

## IN BRIEF

**VISUAL PROCESSING****Double duty of tail caudate nucleus neurons**

Processing of spatial and object information is segregated into two cortical visual pathways, but it is unclear where this information is unified. This study showed that in monkeys performing tasks that involve saccadic eye movements, neurons in the tail of the caudate nucleus (CDt) encode both object-specific and position-specific information of visual objects. In addition, weak electrical stimulation in the CDt induced saccades, and CDt neurons became active before saccades to particular positions and particular objects. These findings suggest that CDt neurons guide saccades to particular visual objects in particular locations.

**ORIGINAL RESEARCH PAPER** Yamamoto, S. *et al.* What and where information in the caudate tail guides saccades to visual objects. *J. Neurosci.* **32**, 11005–11016 (2012)

**NEUROLOGICAL DISORDERS****Loss of synapse-related genes in depression**

A reduced number and function of synapses may underlie the smaller size and density of neurons in the dorsolateral prefrontal cortex (dlPFC) of patients with major depressive disorder (MDD). However, a direct causal relationship has not been demonstrated. Using microarray gene profiling and electron microscopic stereology, this study showed that patients with MDD have a reduced expression of various synapse-related genes and fewer synapses. Moreover, expression of the transcriptional repressor GATA1 is increased in dlPFC neurons of patients with MDD. In rats, *Gata1* expression caused repression of these synaptic genes and loss of dendritic spines and dendrites, and induced depression-like behaviour. These data suggest that reversing dlPFC atrophy could be a strategy for treating depression.

**ORIGINAL RESEARCH PAPER** Kang, H. J. *et al.* Decreased expression of synapse-related genes and loss of synapses in major depressive disorder. *Nature Med.* 12 Aug 2012 (doi:10.1038/nm.2886)

**AUDITORY SYSTEM****Auditory thalamus is dysfunctional in dyslexia**

Individuals with dyslexia have difficulties in processing speech sounds (termed phonemes). This functional MRI study showed that the left medial geniculate body (MGB), but no other components of the auditory pathway, responds aberrantly when adults with dyslexia were asked to attend to phonemes compared with other speech features. Moreover, MGB activity correlated with dyslexia severity. This finding may help to clarify the underlying causes of dyslexia.

**ORIGINAL RESEARCH PAPER** Diaz, B. *et al.* Dysfunction of the auditory thalamus in developmental dyslexia. *Proc. Natl Acad. Sci. USA* **109**, 13841–13846 (2012)

**NEURAL CODING****Encoding competitive behaviour**

Competing against another individual for resources carries a cost that may or may not outweigh the benefit. The anterior cingulate cortex (ACC) has been implicated in cost–benefit decision-making, but it had not been evaluated in a competitive scenario. In this study, a confined rat and a freely moving rat had to compete for food. Recordings in the freely moving rat demonstrated that ACC neurons encode cost–benefit decisions that involve effort, indicating that the ACC registers competitive effort as a decision cost.

**ORIGINAL RESEARCH PAPER** Hillman, K. L. & Bilkey, D. K. Neural encoding of competitive effort in the anterior cingulate cortex. *Nature Neurosci.* 12 Aug 2012 (doi:10.1038/nrn.3187)