

TIFR-UoH (Life Sciences) Seminar Series

Regulation of nuclear shape and size

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Nuclear shape and size is cell type specific. Change in nuclear shape is seen during cell division, development and pathology. Nucleus is bound by a double-membrane nuclear envelope that is perforated with nuclear pore complexes, which facilitate the exchange of molecules between nucleus and cytoplasm. The outer and inner membrane contains several integral and peripherally associated proteins that participate in multiple functions of the cell including chromatin association, gene expression, spindle assembly, RNA metabolism. Many of these proteins are also involved in maintaining the shape and rigidity of the nucleus. Despite our growing knowledge of the importance of nuclear membrane proteins in nuclear transactions and cytoplasmic communication, a clear understanding of all the key components of the nuclear membrane and how they are organized in the nuclear membrane is lacking. We have initiated a genetic screen for nuclear shape/organization defects in *S. cerevisiae* and have identified novel proteins and pathways that are involved in the organization and maintenance of nuclear shape. In a parallel study we have taken a sequence comparison approach to identify the basic components of the nuclear membrane that are conserved across the eukaryotic kingdom in an attempt to define the basal requirements for a functional NE. Through this study, we have identified several proteins that are *S. cerevisiae* specific and others that are conserved across the fungal kingdom and several that are conserved in all eukaryotes giving us a picture of the evolving nuclear proteome. The talk will give an overview of our attempts to understand the structural basis of nuclear shape, size and NE organization.

Wednesday, Feb 28th 2018

04:00 PM (Tea/Coffee at 03:30 PM)

Auditorium, TIFR-H