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IN BRIEF

ALZHEIMER DISEASE

Targeting protein synthesis to improve memory function in Alzheimer disease

Phosphorylation of eIF2 α suppresses protein synthesis mediated by this translational factor and is associated with Alzheimer disease (AD) pathology. Using mouse models of AD, Ma *et al.* have now shown that genetic deletion of eIF2 α kinases reverses deficits in protein synthesis and synaptic plasticity. Moreover, the mice showed improved performance in tasks involving spatial memory. These findings suggest that inhibition of eIF2 α phosphorylation could be a therapeutic strategy to preserve memory in AD.

Original article Ma, T. *et al.* Suppression of eIF2 α kinases alleviates Alzheimer's disease-related plasticity and memory deficits. *Nat. Neurosci.* 16, 1299–1305 (2013)

NEUROMUSCULAR DISEASE

RNA splicing biomarkers identified for myotonic dystrophy

Myotonic dystrophy types 1 and 2 (DM1 and DM2) are caused by mutations that produce toxic RNA molecules characterized by repeat expansions, and abnormal alternative splicing of RNA is a key feature of these diseases. A study involving global microarray analysis in DM1 and DM2 has identified 20 splicing defects that are associated with graded changes with respect to weakness in ankle dorsiflexion. Such biomarkers are urgently needed to measure response to drugs that target RNA splicing, which are now entering clinical trials for DM1 and DM2.

Original article Nakamori, M. *et al.* Splicing biomarkers of disease severity in myotonic dystrophy. *Ann. Neurol.* doi:10.1002/ana.2399

MULTIPLE SCLEROSIS

Effect of smoking on antibody response to IFN- β treatment

The efficacy of IFN- β for treatment of multiple sclerosis (MS) can diminish over time if a patient develops neutralizing antibodies to the drug. In a retrospective study of 695 patients with MS, researchers have shown that the chances of developing this response to IFN- β 1a in current smokers is almost twice that in nonsmokers. A history of smoking, however, was not found to influence the risk of developing such treatment-induced neutralizing antibodies.

Original article Hedstrom, A. K. *et al.* Smoking and risk of treatment-induced neutralizing antibodies to interferon β -1a. *Mult. Scler.* doi:10.1177/1352458513498635

NEUROCRITICAL CARE

New index for objective determination of consciousness

Determination of the level of consciousness in unresponsive brain-injured patients is challenging. Casali *et al.* have now developed a theoretically based index of consciousness—the perturbation complexity index (PCI)—that is independent of sensory signalling and behavioural responses. Transcranial magnetic stimulation is used to engage distributed cortical patterns of activity, and the complexity of the electrocortical responses is calculated. In healthy individuals at different levels of wakefulness, and in patients who had emerged from different levels of coma, PCI values correlated with consciousness, making this measure a potentially useful tool in neurocritical care.

Original article Casali, A. G. *et al.* A theoretically based index of consciousness independent of sensory processing and behavior. *Sci. Transl. Med.* 5, 198ra105 (2013)