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IN BRIEF

SENSORY SYSTEMS

The smell of anxiety

Symptoms of anxiety are usually induced by sensory stimuli, but the contribution of sensory system deficits to anxiety disorders remains unknown. Here, mice with mutation-induced functional deficits in the main olfactory epithelium (MOE) — one of the two sensory organs that comprise the mouse olfactory system (the other being the vomeronasal organ (VNO)) — exhibited increased levels of anxiety-like behaviour in three behavioural paradigms. Mice expressing the M71 odorant receptor in ~95% of MOE and VNO neurons have impaired odour-evoked neural activity and also showed increased anxiety in these tests. Thus, the olfactory system is a key modulator of anxiety in mice.

ORIGINAL RESEARCH PAPER Glinka, M. E. *et al.* Olfactory deficits cause anxiety-like behaviors in mice. *J. Neurosci.* **32**, 6718–6725 (2012)

NEUROANATOMY

Revising the phylogeny of von Economo neurons

Human neuropathological studies suggest that von Economo neurons (VENs) in the anterior insula cortex have roles in self-awareness and social cognition. However, invasive studies to investigate the possible roles of VENs have not been undertaken, as it was thought that these neurons were only present in humans and other hominids. Evrard *et al.* now show that two species of macaque that are used in laboratory research harbour neurons in the anterior insula that resemble VENs from hominids in various ways, including size, morphology and laminar distribution. This discovery opens up new possibilities for investigating the role of VENs in higher brain functions.

ORIGINAL RESEARCH PAPER Evrard, H. C., Forro, T. & Logothetis, N. K. Von Economo neurons in the anterior insula of the macaque monkey. *Neuron* **74**, 482–489 (2012)

COGNITIVE NEUROSCIENCE

Valuing reward

The desirability or predicted value of a reward is influenced by the value of previously obtained rewards. Here, Richmond and colleagues reveal that in monkeys, the rhinal cortex — a component of the medial temporal lobe memory system — has an integral role in this contextual modulation of predicted value. Animals underwent a behavioural paradigm in which current reward value could only be predicted on the basis of the sizes of previously delivered rewards, which were varied across blocks of trials. Strikingly, despite this variation, monkeys with bilateral rhinal cortex lesions expected all forthcoming rewards to be of a similar size.

ORIGINAL RESEARCH PAPER Clark, A. M. *et al.* Intersection of reward and memory in monkey rhinal cortex. *J. Neurosci.* **32**, 6869–6877 (2012)

AUDITORY SYSTEM

A dangerous din?

How moderate levels of environmental noise — that is, noise that does not cause peripheral deficits in hearing — affect the adult brain is unclear. Here, rats continuously exposed to moderate structured noise (sound pressure of 65 dB) for 2 months showed an impaired ability to discriminate between sound stimulus rates in a behavioural task and deficits in the temporal processing of noise stimuli in the auditory cortex. Thus, in rats, levels of noise that do not affect the inner ear may still cause auditory function deficits.

ORIGINAL RESEARCH PAPER Zhou, X. & Merzenich M. M. Environmental noise exposure degrades normal listening processes. *Nature Commun.* **3**, 843 (2012)

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