

IN BRIEF

ADDICTION**RAC1 signalling remodels dendrites**

Structural changes in neurons in the brain's reward circuits are thought to underlie the changes in behaviour that follow exposure to addictive substances, but little is known about the molecular pathways involved. Here, the authors show that dendritic remodelling in medium spiny neurons in the mouse nucleus accumbens in response to repeated cocaine exposure requires the downregulation of the activity of RAC1, a small GTPase that regulates actin remodelling. Furthermore, the repression of RAC1 activity promotes behavioural responses to cocaine exposure, confirming the importance of this pathway for cocaine-induced structural and behavioural plasticity.

ORIGINAL RESEARCH PAPER Dietz, D. M. *et al.* Rac1 is essential in cocaine-induced structural plasticity of nucleus accumbens neurons. *Nature Neurosci.* 22 Apr 2012 (doi:10.1038/nn.3094)

GENE EXPRESSION**Profiling expression in the human cortex**

An understanding of how gene expression varies across different cell types and brain regions may provide insights into brain function and evolution. Zeng *et al.* profiled the expression of 995 genes at cellular resolution in the visual and temporal cortices of the human brain, revealing distinct expression patterns in different cell types and populations. These patterns were highly conserved across individuals. The authors also compared the expression of most of the genes in mouse and human brains, revealing a large degree of conservation across species, but also identifying a small number of genes that exhibit species-specific expression patterns.

ORIGINAL RESEARCH PAPER Zeng, H. *et al.* Large-scale cellular-resolution gene profiling in human neocortex reveals species-specific molecular signatures. *Cell* 149, 483–496 (2012)

DEPRESSION**Biomarker discovery**

The discovery of reliable biomarkers for psychiatric disorders such as major depressive disorder (MDD) could help to improve diagnosis and treatment. The authors used two animal models of depression to identify 26 candidate biomarker transcripts and compared their expression in human subjects with and without early-onset MDD. The expression of 11 of these transcripts differentiated patients with MDD from controls, suggesting that this approach might yield a reliable panel of biomarkers for the disease.

ORIGINAL RESEARCH PAPER Pajer, K. *et al.* Discovery of blood transcriptomic markers for depression in animal models and pilot validation in subjects with early-onset major depression. *Transl. Psychiatry* 2, e101 (2012)

NEURONAL CIRCUITS**Social status defines circuits**

Variations in behaviour that relate to an individual's position in a social hierarchy are likely to correspond to differences in the underlying neural circuits. Here, the authors provide evidence for this contention by showing that subordinate or dominant crayfish have divergent motor responses to unexpected touch, and that this is associated with differences in the responses of motor neurons and serotonergic interneurons in the circuits that mediate the behaviour.

ORIGINAL RESEARCH PAPER Issa, F. A. *et al.* Neural circuit reconfiguration by social status. *J. Neurosci.* 32, 5638–5645 (2012)