IN BRIEF

NEURAL CIRCUITS

Freeze — you're under arrest

The role of the intralaminar nuclei of the thalamus (ILN) in behaviour is unknown. Giber *et al.* found neurons co-expressing GABA and glycine in the mouse ILN that originate in the pontine reticular formation (PRF) of the brainstem. Optogenetic stimulation of these cells in mouse brain slices elicited inhibitory postsynaptic currents in the ILN. In freely moving animals, ILN neuron stimulation led to slow-wave activity in the motor cortices receiving ILN input and, strikingly, a complete arrest of behaviour. Thus, PRF–ILN neurons may modulate cortical activity and promote behavioural inactivity.

ORIGINAL RESEARCH PAPER Giber, K. *et al.* A subcortical inhibitory signal for behavioral arrest in the thalamus. *Nature Neurosci.* http://dx.doi.org/10.1038/nn.3951 (2015)

NEURODEGENERATIVE DISEASE

Tau brings the network down

How pathological tau — a feature of several neurodegenerative diseases — affects neuronal network function is not clear. The authors took electrophysiological recordings of the activity of frontal cortex pyramidal neurons in mice with forebrain expression of human mutant tau, before the animals exhibited neuronal cell death. Tau transgenic neurons exhibited slower subthreshold membrane oscillations during slow-wave sleep, longer hyperpolarized 'down' states and lower firing rates during 'up' states than did control neurons. These data imply that tau impairs membrane dynamics and activity in intact networks.

ORIGINAL RESEARCH PAPER Menkes-Caspi, N. *et al.* Pathological tau disrupts ongoing network activity. *Neuron* **85**, 959–966 (2015)

SENSORY PROCESSING

Whiskers of a good friend

How social information influences cortical processing is unclear. Here, the authors took whole-cell recordings from neurons in the barrel cortex of awake, head-restrained rats that were whisking freely or nose-to-nose with another rat. Compared with free whisking, 'social' whisking induced depolarization and larger, more-frequent fluctuations in membrane potential in barrel cortical neurons. Moreover, oscillations in membrane potential were locked to the motion of the rat's own whiskers, and these effects even occurred briefly before social contact. Thus, active social touch may evoke different cortical responses to those evoked by non-social stimuli.

ORIGINAL RESEARCH PAPER Lenschow, C. & Brecht, M. Barrel cortex membrane potential dynamics in social touch. *Neuron* **85**, 718–725 (2015)

NEURAL DEVELOPMENT

Expanding horizons

Progenitor cells, such as radial glia, mitose during cortical development. Florio *et al.* performed RNA-seq analysis on subtypes of progenitor cells and neurons from mouse and human fetal neocortex. They identified one gene, *ARHGAP11B*, that was upregulated in human radial glia compared to in neurons, and that has no mouse orthologue. *In utero* electroporation of *ARHGAP11B* mRNA into mouse neocortex at embryonic day 13.5 (E13.5) led to increased numbers of basal mitoses and progenitors at E14.5 and even induced neocortical folding at E18.5. Thus, *ARHGAP11B* may be key to neocortical expansion during development and over evolution.

ORIGINAL RESEARCH PAPER Florio, M *et al.* Human-specific gene *ARHGAP11B* promotes basal progenitor amplification and neocortex expansion. *Science* http://dx.doi.org/10.1126/science.aaa1975 (2015)