IN BRIEF

MEMBRANE TRAFFICKING

Reconstitution of Rab- and SNARE-dependent membrane fusion by synthetic endosomes

Ohya, T. *et al. Nature* 20 May 2009 (doi:10.1038/nature08107)

Although cognate SNAREs (soluble *N*-ethylmaleimide-sensitive factor attachment protein receptors) are sufficient to fuse membranes *in vitro*, the process is inefficient. Using artificial vesicles and a set of 17 recombinant proteins, Ohya *et al.* reconstituted the cooperative activity of RAB5 GTPase and the SNARE machinery in membrane tethering and fusion of early endosomes. Their studies reveal the requirement of four different RAB5 effectors for membrane fusion and confirm that Rab effectors and SNAREs form a more efficient membrane fusion machinery complex than SNAREs alone.

PROTEIN TRANSLOCATION

A trans-membrane segment inside the ribosome exit tunnel triggers RAMP4 recruitment to the Sec61p translocase

Pool, M. R. *J. Cell Biol.* 25 May 2009 (doi:10.1083/jcb.200807066)

Newly synthesized proteins move through an exit tunnel, which connects the ribosome with the aqueous pore, that is formed by the translocon in the membrane of the endoplasmic reticulum. Pool now shows that the ribosomal protein Rpl17, which is located near the tunnel exit, associates with the translocon protein Sec61β. The presence of a transmembrane (TM) segment inside the tunnel, as a result of nascent membrane protein synthesis, causes Rpl17 to bind to a second protein, Ramp4. The author suggests that the recognition of the TM segment by Rpl17 triggers a conformational change of the translocon and primes it for TM segment integration into the lipid bilayer.

DEVELOPMENT

Germline P granules are liquid droplets that localize by controlled dissolution/condensation

Brangwynne, C. P. *et al. Science* 21 May 2009 (10.1126/science.1172046)

Germ cell specification in *Caenorhabditis elegans* is mediated in part by the localization of RNA- and protein-containing granules (P granules) to the posterior of a one-cell embryo. Brangwynne *et al.* show that P granules have liquid-like biophysical properties and rapidly dissolve and condense. P granule localization is caused by a biased increase in P granule condensation at the posterior of the cell, which is typical of a classic phase transition. The authors propose that this might reflect a general mechanism for organizing weakly associated assemblies, such as P bodies, Cajal bodies and stress granules, in the cytoplasm.

CELL DEATH

RIP3, an energy metabolism regulator that switches TNF-induced cell death from apoptosis to necrosis

Zhang, D.-W. *et al. Science* 4 Jun 2009 (doi:10.1126/science.1172308)

Tumour necrosis factor (TNF) and other agonists can stimulate death receptor-mediated apoptosis and necrosis. The authors show that RIP3 kinase affects necrosis but not apoptosis. RIP3 activates several metabolic enzymes, resulting in enhanced metabolism and increased production of reactive oxygen species, which is essential for necrosis. So, RIP3 kinase functions as a molecular switch between TNF-induced apoptosis and necrosis, and energy metabolism affects the death response of a cell.

As this article went to press, two reports related to the last In Brief were published: He, *et al.* Receptor interacting protein kinase-3 determines cellular necrotic response to TNF-α. *Cell* **137**, 1100–1111 (2009) | Cho, Y. *et al.* Phosphorylation-driven assembly of the RIP1–RIP3 complex regulates programmed necrosis and virus-induced inflammation. *Cell* **137**, 1112–1123 (2009)