

IN BRIEF

 **TECHNIQUE****Capturing translation initiation**

Measuring translation initiation rates is difficult. Gao *et al.* developed quantitative translation initiation sequencing (QTI-seq), a technique that captures translation initiation sites (TISs) at single-nucleotide resolution in cells and solid tissues, based on dissociating elongating ribosomes from transcripts while preserving the initiating ribosomes. The authors used QTI-seq to profile the effects of amino acid starvation on HEK293 cells and mouse embryonic fibroblasts (MEFs). Starvation-responsive transcripts often displayed multiple TISs, indicating a role for alternative TISs in translation control. In mouse livers, fasting elicited a different response to that in MEFs: the translation initiation of ribosome biogenesis transcripts was not repressed, and that of transcripts encoding components of the proteasome was enhanced. This indicates that a continuous supply of ribosomal proteins is needed in the liver during prolonged fasting, and that the proteasome contributes to cellular amino acid supplies.

ORIGINAL RESEARCH PAPER Gao, X. *et al.* Quantitative profiling of initiating ribosomes *in vivo*. *Nature Methods* <http://dx.doi.org/10.1038/nmeth.3208> (2014)

 **CYTOSKELETON****How big cells are organized**

In most animal cells, the cytoplasm is organized by a radial array of microtubules — known as aster — that spans the whole cytoplasm. The minus ends of aster microtubules are anchored at the centrosome; the microtubules polymerize outwards, from their plus ends, which undergo dynamic instability. Ishihara *et al.* found that in very large cells, microtubule nucleation occurs away from centrosomes to enable asters to fill the whole cell. They carried out quantitative imaging on a cell-free system derived from *Xenopus laevis* eggs that mimics aster growth in interphase zygotes. In this system, new microtubule plus ends (displaying classic dynamic instability) were generated in the aster at locations far away from the organizing centre. Thus, aster growth in large cells seems to be sustained by microtubule nucleation away from the centrosome, which is presumably stimulated by pre-existing microtubules.

ORIGINAL RESEARCH PAPER Ishihara, K. *et al.* Microtubule nucleation remote from centrosomes may explain how asters span large cells. *Proc. Natl Acad. Sci. USA* <http://dx.doi.org/10.1073/pnas.1418796111> (2014)

 **CELL MIGRATION****Making contacts while on the move**

During collective cell migration, cells establish apicobasal polarity and cell–cell adhesion to allow coordinated movement. By exploiting a gene expression database and *Caenorhabditis elegans* deletion mutants, Kato *et al.* identified and characterized LINKIN, a transmembrane protein required for cell–cell adhesion during male gonad collective migration. LINKIN, which localizes to the plasma membrane of all gonadal cells, has an extracellular domain (containing FG–GAP domains) that resembles the ligand-binding domain of α -integrin. As the protein is conserved across metazoans, the authors carried out SILAC in human cells to identify its interactors. Among these, depletion of α -tubulin and the AAA+ ATPases RUVBL1 and RUVBL2 led to similar gonadal defects as *lnkn-1* mutants, and these proteins were found to bind to the LINKIN intracellular domain at the plasma membrane. Thus, LINKIN may regulate cell–cell adhesion and microtubule dynamics through these proteins.

ORIGINAL RESEARCH PAPER Kato, M. *et al.* LINKIN, a new transmembrane protein necessary for cell adhesion. *eLife* <http://dx.doi.org/10.7554/eLife.04449> (2014)