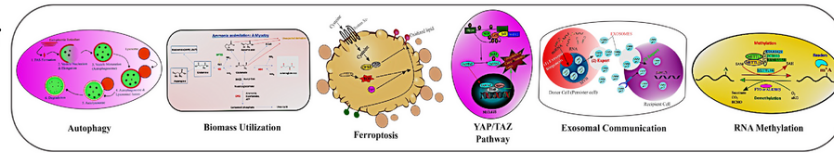
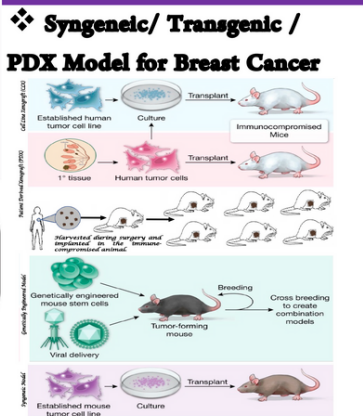


Clinical challenges and scope	Centre of attention	Strategy	Goals
<p>Before therapy</p> <p>During therapy</p> <p>Relapse due to therapy failure</p> <p>Phases of cancer patient before and after receiving therapy</p> <p>Largely undiscovered</p> <p>Oncogene inhibition changes the secreted factors instructing the TME</p> <p>Drug tolerance, aggressive clones come up</p>	<p>Molecular mechanisms of therapy resistance and metastasis</p> <p>Advance tools to dissect the clonal evolution of cancer cells at different phases</p> <p>Identification of novel feature of drug resistance and metastasis</p> <p>Identify the role of tumour microenvironment during treatment</p> <p>Further research required to explain epigenetic aberration driving cancer to identify new targets</p>	<p>Clinical and genetic data from patient sample</p> <p>H&E staining</p> <p>Organoid culture</p> <p>Microscopic analysis</p> <p>Gene Expression Analysis</p> <p>Disease modelling in vitro and in vivo</p> <p>Cancer cells</p> <p>Cell migration assay</p> <p>Cell invasion assay</p> <p>Humanized xenograft model</p>	<p>Develop rational target specific therapy (Natural, semi synthetic, synthetic, and ASOs) to treat metastatic and drug-tolerant dormant cancer.</p>

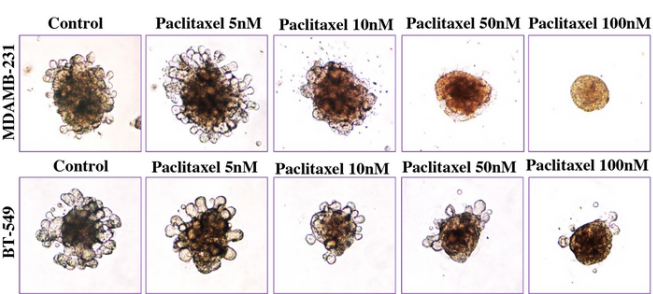
Spheroid/ Organoid Model



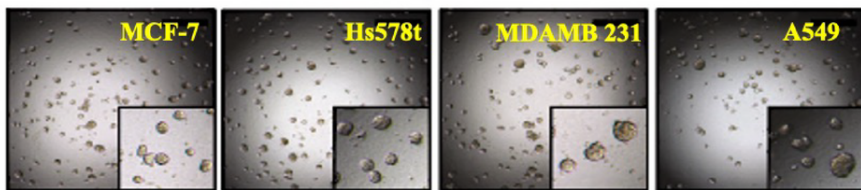
In-Vivo Models



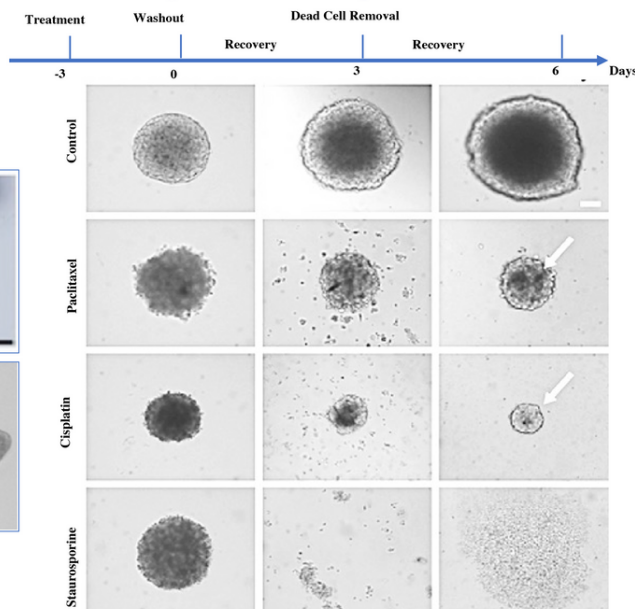
Spheroid/ Organoid Model:-



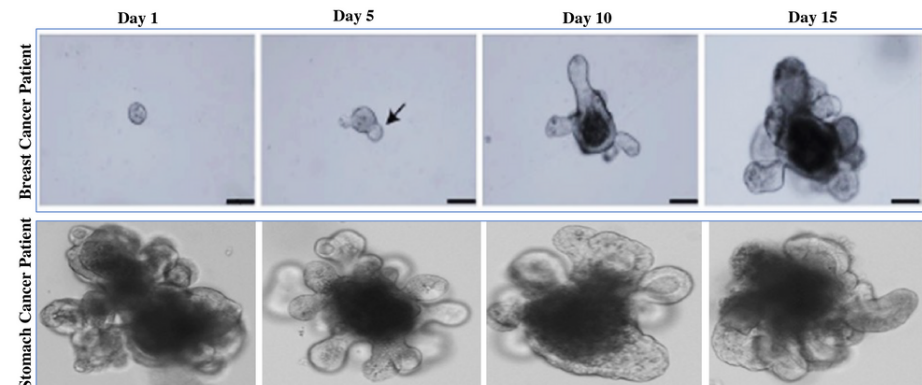
In-Vitro Spheroid Model



Drug Tolerant Persister Spheroid Model



Patient Derived Organoid Model



The minimum Quantity of the compound required the assay's running cost and the assay's time needed shall be communicated on request.

NIPER-Hyderabad: Cancer Screening Information

A. Criteria to be met by the Standardized Extracts /Purified compounds sent for Screening:

We do not accept crude extracts for screening.

1. The supplier should ensure the adequate amount required for carrying out all screening tests and the appropriate mode of shipment of the standardized extracts/ purified compounds to us.
2. Solubility of the compounds should either be in water, Ethanol, or DMSO.
3. The purity of the compounds must be ascertained (HPLC Method).
4. The Molecular weight of Compounds should be mentioned.
5. The Screening Data obtained will be supplied on a CD.
6. Director NIPER-Hyderabad reserves the right to accept /decline the screen of standardized extracts / purified compounds from any source.

B. List of Tests Carried out in the Screening

!MTT Cell viability Assay.

!XTT Cell viability Assay

!CCK-8 Cell viability Assay.

!Annexin/FITC Flowcytometric Assay.

!PI/DAPI-based Cell Cycle Analysis.

!cAMP Assay

!Kinase Screen (PI3K/CDK/mTOR/AKT etc.)

Biological Assays Available:

Over the years, NIPER-Hyderabad has developed many Biological Assays and Screening Protocols for anti-cancer drug discovery to conduct biological activity studies of compounds against various diseases. Below is the list of assays (**Annexure-I**) available at NIPER-Hyderabad. As a policy, NIPER-Hyderabad prefers to carry out these tests for outside samples on a mutual collaboration basis after signing an appropriate undertaking by the concerned institutes/universities to enable scope for further development of any active molecule towards new drug discovery. In addition, the running costs for such screenings need to be paid. Researchers willing to get any of the tests carried out may please contact:

Dr. Santosh Kumar Guru. Assistant Professor

Department of Biological Sciences

Anti-Cancer Drug Discovery Programme

NIPER-Hyderabad, Room No-64

Email: santoshkumar.guru@niperhyd.ac.in or

santoshkumarguru@gmail.com

ANNEXURE-I

a. List of Assays are available at Cancer Drug Discovery Laboratory:

Name of the Assay	Purpose
Annexin V/PI assay	Anti -cancer
Real-time PCR-based methods for specific apoptotic/survival gene expressions	Anti -cancer
Western based methods for specific apoptotic/survival gene expressions	Anti -cancer
FACS based assay for analysis of differentiation and Apoptosis	Anti -cancer
Gelatin Zymography Assay	Anti -cancer
Crystal violet Assay for assessment of cell growth	Anti -cancer
Patient-derived organoids for drug screening.	Anti -cancer
Wound healing assay	Anti -cancer
Migration and invasion assays	Anti -cancer
Topoisomerase inhibition assay	Anti -cancer
Anti-proliferation Assay in cancer/ normal cell lines	Anti -cancer
Apoptosis assay in normal cells/ tumors -To evaluate the anti-cancerous properties of a particular compound using apoptosis assay	Anti -cancer
Chromatin Immuno Precipitation (ChIP) assay- For DNA-protein interaction studies and Co-Immunoprecipitation Assay for protein-protein Interaction	Anti -cancer
Clonogenic assay	Anti -cancer
Flowcytometric TUNEL assay-DNA damage, apoptosis	Anti -cancer
Fluorometry-based autophagy assay- For screening of Autophagy	Anti -cancer
Luciferase reporter assay- For evaluation of Transcriptional activity	Anti -cancer
In-vitro Spheroid Model for anti-cancer drug screening Assay	Anti -cancer
Kinase Screening (PI3K, mTOR, Akt, AURORA, etc. / Any Cell Based assay (cAMP, Cytokines etc.)	Anti -cancer

I. Cytotoxic activity against human cancer cell lines (Method Sulphorhodamine B Assay)

SL No.	Detail of Technical service	Price (INR)	Duration
1.	Cytotoxicity against one cell line (three concentrations)	4000/- per sample	30 days
2.	Cytotoxicity against 24 cell lines (three concentrations)	100,000/-per sample	30 days
3.	3 Eight-point IC50 determination against one cell line	10,000/- per sample	30 days
Price for > 50 samples (single concentration in triplicate)-INR 4,000/sample			

II. Human cancer cell-based cell death measurements (Method: MTT or XTT Assay)

SL No.	Detail of Technical service	Price (INR)	Duration
1.	< 10 samples (single concentration in triplicate against 5-7 cell lines Of various cancers)	10,000/sample	30 Days
2.	Price for < 10 samples (2 concentrations in triplicate against 5-7 cell lines of various cancers)	20,000/sample	30 Days
3.	Price for 10-50 samples (single concentration in triplicate against 5-7 cell lines of various cancers)	10,000/sample	30 Days
4.	Price for 10-50 samples (2 concentrations in triplicate against 5-7 cell lines of various cancers)-	18,000/sample	30 Days
5.	Price for > 50 samples (single concentration in triplicate against 5-7 cell lines of various cancers)	9,000/sample	30 Days
6.	Price for > 50 samples (2 concentrations in triplicate against 5-7 cell lines of various cancers)-	16,000/sample	30 Days
7.	IC50 Value Determination (6-8 points) per sample	INR 35,000/-	30 Days

III. Human cancer cell-based Organoid Screening

SL No.	Detail of Technical service	Price (INR)	Duration
1.	< 10 samples (single concentration in triplicate against 5-7 cell lines Of various cancers)	40,000/sample	45 Days

IV. In-vivo Anticancer studies against

SL No.	Detail of Technical service	Price (INR)	Duration
1.	Ehrlich Ascites Carcinoma in noninbred mice (4 groups) n=7 per group (Parameters: Percent Tumor Growth Inhibition by one sample at two dose levels)	80,000/-	60 Days
2.	Sarcoma-180 (Ascites) in BALB/c mice (4 groups) n=7 per group (Parameters: Per cent Tumor Growth Inhibition by one sample at two dose levels)	80,000/-	60 Days
3.	Ehrlich Tumor (solid) in non-inbred mice (4 groups) n=7 per group (Parameters: Percent Tumor Growth Inhibition by one sample at two dose levels)	80,000/-	60 Days
4.	Sarcoma-180 (solid) in BALB/c mice (4 groups) n=7 per group (Parameters: Per cent Tumor Growth Inhibition by one sample at two dose levels)	80,000/-	60 Days
5.	L1210 Lymphoid leukemia in CDF1 mice (4 groups) n=6 per group (Parameters: Percent increase in life span by one sample at two dose levels)	110,000/-	60 Days
6.	P388 Lymphocytic leukemia in CDF1 mice (4 groups) n=6 per (Parameters: Percent increase in life span by one sample at two dose levels)	110,000/-	60 Days
7.	4T1 mouse mammary carcinoma model for metastasis Method: Implantation of 4T1 cells in the mammary pad of BALB/c mouse (Parameters: Effect of test sample(s) on the metastatic nodule formation)	1,40,000/- per sample at two doses	30 Days
8.	Cancer xenograft in NOD.SCID mice (4 groups) n=6 per group Parameters: Percent Body wt. change Median tumor volume change/By one sample at two dose levels and by positive control at one dose level.	370,000/-	12weeks