

Global Initiative on Academic Network (GIAN) program on

**Customized Natural Products To Evade
Multidrug Resistance In Cancer**

May 16-22, 2019

Overview

Cancer, a catastrophic disease, is one of the major causes of death irrespective of age and gender. To date, safe treatment for cancer is not yet available. Over the past several years considerable improvements have been made in therapeutics, however this disease still remains one of the major causes of death. Resistance to chemotherapeutic drugs is one of the main obstacles for effective cancer treatment. Multidrug resistance is the principal mechanism by which many cancers develop resistance to chemotherapeutic drugs. Chemotherapy kills drug-sensitive cells, but leaves behind a higher proportion of drug-resistant cells. As the tumor begins to grow again, chemotherapy may fail because the remaining tumor cells are now resistant to them. Synthetic organic chemistry as well as natural product chemistry has contributed immensely to the anticancer drug development program. It is thus of vital importance to put further efforts into better understanding on mechanism of cancer development and design new lead molecules for chemotherapy. This course has been designed to focus on evolving strategies to develop newer lead molecules from natural products utilizing organic chemistry, which will not only treat cancer but also overcome any future resistance caused by them.

Objectives

The overall philosophy of this program is to integrate organic chemistry with applied cancer research. The scientific focus is on exploring novel targets and therapeutic strategies that will facilitate overcoming drug resistance during clinical use.

This program emphasizes in providing an in-depth understanding of Oncogenesis and the opportunity to explore the scientific rationale for various therapeutic options. The curriculum includes core course in tumor biology, special topics about drug resistance, drug design (concepts and strategies) and perceptive on translational cancer research. To achieve these goals, this program utilizes instructor with expertise in the area of synthetic chemistry and molecular pharmacology.

Who can attend?

- Faculty Members
- Postdoctoral fellows and Researchers (all levels) from various organizations including R&D laboratories and Industries.
- Students at all levels (M.Sc./ B.Tech./ Ph.D./ M.Tech.)

Course Duration: May 16-22, 2019

Course Schedule:

Date	Lectures/ Tutorials
May 16, 2019	
10:00 - 10:30 AM	Inaugural Program
11:00 -12:00 Noon	Introduction to current status of cancer treatment: Cancer and types, loss of normal growth control, causes for cancer, cancer risk factors, symptoms, classification of cancer, common adult cancers, categories of cancer research, types of cancer treatment, an update on the outcome of cancer research done so far on cancer survival.
12:15 – 1:15 PM	Cell cycle, carcinogens, mutagens and mutations, tumor suppression genes, oncogene activation, apoptosis and necrosis.
2:30 – 3:30 PM (Tutorials)	Above topics for open discussion.
May 17, 2019	
10:00 –11:00 AM	Rationale to design Cancer therapeutics, Current chemotherapies: benefits and pitfalls, Introduction to Natural Products and their pharmacology
11:00 – 12:00 Noon	Current areas of interest such as DNA-adducts, oxidative stress, anti-oxidants, COX-1 and COX-2 inhibitors, anti-estrogens, and farnesyl transferase inhibitors (N-17 Ras activated cancer cells).
12:15-1:15 PM	An overview of latest cancer therapies (targeted therapy versus traditional therapy), advanced immunotherapy, role of monoclonal antibodies, IMX-therapy, adoptive cell transfer therapies, immunotherapeutic vaccines, gene therapy, etc.
2:30 – 3:30 PM (Tutorials)	Discussion on techniques used for drug design, drug-receptor interactions, QSAR, and combinatorial chemistry.
May 18, 2019	
10:00 –11:00 AM	Multidrug Resistance (MDR) in cancer chemotherapy, probable candidates for conferring resistance, and chemosensitizers.
11:15 – 12:30 PM	Characterization of a novel bis-acridone and comparison with PSC 833 a potent and poorly reversible modulator of P-glycoprotein.
2:00 – 3:00 PM (Tutorials)	Open discussion on MDR and chemosensitizers.
May 19, 2019 SUNDAY	

May 20, 2019	
10:00 –11:00 AM	A general account of anti-cancer vinca alkaloids, microtubules, metabolites of vincristine, vinblastine, and vindesine.
11:30–12:30 PM	Phenoxazines as anti-MDR agents (an overview), modulation by verapamil of vincristine pharmacokinetics and toxicity in mice bearing human tumor xenografts.
2:00 – 3:30 PM	IGF-I blocks rapamycin-induced apoptosis via PI3kinase/PKC/Bad signaling pathway and completely independent of Ras/Erk-1/Erk-2 pathway in rhabdomyosarcoma cells.
3:30 – 4:30 PM (Tutorials)	Topics for open discussion.
May 21, 2019	
10:00 –12:00 Noon	Targeting of PI3kinase/Akt/mTOR/p70S6/S6 signaling by novel phenoxazines induces massive apoptosis in rhabdomyosarcoma cells.
12:30 – 1:30 PM (Tutorials)	Discussion Topics: What kinds of small molecules are required for targeting the prominent signaling pathways implicated in cancer.
May 22, 2019	
10:00 –11:00AM	TEST
11:30AM onwards	Valedictory Program

Course Fee:

Industry delegates	Rs. 5000
Faculty Members	Rs. 2000
Research Scholars	Rs. 1000
Students	Rs. 500
International participants	\$ 300

Note: The participants will be provided with accommodation on payment basis (subject to availability).

Please contact the Course Coordinator for all the queries pertaining to the GIAN course.

Foreign faculty:



PROF. K.N. THIMMAIAH

Professor of Chemistry
Division Chair, Natural Sciences
Northwest Mississippi
Community College, DeSoto Center, Southaven,
MS 38671. USA.
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PROF. K.N. THIMMAIAH is currently a faculty of Chemistry and Division Chair, Natural Sciences, Northwest Mississippi Community College, USA. Dr. Thimmaiah's research focus has been mainly on synthesis of novel molecules that may be directly or indirectly contributing towards anticancer activity. He has been actively working in the area of chemosensitizers and how new drugs can be designed to circumvent multi-drug resistance (MDR), that's commonly encountered during chemotherapy. He has been a passionate researcher who utilizes multidisciplinary cancer drug discovery and development approaches with a motto to "Drug the Undruggables". Dr. Thimmaiah has a tremendous research experience, which spans over 45 year and has authored over 250 research articles, two international patents and two books. He has been recipient of numerous research grants from national and international agencies such as National Institute of Health (NIH, USA) and DBT in India. He has served as peer reviewer for numerous government agencies including DBT, DST and UGC in India. He has been honored with awards nationally and internationally, which includes the President Award for excellent teaching at the University of Mississippi, USA, for the year 2014-2015. He has been an active life member of many societies such as American Association for Cancer Research (AACR), American Chemical Society (ACS), Indian Association for Cancer Research (IACR), Indian Association of Nuclear Chemists and Allied Scientists, and Indian Society of Analytical Scientists.

Course Coordinator:



PROF. B.K. SAROJINI

Professor and Chairperson
Department of Industrial Chemistry
Mangalore University, Mangalagangothri 574199.
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PROF. B.K. SAROJINI presently heading the Department of Industrial Chemistry and as well as Coordinator for M.Sc. in Biochemistry course at Mangalore University. She has been working in the field of synthesis and Structural Chemistry and possible applications new small molecules in medicinal and optical field. Anticancer property of the synthetic compounds such as triazolothiadiazines, triazinothiadiazoles, pyrazolines, pyrimidinothiazolones was tested at NIH, Bethesda, USA and some of them have exhibited very good activity. Extensively worked on the antioxidant and radioprotective activities of Chalcone derivatives (curcumin analogs) in Drosophila Oregon K fly model system. Antiangiogenic effect of the curcumin analogs was studied in Ehrlich ascites tumor (EAT) cells transplanted mouse in vivo. Presently working on the radiosensitizing effect of imidazothiazole compounds funded by BRNS. She has published more than 300 articles in reputed international journals especially in the field of crystallography and medicinal chemistry. She was awarded 'Career Award for Young Teachers [CAYT]' from AICTE for the year 2003. Under this project she has done extensive work on Non Linear Optical materials and published series of research papers in peer reviewed Journals. She has been Principal Investigator of Major research Grants funded by BRNS, MoES GOI amounting for Rs. 65.72 lakhs. and another Rs.60 lakhs as Co-PI. She has been presenting papers in national and international conferences at India and abroad. Delivered many Invited lectures at national and international conferences. She is also recognized as one of the mentor for DST-inspire program. Her publications have received good no. of citations which accounts for her h-index: 23 in Scopus and 27 in Google Scholar. Listed as one of the top five researchers of the country in Material Science Category in a survey conducted by "Careers360" magazine based on the publication citations in the Scopus (Elsevier) for the period 2011-2013. She was listed as one of the Top 20 most productive authors of India in Biochemistry, Genetics and Molecular Biology during 1998-2007, DESIDOC, Journal of Library & Information Technology in 2010. She has published about 340+ papers in the peer-reviewed journals mainly focusing on the synthesis and characterization of new organic small molecules of importance. Publications appeared in European Journal of Medicinal Chemistry, Bioorganic and Medicinal Chemistry, Acta C, Journal of Chemical Crystallography, Polymer, Journal of Crystal growth, etc. She was visiting faculty at Institute of Chemistry Taiwan and she has also established collaboration with national and international scientists of repute. Apart from that she writes popular articles of social issues and science in Kannada language.

MANGALORE UNIVERSITY

MANGALAGANGOTHRI-574199, KARNATAKA STATE, INDIA.

DEPARTMENT OF INDUSTRIAL CHEMISTRY

Global Initiative on Academic Network (GIAN) program on

Customized Natural Products To Evade Multidrug Resistance In Cancer

May 16-22, 2019

Registration Form

GIAN Portal Registration Number:	
Title (Mr./Ms./Mrs./Dr./Prof.):	
Full Name:	
Designation: (For students, name of the course and the year are to be mentioned clearly)	
Name of the Organization :	
Address for Correspondence:	
E-mail:	
Contact Number:	
Category of registration: (SC/ ST/ General / OBC)	
Details of Payment of Course Registration Fee:	
Category (Tick one) : Faculty / Industry / Research Scholar / Student	
Mode of Payment:	
Date of Payment:	

Place:

Date:

Signature of the Applicant

Note: Duly filled-up signed and scanned registration form should be sent to the e-mail id: indchemistry.gian@gmail.com before May 10th, 2019

INSTRUCTIONS TO THE APPLICANTS:

STAGE 1: WEB PORTAL REGISTRATION (AT GIAN PORTAL)

Web (Portal) Registration:

Visit GIAN Website at the link: <http://www.gian.iitkgp.ac.in/GREGN/index> and create login User ID and Password. Fill up the blank registration form and do web registration by paying a one time Non-refundable fee of Rs. 500/- online through Net Banking / Debit / Credit card. This provides him / her with **LIFE TIME REGISTRATION** to enroll in any number of the GIAN courses offered.

STAGE 2: COURSE REGISTRATION (AT GIAN PORTAL)

Course Registration (Through GIAN Portal): Log in to the GIAN portal with the user ID and Password created. Click on “**Course Registration**” option given at the top of the registration form. Select the Course titled “**Customized Natural Products To Evade Multidrug Resistance In Cancer**” (Course code: 176019H01) by **Maguni (Mangalore University)** from the list and click on “Save” option. Confirm your registration by Clicking on “**Confirm Course**”

STAGE 3: COURSE ENROLLMENT (WITH THE COURSE COORDINATOR)

Candidates have to Register / Enroll themselves with the Course Coordinator by submitting the Registration form alongwith payment in cash on or before 10th May, 2019. A soft copy of the duly filled form must be submitted in advance to indchemistry.gian@gmail.com