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IN BRIEF

DECISION MAKING

Flow charting

How information flows among cortical regions during flexible decision making is not clear. Here, multi-unit activity was recorded in several cortical regions in non-human primates during a flexible visuomotor task, in which the animals categorized stimuli by making a left or right saccade. Cue information flowed in a bottom-up manner from the sensory cortex. By contrast, choice information was present first in the lateral intraparietal cortex and the prefrontal cortex, then flowed to frontal eye fields and sensory areas. Thus, sensory cue information flows from the sensory cortex to a broad cortical network, whereas choice information is initiated in frontoparietal regions.

ORIGINAL RESEARCH PAPER Siegel, M. *et al.* Cortical information flow during flexible sensorimotor decisions. *Science* **348**, 1352–1355 (2015)

DEPRESSION

Happy memories modulate mood

Stress can induce depression, and the hippocampus regulates cognitive aspects of this response. In a recent study, hippocampal neurons that were active during a pleasant experience were genetically labelled in mice. Subsequent exposure of these mice to chronic immobilization stress resulted in depression-like behaviours that were transiently attenuated by acute optogenetic reactivation of the labelled neurons. Simultaneous inhibition of neurons projecting from the basolateral amygdala to the nucleus accumbens blocked the antidepressive effect, suggesting a circuit by which activation of a positive engram might alter current affective state.

ORIGINAL RESEARCH PAPER Ramirez, S. *et al.* Activating positive memory engrams suppresses depression-like behaviour. *Nature* **522**, 335–339 (2015)

NEUROTRANSMISSION

Waking up and down

Histaminergic neurons in the tuberomammillary nucleus (TMN) promote arousal. Many of these neurons also contain GABA, but its function in arousal is unclear. In mice, short interfering RNA-mediated knockdown of the expression of the vesicular GABA transporter (VGAT) in TMN histaminergic neurons led to hyperactivity and increased wakefulness. In brain slices from naive mice, optogenetic activation of histaminergic TMN neuron terminals in the neocortex and caudate putamen induced extrasynaptic GABA type A receptor-mediated currents. These findings suggest that GABA acts in a paracrine manner to negatively modulate the effects of histamine on arousal.

ORIGINAL RESEARCH PAPER Yu, X *et al.* Wakefulness is governed by GABA and histamine cotransmission. *Neuron* http://dx.doi.org/10.1016/j.neuron.2015.06.003 (2015)

NAVIGATION

Magnetosensing neurons

Many species orient towards Earth's magnetic field, but how the nervous system detects magnetism is not known. Here, the authors show that *Caenorhabditis elegans* also orients to Earth's magnetic field, during vertical burrowing, and that the AFD pair of sensory neurons show calcium responses when the worms are exposed to an Earth-strength magnetic field. This calcium response even occurs in mutant strains that have impaired synaptic transmission, suggesting that AFD neurons could be directly magnetosensitive. Thus, *C. elegans* may be a useful model for further study of neural detection of magnetic fields.

ORIGINAL RESEARCH PAPER Vidal-Gadea, A. *et al.* Magnetosensitive neurons mediate geomagnetic orientation in *Caenorhabditis elegans*. *eLife* http://dx.doi.org/10.7554/eLife.07493 (2015)