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IN BRIEF

RECEPTORS

Salt attraction

In flies, behavioural responses to different salt concentrations are mediated by gustatory receptor neurons (GRNs). Low salt concentrations, which are beneficial for the animal, elicit attractive responses, whereas harmful high salt concentrations trigger aversive responses. Montell and colleagues now show that the Ionotropic glutamate receptor 76b (Ir76b) functions as a low-salt sensor. Loss of Ir76b selectively impaired the attraction to low salt concentrations. These findings support a model in which competition between low-salt sensing GRNs and high-salt sensing GRNs accounts for the opposing behavioural responses.

ORIGINAL RESEARCH PAPER Zhang, Y. V., Ni, J. & Montell, C. The molecular basis for attractive salt-taste coding in *Drosophila*. *Science* **340**, 1334–1338 (2013)

NEUROLOGICAL DISORDERS

Loss of MECP2 bridge in Rett

Rett syndrome is caused by mutations in the gene that encodes methyl-CpG-binding protein 2 (MECP2). Previous studies have shown that many disease-causing mutations are clustered in its DNA-binding region. Bird and colleagues have identified another cluster of Rett syndrome-associated mutations in the C-terminal half of MECP2. These mutations disrupt the interaction between MECP2 and NCOR–SMRT co-repressor complexes, impairing transcriptional repression. Importantly, mice expressing one of these MECP2 mutations exhibited severe Rett-like phenotypes, indicating that a core function of MECP2 is to recruit co-repressors to DNA.

ORIGINAL RESEARCH PAPER Lyst, M. J. *et al.* Rett syndrome mutations abolish the interaction of MeCP2 with the NCoR/SMRT co-repressor. *Nature Neurosci.* http://dx.doi.org/10.1038/nn.3434 (2013)

NEURAL PATHWAYS

Channelling CO_2 sensing

A single type of olfactory sensory neuron detects CO_2 in flies, but multiple second-order projection neurons (PNs) convey information about the stimulus intensity to higher brain centres. Lin *et al.* characterized the morphology and function of PNs innervating the ventral-glomerulus (PNvs) and found that two types of projection neurons, PNv-1 and PNv-2, were largely responsible for behavioural aversion to low (0.5%) and high (2%) concentrations of CO_2, respectively. By segregating input into a low- or a high-CO_2 pathway, the flies' perception of CO_2 can be modulated by intensity and, potentially, context.

ORIGINAL RESEARCH PAPER Lin, H-H. *et al.* Parallel neural pathways mediate CO_2 avoidance responses in *Drosophila*. *Science* **340**, 1338–1341 (2013)

MOOD DISORDERS

A new target for antidepressant drugs

The mechanisms of action of most antidepressants are unclear. A study in *Nature Medicine* now shows that therapeutic concentrations of the antidepressants amitriptyline and fluoxetine reduced the activity of acid sphingomyelinase (ASM), an enzyme that releases ceramide from sphingomyelin, in both cultured neurons and mouse hippocampi. Reducing ceramide levels in the brain had antidepressant effects in mouse models of depression, suggesting that the ASM–ceramide system may be a useful target for new antidepressants.

ORIGINAL RESEARCH PAPER Gulbins, E. *et al.* Acid sphingomyelinase–ceramide system mediates effects of antidepressant drugs. *Nature Med.* http://dx.doi.org/10.1038/nm.3214 (2013)