

could impose a pattern on the underlying tissue.

A role for RA in the development of anterior hindbrain structures has previously been inferred from the teratogenic effects of excess RA, but this does not necessarily mean that it has an essential patterning function in this region. The identification of a source of RA in the anterior hindbrain should provide us with new opportunities to explore this idea.

Heather Wood

References and links

ORIGINAL RESEARCH PAPER Zhang, J. *et al.* The meninges is a source of retinoic acid for the late-developing hindbrain. *J. Neurosci.* **23**, 7610–7620 (2003)

FURTHER READING Maden, M. Retinoid signalling in the development of the central nervous system. *Nature Rev. Neurosci.* **3**, 843–853 (2002)



unconditioned stimulus, which produces extinction — but only when it becomes dominant over the first trace. On any retrieval trial, the memory trace that is most susceptible to consolidation blockers is the dominant trace — that is, the one that will have the most control over behaviour after that retrieval trial. In conditioned taste aversion in rats, the dominant trace is determined by the amount of training, whereas in fear conditioning in the medaka, it depends on the number of extinction trials.

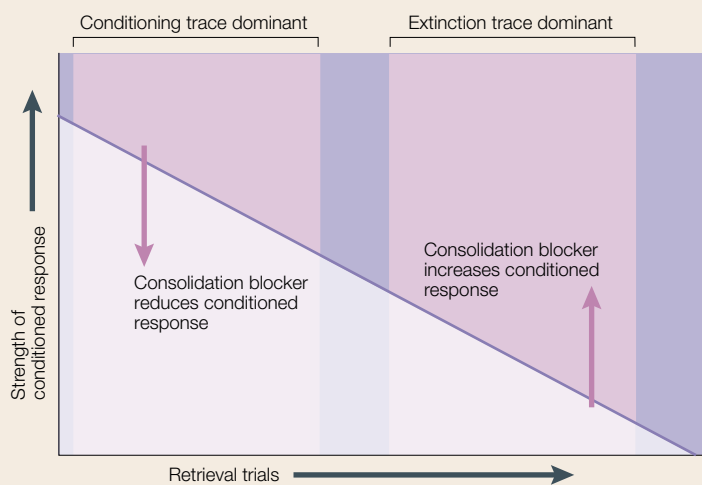
Studies such as this should shed light on the dynamic interplay between memory formation and memory retrieval, and will be crucial for progress in this controversial field.

Rachel Jones

References and links

ORIGINAL RESEARCH PAPER Eisenberg, M. *et al.* Stability of retrieved memory: inverse correlation with trace dominance. *Science* **301**, 1102–1104 (2003)

FURTHER READING Nadel, L. & Land, C. Memory traces revisited. *Nature Rev. Neurosci.* **1**, 209–212 (2000) | Millin, P. M. *et al.* Interpretations of retrograde amnesia: old problems redux. *Nature Rev. Neurosci.* **2**, 68–70 (2001)



Treatment with a consolidation blocker after a small number of retrieval trials reduces the conditioned response. During this period the memory trace for the conditioned response is dominant and the blocker prevents its reconsolidation after retrieval. After more retrieval trials, the conditioned response wanes as the memory trace for extinction becomes dominant. At this stage, a consolidation blocker will increase the conditioned response because it interferes with reconsolidation of the extinction trace after retrieval.

IN BRIEF

CELL BIOLOGY OF THE NEURON

Trafficking of prion proteins through a caveolae-mediated endosomal pathway.

Peters, P. J. *et al.* *J. Cell Biol.* **162**, 703–717 (2003)

Peters *et al.* used immunoelectron microscopy to analyse the trafficking of the prion protein PrP^C in CHO cells, and found that it uses an atypical endocytic pathway to reach the lysosomes. This pathway does not involve clathrin-coated vesicles, but contains caveolin-1, a protein that is characteristic of caveolae. The data raise the possibility that transit through this unusual pathway might be involved in the conversion of PrP^C to the pathogenic form PrP^{Sc}.

COGNITIVE NEUROSCIENCE

Features of neuronal synchrony in mouse visual cortex.

Nase, G. *et al.* *J. Neurophysiol.* **90**, 1115–1123 (2003)

Gamma oscillations and their relevance to feature binding have been largely studied in primates and *in vitro*. Here, the authors investigated whether the mouse would be a suitable model for the study of gamma oscillations, and found that different stimuli elicited oscillations and neuronal synchronization that were similar to what has been found in other models. These results open up the possibility of bringing the strengths of the mouse as a genetic model to bear on the problem of perceptual binding.

NEUROPHYSIOLOGY

Sensitivity of neurons to weak electric fields.

Francis, J. T. *et al.* *J. Neurosci.* **23**, 7255–7261 (2003)

Weak electric fields can modulate neuronal activity, but the sensitivity threshold of neurons has not been clearly defined. Here, the authors measured the sensitivity of hippocampal networks to weak fields and found, first, that networks are more sensitive than single neurons and, second, that the sensitivity threshold is one order of magnitude below what was previously thought. As weak electric fields are a common environmental feature, these results might have implications for the assessment of their effect on public health.

NEURODEGENERATIVE DISEASES

Isolation of drugs active against mammalian prions using a yeast-based screening assay.

Bach, S. *et al.* *Nature Biotechnol.* **21**, 1075–1081 (2003)

Yeast prions cause specific phenotypes in this organism, and Bach *et al.* took advantage of them to develop a two-step, high-throughput assay to screen for drugs that interfere with prion action. They found that two previously known anti-prion agents were effective in their assay, and identified a new class of compounds — the kastellpaolinites — as similarly effective drugs. The authors found that these molecules also acted against mammalian prions, indicating that the pathways that control prion accumulation might be conserved between yeast and mammals.