# Cancer Metastasis:- Biology, Research and Treatments

## Overview

The spread of cancer from its primary site of growth to secondary organs, a process known as metastasis is one of the foremost causes of death in cancer patients. This due to the fact that the metastasis of cancer to vital organs such as the lungs, brain, kidneys, and liver, result in major complications and compromised organ function leading to patient death. This is most evident in cancers such as breast cancer, melanoma and prostate where metastasis can account for up to 90% of deaths. Of significance is that although this is the case, improvements in the treatments and thereby the survival of patients with metastatic disease has changed little in the past 30 years. Although treatments exist that those shrink or slow the growth of metastatic tumours, this is temporary and no treatments exist that eradicate metastasis. Therefore, metastasis represents a significant clinical problem for the clinician and requires a continued growth in our understanding of this aspect of cancer if we are to progress towards next-generation therapeutics to effectively treat metastatic cancer.

Metastasis research has made great advances in the last 10-15 years and our understanding of the multiple-step nature of this process, the cell biology and genetics as well as the role of host factors in this complex process are becoming better defined. However, it is becoming apparent that our advanced understanding of the biology underlying metastasis needs to be rapidly translated into more effective therapies for metastatic cancer in the future. Having a good working knowledge and understanding of metastasis for the cancer researcher, scientist and pharmacologist will greatly aid in the development of potent and effective anti-metastatic therapeutics in the near future.

**Objectives:**

The major objectives of the course are:

a) the participants will gain an understanding of the metastatic process, its major determinants and pathways to identify and test novel therapeutics
b) building on their general knowledge of metastasis they will be have a theoretical understanding of the primary models and principles of metastatic research
c) to demonstrate to the participants, the pathway of translational metastatic research and future opportunities in the field

## The Faculty

**Dr. John Price** is a senior lecturer and research group leader at the Centre for Chronic Disease, College of Health and Biomedicine at Victoria University. He also holds an adjunct A/Professorship at Monash University within the Department of Biochemistry and Molecular Biology.

He received his PhD from the University of Aberdeen, Scotland for his work on the role of cytokines and growth factors in modulating the metastatic phenotype. Having received a prestigious Fogarty International Visiting Fellowship, Dr Price carried out his postdoctoral training at the National Institutes of Health, USA in the Laboratory of Pathology, National Cancer Institute. Dr Price is an internationally recognized expert in the field of metastasis and has won a number of local and international awards including the Bristol-Myers Squib Oncology American Association of Cancer Research Young Investigator Award, Outstanding Achievement Award from The International Journal of Oncology and International Journal of Molecular Medicine and the Novartis Prize (5th International Meeting on Cancer Induced Bone Diseases) for his contributions to metastasis research.
He is an expert in experimental models of metastasis and the identification of novel therapeutic targets and their targeting, especially in relation to breast cancer and bone metastasis. He has served on a number of committees and advisory panels including the National Breast Cancer Foundation Animal and Human Models Steering Committee. Dr Price has also served as a scientific advisor to the biotechnology and pharmaceutical sector on issues relating to metastasis therapeutics. Recently Dr Price was elected Vice-President of the Australian Metastasis Research Society and has convened local and international meetings on the subject of metastasis and cancer biology.

**Dr. Viraraghavan Ramamurthy** is a Professor of Biotechnology at PSG College of Technology, Coimbatore. He is trained in microbiology at University of Bombay and in molecular virology at University of Texas Medical Branch, Galveston. His research contributions include understanding the regulation of antiviral response induced by interferons; using *in vitro* models to study the pharmacodynamics while administering interferons therapeutically; role of RNA polymerase pausing in the control of gene expression. He has also contributed in developing and transferring technologies in the application of industrial enzymes, products for sustainable agriculture, and industrial processes employing green chemistry. His current interests include development of technologies for implementation under resource constrained conditions and developing products health improvement for low income groups.

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| **Course** | **August 21th to August 26th 2017**<br>**Number of participants for the course will be limited to fifty (on first come, first serve basis).** |
| **Host Institute** | PSG College of Technology, Peelamedu, Coimbatore, Tamilnadu-641004 |
| **You Should Attend If…** | you are a student, faculty member or a researcher wanting to gain insights into<br>▪ current status of metastasis research.<br>▪ experimental models and methodologies used in metastasis research.<br>▪ future of translational metastasis research |
| **Fees** | The participation fees for the course is as follows:<br>The participation fees (excluding lodging and boarding) for taking this course is as follows:<br>**Students: Rs. 1,000/- (without grading) and Rs. 2,000 (with grading)**<br>**Faculty members from academic institutions: Rs.3000/-**<br>**Persons working in Industry/ Research Organizations: Rs. 4,000/-**<br><br>The above fee includes all instructional materials, computer use for tutorials and assignments, and session refreshments. Limited number of participants can be provided with accommodation (first come, first serve) on payment basis. |
| **How to Register?** | **Step-1: Web Portal Registration:**<br>Visit http://www.gian.iitkgp.ac.in/GREGN/index and create login User ID and Password. Fill up registration details and complete the registration by paying Rs. 500/- online through Net Banking / Debit / Credit card. This provides the user with life time registration to enroll in any number of GIAN courses offered.<br><br>**Step-2: Course Registration:**<br>Login to the GIAN portal with the user ID and Password already created in Step 1. Click on Course Registration option at the top of Registration Form. Select the Course titled "**Cancer Metastasis:- Biology, Research and Treatments**" from the list and click on Save option. Confirm your registration by clicking on Confirm Course.<br><br>**The selected participants will be intimated by us through email, regarding the payment modality for this course.** |
| **Course Coordinator** | **Prof. M. Ananthasubramanian**<br>**Head, Department of Biotechnology**<br>PSG College of Technology, Peelamedu, Coimbatore, Tamilnadu-641004<br>Phone: 0422-2572177 Extn:4483<br>E-mail: mas@bio.psgtech.ac.in |