

DRUG TRANSPORTERS IN HEALTH AND DISEASE

OVERVIEW

Cancer is the second-highest cause of mortality in the developed world, while infectious diseases are the second-highest cause of death in the developing world. In individuals affected by cancer and infectious diseases, development of resistance to drugs is a serious problem and drug efflux transporters are known to contribute significantly to this phenomenon. Multidrug resistance (MDR) transporters are present ubiquitously throughout nature, from bacteria to humans. This course will expose participants to the area of drug transporters, their role in health and disease, MDR, its molecular mechanism and the status of research in these areas. Recent developments in unraveling the molecular mechanisms of polyspecificity and transport based on biochemical, genomic, pharmacological and structural studies will be focused. Other aspects of MDR transporters such as the pathophysiological functions in humans and cellular mechanisms that regulate the activity and/or expression will also be covered. In addition, novel strategies for the development of potent modulators and various preclinical and clinical strategies to improve clinical outcomes will be discussed. Special emphasis will be given to the use of “omics” and “meta” systemic approaches to study membrane transporters. Research exploring botanicals as source for developing modulators to overcome MDR and the scope of exploring Indian traditional system of medicine for drug transporter modulator discovery will be discussed. This powerful combination of topics will facilitate greater understanding of the current status of the research on drug transporters.

OBJECTIVES

1. Expose participants to the area of drug transporters, their role in health and disease, multidrug resistance and its molecular mechanism.
2. Provide an overview of impact of drug resistance in cancer therapy.
3. Discuss the scope of exploring Indian traditional knowledge to discover natural drug transporter modulators.

MODULES	November 13 to 17, 2017 10 Hours Lectures, 8 Hours Tutorial Number of participants for the course will be limited to thirty.
WHO CAN ATTEND	<ul style="list-style-type: none">▪ Masters students from life sciences, pharmaceutical and medical sciences including AYUSH institutions.▪ Research scholars and postdocs from research institutes and pharmaceutical industry.▪ Faculty members from University departments and colleges.▪ Physician scientists
FEES	The participation fees for taking the course is as follows: Students from SPPU : Rs. 1000/- All Others: Rs. 3000/-

THE FACULTY



Dr. Suresh V. Ambudkar, PhD is the Deputy Chief of Laboratory of Cell Biology at Center for Cancer Research of National Cancer Center, NIH, USA. The long-

term research goals of his lab is to elucidate the role of ATP-binding cassette (ABC) drug transporters in the development of multidrug resistance (MDR) in cancers and on the development of new therapeutic strategies to increase the efficiency of chemotherapy for cancer patients. For last twenty-five years, he has been working on understanding the role of ABC transporters including ABCB1 (P-glycoprotein, P-gp), ABCG2, ABCC1 (MRP1) and ABCC4 (MRP4) in the development of MDR in cancer cells. His team has been using a variety of approaches including biochemical, cell biological, molecular biological, molecular modeling and pharmacological to elucidate the mechanism of action of P-gp and other ABC drug transporters and has published over 200 research articles. His research team also focuses to develop non-toxic natural product modulators of ABC drug transporters to increase the efficiency of chemotherapy for cancer patients.

Course Coordinators

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