IN BRIEF

PAIN

Direct evidence for spinal cord involvement in placebo analgesia

Eippert, F. *et al. Science* **326**, 404 (2009)

Placebo treatment can relieve pain, but whether this involves reduced nociceptive responses in the spinal cord was unknown. The authors used functional MRI of the cervical spinal cord to investigate the effects of a placebo analgaesic cream on the response to painful heat on the arm. Subjects reported less pain in the arm and had reduced activity in the ipsilateral dorsal horn of the spinal cord. These findings indicate that the placebo treatment acted at the earliest level of the pain pathway, inhibiting spinal cord nociceptive processing.

LANGUAGE

Sequential processing of lexical, grammatical, and phonological information within Broca's area

Sahin, N. T. *et al. Science* **326**, 445–449 (2009)

To determine the neural circuitry that processes the different types of information contained in language, the authors obtained intracranial recordings from neuron populations in Broca's area as people silently read words or inflected them to form a grammatically correct sentence. They found sequential activity in neighbouring groups of neurons that was associated with the processing of first lexical (related to word meaning), then grammatical and finally phonological (related to word sounds) information. This study shows spatial and temporal segregation of different types of linguistic information in Broca's area.

REPAIR

Combined intrinsic and extrinsic neuronal mechanisms facilitate bridging axonal regeneration one year after spinal cord injury

Kadoya, K. *et al. Neuron* **64**, 165–172 (2009)

Significant axonal regeneration in the chronically injured spinal cord has not been achieved to date. Here, the authors used a combined therapeutic strategy to induce axonal regeneration in the rat spinal cord 15 months after injury. The treatment targeted both the intrinsic neuronal regenerative capacity, using a peripheral nerve conditioning lesion, and the lesion environment, by transplanting marrow stromal cells and providing a neurotrophin 3 gradient. Axons grew across the lesion, showing that regeneration is possible even long after injury.

NEURODEGENERATIVE DISEASE

TDP-43 mutant transgenic mice develop features of ALS and frontotemporal lobar degeneration

Wegorzewska, I. *et al. Proc. Natl Acad. Sci. USA* **106**, 18809–18814 (2009)

The RNA- and DNA-binding protein TDP-43 has been linked to both frontotemporal lobar degeneration (FTLD) and amyotrophic lateral sclerosis (ALS). Here, transgenic mice expressing human TDP-43 with a mutation found in familial ALS patients had a neurodegenerative phenotype that mirrored many of the characteristics of both FTLD and ALS, including gait abnormalities and aggregation of ubiquitylated proteins in specific neuronal populations. These mice might be used to understand the common mechanisms underlying FTLD and ALS pathology and to aid the development of new therapeutics.