

CANCER SCIENCE INSTITUTE OF SINGAPORE

DISTINGUISHED SPEAKERS' SERIES 2013

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Integrative Genomics - Insights into Tumor Heterogeneity and Molecular Pathogenesis of Liver Cancer

Date: Monday, 10 June 2013

Time: 11am – 12pm

Venue: LT 35, Centre for Translational Medicine, Level 1
 (14 Medical Drive, Singapore 117599)

Chair: Dr Edward Chow

Abstract:

Liver cancer is extremely heterogeneous in its tumor biology and clinical presentation, which impedes treatment options and poses a significant challenge to cancer management. Inter-tumor heterogeneity has been recognized, possibly emanating from the presence of cancer stem cells or selection by clonal evolution. To overcome this problem, molecular-based technologies including genomic, transcriptomic and metabolomic profiling, have been applied to liver specimens to reveal tumor subgroups and delineate critical gatekeepers of cancer initiation and progression. Consequently, various genome-based signatures have been developed to discriminate patients with greater homogeneity and assist in molecular re-staging. Examples include biologically relevant molecular signatures linked to metastasis, tumor recurrence, cancer stem cells, tumor metabolism and gender disparity. Integrative genomics are powerful in identifying key driver genes and functionally linked networks capable of determining patient prognosis or therapeutic outcomes. Comparative genomics has revealed that although signatures share a common prognostic space, each carries unique molecular changes linked to different sets of cancer hallmarks which collectively occupy different tumor biological space. Integrative genomic approaches allow us to tease apart these differences, rooted in tumor heterogeneity, to identify critical biomarkers for cancer diagnosis and clinically relevant therapeutic targets that represent convergent cancer driving molecular nodes.

Biography:

Dr. Xin Wei Wang is a Senior Investigator at the U.S. National Cancer Institute (NCI) where he directs a research lab studying human cancers. He received his B.S. degree from Shanghai First Medical College, his PhD degree from New York University School of Medicine and further research training from Roche Institute of Molecular Biology and NCI. Currently, he serves as Chief of the Liver Carcinogenesis Section and Deputy Chief of the Laboratory of Human Carcinogenesis, Center for Cancer Research at NCI. He is a world renowned liver cancer researcher with a special focus on cancer functional genomics. His lab utilizes state-of-the-art technologies to study liver cancer and other human malignancies. He leads several major international research initiatives on liver cancer genomics and clinical studies through collaborations with multiple universities and cancer centers. He received the 2009 NIH Director's Award in the Science/Medical category to recognize his role for the advancement of cancer biomarker discovery and their clinical utility. He is a recipient of the NIH APAO Award for his outstanding accomplishments in biomedical research. He also received the NCI Mentor of Merit Award for excellence in mentoring and guiding the careers of trainees in cancer research. He is a recipient of an Honorary Professorship from Fudan University and a SCBA Outstanding Leadership and Service Award. He is frequently invited to give lectures both nationally and internationally, and has served on many scientific committees, advisory and editorial boards.