**Ltc1 gets added to the ER’s contacts**

Murley et al. identify a yeast protein that might coordinate the function of vacuoles and mitochondria by transferring sterols at the sites where these organelles are contacted by the ER.

The ERMES complex connects the yeast ER to mitochondria, promoting the exchange of lipids between these organelles and marking the sites of mitochondrial division. Murley et al. looked for proteins that interact with the ERMES complex and identified a previously uncharacterized ER protein called Ylr072w. The protein localized to ER–vacuole as well as ER–mitochondria contacts and was recruited to these sites by Vac8 and Tom70/71, respectively. Because Ylr072w could transfer sterols between artificial membranes in vitro, the researchers renamed it Lipid transfer at tively. Because Ylr072w could transfer sterols between artificial membranes in vitro, the researchers renamed it Lipid transfer at

**A stem cell niche shows self-restraint**

Luo et al. describe how the Drosophila ovarian niche limits its own ability to maintain germline stem cells (GSCs) in an undifferentiated state.

Stem cells reside in specialized microenvirons, or niches, that prevent them from differentiating premature. In the germaria of Drosophila ovaries, GSCs reside next to cap cells that inhibit differentiation by secreting the TGFβ-like molecule Dpp. In other tissues, Dpp can influence cell fate over long distances, but, in the ovary, its range is spatially restricted such that, when a GSC divides, one of its daughters is positioned too far away from the cap cells to receive the Dpp signal, and therefore starts to differentiate into an egg. Luo et al. were interested in how escort cells—another component of the ovarian niche—help to limit Dpp’s sphere of influence.

The researchers found that escort cells express the Dpp receptor Tkv so that they can mop up excess Dpp secreted from the cap cells. Depleting Tkv from the escort cells extended Dpp’s range, resulting in an increased number of undifferentiated germ cells. Tkv’s expression in escort cells was stimulated by several Wnt ligands released from the cap cells. The ovarian niche therefore limits its own ability to maintain GSCs, ensuring that the stem cells’ progeny can undergo differentiation.

**A SMRTer way to track molecules**

Smith et al. describe a microscopy technique that instantaneously captures 3D images of live cells, allowing them to track the movement of single mRNAs in the nucleus.

3D microscopy images are usually obtained by capturing a series of 2D images at different focal planes, but this process is often too slow to follow the rapid movements of individual molecules within a particular region of the cell. One potential solution is to use multifocus microscopy, in which the detection light is split into nine different focal planes that can be imaged simultaneously. However, the acquired images need to be carefully realigned with each other in order to generate an accurate 3D snapshot of the region of interest.

A 3D projection of a nucleus shows the distribution of β-actin mRNA (green), nuclear pores (red), and heterochromatin (blue).