Table S1. Characteristics of three models of the microcirculation flow pattern

	Methods	Observations and Interpretations	Functional implications
Model 1	- Scanning electron microscopy of corrosion vascular casts - Light microscopy with India ink injections - Histochemical staining of islet cell types - In vivo microscopy using intravital stains - Rat, mouse, rabbit, guinea pig, cow, horse, monkey, and human	- Complete mantle formation - Non-beta-cells to beta-cells (mantle-to-core) flow order - The insulo-acinar portal system - The number - islet size dependent (1-30)	- Non-beta-cells should have an intra-islet regulatory effect on insulin secretion. - In turn, insulin would be secreted from the islet without affecting the secretions of the other cell types.
Model 2	- Scanning electron microscopic analysis of methacrylate corrosion casts of the pancreatic blood vessels - Reconstructions from serial sections of immunostained, India ink-infused rat islets - Intravital photomicroscopy of both in situ and transplanted hamster islets - Isolated perfused pancreases in rat, dog, monkey, and human pancreas	- Mantle with gaps for arteriole penetration into the islets - Beta-cells to non-beta-cells (core-to-mantle) flow order - The insulo-acinar portal system in small islets	- A single continuous circulation through the islet - The beta-cell is the primary regulator of islet hormone secretion. - The secretory products of the mantle cells leave the islet without influencing the beta-cell. - The delta-cell has limited or no function within the islet as a direct beta-cell regulator.
Model 3	- Microsphere studies - In vivo microscopy studies using intravital stains in rat and mouse islets - Immunostaining of islets - Isolated perfused human pancreas studies	- Complete mantle formation - There is no set order of perfusion. - Blood flows to one hemisphere of the islet through the afferent arteriole before perfusing across to the other hemisphere. - Regulated flow by external and internal gates - Flow to and within the islet would stop approximately three times per minute at irregular intervals.	- Cells in one hemisphere of the islet are perfused before cells located in the other hemisphere - Beta-cells in one hemisphere could affect beta-cells located in the other hemisphere. - The beta-cell has an important role in the regulation of both beta- and alpha-cell secretion - The delta-cell has an important inhibitory regulatory role on the secretion of insulin and glucagon.
Nyman et al	- In vivo imaging of MIP-GFP mice with a bolus injection of rhodamine dexran	- All three types of microcirculation were observed. - Model ratio of 1:2:3 with observed n of 12:7:1	- Unknown