IN BRIEF

NEUROLOGICAL DISORDERS

A reversible form of axon damage in experimental autoimmune encephalomyelitis and multiple sclerosis

Nikić, I. *et al. Nature Med.* 27 March 2011 (doi:10.1038/nm.2324)

The mechanisms of axon damage in multiple sclerosis are unclear. The authors continuously imaged fluorescently labelled axons *in vivo* in a mouse model of multiple sclerosis, revealing a sequence of events that they named focal axon degeneration (FAD). They found that axon damage is initiated by mitochondrial pathology, leading to focal axonal swellings, after which axons either degenerate or spontaneously recover. Surprisingly, FAD could occur in axons in which the myelin sheath was undamaged. The study provides new avenues for strategies to halt axon damage in multiple sclerosis.

VISUAL SYSTEM

The "parahippocampal place area" responds preferentially to high spatial frequencies in humans and monkeys

Rajimehr, R. *et al. PLoS Biol.* **9**, e1000608 (2011)

The parahippocampal place area (PPA) is thought to respond selectively to images of places and scenes. Using functional MRI, the authors showed that the PPA in fact responds to any image that has a high spatial frequency (HSF), including images of faces that had been filtered so that they only contained HSP information. The authors also identified an area with similar characteristics in the monkey brain. These findings explain the apparent place-selectivity of the PPA, as images of places and scenes are usually of HSF — unlike, for example, faces.

STEM CELLS

The cerebrospinal fluid provides a proliferative niche for neural progenitor cells

Lehtinen, M.K. *et al. Neuron* **69**, 893–905 (2011)

Proliferative niches are thought to provide extrinsic cues to regulate progenitor cell division, but little is known about the source of these signals or about their effects on progenitors. The authors found that the cerebrospinal fluid can regulate neural progenitor cell proliferation via the diffusion of insulin-like growth factor 2 (IGF2) and other factors throughout the brain. In progenitors, the coordination of IGF2 signalling and cell-autonomous signals requires an apical complex of proteins that localize the receptor for IGF2 to the apical membrane.

BEHAVIOUR

Catecholamine receptor polymorphisms affect decision-making in *C. elegans*

Bendesky, A. *et al. Nature* 16 March 2011 (doi: 10.1038/nature09821)

To investigate decision making processes in worms, the authors compared two strains, N2 and HW, which have a low and a high tendency to leave a food patch, respectively. They showed that a polymorphism in the non-coding region of *tyramine receptor* (*tyra-3*) partly underlies this difference. *Tyra-3* is expressed in ASK and BAG sensory neurons, amongst others, and the N2-associated polymorphism increased *tyra-3* expression. The authors established that ASK promotes, and BAG inhibits, leaving behaviour. This suggests that the higher expression of *tyra-3* in N2 worms reduces ASK activity and increases BAG activity, resulting in more leaving behaviour.