



SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by Prof Hong Wanjin:

Date: 11 October 2019, Friday

Time: 11:00AM – 12:00NN

Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Speaker: Dr Xin Hong, HHMI Postdoctoral Fellow, Howard Hughes Medical Institute, MGH Cancer Center, Harvard Medical School

Title: Circulating Tumor Cells: A Unique Window Into Cancer Metastasis & Non-invasive Biomarkers Of Therapeutic Response

Abstract

Recent advances in microfluidic technologies have provided revolutionary tools for the isolation and characterization of individual circulating tumor cells (CTC) from blood samples of cancer patients. The emergence of CTC-based preclinical models has begun to unravel the mystery steps in blood-borne metastasis and enable the precise identification of CTC-specific biomarkers for the non-invasive monitoring of disease progression and therapeutic response.

Using patient-derived melanoma CTC cell lines, I have identified an intricate regulatory module governing the concordant activations of *SREBP*-dependent lipogenesis and *Transferrin*-mediated iron homeostasis programs that contribute to CTC survival, metastasis and therapeutic resistance. Transcriptomic analyses of single primary CTCs from melanoma patients have uncovered heterogeneous yet coordinated expression of *SREBP/Iron transportation* signatures and the elevated expression of these genes in a subset of CTCs is significantly associated with worse prognosis.

The biological insights we have gained from CTC model systems could be directly translated into clinical applications. As one example, I have developed a panel of 19-gene CTC biomarkers (CTC-Score) to quantify early tumor response to immunotherapies. In a prospective cohort of 49 melanoma patients treated with single-agent immune checkpoint inhibitors, a decrease in CTC-Score within 7 weeks of therapy correlates with marked improvement in progression-free survival and overall survival. Thus, digital quantitation of CTC-derived transcripts enables serial monitoring of therapeutic response to immune checkpoint inhibition therapies.

Biography

Dr Xin Hong received his Bachelor of Science degree from National University of Singapore (NUS) and a PhD degree under the supervision of Professor Stephen M. Cohen from NUS (TLL/IMCB, 2008-2013). During his PhD, Xin was fascinated on the questions how distinct growth signaling pathways coordinate with microRNA networks to maintain homeostatic tissue growth, and how

dysregulated oncogenic cross-talk mechanisms lead to cancer transformation using *Drosophila melanogaster* and mammalian cell line systems.

In order to study cancer biology in a clinically relevant setting, Xin became a postdoc fellow in the laboratory of Professor Daniel A. Haber & Professor Shyamala Maheswaran in Harvard Medical School. While in Harvard, he utilized inter-disciplinary approaches involving next generation CTC microfluidic technology, mouse cancer models and single cell genomics to systematically isolate and characterize CTCs in cancer patients, with the aim to dissect mechanisms of CTC-mediated metastasis and develop CTC-specific biomarkers of therapeutic response.

ALL ARE WELCOME (No registration required)

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