

IN BRIEF

➔ AXONAL TRANSPORT

A selective filter for cytoplasmic transport at the axon initial segment

Song, A.-H. *et al. Cell* **136**, 1148–1160 (2009)

Specific transport of molecules into either dendrites or axons is important to maintain neurons' integrity. Poo and colleagues have identified an ankyrin G- and filamentous actin-dependent sorting mechanism that develops in cultured hippocampal neurons at the axon initial segment within 2 days of their differentiation. This mechanism sorts according to cargo size and the efficacy of microtubule-specific transport carriers. It might help to ensure the segregation of cellular components in polarized neurons.

➔ MEMORY

A specific role of the human hippocampus in recall of temporal sequences

Lehn, H. *et al. J. Neurosci.* **29**, 3475–3484 (2009)

Animal studies have indicated that the temporal order of episodic memories is represented in the hippocampal formation (HF), but imaging studies in humans have not supported this notion. Here, subjects watched a movie and then were asked to place selected scenes from the movie in the correct temporal order during functional MRI imaging. Activation of the HF was observed during recollection; moreover, levels of activation in the right HF corresponded to the accuracy of recall, indicating that temporally ordered recall of episodic memories in humans involves the HF.

➔ NEUROIMAGING

A new scenario for negative functional magnetic resonance imaging signals: endogenous neurotransmission

Shih, Y.-Y. I. *et al. J. Neurosci.* **29**, 3036–3044 (2009)

Increases in the functional MRI (fMRI) signal are thought to reflect neuronal activation, but the interpretation of fMRI signal decreases is less clear. The authors show that noxious stimulation of the rat forepaw induced decreased cerebral blood flow (CBV) in the caudate–putamen (CPu). This was associated with higher CPu neuronal activity, as assessed by *Fos* immunostaining and electrophysiology. Dopamine is known to influence vascular responses, and a dopamine D₂ receptor antagonist blocked the CBV decrease, indicating that dopaminergic neurotransmission contributes to the decrease in fMRI signal that follows nociceptive stimulation.

➔ CHEMICAL SENSES

A hub-and-spoke circuit drives pheromone attraction and social behaviour in *C. elegans*

Macosko, E. Z. *et al. Nature* 6 Apr 2009 (doi:10.1038/nature07886)

Laboratory strains of *C. elegans*, unlike their wild counterparts, do not aggregate in feeding groups. This solitary behaviour is promoted by expression of a high-activity variant of the neuropeptide receptor NPR1. Here the authors show that NPR1 acts in the inter/motor neuron RMG to inhibit its activity and suppress aggregation behaviour. Furthermore, they reveal RMG to be the hub of a network of neurons involved in social behaviours, providing insights into the underlying anatomical circuits.