IN BRIEF

BONE DISEASES

Repairing cartilage in osteoarthritis

The cartilage damage that is characteristic of osteoarthritis might be repaired using compounds that promote the differentiation of multipotent mesenchymal stem cells into chondrocytes. Using a high-throughput screen, Johnson *et al.* identified kartogenin as such a molecule. In models of osteoarthritis, the compound (given at early stages of the disease) promoted regeneration of cartilage and alleviated pain. Mechanistic studies showed that kartogenin binds to the actin binding protein filamin A, disrupts its interaction with the transcription factor CBFβ (core binding factor subunit β) and induces chondrogenesis by regulating the CBFβ–RUNX1 (runt-related transcription factor 1) transcriptional programme.

ORIGINAL RESEARCH PAPER Johnson, K. *et al.* A stem-cell based approach to cartilage repair. *Science* **336**, 717–721 (2012)

STEM CELLS

A model of cardiomyopathy

This paper showed that cardiomyocytes derived from induced pluripotent stem cells (iPSCs) from patients with dilated cardiomyopathy could serve as a new disease model. iPSC-derived cardiomyocytes from patients with a point mutation in the gene encoding cardiac troponin T had phenotypes similar to those seen in dilated cardiomyopathy, such as altered regulation of calcium during excitation–contraction coupling and decreased contractility. Moreover, stimulation with a β-adrenergic receptor agonist reduced beating rates compared to controls, whereas treatment with a β-adrenergic receptor antagonist improved cardiomyocyte function.

ORIGINAL RESEARCH PAPER Sun, N. *et al.* Patient-specific induced pluripotent stem cells as a model for familial dilated cardiomyopathy. *Sci. Transl. Med.* **4**, 130ra47 (2012)

OBESITY AND DIABETES

CD44 immune receptor linked to diabetes

Genome-wide association studies (GWAS) have identified numerous genes associated with type 2 diabetes, but selecting candidate genes for further verification can be problematic. This study used an expression-based GWAS in which data from 130 publicly available independent microarray experiments were collated to identify genes involved in the pathogenesis of type 2 diabetes. The gene encoding the immune cell receptor CD44 was the top-ranked gene. Follow-up studies showed that treatment of a mouse model with a CD44-targeted antibody decreased blood glucose levels, and that serum CD44 levels correlated with insulin resistance and glycaemic control in humans.

ORIGINAL RESEARCH PAPER Kodama, K. *et al.* Expression-based genome-wide association study links the receptor *CD44* in adipose tissue with type 2 diabetes. *Proc. Natl Acad. Sci. USA* **109**, 7049–7054 (2012)

ADVERSE EVENTS

Linking COX2 to cardiovascular side effects

Anti-inflammatory inhibitors of cyclooxygenase 2 (COX2) have been shown to increase the risk of adverse cardiovascular events in clinical trials. This study showed that such adverse events could be due to COX2-induced suppression of prostaglandin I_2 (PGI_2) synthesis; PGI_2 is a molecule that acts as a vasodilator and platelet activation inhibitor. Genetic deletion of COX2 in mouse vasculature reduced PGI_2 synthesis, reduced the expression of nitric oxide synthase and led to nitric oxide-dependent vascular dysfunction. Moreover, mice lacking vascular COX2 were predisposed to hypertension and thrombosis.

ORIGINAL RESEARCH PAPER Yu, Y. *et al.* Vascular COX-2 modulates blood pressure and thrombosis in mice. *Sci. Transl. Med.* **4**, 132ra54 (2012)