

3D assessment of beta cell mass

Seeing is believing: 3D imaging of pancreatic islets

Gubra has years of experience with pancreatic markers in preclinical models of diabetes. Analysis of beta cell dynamics in animal models of diabetes is key to understand therapeutic effects of anti-diabetic compounds. Gubra offers light sheet fluorescence microscopy-based 3D visualization and quantitation of pancreatic beta cell mass.

3D imaging of the pancreas

Light-sheet fluorescence microscopy allows for whole-pancreas 3D imaging, registration and quantification of beta cell mass and proliferation.

Unbiased 3D quantitative analysis of beta cell dynamics

Deep learning computational analysis is applied for absolute quantification of pancreatic islet number and volume distribution. Beta cell dynamics can be further addressed by co-staining for markers of cell proliferation (Ki67) or inflammation (CD45).

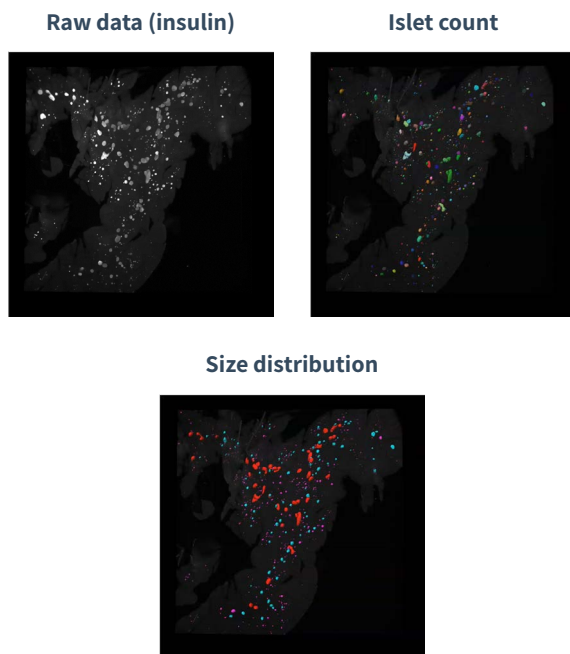
Automated beta cell detection and islet mapping

Automated detection and registration of insulin-positive beta cells provides a 3D distribution map of individual islets for subsequent unbiased quantitative analysis.

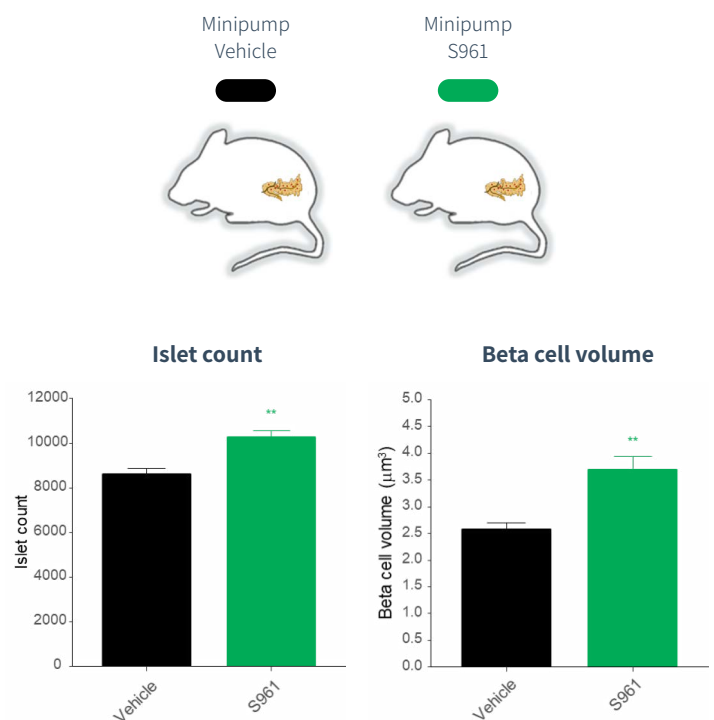
Application to preclinical models of diabetes

Quantitative 3D analysis of beta cell markers is optimal for characterization of drug treatment effects in mouse models of diabetes.

Send us the pancreas samples – our 3D imaging platform is applicable to any relevant mouse model of diabetes.



3D reconstruction of a mouse pancreas. Whole organ immunolabelling using antibodies against insulin staining is used to segment the beta cell volume, enabling for determination of the total number of islets and islet volume distribution.



Mice treated with an insulin receptor antagonist (model of severe insulin resistance) display significantly increased number of insulin positive islets and increased beta cell volume after 2 weeks of treatment.