DBT - AIST International Laboratory for Advanced Biomedicine
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
Manipur University, India

IIT-Delhi, India

Brawijaya University, Indonesia

National Institute of Advanced Industrial Science & Technology, Japan

Peking Medical University, China
Hanyang University, South Korea

Thanks for participation!