IN BRIEF

OBESITY

Regulation of energy homeostasis by bombesin receptor subtype-3: selective receptor antagonists for the treatment of obesity

Guan, X.-M. *et al. Cell Metab.* **11**, 101–112 (2010)

Guan and colleagues developed a selective agonist and a selective antagonist of the bombesin receptor subtype-3 (BRS3), a G protein-coupled receptor for which the endogenous ligand is unknown. Rats treated with the oral agonist had increased metabolic rate, decreased food intake and lower body weight. In addition, studies with knockout mice suggested that the BRS3 system is complementary to other pathways that regulate energy homeostasis. So, BRS3 agonists could be a potential treatment for obesity, either as monotherapy or in combination with other agents.

VIRAL DISEASES

Human liver chimeric mice provide a model for hepatitis B and C virus infection and treatment

Bissig, K.-D. *et al. J. Clin. Invest.* **120**, 924–930 (2010)

There is currently a lack of small animal models of hepatitis B virus (HBV) and HCV infection. Here, the authors used a mouse model of HBV and HCV infection that lacked three genes (*Fah*$^{-/-}$, *Rag2*$^{-/-}$ and *Il2rg*$^{-/-}$) that can be engrafted with human hepatocytes — the primary site of HCV and HBV infection. They showed that high levels of human hepatocytes can be transplanted into the livers of these mice, leading to humanization of the liver. Mice with humanized livers propagated HBV and HCV and were responsive to antiviral treatment, and so could be used for antiviral drug testing.

CANCER

Indentification of therapeutic targets for quiescent, chemotherapy-resistant human leukemia stem cells

Saito, Y. *et al. Sci. Transl. Med.* **2**, 17ra9 (2010)

Chemotherapy-resistant leukaemia stem cells are thought to underlie disease relapse in acute myeloid leukaemia (AML). This study identified CD32 and CD25 as cell-surface molecules that were specific to human leukaemia stem cells. In mouse xenotransplantation models, CD32- and CD25-positive cells could initiate AML, and were cell-cycle quiescent and chemotherapy resistant. By contrast, inhibition of CD32 and CD25 did not affect normal haematopoesis, indicating the safety of targeting these molecules. So, CD32 and CD25 could be new targets for novel AML therapies.

GENETIC DISORDERS

Pharmacological correction of a defect in PPAR-γ signaling ameliorates disease severity in *Cftr*-deficient mice

Harmon, G. S. *et al. Nature Med.* **16**, 313–318 (2010)

Harmon and colleagues showed that colonic epithelial cells and lung tissue from *Cftr*-deficient mice — a model of cystic fibrosis — show a defect in peroxisome proliferator-activated receptor-γ (PPARγ) function and reduced amounts of the endogenous PPARγ ligand 15-keto-prostaglandin E2. Treatment of *Cftr*-deficient mice with the synthetic PPARγ agonist rosiglitazone increased bicarbonate secretion, reduced mucus retention and reduced disease severity, indicating that PPARγ agonists might be beneficial in the therapy of cystic fibrosis.

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