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IN BRIEF

METABOLISM

Could improved understanding of glucose homeostasis in flies translate to humans?

New research has identified the complete set of genes involved in the regulation of glucose levels in *Drosophila melanogaster*, raising questions about what these findings could mean for diabetes research in humans. The researchers demonstrated that glucose levels in the haemolymph of *D. melanogaster* larvae respond to physiological cues in a similar way to blood glucose levels in mammals. Various RNA interference screens were performed in *D. melanogaster* to reveal the 161 genes involved in glucose homeostasis. Of these genes, 141 are known to have mammalian homologues; 56 of these genes are novel candidates for involvement in hyperglycaemia. One of these candidates (*Ck1alpha*) was investigated in mice. Animals with either homozygous or heterozygous mutations in this gene developed diabetes mellitus, which suggests that findings in *D. melanogaster* could be relevant to mammalian physiology.

Original article Ugrankar, R. *et al. Drosophila* glucome screening identifies Ck1alpha as a regulator of mammalian glucose metabolism. *Nat. Commun.* doi:10.1038/ncomms8102

PITUITARY GLAND

GWAS reveals mutations underlying sporadic pituitary adenoma

A team of researchers from China has used a three-stage genome-wide association study (GWAS) to identify the genetic causes of sporadic pituitary adenoma in a cohort of Han Chinese patients. The initial analysis looked at genome-wide single nucleotide polymorphisms in 771 patients with pituitary adenoma and 2,788 control individuals. Variants that seemed to be associated with pituitary adenoma were then tested in two independent cohorts (totalling 2,542 patients and 3,620 control individuals). Three new susceptibility loci were identified: 10p12.31 (rs2359536); 10q21.1 (rs10763170); and 13q12.13 (rs17083838). The authors claim that their study is the first GWAS of sporadic pituitary adenoma.

Original article Ye, Z. *et al.* Common variants at 10p12.31, 10q21.1 and 13q12.13 are associated with sporadic pituitary adenoma. *Nat. Genet.* doi:10.1038/ng.3322

BONE CANCER

New insights into bone homeostasis and metastases

Osteolytic bone lesions are common in patients with advanced breast cancer; however, the molecular events that lead to this debilitating complication have, until now, been uncertain. A new paper published in *Nature* shows that hypoxia is associated with osteolytic bone lesions in patients with estrogen receptor-negative (ER^-) breast cancer. Furthermore, a global quantitative analysis of the hypoxic secretome demonstrated that lysyl oxidase (LOX) is associated with bone tropism and relapse. In a syngeneic model of ER^- breast cancer, high levels of LOX led to osteolytic bone lesions, whereas inhibition of LOX activity prevented tumour-driven formation of osteolytic lesions. The authors suggest that LOX is a novel regulator of osteoclastogenesis and that high levels of LOX disrupt bone homeostasis and lead to the formation of osteolytic bone lesions.

Original article Cox, T. R. *et al.* The hypoxic secretome induces pre-metastatic bone lesions through lysyl oxidase. *Nature* doi:10.1038/nature14492