

IN BRIEF

AFFECTIVE DISORDERS

Antidepressant actions of the exercise-regulated gene VGF

Hunsberger, J. G. *et al. Nature Med.* 2 Dec 2007 (doi: 10.1038/nm1669)

Exercise has antidepressant effects, which might be mediated by neurotrophic factors in the hippocampus. Here, the authors used microarrays to compare differences in hippocampal gene expression between active and sedentary mice. Exercise induced the expression of, among others, the VGF gene and increased VGF protein levels. VGF administration had antidepressant effects in tests of depression-like behaviour, and exercise had no effect on this behaviour in VGF^{-/-} mice. *In vitro*, VGF induced expression of growth factor signalling genes similar to those induced *in vivo* by exercise. Together, these data indicate that VGF mediates the antidepressant actions of exercise.

AXON GROWTH

Toll-like receptor 3 is a potent negative regulator of axonal growth in mammals

Cameron, J. S. *et al. J. Neurosci.* **27**, 13033–13041 (2007)

The authors found that toll-like receptor 3 (TLR3) is expressed in neurons and is concentrated in growth cones. Activation of TLR3 with poly I:C rapidly induced growth cone collapse and inhibited neuronal outgrowth. These effects were independent of NF- κ B, which mediates many of the downstream signalling effects of TLR3 activation. Poly I:C injections resulted in impaired axonal development and sensorimotor deficits in wild-type but not in TLR^{-/-} mouse pups. The findings indicate that TLR3 activation negatively regulates axonal growth and might provide a target for injury-repair strategies.

REWARD

Social comparison affects reward-related brain activity in the human ventral striatum

Fliessbach, K. *et al. Science* **318**, 1305–1308 (2007)

All is relative, including reward. In this study, pairs of study participants in adjacent MRI scanners played a task divided into a series of trials. After each correct trial the participant pairs were informed what monetary reward each of them would receive. The fMRI response to reward in individual participants depended on the ratio between the two rewards: it was larger if the received amount was greater than the opponent's reward, regardless of the reward's absolute value. These findings indicate that ventral striatal responses are dependent on social context.

MOTOR CONTROL

Neurocognitive endophenotypes of obsessive-compulsive disorder

Menzies, L. *et al. Brain* **130**, 3223–3236 (2007)

To identify an endophenotype for obsessive-compulsive disorder (OCD), the authors compared OCD patients, healthy first-degree relatives and healthy unrelated controls in a response-inhibition task. Both patients and their relatives showed delayed response inhibition and alterations in grey matter (measured by structural MRI). The behavioural impairment was associated with increased grey matter in the parieto-cingulo-striatal system and with reduced grey matter in the frontal system. Further analysis revealed that the variation in these brain systems is likely determined by familial factors.