DukeNUS Medical School | Cancer & Stem Cell Biology

CSCB Hybrid Seminar Series

From Discovery to Functional Understanding of Non-Coding Regulatory Elements

Date: 27 June 2022 (Monday)
Time: 12noon – 1pm (SGT)
Venue: Duke-NUS Amphitheatre , Level 2

Format : *via* Zoom & in-person
https://nus-sg.zoom.us/j/85718508394?pwd=UzR0N0lnRDRIa3djWGdNYmU3QlZrQT09
Meeting ID: 857 1850 8394
Passcode: 072581

Abstract:

The vast majority of the human genome is non-coding yet they exhibit widespread regulatory activities and are hot spots for disease-associated SNPs. We pioneered 5' single cell RNA-seq to discover both promoters and non-coding regulatory elements, including enhancer RNAs, and report greater enrichment of disease-associated variants in the 'transcribed' regions - as compared to - 'accessible' regions (HCA consortium). We further built a high-content screening platform and perturbed a myriad of long non-coding RNA/DNA using antisense-oligonucleotides (ASO) and CRISPRi, and reported ~40% lncRNAs are functionally important in gene regulation and exhibit cell type specific activities (FANTOM consortium). Leveraging on the 5' technology, we established a medical genomics network with various clinicians in Japan and produced an Atlas of Promoters and Enhancers across 15 different tissues to elucidate regulatory elements associated with genetic disorders and disease. By combining single-cell 5' RNA-seq with spatial transcriptomics, we further exemplify that non-coding regulatory regions are constrained by regional domains in the human brain.

Speaker:

Dr. Jay W. Shin

Group Leader, Laboratory of Regulatory Genomics
Genome Institute of Singapore

In 2008, Dr. Jay W. Shin acquired his PhD at the ETH Zürich, Switzerland after his research training at Harvard Medical School (MGH), Boston, USA. During this period, Jay combined both experimental and computational approaches to build gene regulatory networks involved in angiogenesis of the skin inflammation. Jay then joined RIKEN after receiving a Special Post-Doctoral Research (SPDR) Fellowship where he established single-cell genomics platform and analytical tools to investigate the role of gene regulation in cell reprogramming. The lab collaborates with industries and various medical institutes and is an active member of Human Cell Atlas to comprehensively characterize non-coding regulatory elements in the human body. In 2022, Jay joined GIS A*STAR to develop single cell genomics platforms that are more accessible and affordable for clinical research and drug discovery.

Host:

Patrick Tan
Professor
Programme in Cancer & Stem Cell Biology
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Singapore

No registration is required.
All are welcome.

Any enquiries, please contact:
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