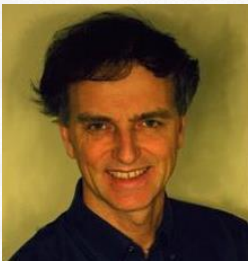


GENOME: THE GIS SPEAKER SERIES

Using Nanopores To Watch Enzymes At Work

18 January (Wednesday) · 11am (SGT, GMT+8)

In-person @ GIS Seminar Room (L2)



**Dr Jens H.
Gundlach**

Professor,
Department of
Physics, University
of Washington,
Seattle,
Washington, USA

My group has been at the nexus of developing nanopore sequencing and establishing nanopores as a new tool for single-molecule biophysics. Much of our work is based on the engineered protein pore MspA. Here, I will show the stunning capabilities of using nanopores to observe enzyme mechanics in real-time as these enzymes move along DNA or RNA. We easily achieve ten times better position and time resolution than optical tweezers, while simultaneously measuring the exact nucleotide sequence in the enzyme. I will show hereto unseen detail in the motion of helicases, DNA and RNA polymerases, reverse transcriptases, etc. Besides establishing decisive kinetic enzyme models our method reveals many surprisingly properties of these enzymes. Of particular contemporary interest are the data we collected with the SARS-CoV-2 helicase nsp13.

Hosted by:
Dr CHEW Wei
Leong
Group Leader,
Synthetic Biology
& Genome Editing
Therapeutics
(A*STAR's GIS)

Prof. Jens H. Gundlach is Professor at the University of Washington. His group pioneered the nanopore DNA sequencing technology that is now a widely used industrial process. His group further invented a new single-molecule nanopore technology with unprecedented precision for real-time observation of the motion of nucleic acid molecular motors such as helicases or polymerases. In addition to his scientific breakthroughs in biophysics, he heads a world-class lab in experimental gravity with research that has recently been awarded the Breakthrough Prize in 2021.