

Figure 1. Procedure for human islet transplantation. In this procedure, specialized enzymes are used to isolate islets from the pancreas of a deceased donor. For the average-sized person (70kg) a typical transplant requires about one million islets, equal to two donor organs. Isolated islets are then injected through a catheter into the liver via the portal vein. Adapted from a figure from the Juvenile Diabetes Research Foundation.

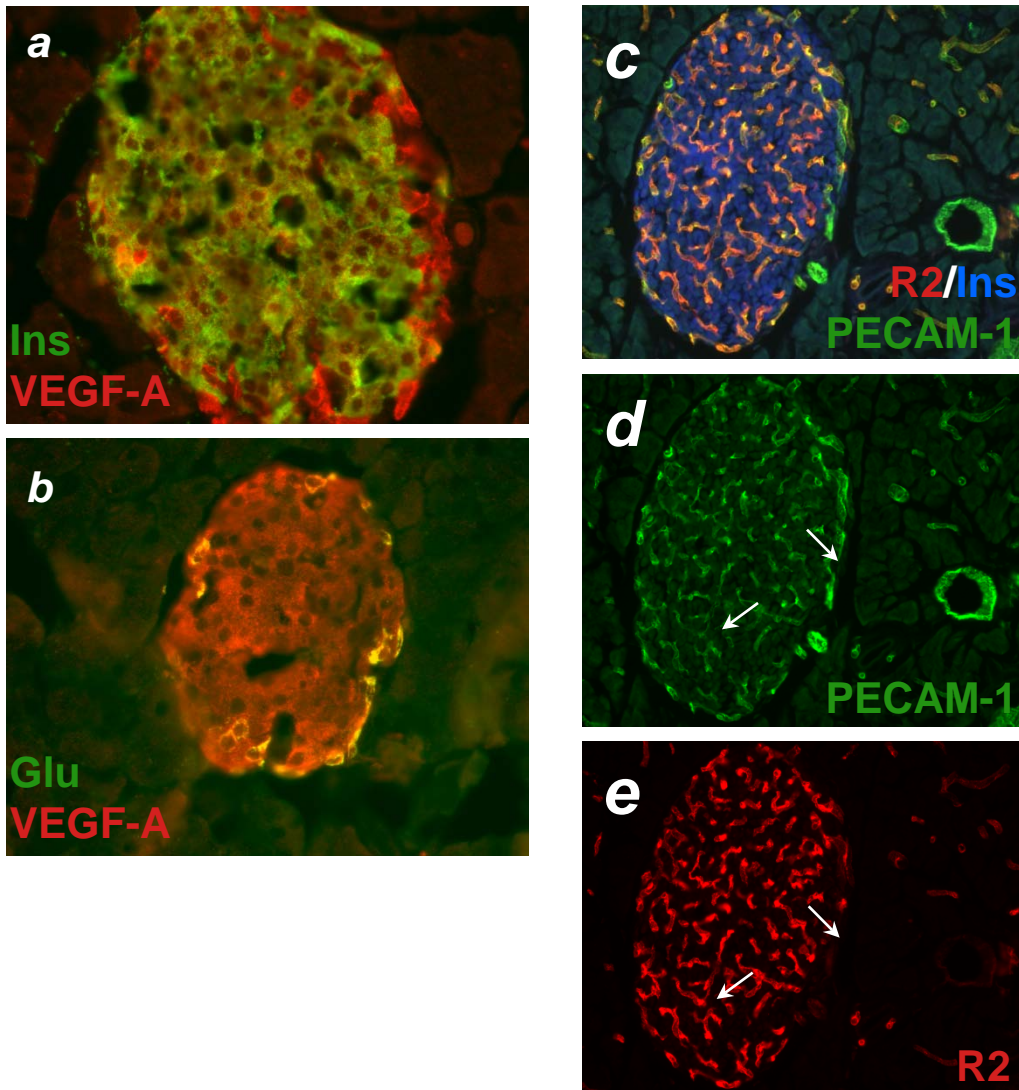


Figure 2. Expression of angiogenic factors and their receptors in adult mouse pancreas. (a) Colocalization of VEGF-A (red) and insulin (Ins; green) in islet β -cells. (b) Colocalization of VEGF-A (red) and glucagon (Glu; green) in islet α -cells. (c-e) Colocalization of VEGFR2 (R2; red) and PECAM-1 (green) in pancreatic vasculature. Arrows point to larger vessels (d and e) where VEGFR2 expression is less. Figure and figure legend adapted from Brissova, 2006.

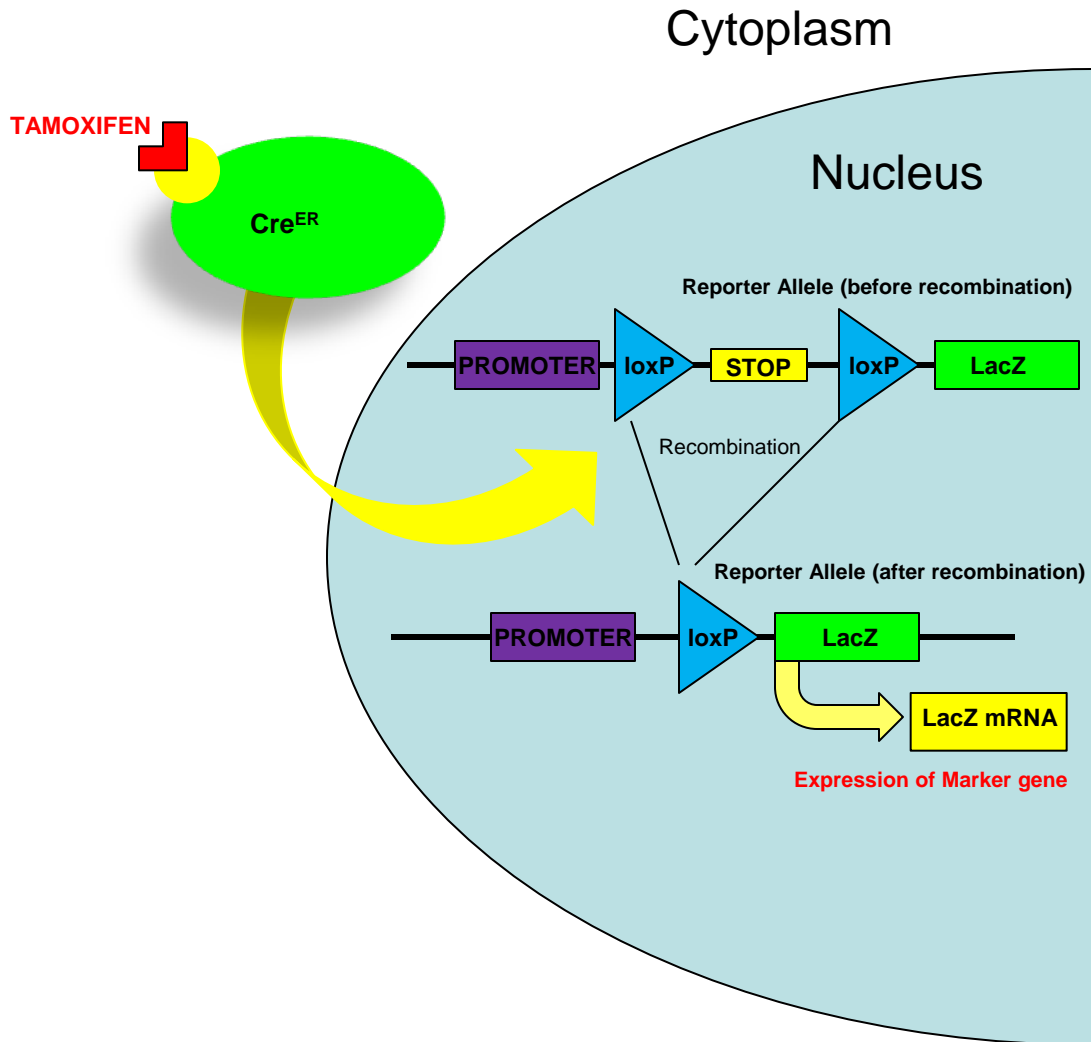


Figure 3. The Cre^{ER}/LoxP system. Cre^{ER} is a tamoxifen-inducible Cre recombinase. In the current studies, expression of Cre^{ER} fusion gene is driven by an islet-specific promoters, RIP or Pdx1^{PB}. When tamoxifen binds to Cre^{ER} protein, Cre^{ER} translocates into the nucleus, and then mediates site-specific recombination.

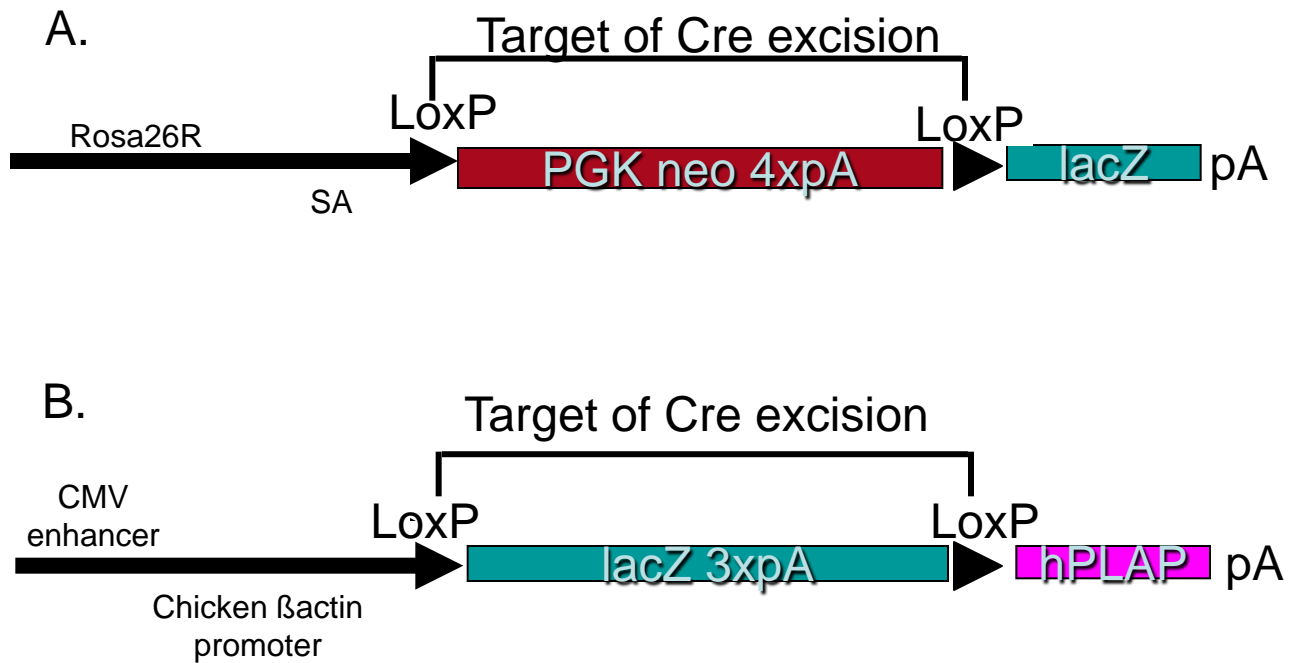


Figure 4. Reporter mice constructs. (A) The Rosa26R (R26R), designed from the original gene trap strain ROSA beta-geo 26 (Soriano, 1999), includes a splice acceptor sequence (SA), a neo expression cassette flanked by loxP sites, a lacZ gene, and a polyadenylation (pA) sequence. When mice homozygous for R26R are crossed with mice expressing Cre, lacZ is expressed in all cells/tissue where Cre is expressed. (B) The Z/AP expression construct is depicted. The pCCAP promoter, comprising the CMV enhancer and the chicken β -actin promoter, drives expression of the reporter genes (Lobe, 1999). The first reporter, lacZ, followed by three copies of the SV40 polyadenylation signals is flanked by loxP sites and is removed by Cre excision. The second reporter, expressed only after Cre excision, is the human placental alkaline phosphatase gene (hPLAP), followed by rabbit β -globin polyadenylation (pA) sequences.