IN BRIEF

PLASTICITY

Neuregulin-1 enhances depolarization-induced GABA release

Woo, R. -S. *et al. Neuron* **54**, 599–610 (2007)

The Neuregulin-1 receptor ErbB4 controls glutamatergic synapse maturation and plasticity

Li, B., Woo, R. -S., Mei, L. & Malinow, R. *Neuron* **54**, 583–597 (2007)

DOI:
10.1038/nrn2186

Mutations in Neuregulin 1 (NRG1) and ERBB4 have been associated with schizophrenia. Two studies now show that NRG1 increases the release of the inhibitory neurotransmitter GABA in cortical slices in an ERBB4-dependent manner, and that NRG1–ERBB4 signalling contributes to hippocampal glutamatergic transmission, by stabilizing AMPA receptors and dendritic spines. These findings highlight a key role for NRG1 and ERBB4 in both excitatory and inhibitory circuits in the adult brain.

MEMORY

Plant-derived flavanol (–)epicatechin enhances angiogenesis and retention of spatial memory in mice

van Praag, H. *et al. J. Neurosci.* **27**, 5869–5878 (2007)

Adult rats fed a diet rich in the flavanol (–)epicatechin displayed better learning and memory. The diet had no effect on the survival of newborn neurons, but it increased their neuronal spine density and enhanced angiogenesis in the hippocampus. Furthermore, (–)epicatechin combined with exercise upregulated hippocampal genes that are involved in learning and angiogenesis, and downregulated genes involved in apoptosis and inflammation. This study suggests that exercise and a flavanol-containing diet may have cognitive benefits in adulthood.

NEUROTRANSMISSION

How synaptotagmin promotes membrane fusion

Martens, S., Kozlov, M. M. & McMahon, H. T. *Science* **316**, 1205–1208 (2007)

SNARES and synaptotagmin-1 mediate calcium-triggered fusion of synaptic vesicles with the presynaptic plasma membrane. The authors show that calcium increases local membrane curvature by inducing the insertion of synaptotagmin's two cytoplasmic domains into the lipid bilayer; this brings the vesical and plasma membranes closer together and promotes SNARE-mediated fusion. Other proteins containing these domains also induce membrane curvature upon the addition of calcium, suggesting that this might be a general mechanism for membrane fusion.

MIRROR NEURONS

The mirror neuron system is more active during complementary compared with imitative action

Newman-Norlund, R. D. *et al. Nature Neurosci.* 27 May 2007 (doi: 10.1038/nn1911)

The mirror neuron system is thought to be involved in imitation of observed actions, but many mirror neurons also respond when the observed and executed actions are not identical. This study showed that the system is more active during the preparation of an action that is complementary, rather than identical, to the observed action, indicating that mirror neurons might associate observed and executed actions in a more flexible manner than was assumed.