

## IN BRIEF

**DEVELOPMENT****DEX-1 and DYF-7 establish sensory dendrite length by anchoring dendritic tips during cell migration**

Heiman, M. G. & Shaham, S. *Cell* **137**, 344–355 (2009)

The shape of neurons is a key determinant of their function, yet how cells generate and maintain their shapes is not well understood. Here the authors showed that two extracellular proteins — DEX-1 and DYF-7 — are required to establish the dendrite length of sensory neurons in *Caenorhabditis elegans*. They found that these proteins are secreted into the extracellular space, where they anchor the dendritic tip while the cell body migrates to its final position in a process termed retrograde extension.

**NEUROIMMUNOLOGY****Systemic inflammation response reactivates immune-mediated lesions in rat brain**

Serres, S. *et al. J. Neurosci.* **29**, 4820–4828 (2009)

Some evidence suggests that viral or bacterial infections might precede relapse in patients with multiple sclerosis (MS), but this has not been shown empirically. Here, in two rat models of MS that represent two common forms of MS pathogenesis, a systemic endotoxin injection induced expression of cell-adhesion molecules, recruitment of inflammatory cells and enhanced demyelination in otherwise quiescent lesions and increased regional blood flow in and around the lesion site, indicating that the lesions had been reactivated. These data show that systemic infections can reactivate quiescent lesions of different aetiology.

**MIRROR NEURONS****Mirror neurons differentially encode the peripersonal and extrapersonal space of monkeys**

Caggiano, V. *et al. Science* **324**, 403–406 (2009)

Mirror neurons have been proposed to have a role in action understanding. Here, the authors demonstrated that ~50% of mirror neurons in the prefrontal cortex responded specifically to an action (picking up an object) being performed either within the monkey's peripersonal space or within its extrapersonal space. For some neurons the boundary between peri- and extrapersonal space was determined by whether the monkey could reach the object. The authors suggest that spatially selective mirror neurons might link an observed action to a potential behavioural reaction.

**COGNITIVE NEUROSCIENCE****Notation-independent representation of fractions in the human parietal cortex**

Jacob, S. N. & Nieder, A. *J. Neurosci.* **29**, 4652–4657 (2009)

Number-selective neurons in the parietal cortex fire in response to stimuli that indicate a particular magnitude, regardless of the way the magnitude is presented (for example, as a number, a number word or a number of items). Here, a functional MRI adaptation experiment revealed that when individuals were presented with a stream of fractions in different formats but all denoting the same proportion, the MRI signal change in the parietal cortex gradually reduced, but it increased upon presentation of a single different fraction in the stream. Thus, the parietal cortex encodes both numbers and fractions regardless of their mode of presentation.