

IN BRIEF

LEARNING AND MEMORY

Involvement of β -site APP cleaving enzyme 1 (BACE1) in amyloid precursor protein-mediated enhancement of memory and activity-dependent synaptic plasticity.

Ma, H. *et al. PNAS* **19**, 8167–8172 (2007)

β -site amyloid precursor protein (APP) cleaving enzyme (BACE1) has been proposed as a therapeutic target for Alzheimer's disease; however, the function of BACE1-mediated APP cleavage in normal brain function is unknown. The authors studied transgenic mice overproducing APP that exhibit enhanced spatial memory and activity-dependent hippocampal synaptic plasticity, and showed that these effects required BACE1 activity. This suggests that activity-dependent BACE1-mediated APP cleavage might have a positive role in learning and memory.

DOI:
10.1038/nrn2164

PERCEPTION

Russian blues reveal effects of language on color discrimination.

Winawer, J. *et al. PNAS* **19**, 7780–7785 (2007)

The Russian language distinguishes between light blues and dark blues, giving each category a separate name. Researchers found that Russian speakers could discriminate more quickly between two shades of blue that fell into different linguistic categories than shades that were in the same category. This effect was not observed in English speakers, who have only one category for blue. This demonstrates that categories in language can alter performance in objective discrimination tasks.

PSYCHIATRIC DISORDERS

Behavioral phenotypes of Disc1 missense mutations in mice.

Clapcote, S. J. *et al. Neuron* **54** 387–402 (2007)

The authors showed that mice with one missense mutation in the gene disrupted in schizophrenia 1 (DISC1) had a depression-like phenotype, whereas a different DISC1 mutation altered prepulse and latent inhibition, thought to model information-processing deficits in schizophrenia. The depression- and schizophrenia-like phenotypes responded to antidepressant and antipsychotic treatment, respectively. Both mutations reduced DISC1 binding to phosphodiesterase-4B (PDE4B), suggesting that altered DISC1–PDE4B binding underlies the behavioural phenotypes. This study confirms a possible involvement of DISC1 in several psychiatric disorders, which might therefore have common underlying mechanisms.

MOTIVATION

How the brain translates money into force: a neuroimaging study of subliminal motivation.

Pessiglione, M. *et al. Science*. 12 April 2007
(doi:10.1126/science.1140459)

In this study, individuals squeezed a handgrip to earn a monetary reward — greater physical exertion earned more of the total reward. Before each trial, the total available reward was briefly presented. Even when the reward was presented subliminally, the participants still exerted more physical force when the stakes were higher. Functional MRI revealed activity in a basal forebrain region, the ventral pallidum, that was consistent regardless of whether the individuals were conscious of the reward.