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

Students' Annual Seminar

Role of an E3 ligase - SkpA in developmental autophagy in Drosophila

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Autophagy is known to perform several functions during development 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 L3 larval stages brought about in response to ecdysone signalling - an example of developmentally induced autophagy. In a targeted screen we identify the role of an E3 ligase - SkpA – in both regulating autophagy induction as well as growth of autolysosomes during developmentally induced autophagy. SkpA mutant cells show enhanced autophagy induction compared to the surrounding wildtype cells. One of the known mechanisms for developmental autophagy induction in fat body tissues is via downregulation of insulin signalling. We identify that SkpA functions along with the F box protein Ago to maintain insulin signalling in the fat body tissues. Loss of SkpA or Ago shows developmentally reduced insulin signalling which may result in the increased 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. Additionally, we observe that both autophagosome and lysosome size and lysosomal acidification is increased in SkpA mutants at the prepupal stages. Finally loss of SkpA in fat body tissue affects metamorphosis as it leads to delayed eclosion in flies.

Friday, Mar 1st 2024

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

Seminar Hall, TIFR-H