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

Seminar

Identifying a role for the E3 ligase SkpA in regulating developmental signalling and autophagy in *Drosophila*

Tarana Anand

TIFR, Hyderabad

Autophagy during development is involved in several key processes such as tissue remodelling and cell differentiation. In order to identify regulators of autophagy during development we used the *Drosophila* larval fat body system. These tissues show increased autophagy during the third instar larval stages brought about in response to ecdysone signalling - an example of developmentally induced autophagy. In a targeted screen for UPS genes, we identify the role of the E3 ligase - SkpA - in both regulating autophagy induction as well as the growth of autolysosomes during development. Loss of *skpA* leads to early enhanced autophagy induction in the larval fat body. We further monitored signalling pathways known to be involved in regulating cellular autophagy levels and found that loss of *skpA* leads to decreased insulin and enhanced ecdysone signalling in the fat body tissue. By performing an F-box RNAi screen to identify the cognate F-box interacting with SkpA in this context, we identify that SkpA functions along with Ago to maintain insulin signalling and regulate autophagic induction. Further, we observe a delay in the growth of autophagosomes and lysosomes in *skpA* mutant cells, which show smaller sized autophagosomes and lysosomes as well as decreased lysosome acidification. Finally, loss of *skpA* in fat body tissue affects metamorphosis as it leads to delayed eclosion in flies.

Wednesday, Jul 2nd 2025

14:30 Hrs (Tea / Coffee 14:15 Hrs)

Seminar Hall, TIFRH