or unstable flow pattern compared with only 27% of unruptured aneurysms. Ruptured aneurysms mostly had small areas of impingement of the inflow jet with the aneurysm wall and small inflow jet size, whereas unruptured aneurysms had mostly large impingement regions and large jet sizes. Of the hemodynamic characteristics studied, only small impingement size was significantly associated with rupture, with a 6.3-fold increased risk compared with aneurysms with large impingement zones ($P=0.01$).

Cebral *et al.* acknowledge that their CFD approach needs to be validated using *in vitro* and *in vivo* data, and that the models need to be further refined. These personalized computational models provide a promising starting point, however, in providing a simple system for characterizing cerebral aneurysms.

Pippa Murdie

Original article Cebral JR *et al.* (2005) Characterization of cerebral aneurysms for assessing risk of rupture by using patient-specific computational hemodynamics models. *AJNR Am J Neuroradiol* 26: 2550–2559

NMDA receptors are present on oligodendrocyte processes and are activated during ischemia

Oligodendrocytes are responsible for axon myelination within the CNS. Glutamate-mediated damage to these cells results in impaired axonal saltatory conduction, and contributes to diseases such as multiple sclerosis, cerebral palsy and ischemia. Three papers recently published in *Nature* report new findings that oligodendrocyte damage occurs not only via glutamatergic α -amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA)/kainate receptors, but also via *N*-methyl-D-aspartate (NMDA) receptors, which were previously not thought to be present on this cell type.

Using electrophysiological experiments in rat brain, Káradóttir *et al.* showed that precursor, immature and mature oligodendrocytes all display NMDA-evoked currents. These currents are mediated by receptors that appear to have an unusual NMDA receptor subunit composition, and are situated on the processes—rather than the somata—of oligodendrocytes. In a separate study involving receptor characterization, Salter *et al.* demonstrated that NMDA receptor subunits show clustered expression on the processes of oligodendrocytes. Modeling of

ischemia in mice revealed that, during ischemic events, the NMDA receptor becomes activated on these processes, resulting in calcium-dependent detachment and disintegration of the processes. In a third study using selective NMDA and AMPA receptor antagonists, Micu and co-workers showed that *in vitro* ischemic calcium accumulation in myelin is mediated largely by the NMDA receptor.

Taken together, these studies strongly indicate that the oligodendroglial NMDA receptor represents an important new pharmacological target in the development of treatments for demyelinating brain disorders.

Christine Kyme

Original articles Káradóttir R *et al.* (2005) NMDA receptors are expressed in oligodendrocytes and activated in ischaemia. *Nature* 438: 1162–1166

Salter MG *et al.* (2005) NMDA receptors are expressed in developing oligodendrocyte processes and mediate injury. *Nature* 438: 1167–1171

Micu I *et al.* (2005) NMDA receptors mediate calcium accumulation in myelin during chemical ischaemia. *Nature* [doi: 10.1038/nature04474]

Deactivation of endocannabinoids in the brain helps treat depression

A trial of URB597 in mice and rats has shown this fatty-acid amide hydrolase inhibitor to be an effective mood regulator with potential for treating depression. The drug, which interferes with deactivation of the endogenous cannabinoid anandamide in the brain, produces similar mood-enhancing effects to cannabis, but is not associated with psychotropic effects or addiction.

Gobbi *et al.* conducted tests including the MOUSE TAIL-SUSPENSION TEST and the RAT FORCED-SWIM TEST, two commonly used tools for measuring ability to cope with stress. They found that certain doses of URB597 (range 0.03–0.3 mg/kg) produced strong antidepressant-like effects, similar to those achieved by some common antidepressant drugs. URB597 also produced an increase in firing activity of serotonergic neurons in the dorsal raphe nucleus and noradrenergic neurons in the nucleus locus ceruleus. These effects were prevented by rimonabant (a CB₁ antagonist), were accompanied by increased levels of anandamide in regions of the brain associated with control of emotions, and were achieved with single doses of URB597 and maintained upon repeat injection.

GLOSSARY

MOUSE TAIL-SUSPENSION TEST

A test used to screen for behavioral despair; mice are suspended by the tail for a set time and their duration of immobility measured, with longer immobility indicating increased despair

RAT FORCED-SWIM TEST

An animal model used to measure depressive-like behavior and response to antidepressants; rodents are forced to swim in a narrow cylinder from which they cannot escape and their duration of immobility measured