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# IN BRIEF

## MULTIPLE SCLEROSIS

### Creating a STIR–MRI sequence improves detection of spinal cord lesions

Spinal cord lesions in patients with multiple sclerosis (MS) are more conspicuous on short T1 inversion recovery (STIR) MRI sequences than on conventional T2-weighted sequences, new research shows. In a double-blind study, spinal cord MRI scans from 29 patients with MS were examined by two neuroradiologists, both of whom identified significantly more spinal cord lesions on STIR images than on T2-weighted images. The investigators argue that STIR sequences should be incorporated into the standard imaging protocols for MS.

**Original article** Nayak, N. B. *et al.* A comparison of sagittal short T1 inversion recovery and T2-weighted FSE sequences for detection of multiple sclerosis spinal cord lesions. *Acta Neurol. Scand.* doi:10.1111/ane.12168

## PAIN

### Nociceptors can be directly activated by bacteria

Pain caused by bacterial infection is generally considered to be a secondary consequence of immune activation, but findings recently published in *Nature* indicate that bacteria are capable of directly activating nociceptor sensory neurons. Chiu *et al.* found that *Staphylococcus aureus* infection could still produce hyperalgesia in mice when key immune response pathways were inactivated. *S. aureus* seems to activate nociceptors via factors such as *N*-formyl peptides and the pore-forming toxin α-haemolysin.

**Original article** Chiu, I. M. *et al.* Bacteria activate sensory neurons that modulate pain and inflammation. *Nature* **501**, 52–57 (2013)

## NEURO-ONCOLOGY

### Neurocognitive function is preserved in patients with brain metastases treated with carmustine wafers

Brain metastases are commonly treated with surgery plus whole-brain radiation therapy (WBRT), but WBRT carries a substantial risk of neurocognitive decline. A study published in *Cancer* has shown that use of carmustine wafers, in conjunction with neurosurgical resection, enables preservation of neurocognitive function while achieving similar rates of local tumour control to those seen with surgery plus WBRT. The findings suggest that carmustine wafers are a viable treatment option for brain metastases.

**Original article** Brem, S. *et al.* Preservation of neurocognitive function and local control of 1 to 3 brain metastases treated with surgery and carmustine wafers. *Cancer* doi:10.1002/cncr.28307

## ALZHEIMER DISEASE

### Amyloid-β-related cholinergic dysfunction is linked to cognitive deterioration in Alzheimer disease

A link between amyloid-β (Aβ) deposition and α4β2 nicotinic acetylcholine receptor availability in specific brain regions could provide a clue to the mechanisms underlying cognitive decline in Alzheimer disease (AD), according to a new report. In patients with AD, Okada *et al.* found an inverse relationship between Aβ burden and α4β2 receptor availability in the nucleus basalis magnocellularis and medial frontal cortex, but not in other brain regions. This region-specific effect might explain why the global Aβ burden in the brain is often an unreliable indicator of cognitive function.

**Original article** Okada, H. *et al.* Alterations in α4β2 nicotinic receptors in cognitive decline in Alzheimer's aetiopathology. *Brain* doi:10.1093/brain/awt195