IN BRIEF

DEVELOPMENT

A biphasic push breaks symmetry

During oocyte maturation, polar body extrusion results from two asymmetric meiotic cell divisions that depend on the chromosome–spindle complex migrating from the oocyte centre to a subcortical location. Li and colleagues report that this migration occurs in two phases during meiosis I. The first phase was slow and dependent on formin 2 (FMN2). FMN2 colocalized with endoplasmic reticulum structures that surround the spindle and promoted local F-actin nucleation, which pushed the chromosome–spindle complex away from the centre. The second phase was rapid, driven by cytoplasmic streaming and initiated upon activation of a cortical actin-related protein 2/3 (ARP2/3) complex as chromosomes approached the cortex.

ORIGINAL RESEARCH PAPER Yi, K. *et al.* Sequential actin-based pushing forces drive meiosis I chromosome migration and symmetry breaking in oocytes. *J. Cell Biol.* **200**, 567–576 (2013)

CELL SIGNALLING

Transducing mechanical signals

Mechanosensing is a vital cellular process, but how cells transduce mechanical stimuli is not well defined. Here, Ulbricht *et al.* report that, in mammalian cells, tension-induced unfolding of the cytoskeleton protein filamin is sensed by BAG3, a component of the CASA (chaperone-assisted selective autophagy) complex. BAG3 binds to unfolded filamin and to the adaptor protein synaptopodin 2 (SYNPO2); SYNPO2 links the CASA complex to a membrane-tethering and fusion complex, which leads to autophagosome formation and filamin degradation. In addition, BAG3 stimulates the transcriptional activators YAP and TAZ, which leads to increased filamin mRNA and protein levels. Thus, by regulating the degradation and transcription of filamin in mechanically strained cells, BAG3 is a key transducer of mechanical signals.

ORIGINAL RESEARCH PAPER Ulbricht, A. *et al.* Cellular mechanotransduction relies on tension-induced and chaperone-assisted autophagy. *Curr. Biol.* **23**, 430–435 (2013)

RNA

Circular RNAs as miRNA sponges

There is much interest in how microRNAs (miRNAs), which target mRNAs to regulate gene expression, are themselves inhibited. Now, two groups have found that a naturally expressed circular RNA (circRNA) binds to miRNAs to suppress their function. Memczak *et al.* and Hansen *et al.* show that a mammalian circRNA, termed CDR1 antisense (CDR1as) or circular RNA sponge for miR-7 (ciRS-7), contains >60 conserved miR-7 seed matches, suggesting that it can bind densely to this target miRNA. miR-7 and the circRNA are co-expressed specifically in mouse neuronal tissues, which indicates that they interact endogenously. Moreover, this circRNA associates with the miRNA effector protein Argonaute, and this is miR-7-dependent. Injection of the human variant of this circRNA into zebrafish or knockdown of endogenous miR-7 result in impaired midbrain development. This, together with the finding that this circRNA affects miR-7 target gene activity, further supports a suppressive role for circRNAs. Bioinformatic data predicting the presence of thousands of circRNAs in the genome suggest that they may function as important post-transcriptional regulators.

ORIGINAL RESEARCH PAPERS Hansen, T. B. *et al.* Natural RNA circles function as efficient microRNA sponges. *Nature* 27 Feb 2013 (doi:10.1038/nature11993) | Memczak, S. *et al.* Circular RNAs are a large class of animal RNAs with regulatory potency. *Nature* 27 Feb 2013 (doi:10.1038/nature11928)