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Drosophila Sec20 regulates autophagy and endocytosis independently of the Golgi-to-ER retrograde transport

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Sec20/BNIP1 (BCL2/adenovirus E1B 19 kDa protein-interacting protein 1) is a SNARE protein first described in yeast as an endoplasmic reticular SNARE. It mediates the fusion between the ER and retrograde vesicles from the Golgi. Other studies have also suggested that it may have a role in many other cellular functions including autophagy, ER homeostasis and apoptosis. As the role of Sec20 in autophagy (and other lysosomal pathways) has yet to be elucidated we used *Drosophila melanogaster* as an *in vivo* model organism. Starved larval fat cells and garland nephrocytes were used to detect any defects in autophagy or endocytosis, respectively. We found that Sec20 not only regulates autophagy, but it surprisingly has a role in endocytic transport as well. Ultrastructural analyses revealed abnormal lysosomal compartment and dilated ER in both fat cells and nephrocytes. Moreover, the latter contained enlarged late endosomes and was nearly devoid of endolysosomes. As we found that depletion of other SNAREs or tethering proteins (previously shown to regulate Golgi-to-ER retrograde traffic) did not cause any defect in either autophagy or endocytosis, we suggest that Sec20 has a novel role in lysosomal degradation that seems to be independent of Golgi-to-ER transport.

Keywords: *Sec20, BNIP1, autophagy, endocytosis, SNARE*

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Hemocytes regulate selective autophagy during regeneration of germline stem cells in Drosophila

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Autophagy is a highly conserved lysosome-dependent catabolic process of eukaryotic cells which has an essential role in the degradation of damaged proteins and organelles. It also plays important roles in cellular differentiation and development, by mediating the remodelling of cytoplasmic constituents. In early spermatogenesis of *Drosophila*, there are two different populations of stem cells, the somatic stem cells and the germline stem cells