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Government of India



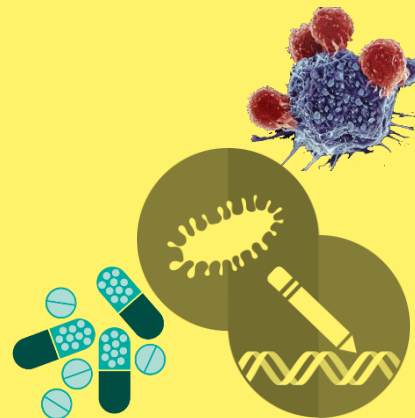
MHRD SPONSORED GIAN VIRTUAL COURSE ON

**NEW CONCEPTS IN TUMOR BIOLOGY:
FROM THE BENCH TO BEDSIDE**

MAY 2022

VENUE:

*Department of Pharmaceutical Technology
Centre for Excellence in Nanobio Translational Research (Autonomous)
Anna University, Bharathidasan Institute of Technology Campus
Tiruchirappalli, Tamil Nadu, INDIA.*





ANNA UNIVERSITY

@ Chennai, T.N. India

Anna University, Chennai is one of the best ranked Technical University in India. It was recognised by UGC as an University with Potential for Excellence and identified by MHRD as an Institute of Eminence. Comprising 4 University Departments, 13 Constituent Colleges, 3 Regional Campuses and 593 Affiliated Colleges, Anna University offers 29 UG and 90 PG Programmes in Engineering, Technology, Architecture and Applied Sciences. Anna University strives to promote research and dissemination of knowledge gained therefrom.



CENTRE FOR TECHNOLOGY DEVELOPMENT AND TRANSFER

@ Anna University, Chennai, T.N. India

Centre for Technology Development and Transfer strives to make Anna University an Institution of Excellence to serve the needs of the society through Research, Technology Development and Transfer. It encourages the faculty members and researchers to participate in Applied Research & Technology Transfer and facilitates them to transform the research output into Technology and its utilisation for public benefit.



ANNA UNIVERSITY

@ BIT Campus, Tiruchirappalli, T.N. India

University College of Engineering, Tiruchirappalli was established as a Technical Institute in 1999 under Bharathidasan University and later on merged with Anna University, Chennai by the Government of Tamil Nadu. Anna University @ BIT Campus offers UG, PG and Research programmes in Engineering and Technology approved by UGC and AICTE in both English and Tamil. Anna University, BIT Campus caters to the educational needs of around 5000 students annually. It supports their academic, research, training, placement and other extension activities including NCC, NSS, YRC, NSA student clubs & forums to instill human values.



D/O PHARMACEUTICAL TECHNOLOGY

@ AUBIT, Tiruchirappalli, T.N. India

Pharmaceutical Technology Department was established in 1999 offers unique degree programmes like B.Tech in Pharmaceutical Technology (approved by AICTE and accredited by the National Board of Accreditation), M.Tech in Biopharmaceutical Technology, and Ph.D. in Pharmaceutical Technology. The faculty members investigate many sponsored research projects to a tune of 16.00 crores INR supported by DST, DBT, ICMR, UGC, TNSCST etc. It houses the DST sponsored National Facility on Drug Development for Academia, Pharmaceutical and Allied Industries and National Facility on Bioactive Peptides from Milk. Pharmaceutical Technology department fetched DST-FIST grants for 1.6 crores INR established the Central Animal Facility and EDII-Anna Business Incubation Research Foundation. Considering the research achievements, Anna University, Chennai recognised this department as a Centre for Excellence in Nanobio Translational Research with Autonomy.

COURSE OVERVIEW

Our understanding of biology of human cancers has greatly increased over the last decades. Very recently, modern high throughput technologies, especially next generation sequencing, have allowed to analyze human tumors in unprecedented detail. This has led to a completely new theory on tumor evolution, the punctuated equilibrium, that incorporates but also partially revises older concepts such as the two hits theory or the hallmarks of cancer development formulated respectively by Knudson and Hanahan & Weinberg. Understanding the natural evolution of human cancers is important for the design of therapeutic strategies and cancer prevention. The course will introduce current and past theories on cancer evolution and address how the predictions that derive there from affect future cancer research and therapy. At the same time, the development of immunotherapy has dramatically improved survival of cancer patients. For the first time in cancer therapy we observe complete remissions of patient with multiple metastases, for example in melanoma patients, rather than a mere extension of life with disease. However, the majority of patients still do not respond to immunotherapy or progress after an initial response. The causes of resistance to immunotherapy are manifold and reside in both, the tumor cell itself and the tumor microenvironment where immune cells and their exhaustion play a crucial role. Several strategies are being investigated to overcome pre-existing, acquired and adaptive resistance to immunotherapy among which the combination of immune checkpoint blockers with epigenetic drugs. The course will introduce state of the art immune therapy and address strategies aimed at increasing the percentage of responders, both in terms of ratio of patients responding and of duration of the response. Most of present cancer research is devoted to the therapy of metastatic cancers. With the exception of the recently introduced immunotherapies, this normally means to extend the life with metastatic disease. Primary prevention of cancer holds the potential to add years of healthy life for potential cancer patients thereby also reducing the disease associated costs for patients and health systems. Our increasing knowledge of the individual risk of a person, determined by genetic, environmental and life style factors, of the molecular make-up of the cancers to be prevented and the molecular mechanisms of natural and synthetic chemo preventive compounds will allow for the design of targeted chemoprevention strategies that can be combined with diet and life style interventions. The course will introduce the concept of targeted chemoprevention and discuss environmental and genetic risk factors for major cancers at the example of breast cancer.

COURSE OBJECTIVES & SCHEDULE

Objectives of this course is to learn the fundamental and innovative concepts of tumor evolution, mechanisms of response and resistance to immunotherapy and innovative approaches to overcome resistance, genetic and environmental risk factors for cancer and to understand the concept of targeted prevention, learn innovative techniques for the analysis of the biology of human tumors and to discuss applications of the concepts learned to the management of patients in a specific socio-cultural and economic environment.

Day	Lecture /Tutorial	Duration	Content delivery	Faculty
06.05.2022	L1	1 Hour	Tumor evolution: Two hits theory and cancer hallmarks	UP
	L2	1 Hour	Tumor evolution: Punctuate equilibrium – The big bang hypothesis	UP
	T1	2 Hours	Hands on / Tutorial / Exercise: Analysis of tumor heterogeneity using next generation sequencing	UP
13.05.2022	L3	1 Hour	Fundamentals of immunotherapies for human cancers – Immune checkpoint blockers	UP
	L4	1 Hour	Fundamentals of immunotherapies for human cancers – Cancer vaccines and CAR-T	UP
18.05.2022	T3	2 Hours	Hands on / Tutorial / Exercise: Case Study on immune checkpoint blockers	PS
	L5	1 Hour	Epigenetics of human cancers	UP
	L6	1 Hour	Epigenetics of the response to immunotherapy	UP
	L7	1 Hour	Methods of analysis of DNA-methylation	UP
	T4	2 Hours	Hands on / Tutorial / Exercise: Case Study on tumor epigenetics	PS
20.05.2022	L8	1 Hour	Genetic and environmental risk factors for breast cancer	UP
	L9	1 Hour	Molecular mechanism of cancer chemoprevention	UP
	L10	1 Hour	The concept of targeted chemoprevention	UP
25.05.2022	T5	1 Hour	Hands on / Tutorial / Exercise: Case study on drug repurposing, Aspirin for cancer prevention	UP
	L11	2 Hours	New methods in cancer biology: gene editing, next generation sequencing, single cell transcriptomics, 3D cell culture	UP
	L12	1 Hour	Breast cancer risk in India	UP
	S1	1 Hour	Self-assessment / review of the course	UP & PS

COURSE FACULTY



Dr. Ulrich Pfeffer is Head of the Laboratory of Epigenetics of Tumors of the San Martino Hospital, Genoa, Italy, an Academic Hospital that is part of the National Program of Research Hospitals (Istituti di Ricovero e Cura a Carattere Scientifico) and Adjunct Professor for Bioinformatics at the University of Genoa. He received his Master degree in Biology in 1983 and his PhD in Molecular Biology in 1987 from the Free University of Berlin, Germany. From 1987 to 2011 he worked at the National Cancer Research Institute, Genoa, Italy. From then on, he is working at the San Martino Hospital, Genoa, Italy. He holds 38 years of rich professional and research experience.

COURSE FACULTY



Dr. Selvamani is Professor at the Department of Pharmaceutical Technology, Anna University, Chennai, India. He received the Bachelor's degree in Pharmacy from The Tamil Nadu Dr.M.G.R. Medical University, Chennai and a Master's degree in Pharmacy and a Doctor of Philosophy in Pharmacy from Jadavpur University, Kolkata, India. His research interests are discovery and development of protein based pharmaceuticals, novel drug carriers using magnetic nanoparticles for targeted drug delivery for various conditions including cancer, rheumatoid arthritis and ulcer.

ORGANISING COMMITTEE

Chief Patron

Prof. Dr. R. Velraj

Hon'ble Vice-Chancellor, Anna University, Chennai

Patrons

Prof. Dr. G. Ravikumar

Registrar, Anna University, Chennai

Prof. Dr. P. Hariharan

Director, CCC, Anna University, Chennai

Advisors

Prof. Dr. K. Baskar

Director, CTDT and GIAN-Local Coordinator, Anna University, Chennai

Prof. Dr. T. Senthilkumar,

Dean, Anna University, BIT Campus, Tiruchirappalli

Course Coordinator

Prof. Dr. P. Selvamani

D/o Pharmaceutical Technology, Anna University, BIT Campus, Tiruchirappalli

Members

Dr.A.Puratchikody, Prof & Head, **Prof.Dr.K.Ruckmani**, **Dr.E.Sanmugapriya**, Asso.Prof., **Dr.S.Latha**, Asso.Prof., **Dr.R.Vijaya**, **Dr.A.Shanmugarathinam**, **Dr.A.Umamaheswari**, **Dr.P.Senthamil Selvan**, **Dr.K.Kavitha**, **Dr.S.Lakshmanaprabu**, **Dr.R.Vijayalakshmi**, Assistant Professors, D/o Pharmaceutical Technology, Anna University, BIT Campus, Tiruchirappalli



RESEARCH GRANTEES



सत्यमेव जयते

Ministry of Electronics and
Information Technology
Government of India



सत्यमेव जयते

Department of Science & Technology
Govt. of India



सत्यमेव जयते

DEPARTMENT OF BIOTECHNOLOGY
GOVERNMENT OF INDIA



सत्यमेव जयते

Government of India
Ministry of Human Resource
Development



ज्ञान-विज्ञान विमुक्तये



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German Academic Exchange Service



Registration to the MHRD Sponsored GIAN Course on 'New Concepts in Tumor Biology: From the Bench to Bedside' scheduled during May 2022 can be made online in two steps

- (i) Registration in the GIAN web portal @ <http://gian.iitkgp.ac.in/GREGN/index>
- (ii) in this GIAN course website @ <https://sites.google.com/view/course-code-196020h01/home>

Submit a copy of your registration form along with applicable payment and NOC from the Supervisor/Head of the Institution on or before 03.05.2022.



Academic - UG & PG students – Rs.1000/- | Academic - Faculty Members & Research Scholars - Rs.1500/- | Industry/ Research Organization – Rs.2000/- Participants from Abroad – US \$ 500
Payment as Demand Draft drawn in favour of “The Director CTD, Anna University” payable at Chennai

FOR ANY CLARIFICATIONS

Prof. Dr. P. Selvamani

Coordinator – GIAN Virtual Course on NCTBBB

ANNA UNIVERSITY

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