INTERNATIONAL Course
Under
GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN)

Biomedical Imaging -Advanced FLIM - FRET Microscopy Techniques for Cancer Cellular Imaging
***17th December* to 22nd December , 2018**

Foreign Faculty: Prof. Ammasi Periasamy
Course Coordinators:Prof.Dr.P.Aruna and Dr.C.D. Anuradha

Overview

This course facilitates the enthusiastic participants to learn the practical usage of various microscopy imaging methodologies to study the morphology and cellular function in various biological systems from single molecule to single cell. The microscopy techniques provides spatial and temporal information of the cells or molecules. Better understanding of the basics of microscopy imaging allows the users to interpret the data appropriately. Many components are involved in microscopy imaging, more importantly it is essential to understand how the lens works, the detectors, and digital image processing approaches. This is important because the cellular signal responses are heterogeneous distribution. For example, the metabolic signals such as NADH, FAD and Tryptophan responses due to drug are heterogeneous distributions. Investigation of the metabolic signal helps to understand the cancer development, cancer progression and that leads to develop better drug to treat the cancer. Various microscopy techniques can be used to monitor the cellular response but fluorescence lifetime imaging technique has high sensitivity compared to any other microscopy techniques. Measurement of lifetime of the molecule is independent of change in fluorophores concentration or excitation intensity or light scattering. Lifetime is a fingerprint of the molecule. The main focus of this course is to educate the students on various aspects of microscopy imaging of normal vs cancer cells and delineate the heterogeneous distribution of the cellular response using digital image analysis methods..

Objectives

The main objective of the course are as follows:

- **Educate the participants the basics of various microscopy techniques.**
- **Describe the various components involved in the microscopy imaging.**
- **Explain the basics of FLIM and FRET and its importance in normal and cancer cellular imaging.**
- **Educate the participants the importance of digital image processing of microscopy images.**
- **Describe the advantages of microscopy imaging to monitor in real time normal cell versus cancer cells.**
- **Explain the importance of quantitative digital image analysis of cellular images.**

Modules	**12 hours Lectures and 12 hours Tutorials/Laboratory: December 17th to December 22nd**
You should attend if….	• **Both undergraduate and graduate students (BTech/MSC/MTECH/PhD) can enroll in the course** • **Any division of faculty members can attend the Course and researchers from government organizations including R&D laboratories.**
Fees	**The participation fees for taking the course is as follows:** **Academic Institutions Students - Rs.500/-** **Academic Institutions Staffs - Rs.1000 /-** **Industry/ Research Organizations - Rs.2000/-** **Participants from abroad – 300USD** **The registration fee includes all course materials.** **Accomodation and food based on Payment basis**
Mode of Registration	**GIAN Registration:** **The participants who wish to attend any GIAN course should register at http://www.gian.iitkgp.ac.in/GREGN/index and pay a one-time non-refundable payment of Rs.500 which is valid for lifetime .** **Registration for the Course:** **The participants are requested to pay participation fees in the form of demand draft in favour of The Director, CTDT, Anna University payable at Chennai.**

Foreign Faculty

Prof. Periasamy is an internationally recognized expert in advanced microscopy techniques, particularly in the area of molecular imaging in living cells, tissue and animal. A key area of his research is focused on the design and development of optical methodology including advanced light microscopy techniques to investigate/monitor exogenous and endogenous protein-protein interactions, intravital imaging and monitoring the physical parameters of normal versus cancer cells/tissues. Prof. Periasamy is the founder and center director of the internationally known W.M. Keck Center for Cellular Imaging (KCCI; http://www.kcci.virginia.edu/). Prof. Periasamy is one of the pioneers in the development of fluorescence lifetime imaging microscopy (FLIM) . He developed a 2- and 3-color steady state, confocal, multiphoton, and FLIM based Förster resonance energy transfer (FRET) imaging system for protein localization in living specimens. He has published over 130 articles in refereed journals and book chapters. http://kcci.virginia.edu/peri-publications He has given more than 150 invited lectures nationally and internationally. Prof. Periasamy has edited three books, series book editor on cellular and clinical imaging

Host Faculties

Prof. P. Aruna is the Professor and Head, Department of Medical Physics, Anna University, Chennai. She has received Ph.D degree from Anna University in 1991. She is the recipient of the prestigious BOYSCAST award from DST in 1998. She has guided 7 doctoral candidates and 150 post graduate projects of MDS, M.Tech, M.Phil & M.Sc students in the field of Mediphotonics. Her research interests include fluroscopy and spectroscopy based techniqes for cancer diagnosis. She has published more than 100 papers in national and international journals.

Dr. C.D. Anuradha M.Phil., PhD., is HOD & Director, Centre for Biotechnology, Anna University. She obtained her M.Phil and Ph.D. degree in Biochemistry. She has 25 years of research experience in the field of Stem cell Technology, Cancer Therapeutics and Cardiovascular therapy in Germany, Japan and USA. She has more than 40 research articles in International peer reviewed Journals like JBC, PLOS and American Journal of Physiology and has several ongoing research projects .She collaborates with various labs in the UK and USA and has a great passion for research in cell signaling mechanisms

Contact Details

Prof.Dr.Aruna
Professor and Head
Department of Medical Physics
Anna University
Chennai-600025
Mobile: 9840776274
Email medphyGIAN@gmail.com

Global Initiative of Academics Networks(GIAN)

176020G02 : Biomedical Imaging -Advanced FLIM - FRET Microscopy Techniques for Cancer Cellular Imaging"

17th December to 22nd December , 2018

Anna University, Chennai

REGISTRATION FORM

Name (Block Letters) :.....

Age and Date of Birth :.....

Gender : ☐ Male ☐ Female ☐ Transgender

Educational qualification :.....

Designation :.....

Experience :.....

Institution :.....

Address :.....

.....

Mobile :.....

E-mail :.....

GIAN Application ID :.....

(Application Id Generated during One time registration at GIAN portal of IIT Kharagpur)

Course Fee : ☐ Academic Institutions Students - Rs. 500/-

☐ Academic Institutions Staffs - Rs. 1000/-

☐ Industry/ Research Organizations - Rs. 2000/-

☐ Participants from abroad: US $300

Payment should be made through:

Demand Draft , in favour of "**The Director CTDT,Anna University**" payable at chennai.

DD no: ....., Date: .....

Amount: ....., Bank :.....

Date: ..... Signature of Candidate

APPROVAL FROM INSTITUTION

Date: ..... Seal and Signature of the Principal/

Head of the Department/Division

Send through post to the course coordinator: **Prof.Dr.Aruna, Professor &Head, Department of Medical Physics, Anna University,Chennai-600025,Mobile: 9840776274,** **Email:** medphyGIAN@gmail.com

Please visit www.gian.iitkgp.ac.in and www.annauniv.edu/gian/ for more details .