**RenaSci: Evaluation of Novel Drugs to Treat Diabesity**

- Diabesity is a popular term for type 2 diabetes associated with obesity
- Typical symptoms of diabesity include abdominal obesity, high blood glucose levels and/or glucose intolerance and dyslipidaemia
- RenaSci employs a variety of assays and animal models to evaluate new drugs to treat diabesity

**Diabetic-Induced Obese (DIO) mice on high fat diet**
- Polygenic model of human obesity
- Visceral adiposity (30-35% fat)
- Insulin resistance
- Mild lipid abnormalities with similar change in HDL/LDL ratio to man
- Good predictive validity for weight-loss in the clinic
- Useful initial screen

**Female DIO rats on cafeteria diet**
- Gold standard model of obesity with excellent predictive validity for clinic

**ob/ob mice**
- Monogenic
- Obesity and insulin resistance

**db/db mice**
- Monogenic
- Obesity and type 2 diabetes

**ZDF and ZSF1 rats**
- Monogenic
- Obesity and type 2 diabetes with renal impairment and cardiovascular complications (ZSF1)

**The GLP-1 Receptor Agonist, Liraglutide, is the Only Drug Registered for the Treatment of Obesity and Type 2 Diabetes**

**Bespoke study design**
- Acute, sub-chronic or chronic drug administration by a variety of routes
- Body weight and food and water intake measurements

**Optional additional studies:**
- Glucose tolerance tests to assess effects of drugs on glycaemic control
- Blood and urine-sampling to determine levels of metabolic parameters (including HDL-C and LDL-C) and other biomarkers
- Blood and tissue sampling for PK
- Metabolic rate and RER
- Gastrointestinal transit
- Blood pressure and heart rate (using a CODA non-invasive blood pressure system)
- Liver TAG, cholesterol, glycogen
- Assays of liver function (AST, ALT, ASP)
- Markers of renal impairment/diabetic nephropathy (including GFR)
- Pancreatic insulin levels
- β-cell mass (out-of-house)
- Preparation of tissues for immunohistochemistry and histopathological assessment
- Ex vivo binding in brain tissue (to confirm mode of action for centrally-acting antiobesity drugs)
- Fat pad measurements
- Body composition analysis (DEXA, FoodScan, chemical analysis)

**Liraglutide Reduces Body Weight and Improves Glucose Tolerance and Insulin Sensitivity in DIO Mice**

**Liraglutide Prevents the Progression of Diabetes in db/db Mice**

**Liraglutide Improves Glycaemic Control and Lipid Profiles in ZDF Rats**

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For more information contact: e: inform@renasci.co.uk  t: +44 (0) 115 912 4260  www.renasci.co.uk