IN BRIEF

BIOTECHNOLOGY

CRISPR corrects a disease phenotype

The CRISPR (clustered regularly interspaced short palindromic repeats)-associated (Cas) system, which consists of the Cas9 nuclease and a single guide RNA sequence against a desired target, is emerging as a powerful genome editing tool. This paper describes the first use of the CRISPR–Cas9 system to mediate genome editing in adult mammals. Injection of the system in a mouse model corrected a splicing mutation in the fumarylacetoacetate hydrolase (*Fah*) gene, which causes hereditary tyrosinaemia type I. Wild-type FAH protein was detected in ~1 out of 250 liver cells, and the expansion of FAH-positive hepatocytes rescued the weight loss phenotype of mice.

ORIGINAL RESEARCH PAPER Yin, H. *et al.* Genome editing with Cas9 in adult mice corrects a disease mutation and phenotype. *Nature Biotech.* http://dx.doi.org/10.1038/nbt.2884 (2014)

ANTICANCER DRUGS

Reprogramming metabolism in lung cancer

Lactate dehydrogenase A (LDHA), which catalyses the interconversion of pyruvate and lactate, is upregulated in cancer. Xie *et al.* showed that genetic reduction of LDHA levels reduced tumorigenesis and caused disease regression in two mouse models of non-small-cell lung cancer, an effect that was due to reprogramming of pyruvate metabolism and decreased lactate fermentation. A small-molecule LDHA inhibitor suppressed the survival and proliferation of cancer-initiating cells. So LDHA could be a therapeutic target for lung cancer.

ORIGINAL RESEARCH PAPER Xie, H. *et al.* Targeting lactate dehydrogenase-A inhibits tumorigenesis and tumor progression in mouse models of lung cancer and impacts tumor-initiating cells. *Cell Metab.* **19**, 795–809 (2014)

INFECTIOUS DISEASE

Complementing antibacterial strategies

This study showed that recombinant properdin, which promotes activation of the complement pathway, could protect mice against infection with lethal-dose *Streptococcus pneumoniae* and *Neisseria meningitidis*. *In vitro*, properdin caused deposition of C3b fragments on bacterial cell surfaces — which is a key step in promoting a host immune response against bacteria — and boosted cell lysis. Importantly, the majority of mice given properdin did not develop sepsis. So properdin might be useful for combating infections caused by drug-resistant neisserial or streptococcal strains of bacteria.

ORIGINAL RESEARCH PAPER Ali, Y. M. *et al.* Low-dose recombinant properdin provides substantial protection against *Streptococcus pneumoniae* and *Neisseria meningitidis* infection. *Proc. Natl. Acad. Sci. USA* **111**, 5301–5306 (2014)

CANCER

Targeting microRNA blocks metastasis

MicroRNAs (miRNAs) that are secreted by cancer cells are thought to facilitate metastasis. Zhou *et al.* showed that miR-105 regulates breast cancer cell migration by targeting the tight junction protein ZO1 in surrounding cells. Inhibition of miR-105 in breast cancer cells reduced tumour size, suppressed metastasis to the lung and brain, and restored vascular integrity in a mouse model. Moreover, miR-105 was detected in the circulation of patients with pre-metastatic breast cancer; levels in the blood and tumour were associated with higher ZO1 expression and metastatic potential.

ORIGINAL RESEARCH PAPER Zhou, W. *et al.* Cancer-secreted miR-105 destroys vascular endothelial barriers to promote metastasis. *Cancer Cell* **25**, 501–515 (2014)