IN BRIEF

GLIA

Microglial maintenance

Colony-stimulating factor 1 receptor (CSF1R) is essential for the production of microglia during embryogenesis, but its role in the adult brain is unknown. Here, the authors found that treatment of adult mice with CSF1R inhibitors resulted in the loss of almost all brain microglia, indicating a key role for this receptor in microglial homeostasis. Strikingly, removal of the inhibitors led to a rapid recovery of the microglial cell population. This effect was mediated through the proliferation and differentiation of nestin-positive cells, revealing these cells to be a microglial progenitor population in the adult brain.

ORIGINAL RESEARCH PAPER Elmore, M. R. P. *et al.* Colony-stimulating factor 1 receptor signaling is necessary for microglia viability, unmasking a microglia progenitor cell in the adult brain. *Neuron* **82**, 380–397 (2014)

DEPRESSION

Becoming resilient

Mice exposed to social defeat stress can be separated into those that are susceptible to the paradigm's depressive effects, and those that are resilient. The authors found that susceptible mice exhibited hyperactivity of ventral tegmental area dopamine (VTA DA) neurons that was linked to a pathological upregulation of the hyperpolarization-activated current I_h. Surprisingly, resilient mice showed an even greater increase in I_h but maintained normal VTA DA neuron activity through homeostatic plasticity mechanisms. Experimentally increasing I_h or VTA DA neuron activity had an antidepressant effect in susceptible mice, suggesting that boosting the brain's natural resilience mechanisms may aid the treatment of depression.

ORIGINAL RESEARCH PAPER Friedman, A. K. *et al.* Enhancing depression mechanisms in midbrain dopamine neurons achieves homeostatic resilience. *Science* **344**, 313–319 (2014)

NEURAL NETWORKS

Making waves

Propagating waves of cortical activity have been observed in several species under anaesthesia; however, the extent to which they occur in awake animals was unclear. Here, the authors present a method to detect propagating waves using data from single-trial voltage-sensitive dye imaging in awake monkeys. They show that propagating waves are initiated in both the primary and secondary visual cortices in response to sensory input. Using network modelling, they propose that the horizontal fibre network may be crucially involved in the propagation of these waves.

ORIGINAL RESEARCH PAPER Muller, L. *et al.* The stimulus-evoked population response in visual cortex of awake monkey is a propagating wave. *Nature Commun.* **5**, 3675 (2014)

SLEEP

Young sleep

Young animals tend to sleep more than adults; however, the mechanisms and function of this increased sleep are unclear. The authors show that, compared with adult flies, young flies exhibit reduced activity of the dopamine neurons that inhibit the activity of the sleep-promoting dorsal fan-shaped body. Artificially increasing the activity of these dopamine neurons in young flies disrupted courtship behaviours and circuitry. Thus, sleep in early life promotes normal brain development.

ORIGINAL RESEARCH PAPER Kayser, M. S., Yue, Z. & Sehgal, A. A critical period of sleep for development of courtship circuitry and behavior in *Drosophila*. *Science* **344**, 269–274 (2014)