



# BIOLOGY COLLOQUIUM

Friday, 10 Feb 2017 | 4pm | DBS Conference Room 1

Hosted by Dr Lu Gan

## How is the long strand of human genome DNA organized in the cell?

Dynamic organization of chromatin domains revealed by super-resolution live-cell imaging



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DNA is wrapped around core histones, forming a nucleosome structure. The nucleosome had been long assumed to be folded into a regular 30-nm chromatin fiber and other helical folding structures. However, several recent evidences including our cryo-microscopy and synchrotron X-ray scattering analyses showed that chromatin in the cells mainly consists of irregularly folded nucleosome fibers without such regular fibers. This irregular folding implies a less physically constrained and locally more dynamic chromatin state. Recently, using the super-resolution imaging, we revealed the chromatin domains and their local dynamics (“fluctuation”) in live mammalian cells. Our simulation result suggested that the fluctuation increases chromatin accessibility, which is advantageous for many “information searching” biological processes, such as RNA transcription, DNA replication and DNA repair/recombination.