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an autophagosome is built from small vesicles, which come together and fuse. This process is driven by one big complex called the Atg1-kinase complex. This complex is known to be involved in recruiting the donor vesicles that create the autophagosome.

We recently published work on the expansion step. This is an interesting step that involves a small ubiquitin-like molecule, Atg8. The unique feature of this particular molecule is that it becomes covalently attached to autophagic precursor membranes. Many Atg8 molecules get conjugated to these membranes, so the question has been: why is there so much Atg8 on the membrane and what is its job there?

To answer this, we analysed the proteins independently of the complex cellular environment. We produced recombinant molecular machines that drive the formation of autophagosomes and analysed their function in the test tube. The test-tube components include the protein subunits of these molecular machines and model-membranes that serve as the platform for proteins to assemble into large complexes.

What we realized — and what came as a surprise to us — was that the molecular machine that drives conjugation of Atg8 stays with Atg8 at the membrane, rather than leaving after conjugation. We predicted that something needs to happen, some bigger structure needs to form on the membrane to keep the conjugation machine there. Using high-resolution approaches, we observed that Atg8 forms together with its conjugation machine, a protein shell on membranes. It's like a meshwork that sits on top of the membrane and stabilizes the forming autophagosome. Presumably.

JG: Why presumably?

TW: Because the details of how this expansion is driven by the sca□old is something that we are investigating.

JG: Will you be following this up over the next few years?

TW: Yes. This is an interesting question, but not an easy one to answer. We need to understand the direct relationship of how this really works *in vivo*.

JG: How does the autophagosome capture material from cells?

TW: The selection of cargo comes in two flavours. Under normal conditions, when the cell is happy, it only wants to degrade unwanted material or something damaged. It chooses these materials quite selectively. For example, it might only want to degrade dysfunctional mitochondria, the cell's power plants. The membrane then wraps tightly around these structures.

However, if a cell becomes stressed or starved, it can n ses to-0.04eca28e 0 036avours. UndMC Span 262becomes stressed or