Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

Students' Annual Seminar

Monitoring global changes to physical chromatin structure in response to DNA damage in living cells

P S Kesavan

Damage to the genetic material of cells is common, and occurs due to both endogenous and environmental insults. Cells have evolved different DNA repair pathways to address specific groups of chemical damage to DNA. Like most cellular processes that need access to DNA, such as replication or transcription, higher order structures of chromatin can act as barriers to the efficient repair of damaged DNA. Chromatin level changes in response to DNA damage have largely been studied biochemically. In my research, using tools of steady state fluorescence anisotropy, I monitor changes to global chromatin compaction in response to DNA damage caused by specific genotoxic agents or laser-induced localized double-strand breaks. Local anisotropy changes in living cells are related to subsequent immunofluorescent detection of damage and chromatin markers. Increased chromatin compaction as monitored by anisotropy is related to the pan-nuclear induction of phosphorylated H2A.X, and activation of checkpoint kinases. Together these studies are yielding interesting new insights into DNA damage responses in the context of chromatin in living cells.

Tuesday, Apr 03rd 2018

02:00 PM (Tea/Coffee at 01:30 PM)

Seminar Hall, TIFR-H