

How to Make an Autophagosome – Membrane Remodeling in Autophagy

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Abstract:

Autophagy is a major catabolic pathway, which involves the sequestration of superfluous or dysfunctional cellular components into autophagosomes and their delivery to lysosomes for degradation. The formation of autophagosomes depends on a concerted action of canonical and autophagy-specific membrane trafficking and remodeling pathways. A highly conserved set of autophagy related (Atg)-proteins is hierarchically recruited to the phagophore assembly site to coordinate the biogenesis of autophagosomes. Their specific contribution remained, however, unclear. We use a powerful combination of in vitro reconstitution techniques and in vivo studies to reveal how Atg-proteins drive the initiation and expansion of the cup-shaped autophagic precursor membrane, called phagophore. We reconstituted a critical step in autophagy, which is thought to control phagophore-initiation, from purified components on model membranes in vitro. I will present our recent results that cover the molecular mechanism by which autophagy is initiated.

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