



An event under GLOBAL INITIATIVE FOR ACADEMIC NETWORKS (GIAN)

7-11 July, 2025

Overview

Experimental therapeutics has emerged as a key field at the intersection of molecular discovery and patient care, deploying translational medicine to advance disease treatment and promote patient wellness. The exponential expansion of modern science and the integration of basic, translational, and clinical sciences has helped in uncovering key pathophysiological mechanisms and transformed the therapeutic toolbox. Thus, the Experimental therapeutics is a field of research that aims to develop new and better treatments for human diseases. The approach is highly interdisciplinary and involves the interaction of, for example, chemists with biochemist, enzymologists, cell biologist and/or protein scientists etc. With comprehensive introduction to the origins and emerging frontiers of chemical biology, this course develops the fundamental chemistry of molecules found in nature and help in understanding (i) What is experimental therapeutics? (ii) How can chemistry be used to advance the study of biological systems? and (iii) How knowledge of chemical biology, pharmacology and toxicology is important for the discovery of new drugs and advance science and human health?

Technological advances have allowed chemists and biologist to develop new tools to probe disease biology, and discover/develop novel molecules for biological activity to decipher complex biological systems. This approach benefits from both a grasp of basic chemistry and an understanding of molecular biology, representing a true intersection of the two fields. The goal of the course is to familiarize students with innovative recent experimental approaches and to stimulate them to conceive their own new ideas/methods to advance biomedical research.

Course Duration	July 7, 2025 – July 11, 2025 (5 days, 10 hours of lectures and 10 hours of Tutorials)
Lectures & Tutorials	<ol style="list-style-type: none">(1) What are Experimental Therapeutics?(2) Chemical biology and drug discovery(3) Platinum complexes as drugs in Therapeutics(4) Chemical biology and drug discovery(5) How to unravel biological mechanism(6) Asymmetric synthesis in drug design(7) Drug Development and Pharmacokinetics (I)(8) Drug Development and Pharmacokinetics (II)(9) Gold complexes in Therapeutics(10) Molecular Imaging in Drug Development(11) Biological Therapeutics(12) Generations of Asymmetric synthesis for drug molecules(13) The Structure of Clinical Trials and Experimental Therapeutics(14) (A case study)- Illustration of the drug development process using examples(15) Iron complexes in Therapeutics

Who may attend	This course is important and intended for (i) Undergraduate students, (ii) Graduate Students (iii) Research Scholars and Postdoctoral Research Fellows, and also (iv) Scientific staff working in life sciences, biotechnology, biomedical and pharmaceutical industry, and professional labs working in these areas in the public and private sectors. To obtain maximum benefit from this course, a fundamental background in chemistry is required. Basic understanding of biochemistry and molecular biology is assumed, although a lack of experience in this area can be remedied during the course by diligently reviewing the relevant materials.
Fees	The participation fee will be Rs. 1000/- (includes instructional materials, laboratory equipment usage charges, and an internet facility).

To register Click here: <https://docs.google.com/forms/d/e/1FAIpQLSdTW4XvIXpHl02JUBnHGWrUYaa4yApN-I7V5KEATI5Ggy6zYw/viewform?usp=sharing>

Bank Account Details for Fee Payment:

Name - Local Coordinator GIAN (Prof. Gurjaspreet Singh)

SBI Account No: 41435937793

IFSC - SBIN0000742

Branch- Sector-14, Panjab University Chandigarh

Foreign Faculty



Sanjay V. Malhotra, PhD, FRSC is Professor, Department of Cell Development & Cancer Biology, and Sheila Edwards-Lienhart Endowed Chair in Cancer Research, Director of the Center for Experimental Therapeutics, and Director of the Center for Radiopharmaceutical Research at Oregon Health & Science University (OHSU). Before joining OHSU, he was on the Faculty of the Stanford University School of Medicine, and previously served as the Director- Chemical Diversity Division of the National Cancer Institute (NCI)'s Experimental Therapeutics (NExT) program. He is a founding member of the Chemical Biology Consortium, a national Drug

Discovery/Development program of the NCI/NIH, and served on the Joint Commission on Science & Technology of the Office of Science & Technology of the President (President Obama White House). Dr. Malhotra's lab studies the science of therapeutics, with main focus on (i) developing chemical tools to probe disease biology, and (ii) discover small molecules that modulate the targets and provide pharmacological intervention. Dr. Malhotra obtained a PhD (Chemistry) and trained under Nobel Laureate Prof. Herbert C. Brown at Purdue University. His work has led to preclinical and clinical advancement of drug candidates. He has edited five books, is inventor on 20 patent applications and has authored > 170 research articles. Dr. Malhotra is a Fulbright Specialist and Fellow of the Royal Society of Chemistry, UK.

Host Faculty



Dr. Gurjaspreet Singh, is Professor in the Department of Chemistry at Panjab University, Chandigarh, India. He is among top 2% most cited scientists across the globe as per Elsevier publication by Faculty from Stanford University, USA (2022-23 to 2023-24). He has more than 22 years of experience in teaching as well as in research. His research work focuses on Organosilanes, Bio-Inorganic Chemistry, Organo-Transition Chemistry, Click Chemistry, Chemosensors, Medicinal Chemistry, Environmental Chemistry, and Nano-Chemistry, leading to the

development of innovative solutions for sensing of metal ions, anions, amino acids, proteins, pesticides, fungicides etc. He has actively contributed to more than 200 peer-reviewed publications. He has a strong track record of collaborating with diverse teams, as evidenced by publications. He had successfully completed UGC, DST-SERB, and CSIR major research projects. Much of his research work has been presented at various conferences and professional meetings. He is a Life member of the Chemical Research Society of India and the Indian Science Congress Association. He has been acting as a reviewer of research articles for various international peer-reviewed journals (ACS, RCS, Wiley, Elsevier, Springer etc).



Dr. Aman Bhalla is currently an associate professor in Department of Chemistry at Panjab University, Chandigarh. He obtained his Master's degree (1999) from Panjab University. He received his Ph.D. (2007) in organic chemistry under the guidance of Professor S. S. Bari. He is awarded by DST SERC Fast Track Project and DST SERB Fast Track Project fellowships as principal investigator. He is also mentored two research proposals under the Project Incubators Funding Scheme (PIFS) of RUSA and the Budget Head "Impetus to Research" at Panjab University, Chandigarh. His current research interest primarily focuses in the development of asymmetric synthesis/organic transformations using green methodologies for the synthesis of β -lactams and heterocyclic scaffolds. He has published 15 chapters in the books Green Approaches in Medicinal Chemistry for Sustainable Drug Design (2024), Occurrence, Distribution and Toxic Effects of Emerging Contaminants (2024), Handbook of Green and Sustainable Nanotechnology (2022), Organic and Medicinal Chemistry (2018), In β -lactams: Novel Synthetic Pathways and Applications (2017), In Topics in Heterocyclic Chemistry: Heterocyclic Scaffold I (2017). He has 90 research publications in international journals of repute like Journal of Materials Chemistry A, Green Chemistry, Materials Today Chemistry, Journal of Molecular Liquids, Microchemical Journal, Scientific Reports, Biological Trace Element Research, ChemMedChem, New Journal of Chemistry, Organic and Biomolecular Chemistry, Tetrahedron, Tetrahedron Letters, ChemistrySelect, Tetrahedron: Asymmetry, Synthetic Communication, Journal of Sulfur Chemistry etc. He is active member of Chemical Research Society of India (CRSI), The Indian Thermodynamics Society, Editorial and Reviewer Board of International/National Journal etc. His nine (9) students have been awarded Ph.D. degree, thirty-two (32) students awarded M.Sc. dissertation and one (1) student recently submitted their thesis. Currently, four (4) Research Scholars have registered to pursue their Ph.D programme and three (3) M.Sc. students for their project dissertation.

Co-ordinators

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