

## IN BRIEF

 GLIA**Glial AMPA receptors finely tune motor behaviour**

The roles of glial neurotransmitter receptor signalling *in vivo* remain a matter of some debate. Here, the authors generated mice in which AMPA glutamate receptors (AMPA receptors) could be conditionally knocked out in Bergmann glial cells, a type of cerebellar astrocyte. Loss of AMPARs led to glial process retraction from Purkinje cell spines, and young animals showed delayed glutamatergic synapse formation. Young and old mice also exhibited deficits in fine motor coordination, suggesting that Bergmann glial cell AMPARs are needed for proper cerebellum-mediated motor function.

**ORIGINAL RESEARCH PAPER** Saab, A. S. *et al.* Bergmann glial AMPA receptors are required for fine motor coordination. *Science* 5 Jul 2012 (doi:10.1126/science.1221140)

 LEARNING AND MEMORY**Listen while you sleep**

Learning-related cues presented during slow-wave sleep (SWS) can enhance spatial memories. Antony *et al.* now show that cue-induced memory reactivation during SWS can also strengthen a type of sensorimotor skill memory. Individuals learned to play two melodies in time with moving sequences of circles that showed which keys to strike. They then took a nap, during which they were repeatedly exposed to one of the two melodies after SWS had been reached. Post-nap tests revealed that individuals performed the melody played during SWS more accurately than the one that they were not exposed to.

**ORIGINAL RESEARCH PAPER** Antony, J. W. *et al.* Cued memory reactivation during sleep influences skill learning. *Nature Neurosci.* 26 Jun 2012 (doi:10.1038/nn.3152)

 ADDICTION**Targeting nicotine**

The development of an effective anti-nicotine vaccine to aid smoking cessation, by preventing nicotine from entering the brain, has been hampered by the inability of the tested vaccines to generate consistently high antibody titres in humans. Now, Hicks *et al.* have created an adeno-associated virus gene transfer vector that is capable of expressing high levels of a monoclonal anti-nicotine antibody. Following systemic nicotine administration, vector-treated mice had markedly lower levels of brain nicotine than did untreated mice, and treatment also prevented nicotine-induced cardiovascular and locomotor effects. Thus, passive anti-nicotine immunotherapy may warrant further study as a possible anti-smoking therapy.

**ORIGINAL RESEARCH PAPER** Hicks, M. J. *et al.* AAV-directed persistent expression of a gene encoding anti-nicotine antibody for smoking cessation. *Sci. Transl. Med.* 4, 140ra87 (2012)

 SENSORY SYSTEMS**The UV regulator**

In mammals, melanopsin (OPN4)-based phototransduction is thought to account for most of the non-image-forming light detection that entrains the circadian pacemaker. van Oosterhout *et al.* now show that ultraviolet (UV) light-sensitive cones also make an important contribution to circadian regulation in mice. UV light had comparable phase-shifting effects to white light in a wheel running task. In wild-type and *Opn4*<sup>-/-</sup> mice, UV or white light exposure could elicit a sustained increase in neural activity in the suprachiasmatic nucleus, and UV light, like white light, was capable of inducing sleep. Lastly, loss of cones but not rods had a severe effect on UV light-induced phase-shifting responses.

**ORIGINAL RESEARCH PAPER** van Oosterhout, F. *et al.* Ultraviolet light provides a major input to non-image-forming light detection in mice. *Curr. Biol.* 5 Jul 2012 (doi:org/10.1016/j.cub.2012.05.032)