



Graduate Seminar – PhD Oral Defence

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Date : 6 July 2022 (Wednesday)
Time : 9:00 a.m.
Zoom Link : <https://cuhk.zoom.us/j/92996639433?pwd=Uk1KdHBiQ2F5QmdDb2NyQy9BUG5ndz09>
Meeting ID : 929 9663 9433
Password : 766935

Title: SIH-NAH: A Protocol for Optical Genome Mapping Quantitative Assessment and Combinatorial Optimization with optional Genome Editing Assistance

Optical Genome Mapping is a genomic tool complement to genome sequencing, for its advantages in throughput and read length, allowing very long DNA fragments to be mapped onto reference genome with lower cost albeit also with lower resolution, and therefore suitable to investigate relatively macroscopic profile of DNA sequence. On the other hand, genome editing has been a hot topic in genomics and genetic engineering, with developments emerging to enhance its flexibility and reliability. Along their developments, both technologies have different studies to address their limitations and provide countermeasures, in order to push their envelope even further.

This study aims to explore prospects of further optimization of some optical genome mapping procedures in terms of the capability to uniquely map a subsequence into given reference genome in a framework addressing data processing and combinatorial optimization, as well as the possibility to include gene editing as a means to assist optical genome mapping.

With optical mapping procedure formulated into a framework with its task of data processing and mathematical analysis, the protocol simulated the workflow of optical mapping, and its output expected by the downstream analyses according to the principle of optical mapping.

As this study progresses, researches involving potential for multiple round optical mapping has been emerging. As a result, we devised a protocol to assess options available for optical mapping in a quantitative manner, in terms of their performances to ease subsequent procedures and analyses such as genome assembly. Doing so, we aim to ride the tide of multiple round optical mapping development with this protocol, while the technology is in its infancy with untapped potential which the protocol sight to elucidate.

***** ALL ARE WELCOME *****

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