Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Comprehensive Seminar

Understanding the mechanism of DNA-Protein Crosslink repair

Priya

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DNA-protein interactions are highly dynamic and transient, regulating several metabolic processes. Occasionally, distortions in DNA, endogenous and exogenous agents can cause covalent trapping of proteins on DNA, forming a structure called DNA-Protein Crosslink (DPC). An estimate suggests that mammalian cells are challenged with nearly 6000 DPCs during exponential growth. DPCs negatively affect all chromatin transaction processes and if left unresolved, cause genomic instability and cell death. Earlier studies postulate that these adducts are repaired by canonical DNA repair pathways. However, recently it was shown that majority of DPCs require pre-processing of adducts by proteasomes and proteases for their repair, which is not required in classical repair pathways. However, the understanding of DPC repair is still in its infancy and a cellular DPC reporter system or comprehensive study to evaluate role of proteases in their repair is lacking. Understanding the DPC repair mechanism is crucial to the betterment of current cancer treatment regimens, almost half of which involve agents that induce covalent DNA-protein crosslinks. In this seminar, I will be discussing about DNA- protein crosslinks repair pathways with the main focus on the proteases, their identification and gaps in the understanding of their regulation.

Tuesday, Dec 10th 2024

10:00 Hrs (Tea / Coffee 09:45 Hrs)

Seminar Hall, TIFRH