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IN BRIEF

PSYCHIATRIC DISORDERS

Creating ripples

Mice lacking the synaptic plasticity-mediating protein calcineurin in their forebrain have behavioural and cognitive abnormalities equivalent to those found in patients with schizophrenia; however, the underlying mechanism is unclear. Hippocampal sharp wave ripple (SWR) events are associated with memory consolidation, and calcineurin-knockout mice were found to exhibit SWRs during post-experience rest periods and lacked the sequential reactivation of hippocampal place cells that normally occurs during SWR events. These data suggest a potential mechanism underlying some of the behavioural alterations seen in schizophrenia.

ORIGINAL RESEARCH PAPER Suh, J. *et al.* Impaired hippocampal ripple-associated replay in a mouse model of schizophrenia. *Neuron* **80**, 484–493 (2013)

CELLULAR NEUROSCIENCE

Prion prevention

Accumulation of misfolded prion protein overactivates the unfolded protein response (UPR) and results in a cell-wide shutdown of protein translation and consequent synaptic dysfunction and cell death. The kinase PERK (protein kinase RNA-like endoplasmic reticulum kinase) is a key component in the UPR, and oral administration of a PERK inhibitor in a mouse model of prion disease, either before or after manifestation of symptoms, attenuated disease progression. PERK inhibitors function downstream of prion replication and thus have therapeutic potential in neurodegenerative diseases that involve UPR activation.

ORIGINAL RESEARCH PAPER Moreno, J. A. *et al.* Oral treatment targeting the unfolded protein response prevents neurodegeneration and clinical disease in prion-infected mice. *Sci. Transl Med.* **5**, 206ra138 (2013)

BEHAVIOUR

To eat or not to eat?

The parabrahial nucleus (PBN) has a key role in appetite suppression, but precisely which neurons mediate this effect is unknown. Carter *et al.* identified a population of calcitonin gene-related peptide (CGRP)-expressing neurons in mice that project from the PBN to the central nucleus of the amygdala. Using optogenetic and pharmacogenetic approaches, they found that increasing activity in this pathway suppressed appetite, and inhibition increased food intake and prevented starvation in mice in which agouti-related protein (AGRP)-expressing PBN neurons were ablated. Thus, this CGRP circuit has an important role in suppressing appetite.

ORIGINAL RESEARCH PAPER Carter, M. E. *et al.* Genetic identification of a neural circuit that suppresses appetite. *Nature* http://dx.doi.org/10.1038/nature12596 (2013)

CELLULAR NEUROSCIENCE

Merging membranes

Fusion of a synaptic vesicle with the plasma membrane is thought to be catalysed by the transmembrane regions (TMRs) of key synaptic and vesicular SNARE complex proteins that induce opening of a fusion pore, but this has not been tested physiologically. Zhou *et al.* show that, surprisingly, lipid-anchored SNARE proteins lacking TMRs can catalyse vesicle fusion. This suggests that the main function of the SNARE complex is to force the two membranes in close apposition, and that this is sufficient to induce membrane fusion.

ORIGINAL RESEARCH PAPER Zhou, P. *et al.* Lipid-anchored SNAREs lacking transmembrane regions fully support membrane fusion during neurotransmitter release. *Neuron* **80**, 470–483 (2013)