

## IN BRIEF

**NEURAL REPAIR****Regenerate and reinsulate**

The ability of regenerated CNS axons to form synapses and conduct neural signals is unclear. This study found that, in mice, deletion of phosphatase and tensin homologue (*Pten*) and suppressor of cytokine signalling 3 (*Socs3*) promoted the regeneration of transected retinal ganglion cell (RGC) axons and the reformation of RGC–superior colliculus (SC) synapses. However, these axons were not myelinated, leaving axonal voltage-gated potassium channels (VGKCs) exposed, and preventing functional recovery on an optomotor task. Pharmacological VGKC blockade enabled optogenetic RGC stimulation to induce SC activity and improved optomotor performance. So, remyelination is needed to restore function of regenerated axons.

**ORIGINAL ARTICLE** Bei, F. *et al.* Restoration of visual function by enhancing conduction in regenerated axons. *Cell* **164**, 219–232 (2016)

**GLIAL MIGRATION****Tyrolean traversing through the brain**

Here, live-imaging of cortical slices from mice at embryonic day 16 (E16) and E18 revealed that OPCs ‘crawl’ along blood vessels. WNT-activated OPCs expressed the chemokine receptor CXCR4, which binds endothelial stromal cell-derived factor 1 (SDF1), and application of an antagonist of the CXCR4–SDF1 interaction prevented OPC clustering on blood vessels of mice with upregulated WNT signalling. Thus, WNT signalling promotes OPC–endothelial cell attachment during migration.

**ORIGINAL ARTICLE** Tsai, H.-H. *et al.* Oligodendrocyte precursors migrate along vasculature in the developing nervous system. *Science* **351**, 379–384 (2016)

**GENE EXPRESSION****Old and young, far and wide**

The impact of brain region and ageing on microglia is unknown. Grabert *et al.* analysed transcriptomes of microglia from different brain regions (including the hippocampus, cortex and cerebellum) in 4-, 12- and 22-month-old mice using various clustering techniques. They found that differences in the expression of bioenergetics- and immune-related genes best differentiated microglia from different regions at 4 months, and that changes in expression with age were also region-specific.

**ORIGINAL ARTICLE** Grabert, K. *et al.* Microglial brain region-dependent diversity and selective regional sensitivities to aging. *Nat. Neurosci.* <http://dx.doi.org/10.1038/nn.4222> (2016)

**BEHAVIOURAL NEUROSCIENCE****Soothing grooming**

Prairie voles are highly social, but whether they show ‘empathy’ is unknown. Here, ‘demonstrator’ prairie voles subjected to a stressor (footshocks) were then placed with ‘observer’ prairie voles, which groomed the demonstrators. Grooming reduced demonstrators’ anxiety-like behaviour and was specific for demonstrators known to the observer, suggesting that it is a social behaviour. Injection of an oxytocin receptor antagonist into the anterior cingulate cortex — a region implicated in empathy in humans — of observers blocked this consolation behaviour.

**ORIGINAL ARTICLE** Burkett, J. P. *et al.* Oxytocin-dependent consolation behavior in rodents. *Science* **351**, 375–378 (2016)