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IN BRIEF

SENSORY SYSTEMS

Discriminating taste from waste

The yeast that grows on fermenting fruit and that is the main food source of the fruitfly *Drosophila melanogaster* can sometimes harbour harmful microbes. How do fruitflies recognize which yeasts are safe and which are coated in dangerous micro-organisms? Geosmin is an aversive odourant that is produced by numerous harmful microbes, and a new study finds that the circuitry activated by this compound is functionally segregated and involves a single class of olfactory sensory neuron. This circuit is conserved across the *Drosophila* genus and provides a mechanism for avoiding potentially dangerous environments.

ORIGINAL RESEARCH PAPER Stensmyr, M. C. *et al.* A conserved dedicated olfactory circuit for detecting harmful microbes in *Drosophila*. *Cell* **151**, 1345–1357 (2012)

STEM CELLS

Sending cells back in time

Obtaining neural stem cells (NSCs) by reprogramming differentiated cells has tremendous therapeutic potential with few ethical problems. Wang *et al.* used episomal vectors to reprogram human urine cells (epithelial-like cells) into an expandable population of neural progenitors. They demonstrated that, both *in vitro* and *in vivo*, these NSCs differentiated into mature neurons and glia. Future studies are required to characterize these cells fully and to determine their suitability for autologous transplantation, which is the ultimate goal.

ORIGINAL RESEARCH PAPER Wang, L. *et al.* Generation of integration-free neural progenitor cells from cells in human urine. *Nature Methods* 9 Dec 2012 (doi:10.1038/nmeth.2283)

NEURODEGENERATIVE DISORDERS

Parkinson's disease reveals hidden depths

Deep brain stimulation (DBS) applied to the subthalamic nucleus (STN) has proved to be useful in the treatment of Parkinson's disease. It was thought that the therapeutic action of DBS involved a direct inhibitory action on the STN. Li *et al.* simultaneously recorded local field potentials and single-unit activities from the motor cortex of freely moving Parkinsonian rats during DBS applied to the STN. They found that DBS has a more widespread influence: it induces antidromic action potentials from the STN that normalize pathological cortical β-oscillations in the motor cortex, and it is this that is thought to underlie the therapeutically beneficial effect of this treatment.

ORIGINAL RESEARCH PAPER Li, Q. *et al.* Therapeutic deep brain stimulation in Parkinsonian rats directly influences motor cortex. *Neuron* **76**, 1030–1041 (2012)

MOTOR SYSTEMS

From dream to reality for 'bionic' limbs?

Brain–machine interfaces have the potential to restore some normal motor function in paralysed individuals. The authors implanted a 96-channel microelectrode array into the motor cortex of an individual with tetraplegia and connected it to a prosthetic limb. After 3 months of training, the individual could carry out skilful and co-ordinated upper-limb motor tasks. This represents an important advance in the development of neuroprosthetic limbs that use a patient's natural command signals to guide movement.

ORIGINAL RESEARCH PAPER Collinger, J. L. *et al.* High-performance neuroprosthetic control by an individual with tetraplegia. *Lancet* 17 Dec 2012 (doi:10.1016/S0140-6736(12)61816-9)