IN BRIEF

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ANGIOGENESIS

Inhibition of angiogenesis by the antifungal drug itraconazole.

Chong, C. R. *et al. ACS Chem. Biol.* **2**, 263–270 (2007)

Angiogenesis — the formation of new blood vessels — is implicated in diseases such as cancer, diabetic neuropathy and rheumatoid arthritis. By screening of a library of approved drugs, Chong and colleagues identified the antifungal drug itraconazole as an angiogenesis inhibitor with *in vivo* activity. In addition, the authors showed that human lanosterol 14α-demethylase (14DM, CYP51) is essential for endothelial cell proliferation, suggesting that lanosterol 14DM is a new target for angiogenesis inhibitors.

NEURODEGENERATIVE DISEASE

An orally active catalytic metalloporphyrin protects against 1-methly-4-phenyl-1,2,3,6-tetrahydropyridine neurotoxicity *in vivo*.

Liang, L. P. *et al. J. Neurosci.* **27**, 4326–4333 (2007)

The role of reactive oxygen species is strongly implicated in Parkinson disease (PD). In a murine model of Parkinson disease, Liang and colleagues showed that oral administration of AEOL11207, a lipophilic manganic porphyrin compound, protected against dopamine depletion in the striatum, as well as dopaminergic neuronal loss and oxidative stress in the ventral midbrain. This demonstration of neuroprotection by an orally active catalytic antioxidant able to cross the blood–brain barrier suggests its potential for the treatment of chronic neurodegenerative diseases such as PD.

LEARNING AND MEMORY

eIF2α phosphorylation bidirectionally regulates the switch from short- to long-term synaptic plasticity and memory.

Costa-Mattioli, M. *et al. Cell* **129**, 195–206 (2007)

Repeated synaptic activation results in new gene-expression patterns that lead to long-term memory (LTM). Costa-Mattioli and colleagues showed that mice with reduced phosphorylation of the translation initiation factor eIF2α had enhanced learning and memory, and a small-molecule inhibitor of eIF2α dephosphorylation impaired late long-term potentiation and LTM. These findings highlight the importance of a single phosphorylation site — which might be therapeutically manipulated — in eIF2α as a key regulator of LTM formation.

NEUROLOGICAL DISEASE

Effects of pan- and subtype-selective *N*-methyl-D-aspartate receptor antagonists on cortical spreading depression in the rat: therapeutic potential for migraine.

Peeters, M. *et al. J. Pharmacol. Exp. Therap.* **321**, 564–572 (2007)

Cortical spreading depression (CSD) — a transient wave of neuronal depolarization — is associated with the underlying pathophysiology of migraine. Peeters and colleagues showed that memantine, a clinically used *N*-methyl-D-aspartate (NMDA) glutamate receptor (NMDAR) blocker, and two antagonists that are selective for NMDAR containing the NR2B subunit, decreased CSD events at therapeutically relevant doses. This suggests that NMDAR antagonists might be useful for the treatment of migraine and other SD disorders.