## › NEWS UPDATES

### Pain receptor turns up the heat

In the US alone, almost 50 million people suffer from chronic pain. Treatment options are largely limited to opioids (like morphine) or nonsteroidal anti-inflammatory drugs (like aspirin), which carry risks of addiction, dependency or organ damage. But the recent elucidation of a new pain pathway may lead to the development of new treatment options.

The newly described pathway relies on a molecule called transient receptor potential vanilloid 1 (TRPV1), which detects noxious heat and responds by causing pain. A group of scientists led by Kenneth Hargreaves (University of Texas Health Science Center, San Antonio) set out to investigate the mechanism by which TRPV1 is activated after heat exposure. They found that in response to heat, mouse skin cells created endogenous compounds (oxidized linoleic acid metabolites (OLAMs)) that activated TRPV1 (*J. Clin. Invest.* **120**, 1617–1626; 2010). Blocking the OLAMs (by inhibiting production pathways or by using antibodies) resulted in decreased heat sensitivity and pain sensation in mice and rats.

The results suggest that preventing the production or activation of OLAMs could lead to new analgesic drugs or therapies, with potential applications in chronic pain disorders such as arthritis, fibromyalgia and even cancer.

### Regenerating damaged blood vessels

Recent research has suggested that human veins and arteries contain progenitor cells. Since these cells are early descendants of stem cells, this research has raised hope that human blood vessel progenitor cells could be used to help regenerate damaged heart tissue. Scientists have shown that implantation of progenitor cells derived from fetal aortas promoted cell growth in animal models of ischemia and diabetic ulcers. Now, researchers have reported that progenitor cells generated from adult human blood vessel cells helped to rebuild damaged vessels in rats.

The research team, led by Paolo Madeddu of the University of Bristol (UK), used saphenous veins that had been collected during heart bypass operations on elderly patients (*Circulation* **121**, 1735–1745; 2010). They analyzed digested samples of these veins for progenitor cells and then cultured these progenitor cells into a population of 'saphenous vein-derived progenitor cells' (SVPs).

Madeddu and his colleagues injected SVPs into the legs of immunodeficient mice that had been subjected to unilateral limb ischemia. Within a week of the injury, mice injected with SVPs had made a full recovery. It took mice that had received control vehicle injections another 7 days to reach the same level of recovery. According to a press release, the research team is studying whether SVPs could help hearts to recover from heart attacks.

### Lab animal directive compromise reached

On 7 April, representatives from the European Commission, the European Parliament and the European Council agreed on a draft of a directive covering the protection of animals used for experimental and scientific purposes (86/609/EEC). The goals of this new legislation are to update the current version of the directive, which was ratified in 1986, and to provide common animal research regulations for all European Union (EU) member states. The parliament and council, the two legislative branches of the EU, are expected to approve the directive within the next few months.

This final draft proposes a number of changes to the current directive. It bans research that involves great apes or that causes extreme and prolonged pain. However, in cases of clinical urgency, researchers would be able to appeal to a central committee for exemption. Though a previous version required that researchers share animal experimental data, the final draft does not require this.

The 3R principles—replacement, reduction and refinement of animal use—are emphasized throughout the revised directive, which requires member states to ensure that the breeding, accommodation and care of experimental animals are improved. For example, the directive introduces minimum housing requirements. Additionally, projects involving animal use will have to be ethically reviewed and approved at the member state level.