IN BRIEF

BEHAVIOUR

A role for brain-specific homeobox factor Bsx in the control of hyperphagia and locomotory behaviour

Sakkou, M. *et al. Cell Metab.* **5**, 450–463 (2007)

Maintaing a stable weight requires a balance between energy expenditure and food intake. Neuropeptide Y (NPY) and agouti-related peptide (AGRP) promote feeding behaviour and weight gain. The evolutionarily conserved transcription factor BSX has now been found to regulate the expression of these peptides in the hypothalamus. BSX-deficient mice exhibit reduced expression of NPY and AGRP, are about 50% less active and show reduced hyperphagia after fasting. Loss of BSX rescues the obese phenotype of mice that are deficient in the anorexigenic peptide leptin, suggesting that BSX might be a potential target for controlling obesity.

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10.1038/nrn2187

AXON GROWTH

Genetic modulation of BDNF signalling affects the outcome of axonal competition *in vivo*

Cao, L. *et al. Current Biol.* **17**, 911–921 (2007)

Activity-dependent competition between axons influences branch formation and stability, but the underlying molecular mechanisms are unknown. The authors show that in the mouse olfactory system, competitive neuronal environments change the axonal arborisation pattern by pruning silent axon arbors. Such elimination is regulated by the total level or activity-dependent release of brain-derived neurotrophic factor (BDNF); this effect might be mediated by the neurotrophin receptor p75(NTR).

PERCEPTION

Increased structural connectivity in grapheme–colour synesthesia

Rouw, R. & Sholte, H. S. *Nature Neurosci.* **10**, 792–797 (2007)

Examination of the brains of individuals that associate particular letters with specific colours (grapheme–colour synaesthetes) by DTI (diffusion tensor imaging) and functional MRI revealed increased anatomical connectivity between the right fusiform gyrus, involved in word and colour perception, the left intraparietal sulcus and the frontal cortex. Furthermore, the degree of connectivity in the right temporal cortex appeared to be correlated with the strength of the synaesthetic experience. This study raises the possibility that neuroanatomical differences may influence our conscious perceptions more generally.

CIRCADIAN RHYTHMS

microRNA modulation of circadian-clock period and entrainment

Cheng, H. -Y. M. *et al. Neuron* **54**, 813–829 (2007)

The detailed mechanisms involved in timing the circadian clock in the suprachiasmatic nucleus (SCN) are not completely understood. This study revealed that the microRNA miR-219, whose rhythmic expression is itself driven by the SCN clock, modulates the length of the circadian period, whereas miR-132, which is light-induced, regulates circadian-clock resetting by light. *In vitro*, both microRNAs can affect cellular excitability and modulate CLOCK- and BMAL1-dependent expression of the *PER1* clock gene, providing a novel, post-translational mechanism of circadian-clock timing.