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IN BRIEF

SYNAPTIC PHYSIOLOGY

Miniature neurotransmission stabilizes synaptic function via tonic suppression of local dendritic protein synthesis.

Sutton, M. A. *et al. Cell* **125**, 785–799 (2006)

Long-term blockade of neuronal activity induces compensatory increases in neurotransmitter release. Miniature synaptic events ('minis') are thought to be crucial for this process, but their precise function is not known. Sutton *et al.* show that blockade of NMDA receptor-mediated 'minis' rapidly scales up the amplitude of AMPA miniature excitatory postsynaptic currents, which requires local protein synthesis and the insertion of synaptic AMPA receptors. The results suggest that NMDA signalling during miniature synaptic transmission serves to stabilize synaptic function through active suppression of dendritic protein synthesis.

PAIN

Prociceptive and antinociceptive effects of estradial through endogenous opioid neurotransmission in women.

Smith, Y. R. *et al. J. Neurosci.* **26**, 5777–5785 (2006)

Smith *et al.* provide functional evidence on the role of oestrogen in the regulation of the μ-opioid receptor. The researchers recruited women in the early follicular phase of their menstrual cycle, during which the level of oestrogen is low, and used positron emission tomography to examine their pain responses before and after oestradiol treatment. In regions of the brain associated with sex-dependent differences in pain processing, oestradiol was shown to increase the basal level of μ-opioid receptors and enhance the activation of opioid neurotransmission.

NEURODEGENERATIVE DISORDERS

Onset and progression in inherited ALS determined by motor neurons and microglia.

Boillée, S. *et al. Science* **312**, 1389–1392 (2006)

Mutations in superoxide dismutase (SOD1) result in amyotrophic lateral sclerosis (ALS). Boillée *et al.* now show that the initiation and progression of ALS are distinct phases of the disease. Expression of mutant SOD1 in motor neurons was found to be a key factor in the initiation, but not the progression, of ALS-like disease in mice, whereas its expression in microglia was the primary determinant of disease progression.

BEHAVIOURAL NEUROSCIENCE

Cortical substrates for exploratory decisions in humans.

Daw, N. D. *et al. Nature* 15 June 2006 (doi:10.1038/nature04766)

In an uncertain environment, we can either choose familiar options with known rewards (exploitative behaviour) or unfamiliar options with riskier, but potentially more advantageous, outcomes (exploratory behaviour). Daw *et al.* used a gambling task designed to tease apart these two types of behaviour during functional MRI studies. Exploratory decisions were associated with activation of the frontal pole of the prefrontal cortex, whereas the striatum and ventromedial prefrontal regions were active during exploitative decision making. The authors therefore propose that decision making in uncertain situations entails switching between exploitative and exploratory behaviour.