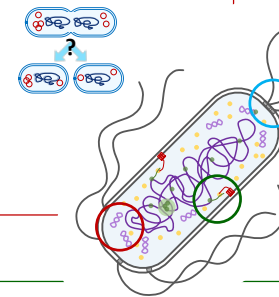
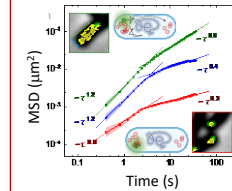


Our researches mainly focus on single-molecule dynamics *in vivo* which includes two major topics: the organization and segregation of chromosomal and plasmid DNA molecules, as well as the spatial arrangement and self-assembly of proteins in living prokaryotic cells. It aims to reveal the fundamental physical mechanisms in the micro- and nano-cellular environments.

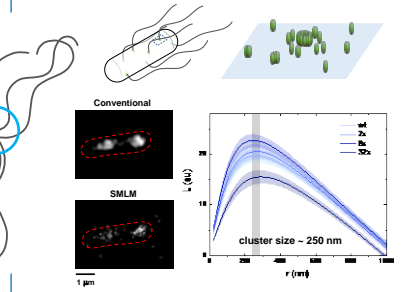
Techniques used in study

Super-resolution optical microscopy and spectroscopy
Single molecule imaging and tracking
Gene and cellular engineering on prokaryotes

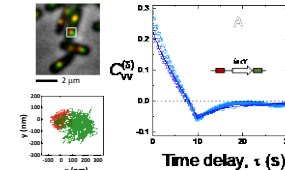
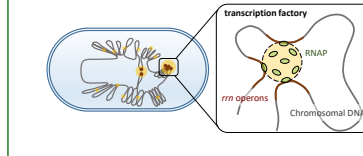
Plasmid motion dynamics and segregation



Protein arrangement and assembly



Chromosome organization



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Funding:

Ministry of Science and Technology
National Taiwan Normal University



Publications

- High-copy-number plasmid segregation—Single-molecule dynamics in single cells, *Biophys. J.* **116**, 772-780 (2019)
- Gene expression in *E. coli* influences the position and motion of the lac operon and vicinal loci, *Biochem. Biophys. Res. Comm.* **519**, 438-443 (2019)
- Frequency modulation of the Min-protein oscillator by nucleoid-associated factors in *Escherichia coli*, *Biochem. Biophys. Res. Comm.* **525**, 857-862 (2020)

