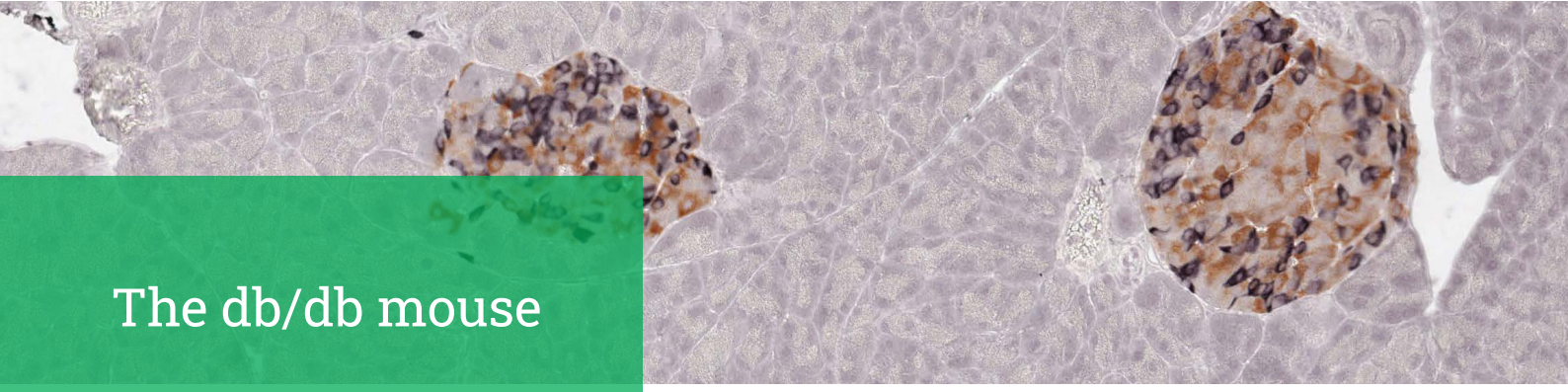


The db/db mouse

Benchmark therapeutic drug effects in a gold-standard mouse model of type 2 diabetes

A model of progressive obesity and type 2 diabetes

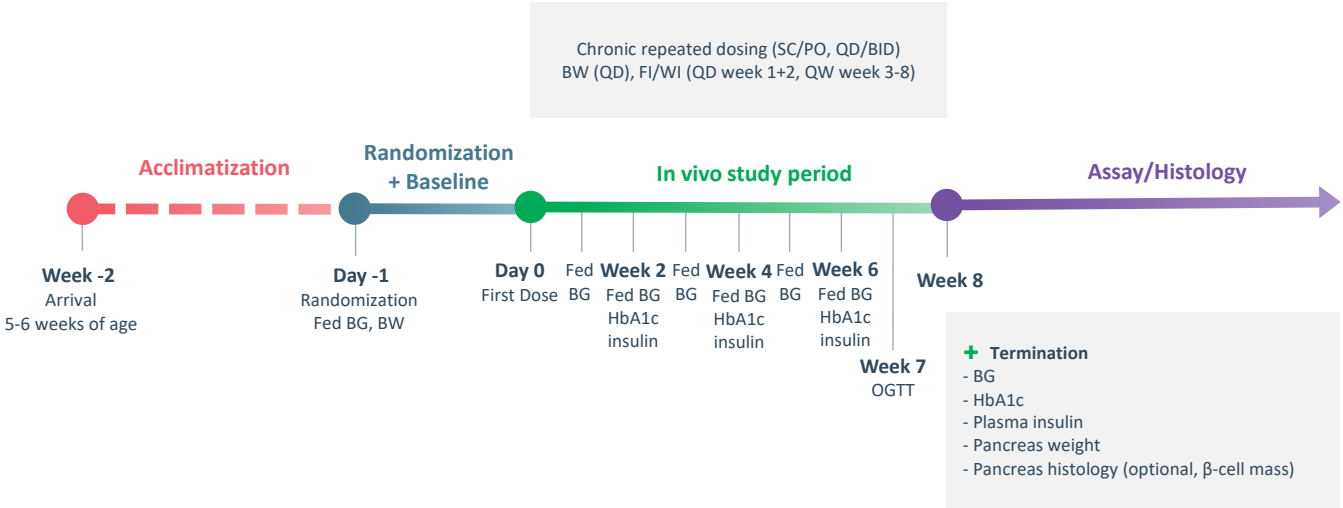
The db/db mouse carries an inactivating mutation in the leptin receptor gene which causes hyperphagia, severe obesity, glucose intolerance and sustained hyperglycemia. The model is widely applied for characterizing metabolic and histological effects of anti-diabetic drugs in various phases of type 2 diabetes.

Key model traits

- Deficient leptin receptor signalling.
- Morbid obesity and impaired glucose tolerance.
- Early phenotype of type 2 diabetes.
- Reliable transition to chronic type 2 diabetes.
- Well-defined progression in islet pathology.
- Treatment efficacy across a wide range of anti-diabetic drug classes.

Diet	Regular chow (Altromin 1324)	Develops sustained hyperglycemia from approximately 8 weeks of age. Male and female db/db mice generally show similar disease progression.
Strain	BKS.Cg-Dock7m+/+LeprdbJ	

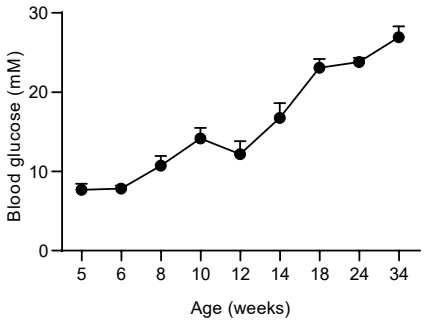
Study outline

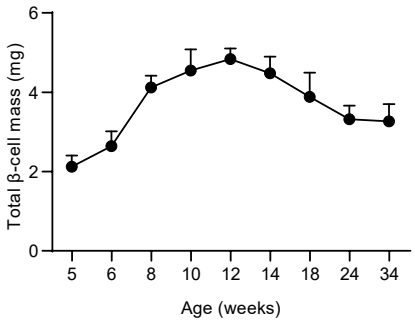


Metabolic, biochemical and histological characteristics

The db/db mouse exhibits overt obesity and progressive type 2 diabetes with compensatory changes in pancreatic β-cell mass. Sustained hyperglycemia is manifest from 8-10 weeks of age.

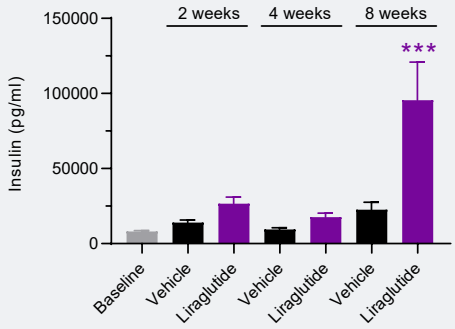
Baseline (10 weeks of age)	db/+ control	db/db mouse
Body weight (g)	23.0 ± 0.4	46.1 ± 0.7
Fasted blood glucose (mM)	6.3 ± 0.3	14.2 ± 1.3
HbA1c (%)	4.0 ± 0.1	4.9 ± 0.1
Plasma insulin (pg/ml)	951 ± 117	8,166 ± 436

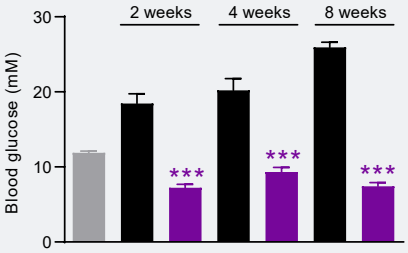


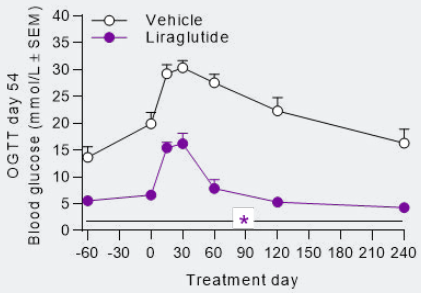


Pharmacological treatment: Glycemic effects

DIO mice develop mild hyperglycemia, hyperinsulinemia and elevated plasma levels of triglycerides and cholesterol. Liraglutide treatment for 4 weeks improves blood biochemistry in DIO mice.

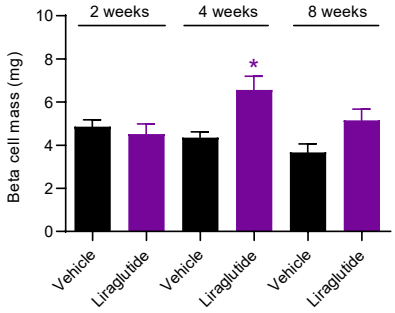


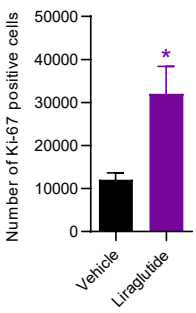


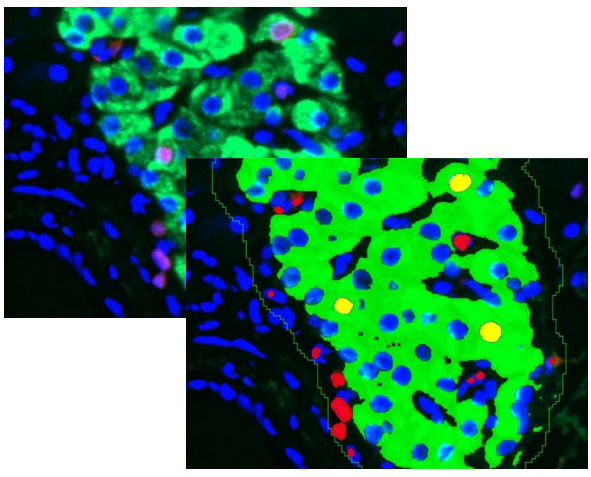


Pharmacological treatment: Stereological analysis of pancreatic β-cell mass

Effects of 2-8 weeks of treatment with the GLP-1 analogue liraglutide on total pancreatic β-cell mass and Ki-67 positive proliferating cells.







Ki67 Insulin DAPI