

Students' Annual Seminar

Understanding division of labour at asymmetric fork during replication and repair

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DNA replication is a fundamental process that characterises all life forms and is essential for faithfully transmitting genetic information to daughter cells. Often during replication, the replicative polymerases stall upon encountering a lesion. One of the damage tolerance mechanisms commonly utilised by the cells is the 'Translesion Synthesis' (TLS) pathway, which recruits error-prone polymerases that help the replication machinery to bypass the lesion uninterrupted. Here, we aim to explore the asymmetric proteome associated with the two strands of DNA during replication and to unravel the mechanism of the polymerase switch. Additionally, we want to investigate, upon encountering a lesion, whether the choice of recruitment of the TLS polymerase is entirely random or if specific biases exist depending on the encountered damage. In this seminar, I will be discussing the approaches that we have taken to study the asymmetric nature of the replication fork and some of its preliminary findings. I will talk about the approaches taken to study the mechanism of polymerase switch and the kinetics of TLS polymerase recruitment during damage bypass.

Friday, Dec 6th 2024

14:00 Hrs (Tea / Coffee 13:45 Hrs)

Seminar Hall, TIFRH