THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics
SEMINAR

Probing Transcription Machinery in Modules via Physical Modeling and Computational Interrogation

by

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Place: Rm G26, Science Centre North Block, CUHK

ALL INTERESTED ARE WELCOME
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Abstract

Molecular machinery regulating gene transcription in central dogma consists of factor proteins and enzymes responsible for locating promoter sequences and then initiating and elongating for template-based synthesis of RNA. Implementing physical modeling and simulation from atomic to coarse-grained level, along with polymer physics, statistical mechanics, and stochastic kinetic/dynamics approaches, we have re-examined transcription factor diffusional search along DNA, explored RNA polymerase promoter recognition, investigated the polymerase mechanochemical and fidelity control mechanisms during elongation, and further probed DNA supercoiling as mechanical feedback in the transcription.

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