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## IN BRIEF

### AUTOIMMUNITY

#### Sex-specific gut microbiome affects T1DM development

Research in non-obese diabetic (NOD) mice has shown that colonization by commensal bacteria raises serum levels of testosterone in NOD males, which prevents the mice from developing type 1 diabetes mellitus. The researchers then transferred gut microbiota from adult male NOD mice to immature female NOD mice. The gut microbiota of the females was altered, resulting in raised serum levels of testosterone, reduced islet inflammation and protection from developing type 1 diabetes mellitus.

**Original article** Markle, J. G. *et al.* Sex differences in the gut microbiome drive hormone-dependent regulation of autoimmunity. *Science* doi:10.1126/science.1233521

### METABOLISM

#### Glucagon control of glucose, energy and lipid metabolism

A team from the University of Cincinnati, USA, has developed a novel glucagon receptor agonist that has enabled them to examine the action of glucagon. In mice, glucagon receptor agonism resulted in hyperglycaemia and reduced levels of body fat and plasma cholesterol. Activation of the glucagon receptor increased hepatocyte expression and circulating levels of fibroblast growth factor 21. These effects were confirmed in healthy human volunteers, in whom injection of glucagon increased plasma levels of fibroblast growth factor 21.

**Original article** Habegger, K. M. *et al.* Fibroblast growth factor 21 mediates specific glucagon actions. *Diabetes* doi:10.2337/db12-1116

### REPRODUCTIVE ENDOCRINOLOGY

#### New model to predict age at menopause

Researchers have refined an existing model that used serum levels of anti-Müllerian hormone to predict the age at which menopause starts. The model was tested in 1,015 women aged 20–50 years who were participating in the Tehran Lipid and Glucose Study. Serum levels of anti-Müllerian hormone were measured when the women entered the study, and their age at menopause was recorded over a 10-year follow-up. Over this time period, 277 women entered menopause. The model accurately predicted age at menopause in 92% of the women.

**Original article** Tehrani, F. R. *et al.* Modeling age at menopause using serum concentration of anti-Müllerian hormone. *J. Clin. Endocrinol. Metab.* doi:10.1210/jc.2012-3176

### THYROID FUNCTION

#### Birth weight does not affect thyroid function

In 2010, 152 monozygotic twins with extremely different birth weights were identified from the Danish Twin Registry. When participants were analysed as singletons, birth weight was inversely associated with serum levels of free T<sub>4</sub> and T<sub>3</sub>, but not with serum TSH levels. When participants were analysed as twin pairs, serum levels of all three markers were similar between twins of low and high birth weight. The authors conclude that birth weight has no effect on the pituitary–thyroid axis in adults.

**Original article** Frost, M. *et al.* Regulation of the pituitary–thyroid axis in adulthood is not related to birth weight: evidence from extremely birth weight–discordant monozygotic Danish twin pairs. *Thyroid* doi:10.1089/thy.2012.0095