

CSCB Seminar Series

Somatic mutagenesis in morphologically normal human tissues

Date: 3 June 2024 (Monday)

Format: In-person

Time: 12:00pm – 1:00pm

Amphitheatre, Level 2, Duke-NUS Med Sch

Abstract:

Somatic mutations accumulated in normal tissues are associated with aging and disease. Here, we performed a comprehensive genomic analysis of 1,737 morphologically normal tissue biopsies of nine organs from five donors. We found that somatic mutation accumulations and clonal expansions were widespread, although to variable extents, in morphologically normal human tissues. Somatic copy number alterations were rarely detected, except for tissues from esophagus and cardia. Endogenous mutational processes like SBS1 and SBS5 are ubiquitous among normal tissues though exhibiting different relative activities. Exogenous mutational processes operate in multiple tissues from the same donor. We reconstructed the spatial somatic clonal architecture with sub-millimeter resolution. In esophagus and cardia, macroscopic somatic clones that expanded to hundreds of micrometers were frequently seen, whereas in tissues like colon, rectum, and duodenum, somatic clones were microscopic in size and evolved independently, possibly restricted by local tissue micro-structures. Our study depicted a body map of somatic mutations and clonal expansions from the same individuals.

Speaker:



Prof. Dr. Fan Bai

Principal Investigator

Professor of Biophysics

Biomedical Pioneering Innovation Center (BIOPIC), Sch of Life Sciences
Peking University

Joint- Principal Investigator at Peking University First Hospital

Dr. Bai has obtained a Bachelor of Science in Physics (Peking University) and a PhD in biophysics (University of Oxford). After returning to China, his research group is focusing on the innovation and development of interdisciplinary techniques such as single-molecule fluorescence imaging, single-cell sequencing, and bioinformatics analysis, and apply these cutting-edge methods to reveal the critical genomic events driving cancer initiation, progression and metastasis. In recent five years, Dr. Bai has published over 40 papers in famous academic journals, including Science, Nature, Cell, Cancer Cell, Cell Research, Nature Immunology, Molecular Cell, etc. His research works were recognized as the 2019 Cell Press Paper of the Year (China) and ranked among the top 10 Chinese clinical medical advances in 2019.

Host:

Prof Patrick Tan

Senior Vice Dean, Research

Professor, Programme in Cancer & Stem Cell Biology
Duke-NUS Medical School

No registration is required.

All are welcome.

Enquiries: please contact Dolliss Ang,
dolliss.ang@duke-nus.edu.sg