

## IN BRIEF

**LEARNING AND MEMORY****The left–right divide**

Several studies in mice have revealed that there are differences in the molecular make-up of and plasticity at CA3–CA1 pyramidal neuron synapses that depend on whether the presynaptic input comes from the left or right CA3. To detect any functional effects of this asymmetry, Shipton *et al.* assessed the performance of mice in hippocampus-dependent memory tasks while optogenetically silencing their left or right CA3. Silencing the left but not the right CA3 impaired long-term spatial memory, suggesting the existence of functional asymmetry between the left and right CA3 in mice.

**ORIGINAL RESEARCH PAPER** Shipton, O. A. *et al.* Left–right dissociation of hippocampal memory processes in mice. *Proc. Natl Acad. Sci. USA* <http://dx.doi.org/10.1073/pnas.1405648111> (2014)

**NEURAL CIRCUITS****Getting colder**

The neural circuitry that underlies the perception of skin cooling is unclear. To examine this, the authors trained mice to report temperature drops (delivered by a thermal probe applied to the forepaw skin) by licking a water dispenser. Cooling induced activity in the primary somatosensory cortex (S1). Moreover, mice lacking the cold-responsive ion channel TRPM8, which is expressed in sensory afferents that innervate the skin, did not show cooling-induced licking or S1 activation. Thus, TRPM8-expressing sensory neurons and S1 cortical neurons form parts of a cooling perception circuit in mice.

**ORIGINAL RESEARCH PAPER** Milenkovic, N. *et al.* A somatosensory circuit for cooling perception in mice. *Nature Neurosci.* <http://dx.doi.org/10.1038/nn.3828> (2014)

**PERCEPTION****A decisive response**

Certain neurons in the medial temporal lobe (MTL) respond to different images and even the name of a given individual. Here, the authors assessed MTL neuron responses in a face adaptation task. Participants were shown the face of one of two well-known people (who were chosen because the authors could find MTL neurons that selectively responded to their images) and were then asked who they saw in a merge of the two faces; most reported seeing the other individual. Single MTL neurons also responded strongly to the merge when the identity of the face chosen by participant matched the neuron's supposed face selectiveness. This suggests that MTL neurons signal perceptual decisions rather than visual features.

**ORIGINAL RESEARCH PAPER** Quiari Quiroga, R. *et al.* Single-cell responses to face adaptation in the human medial temporal lobe. *Neuron* <http://dx.doi.org/10.1016/j.neuron.2014.09.006> (2014)

**LEARNING AND MEMORY****Actively compensating**

Alzheimer's disease is characterized by episodic memory impairments and brain deposition of the peptide amyloid- $\beta$  (A $\beta$ ). However, not all older people with A $\beta$  pathology exhibit memory deficits. Elman *et al.* examined whether brain hyperactivity, which has been observed in such individuals, might compensate for this pathology. Compared with old individuals with no A $\beta$  deposits, cognitively normal older people with A $\beta$  pathology showed increased activity in brain regions associated with detailed memory encoding, indicating that the increased activity may indeed be compensatory.

**ORIGINAL RESEARCH PAPER** Elman, J. A. *et al.* Neural compensation in older people with brain amyloid- $\beta$  deposition. *Nature Neurosci.* **17**, 1316–1318 (2014)