

IN BRIEF

LANGUAGE

Mapping meaning

Where are the meanings of words represented? Huth *et al.* used voxel-wise modelling of cortical blood oxygen level-dependent responses of people listening to stories to show that different areas of the cortex are selective for words in different semantic categories. Strikingly, the organization of semantically selective cortical areas was fairly consistent across participants, allowing the authors to generate a 'semantic atlas'.

ORIGINAL ARTICLE Huth, A. G. *et al.* Natural speech reveals the semantic maps that tile human cerebral cortex. *Nature* **532**, 453–458 (2016)

SPATIAL PROCESSING

Motion replay

During rest, hippocampal place cells replay activity sequences, but it is not clear whether grid cells in the medial entorhinal cortex are involved in this replay. Here, grid cell activity in resting mice that had navigated a Z-shaped track was spatially coherent with that of place cells, with grid cell activity lagging ~10 ms behind that of place cells. So, grid cells may be involved in relay and so may have a role in spatial memory consolidation.

ORIGINAL ARTICLE Ólafsdóttir, H. F., Carpenter, F. & Caswell, B. Coordinated grid and place cell replay during rest. *Nat. Neurosci.* <http://dx.doi.org/10.1038/nn.4291> (2016)

NEURODEGENERATIVE DISEASE

Repeating mistakes

How GGGGCC repeat expansions (REs) in chromosome 9 open reading frame 72 (*C9orf72*) lead to amyotrophic lateral sclerosis (ALS) and frontotemporal dementia is unclear. Now, two studies supporting a toxic gain-of-function mechanism add to the debate. Jiang *et al.* find that *C9orf72*^{-/-} mice show no overt neuropathology, whereas mice expressing RE-containing *C9orf72* show accumulation of RNA foci and behavioural deficits that can be reversed using antisense oligonucleotides against repeat-containing RNAs. Liu *et al.* generate an RE-containing *C9orf72* mouse model that recapitulates the TDP43 (TAR DNA-binding protein 43) inclusions and motor neuron degeneration seen in ALS.

ORIGINAL ARTICLES Jiang, J. *et al.* Gain of toxicity from ALS/FTD-linked repeat expansions in *C9ORF72* is alleviated by antisense oligonucleotides targeting GGGGCC-containing RNAs. *Neuron* <http://dx.doi.org/10.1016/j.neuron.2016.04.006> (2016) | Liu, Y. *et al.* *C9orf72* BAC mouse model with motor deficits and neurodegenerative features of ALS/FTD. *Neuron* <http://dx.doi.org/10.1016/j.neuron.2016.04.005> (2016)

FURTHER READING Haeusler, A. R., Donnelly, C. J. & Rothstein, J. D. The expanding biology of the *C9orf72* nucleotide repeat expansion in neurodegenerative disease. *Nat. Rev. Neurosci.* <http://dx.doi.org/10.1038/nrn2016.38> (2016)

GUT-BRAIN COMMUNICATION

Gut reaction

The effects of microbiota on the development of psychiatric disorders is not clear. Here, daily gavage of saline in non-obese diabetic (NOD) mice (but not controls) induced social avoidance behaviour and decreased myelination in the prefrontal cortex (PFC). Transfer of gut microbiota from saline-treated NOD mice to naive controls induced social deficits and lowered expression of myelin-associated genes in the PFC of recipients. Thus, changes in microbiota can alter gene expression and behaviour.

ORIGINAL ARTICLE Gacias, M. *et al.* Microbiota-driven transcriptional changes in prefrontal cortex override genetic differences in social behavior. *eLife* <http://dx.doi.org/10.7554/eLife.13442> (2016)