

IN BRIEF

RNA LOCALIZATION

In vivo imaging of *oskar* mRNA transport reveals the mechanism of posterior localization.

Zimyanin, V. L. *et al.* *Cell* **134**, 843–853 (2008)

Multiple kinesin motors coordinate cytoplasmic RNA transport on a subpopulation of microtubules in *Xenopus* oocytes.

Messitt, T. J. *et al.* *Dev. Cell* 3 Sept 2008 (doi:10.1016/j.dev-cel.2008.06.014)

RNA localization is a widely conserved mechanism for generating cellular asymmetry. Using live imaging, Zimyanin *et al.* observed *oskar* mRNA particles in *Drosophila melanogaster* oocytes and show that the mRNA is actively transported along microtubules in all directions, with a slight bias toward the posterior. This bias is sufficient to localize the mRNA and is reversed in *mago nashi*, *barentsz* and *tropomyosin II* mutants, which mislocalize the mRNA to the anterior. Almost all transport is mediated by kinesin, which transports *oskar* mRNA by a biased random walk along a weakly polarized cytoskeleton. Kinesin motors have also been implicated in microtubule-dependent transport of RNAs to the vegetal cortex during germ layer patterning in *Xenopus laevis*. Messitt *et al.* analysed the role of kinesin motors in vegetal RNA transport and identified a direct role for kinesin-1. *In vivo* interference and biochemical analyses reveal that kinesin-1 functions together with kinesin-2 in this process, and suggest that these motors might interact during transport.

SIGNAL TRANSDUCTION

Structural coupling of SH2-kinase domains links Fes and Abl substrate recognition and kinase activation.

Filippakopoulos, P. *et al.* *Cell* **134**, 793–803 (2008)

The Src-homology-2 (SH2) domain of Tyr kinases enhances activity, substrate recognition and oncogenicity of the linked catalytic domain. Yet the molecular mechanisms by which the SH2 domain can enhance catalytic activity and substrate recognition are poorly understood. The structure of the prototypic SH2-kinase unit of the human FES Tyr kinase now reveals that in its active conformation, the SH2 domain tightly interacts with the kinase N-terminal lobe and positions the kinase α C helix in an active configuration through essential packing and electrostatic interactions. This interaction is stabilized by ligand binding to the SH2 domain. Related findings with ABL kinase indicate an integrated SH2-kinase mechanism that is essential for effective signalling by these Tyr kinases.

PLANT CELL BIOLOGY

Strigolactone inhibition of shoot branching.

Gomez-Roldan, V. *et al.* *Nature* 10 Aug 2008 (doi:10.1038/nature07271)

Strigolactones are compounds that are thought to be derived from carotenoids, and are known to trigger the germination of parasitic plant seeds and to stimulate symbiotic fungi. However, until now, strigolactone biosynthesis mutants had escaped identification. Gomez-Roldan and colleagues showed that carotenoid cleavage dioxygenase-8 (*ccd8*) shoot branching mutants of pea are strigolactone deficient. Adding strigolactone restored the wild-type branching phenotype in *ccd8* mutants. These responses are conserved in *Arabidopsis*. The authors propose that endogenous strigolactones or related compounds inhibit shoot branching in plants.