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IN BRIEF

DIABETES

Fibroblasts reprogrammed to produce insulin

Researchers from The University of California, San Francisco, USA, have recently reported the efficient conversion of human adult skin cells into functional pancreatic β-like cells. Endodermal progenitor cells were first established from adult human fibroblasts using a non-integrative episomal reprogramming approach. The team then identified conditions that enabled the differentiation of these cells, first into posterior foregut-like progenitors and then into pancreatic endodermal progenitors. *In vitro* maturation of this latter progenitor cell type generated insulin-producing, glucose-responsive pancreatic β-like cells in high numbers. Upon transplantation in streptozotocin-induced diabetic mice, these β-like cells exhibited glucose-stimulated insulin secretion and afforded protection against diabetes mellitus. These findings bring islet regeneration in patients with type 1 diabetes mellitus one step closer.

ORIGINAL ARTICLE Zhu, S. *et al.* Human pancreatic beta-like cells converted from fibroblasts. *Nat. Commun.* **7**, 10080 (2016)

BONE

New spine BMD loci associated with fractures

A novel BMD locus within *PTCH1*, which encodes protein patched homologue 1 (the receptor for three Hedgehog morphogens), is associated with reduced BMD at the spine ($P = 1.0 \times 10^{-11}$) and an increased risk of osteoporotic fractures ($P = 8.5 \times 10^{-4}$, OR = 1.09), according to a new study published in *Nature Communications*. The locus was identified in a genome-wide association study of individuals from Iceland with BMD measurements at the spine ($n = 20{,}132$) and the hip ($n = 20{,}162$) and a follow-up in 10,091 individuals of Northern European (Danish and Australian) and East-Asian (Korean and Hong Kong Chinese) descent. The researchers also identified a new spine BMD locus within *RSPO3* (encoding R-spondin-3, an activator of the Wnt signalling pathway) associated with increased BMD at the spine ($P = 6.6 \times 10^{-10}$) and a decreased risk of osteoporotic fractures ($P = 2.0 \times 10^{-4}$, OR = 0.86).

ORIGINAL ARTICLE Styrkarsdottir, U. *et al.* Sequence variants in the *PTCH1* gene associate with spine bone mineral density and osteoporotic fractures. *Nat. Commun.* **7**, 10129 (2016)

TARGETED THERAPIES

Antidiabetic effects of a mAb targeting FABP4

Newly published data suggest that targeting fatty acid-binding protein 4 (FABP4), an intracellular protein involved in lipid transport in adipocytes and an active adipokine, is a promising approach for the treatment of type 2 diabetes mellitus and fatty liver disease. In leptin-deficient (*ob/ob*) and diet-induced obese (DIO) mouse models of obesity, a monoclonal antibody (mAb) targeting serum FABP4 (designated CA33) increased systemic insulin sensitivity, reduced fasting blood glucose levels, fat mass and liver steatosis, and improved systemic glucose metabolism. Using hyperinsulinaemic–euglycaemic clamp studies, the antidiabetic actions of CA33 were shown to be associated with peripheral glucose utilization and hepatic glucose production. The findings, published in *Science Translational Medicine*, support the further development FABP4-targeted therapies as a potential treatment for metabolic diseases.

ORIGINAL ARTICLE Burak, M. F. *et al.* Development of a therapeutic monoclonal antibody that targets secreted fatty acid-binding protein aP2 to treat type 2 diabetes. *Sci. Transl Med.* **7**, 319ra205 (2015)

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