IN BRIEF

NEUROGENOMICS

Functional organization of the transcriptome in human brain

Oldham, M. C. *et al. Nature Neurosci.* **11**, 1271– 1282 (2008)

How the genome encodes the complexity of the human brain has baffled scientists for years. A systematic analysis of gene co-expression networks in the human cerebral cortex, caudate nucleus and cerebellum has shed new light on the organization of the brain's transcriptome. The authors identified modules of co-expressed genes that correspond to particular cell types, organelles, types of synapse and brain regions. These distinct gene-expression patterns will aid the molecular characterization of cell types and brain functions in health and disease.

NEURODEGENERATIVE DISEASE

Aβ oligomers induce neuronal cell cycle events in Alzheimer's disease

Varvel, M. C. *et al. J. Neurosci.* **28**, 10786–10793 (2008)

DNA synthesis and expression of cell cycle re-entry proteins have been observed in neurons that are about to succumb to neurodegeneration in Alzheimer's disease (AD). Using a mouse model of the disease, the authors show that these cell cycle events (CCEs) precede amyloid-β (Aβ) deposition and that they are prevented when β-secretase activity is eliminated, indicating that CCEs are dependent on the amyloidogenic processing of amyloid precursor protein. Furthermore, preparations of Aβ oligomers induced CCEs in healthy primary cortical neurons, providing evidence of a new role for Aβ oligomers in AD.

DECISION MAKING

Millisecond-scale differences in neural activity in auditory cortex can drive decisions

Yang, Y., DeWee, M. R., Otazu, G. H. & Zador, A. M. *Nature Neurosci.* **11**, 1262–1263 (2008)

Although it is known that animals can detect inter-aural time differences of less than 1 ms when localizing sounds, little is known about how they process such fine timing of neural activity in the auditory cortex and whether it can drive behaviour. Using implanted electrodes to directly stimulate neurons in the auditory cortex of trained rats, the authors showed that the animals could discriminate temporal differences as short as 3 ms in the timing of artificially induced neuronal activity, suggesting that the timing of cortical spikes in response to some stimuli can be behaviourally relevant.

DEVELOPMENT

Temporal requirement of the alternative splicing factor *Sfrs1* for the survival of retinal neurons

Kanadia, R. N. *et al. Development* **135**, 3923–3933 (2008)

Alternative splicing expands the repertoire of proteins that a cell can produce from a limited number of genes and has an important role in the development and function of the nervous system. The authors show that loss of *Sfrs1* hampers the development of the mouse retina, leading to the death of early-born retinal ganglion cells, cone photoreceptors, horizontal cells and amacrine cells. Later-born cells were unaffected, suggesting that the pro-survival effects of *Sfrs1* are dependent on the time at which the neurons are born.