Bose Colloquium

S. N. Bose National Centre for Basic Sciences
(An Autonomous Research Institute established under DST, GOI

Title:

ON and OFF Controls inside a Cellular Nano-machine

Abstract:

Dynein is a nanoscale "Molecular Motor" that derives its name from the unit of force (dyne). This motor is the unit generator of force that executes vastly diverse tasks inside living cells including cell division, cell migration and transport of cargo (e.g. virus, bacteria, mitochondria). This implies a remarkable ability of Dynein to tune its force across several orders of magnitude, depending on the specific biological requirement at hand. How is this possible?

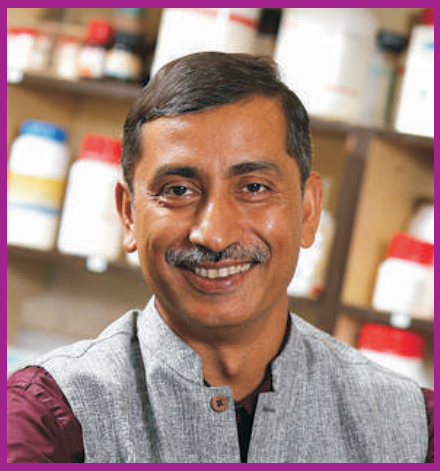
I will summarize our work suggesting that Dynein has highly specialized adaptations that allow it to work in large teams :- (1) An automatic Gear that optimizes force generation (2) Ability to Cluster into Cholesterol-rich platforms (3) Resisting detachment by the use of a catch-bond. I will then move on to newer results where we interrogate this machine using an optical trap. These findings reveal specific "nuts and bolts" inside the molecule that allow Dynein to engage rapidly, and then generate force tenaciously against opposition. Taken together, the talk will address how cooperative forces are generated at the Molecular level to sustain biological motion.

17 September, 2021

4.00 PM

Webinar Link

YouTube Link



Speaker:

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