## **Supporting Information**

Rodriguez-Diaz et al. 10.1073/pnas.1211659110

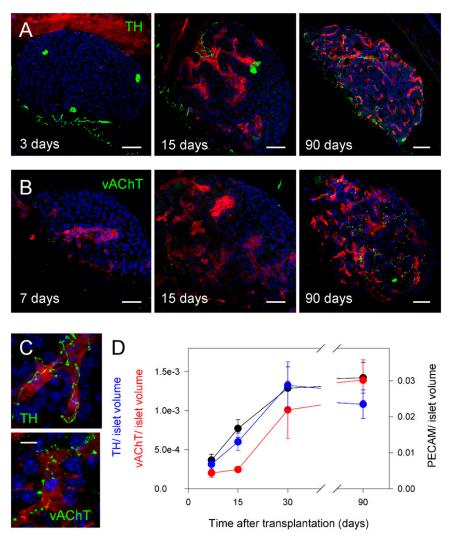


Fig. S1. Time course of reinnervation and revascularization of islets engrafted in the anterior chamber of the mouse eye. (A and B) Z-stacks of confocal images of intraocular islets grafts at different time points after transplantation show new blood vessel formation [platelet endothelial cell adhesion molecule (PECAM); red] and ingrowth of sympathetic axons (A) [tyrosine hydroxylase (TH); green] and parasympathetic axons (B) [vesicular acetylcholine transporter (vAChT); green]. (C) High-magnification Z-stack of confocal images of TH and vAChT axons (green) reinnervating the islet graft along ingrowing blood vessels (PECAM; red). (Scale bars: A and B, 20 μm; C, 5 μm.) (D) Quantification of the time course of islet graft TH (blue symbols), vAChT (red symbols), and PECAM (black symbols) immunostaining at 0, 15, 30, and 90 d after transplantation.

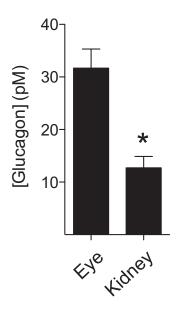


Fig. S2. Glucagon plasma concentrations of mice shown in Fig. 3A (\*P<0.05, Student t test). Islet grafts are reinnervated by sympathetic axons, as shown in Fig. 1A and Fig. S1. As shown recently (1), α-cells in mice are also innervated by parasympathetic cholinergic axons. Glucagon secretion is stimulated by sympathetic and parasympathetic input in mice (2). Although mice treated with streptozotocin retain their endogenous α-cell population, it is likely that the increase in glucagon secretion relative to that in mice with islets grafts under the kidney capsule is a result of activation of these autonomic inputs in the eye during changes in ambient illumination.

- 1. Rodriguez-Diaz R, et al. (2011) Innervation patterns of autonomic axons in the human endocrine pancreas. Cell Metab 14(1):45-54.
- 2. Havel P, et al. (1993) Autonomic control of pancreatic polypeptide and glucagon secretion during neuroglucopenia and hypoglycemia in mice. Am J Physiol 265(1 Pt 2):R246–254.

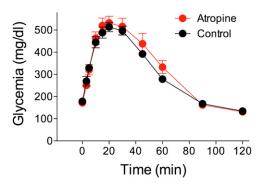


Fig. S3. Glucose excursions of nontransplanted C57BL/6 mice during i.p. glucose tolerance tests was not affected by topical application of atropine (1%, wt/vol) to the right eye (n = 5 mice per group). PBS solution was applied to control mice.

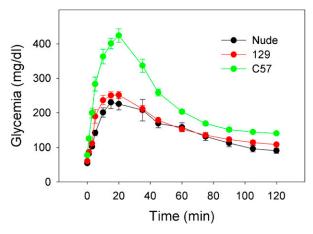


Fig. S4. Glucose excursions of nontransplanted C57BL/6 (C57), 129X1 (129), and nude mice during i.p. glucose tolerance tests (n = 8 mice per group).