IN BRIEF

DENDRITES

Functional mapping of single spines in cortical neurons *in vivo*

Chen, X. *et al. Nature* 26 Jun 2011 (doi:10.1038/nature10193)

Sensory-evoked calcium signalling has been detected in dendrites in mouse visual cortex through conventional two-photon imaging. The precise localization of such signalling has, however, remained unclear. Using a new variant of two-photon imaging, Chen *et al.* show that sound-evoked dendritic calcium signalling in auditory cortical neurons from mice primarily occurs in spines. Moreover, they show that this signalling requires NMDA receptor activation, and that individual dendrites contain spines that respond to different frequencies.

NEUROLOGICAL DISORDERS

Adult neural function requires MeCP2

McGraw, C. M., Samaco, R. C. & Zoghbi, H. Y. *Science* **333**, 186 (2011)

Mutations in the gene encoding methyl-CpG-binding protein 2 (MECP2) can cause the neurological disease Rett syndrome. The fact that this disorder manifests in early childhood suggests that MECP2 is necessary for neurodevelopment. The authors created transgenic mice in which *Mecp2* expression was turned off in adulthood. These mice developed symptoms of disease in adulthood resembling those seen in germline *Mecp2*$^{-/-}$ mice, indicating that functional MECP2 is required throughout life, at least in mice.

GLIA

TACE (ADAM17) inhibits Schwann cell myelination

La Marca, R. *et al. Nature Neurosci.* **14**, 857–865 (2011)

Axonal levels of neuregulin 1 type III regulate the extent of myelination in the peripheral nervous system (PNS). In this study, the authors showed that disintegrin and metalloproteinase domain-containing protein 17 (ADAM17) — a protein that is implicated in the cleavage of several membrane proteins — cleaves neuregulin 1 type III and inhibits myelination in PNS neurons of mice. Moreover, they demonstrated that the inhibitory action of ADAM17 is neuron autonomous, as myelination was not affected by knockdown of ADAM17 expression in Schwann cells. Together, these findings suggest that ADAM17 is a negative regulator of PNS myelination.

SENSORY SYSTEMS

Transient receptor potential channel type M5 is essential for fat taste

Liu, P. *et al. J. Neurosci.* **31**, 8634–8642 (2011)

Several studies have demonstrated that free fatty acids can activate taste cells, but fat-signal transduction mechanisms in these cells remain to be fully understood. Liu *et al.* showed that linoleic acid — a long chain unsaturated free fatty acid — depolarized taste cells from mice and elicited a marked rise in intracellular calcium levels, and that these effects were largely mediated by transient receptor potential channel type M5. Inhibition of G protein–phospholipase C signalling reduced these linoleic acid responses, suggesting that the taste receptors for fatty acids, as for other taste stimuli, are G protein-coupled receptors.