



Department of Biotechnology  
Ministry of Science and Technology  
Government of India

**DBT**



National Institute of  
Advanced Industrial Science  
and Technology

**AIST**

# DBT - AIST International Laboratory for Advanced Biomedicine

  
DAILAB

Classroom for Advanced & Frontier Education  
CAFE

# DAiLAB-CAFE

## Series - 021

Date & Time - August 1, 2017 / 3 pm

Venue - Central 5-41; 2F (Conference Room # 1)

Speaker - Amrita KUMARI

Title: **Molecular Basis of Cargo Switching in Nano Motor Dynein During Mitosis**

Affiliation - Regional Centre for Biotechnology (RCB), NCR Biotech Science Cluster, Faridabad, India.

E-mail: [amrita.kumari@rcb.res.in](mailto:amrita.kumari@rcb.res.in)



**Abstract:** The molecular motor cytoplasmic dynein acts as a vehicle to ferry a variety of cargoes to the correct destinations inside the cell as part of the intracellular transport machinery. Cargo transport is a key process for cell survival, function and cell division (mitosis). Dynein plays distinct roles during the cell cycle, owing to its incredible ability to switch between diverse set of cargoes. At the onset of mitosis, a dramatic biochemical change is imparted to the dynein motor which involves the phosphorylation of some of its subunits. This phosphorylation event triggers the cargo switch from the membranous organelles during interphase to various mitotic cargoes. In our study, we aim to decipher the cascade of molecular events that are triggered by the initial phosphorylation of dynein, consequently allowing it to execute its diverse mitotic functions. Using high resolution microscopy, we show that distinct individual phosphorylation events at specific amino acid residues affect discrete stages of early and late mitosis. In conjunction with various other proteomic and biochemical approaches, our study will illuminate the underlying mechanisms adopted by dynein to achieve functional diversity during mitosis. Insights from this study can be potentially exploited to rationally design approaches to curb aberrant cell divisions, which are a hallmark of many cancers.



# Series 21

1st August 2017 (15:00-16:00 hours JST)

**Speaker: Amrita Kumari (RCB-Faridabad, INDIA)**

Topic: Molecular Basis of Cargo Switching in Nano Motor Dynein During Mitosis

Univ. of Sri  
Jayewardenepura, Sri Lanka IIT-Delhi, India

Manipal University, India

Brawijaya University, Indonesia

National Institute of Advanced Industrial Science & Technology, Japan

&  
Peking Medical University, China  
Hanyang University, South Korea

**Thanks for  
participation !**