



One Week **GIAN** Course On **Developing Cancer Models *In-vitro* and *In-vivo*: Advantages and Limitations**

March 24-28, 2025 | Mangalore University, Mangalore, Karnataka

International Faculty

Nagaraj Nagathihalli Ph.D.
Associate Professor of Surgery
Sylvester Comprehensive Cancer Center
Cancer Biology & Surgical Oncology Program
University of Miami, FL, USA

Course Coordinator

Chandrashekhar Gajanan Joshi Ph.D.
Professor, Biochemistry Division
Mangalore University, Mangalore
Karnataka-574 199

Organized By
Biochemistry Division
Mangalore University, Mangalore, Karnataka-574 199

+91 9448446641
cgjoshi@mangaloreuniversity.ac.in
<https://mito24.sdmuniversity.edu.in/>

Overview

Researchers have developed various *in vitro* and *in vivo* models to understand how antineoplastic agents work against different types of cancers. Most of these models are designed to mimic the conditions found in malignant tumors, as it can take several years for tumors to become malignant in humans. These models are used in cancer studies to identify chemical carcinogens, analyze the potential of drugs for prevention or treatment, understand cancer biology, and explore tumor markers that can help with treatment strategies. In addition to traditional *in vitro* cell culture, a three-dimensional culture system known as the multicellular spheroid model is often used to screen anticancer drugs. This model is considered an intermediate between *in vivo* and *in vitro* systems. The use of animals in cancer studies has also improved our understanding of cancer progression and potential treatments. By studying the genetic basis and the involvement of various genes and mutations, researchers can design better treatment strategies for cancer. Advancements in transgenic and knock-out animals have made personalized tumor models similar to human cancer available, leading to the development of precision and personalized medicine. Various animal models and *in vitro* studies have contributed to a better understanding of human tumors and the design of appropriate therapeutic regimens.

Objectives

1. Provide an overview of cancer.
2. Update participants about the advances in cancer research.
3. Offer exposure to *in-vitro* and *in-vivo* models used in cancer research.
4. Raise awareness about the challenges and opportunities in *in-vitro* and *in-vivo* models used for cancer research, with special emphasis on gene knock-out models.

Course Details: March 24- 28, 2025

Day	Lecture 1	Lecture 2	Tutorial
Day 1	Basics of cancer biology: Incidences, types, mechanisms	Pancreatic cancer models <i>in-vitro</i> and <i>in-vivo</i>	Problem-solving session with examples of cancers of origin in India
Day 2	Mechanisms of cancer progression	Tumor microenvironment in tumor progression and metastasis	Discussion on the gaps and opportunities in cancer research
Day 3	Challenges in designing models to study cancer progression	Designing therapeutic studies in cancer	Discussion on models and technologies in studying tumor microenvironment
Day 4	<i>In-vivo</i> and mouse models in cancer study	Importance of technologies and models in therapeutic strategies	Visit cell culture labs and discuss the design of <i>in-vitro</i> cellular models
Day 5	Mechanism of natural anticancer drugs and their use in human models	Screening of anticancer drugs using <i>in-vitro</i> models	Understanding cell culture techniques and examination of participants



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Expert Faculty

Dr. Nagaraj Nagathihalli is a cancer biologist at the Sylvester Comprehensive Cancer Center. He is an Associate Professor in the Department of Surgery and a graduate faculty member in the Cancer Biology Program at the University of Miami School of Medicine, USA.

Dr. Nagathihalli received his postgraduate training in biochemistry from the University of Mysore, India, and earned his Ph.D. from the Defense Food Research Laboratory and the University of Mysore, India, with a DRDO National Research Fellowship. Until 2015, he held positions as a Postdoctoral Fellow, Instructor, and Research Assistant Professor at the Vanderbilt Cancer Center at Vanderbilt University, USA. Dr. Nagathihalli has been honored with various awards and scholarships, including the Ed Nelson Research Award, Young Investigator Award from ISGO, American Pancreatic Association, ECOG, Scholarships from the American Institute for Cancer Research, PancreasFest, and American Association for Cancer Research (AACR), Stanley Glaser Research Award from the University of Miami, Sylvester Faculty Travel Award, and Florida State's James and Esther King Biomedical Research Award. He has also served as an Ad Hoc Grant Reviewer for organizations like the National Institute of Health (NIH), the Department of Defense (DOD), The Wellcome Trust/Department of Biotechnology (DBT), India, LEaDing Fellows Program Office TU Delft, Catalan biomedical research funding program, and Foundation La Marató de TV3. Throughout his career, Dr. Nagathihalli has published nearly 60 peer-reviewed papers in prestigious cancer research journals, including Gastroenterology, Cancer Research, Cancer Discovery, Clinical Cancer Research, Oncogene, Molecular Cancer Therapeutics, Molecular Cancer, and Molecular Cancer Research. He has received notable grants such as the NIH R01, R21, and R03 grants, as well as several institutional and Florida state biomedical grants.



Chandrashekhar Gajanan Joshi Ph.D.
Professor
Biochemistry Division
Mangalore University
Mangalore, Karnataka- 574 199

Course Coordinator

Prof. Chandrashekhar Gajanan Joshi currently serves as the Coordinator of the M.Sc Biochemistry Programme at Mangalore University, Mangalagangothri. His research primarily focuses on Cancer Biology, Phytopharmacology, and Nanotechnology. Dr. Joshi has received research grants from national funding agencies such as DST-SERB, ICMR, DAE-BRNS, and UGC. He has also served as a peer reviewer for government agencies, including DST, DAE-BRNS, and UGC. In 2018-2019, he was honored with the ICMR international fellowship. Dr. Joshi is an active life member of numerous societies, including the American Association for Cancer Research (AACR), the Society of Biological Society of India, the Indian Science Congress Association (ISCA), and the Indian Association of Biomedical Scientists. Additionally, he is the convenor of SBC(I), Madikeri branch.

Instructions to the Applicants:

Course Enrollment (With the Course Coordinator)

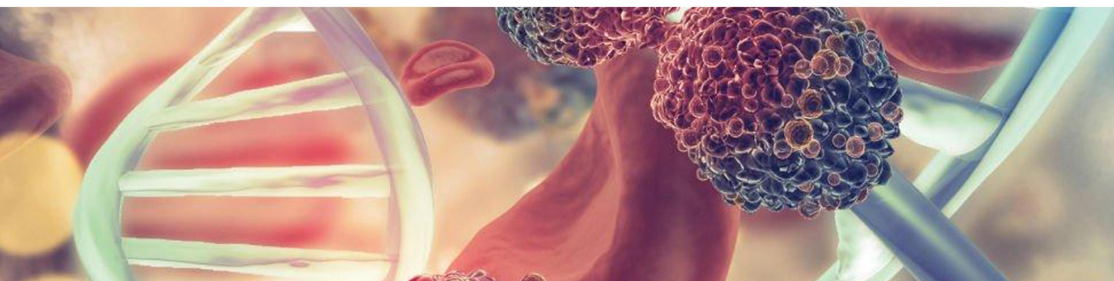
Candidates must Register/Enroll themselves with the Course Coordinator by filling up the Google form along with payment on or before March 15, 2025. For the registration link please scan the barcode

Who can attend?

- Researchers/ Physicians from biomedical sciences and government organizations, including R&D laboratories/Hospitals.
- Students of UG/PG/Ph.D. in Biological Sciences and/or Faculty from academic and technical institutions.

Note: The fees includes workshop kit, working lunch and refreshments and certificates. The participants will be provided with accommodation on payment basis (subject to availability).

Candidates registering early will be given preference in the shortlisting process. If you have any questions regarding the course registration, please contact the Course Coordinator.



Course Fees

For International Participants

Industry/ Research organizations : US \$ 300

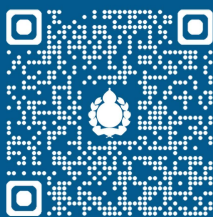
For Indian Participants

Industry/ Research organizations : ₹ 5000

Faculty Members : ₹ 2000

Research Scholars : ₹ 1000

UG/PG Students : ₹ 500



**Scan to
Register**

