

# ASHBi SEMINAR

## Controlling gene activation by enhancers through a drug-inducible topological insulator

Lecturer: **Dr. Taro Tsujimura**

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**Date: Wednesday, 3<sup>rd</sup> July 2019**

**Time: 15:30–16:30**

**Venue: seminar room 102, Faculty of Medicine Bldg. A**

While regulation of gene-enhancer interaction is better understood, its application remains limited. We reconstituted arrays of CTCF binding sites and devised a synthetic topological insulator with tetO for chromatin-engineering (STITCH). By coupling STITCH with tetR linked to the KRAB domain to induce heterochromatin and disable the insulation, we developed a drug-inducible system to control gene activation by enhancers. We applied this to dissect MYC regulation in human iPS cells, and obtained several important insights in gene regulation. In this seminar, I will demonstrate these results and discuss how the system would be useful in the field of chromatin conformation, particularly when combined with approaches of single cell genomics.

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