



Seminar Announcement

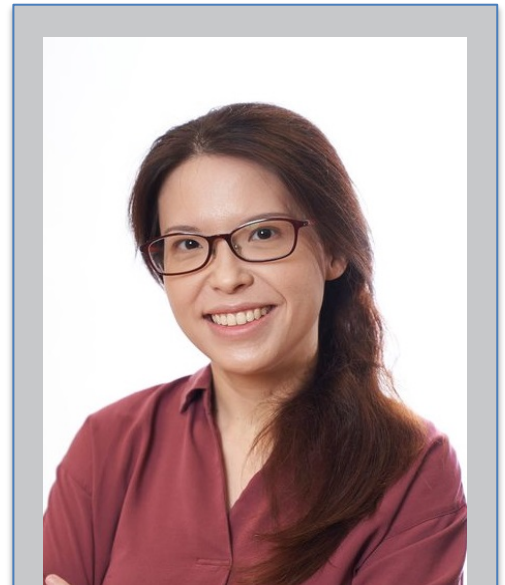
Investigating the 3D Genome Organization of Enhancers and Silencers in Regulating Gene Transcription

Date: 14 August 2020, Friday

Time: 4:00 p.m.

Venue: Classroom 1, SBS

The 3-dimensional (3D) organization of our genome is important in controlling gene transcription. Chromatin interactions are two or more regions that come together in close proximity. Enhancers are known to loop over to gene promoters in the crowded 3D space of the nucleus. In the first story that I will present, we obtained the first ever 3D genome organization maps by Hi-C in haematopoietic stem cells from the bone marrow of 3 healthy individuals and 3 individuals with Acute Myeloid Leukemia (AML), which is a highly lethal cancer. We found that MEIS1, a key oncogenic transcription factor in AML, is regulated by a recently-described 3D genome structure called a Frequently Interacting Region (FIRE). In the second story, we found that silencers in the genome can similarly loop over to target gene promoters through chromatin interactions. Removal of silencers led to upregulation of interacting target genes, altered chromatin interactions, changes in phenotype associated with cell identity, and altered xenograft tumor growth. Taken together, our results illustrate the importance of chromatin interactions both in gene activation and gene silencing in cancer progression.



Speaker:

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