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IN BRIEF

TECHNOLOGY

Transgenic strategies for combinatorial expression of fluorescent proteins in the nervous system.

Livet, J. *et al. Nature* **450**, 56–62 (2007)

Livet and colleagues describe a new method for visualizing neuronal circuits by genetically labelling neurons with a range of different colours. This methodology, which could be applied to study any cell type in any organism and might be particularly useful for lineage tracing, is termed Brainbow. It relies on the use of Cre-mediated recombination to stochastically express multiple fluorescent proteins from a single transgene, and allowed the authors to distinguish between adjacent neurons and visualize cell–cell interactions in the mouse cerebellum.

EPIGENETICS

An epigenetic activation role of Piwi and a Piwi-associated piRNA in *Drosophila melanogaster*.

Yin, H. & Lin, H. *Nature* 21 Oct 2007 (doi:10.1038/nature06263)

Drosophila melanogaster Piwi (P-element induced wimpy testis) is a conserved regulatory protein that, together with repeat-associated small-interfering RNAs (rasiRNAs), has an important role in gene silencing and heterochromatin formation. The authors demonstrate a new role of Piwi in promoting the epigenetic activation of a telomere-associated sequence located on the right arm of chromosome 3 (3R-TAS). They identified small RNAs that interact with Piwi, known as piRNAs, one of which associates with 3R-TAS. Piwi regulates 3R-TAS piRNA and promotes histone modifications that are associated with active transcription.

LIPID TRAFFICKING

SNARE proteins mediate fusion between cytosolic lipid droplets and are implicated in insulin sensitivity.

Boström, P. *et al. Nature Cell Biol.* **9**, 1286–1293 (2007)

Lipid droplets are dynamic intracellular stores for neutral lipids. A team led by Sven-Olof Olofsson now shows that cytosolic lipid droplets are associated with three SNARE proteins (VAMP4, syntaxin-5 and SNAP23), which are components of the machinery that drives membrane bilayer fusion. Knockdown of these SNAREs decreases droplet fusion rate and size, suggesting a role for the SNARE system in fusing lipid monolayers as well as bilayers. They also implicate SNAP23 in fatty-acid-induced insulin resistance in cells.

SMALL RNAS

A small RNA regulates multiple ABC transporter mRNAs by targeting C/A-rich elements inside and upstream of ribosome-binding sites.

Sharma, C.M. *et al. Genes Dev.* **21**, 2804–2817 (2007)

Enterobacterial small non-coding RNAs (sRNAs) function as stress-response and virulence gene regulators. Many repress translation by masking the ribosome binding site (RBS) of their mRNA target. Sharma *et al.* now report that a conserved G/U-rich region within the GcvB sRNA mediates translational repression of seven ABC transporter mRNAs, which encode molecules that are important for amino-acid uptake. GcvB represses mRNA translation by binding C/A-rich regions that overlap with and are upstream of the RBS.