Artificial pancreas

Simply a glucose sensor and insulin pump working together. Made up of a glucose sensor (under the skin), which is attached to a wireless transmitter, which send its signal to the insulin pump. Somewhere along this a computer is present to convert blood sugar into an amount of insulin to pump out.
Can still be quite limiting in terms of movement (with a sensor under the skin etc), but having a computer constantly monitor insulin stop the need for constant injections.

Beta cell replacement therapies

Islet transplants

Islet cells are transplanted into patients. Allo-transplants feature beta cells from deceased patient organs. Infusions of up to half a million islets are given, and in current research 2 infusions have been given to patients. This is done by feeding a catheter into the hepatic portal vein, and forcing islets into the liver.

Pancreatic auto-transplantation is another procedure, in which patient pancreas' is removed (usually due to severe pancreatitis) and functioning islets are purified. They are then infused into the liver as with allo-transplantation. Immunosuppression is usually required for both treatments.
http://www.niddk.nih.gov/health-information/health-topics/Diabetes/pancreatic-islet-transplantation/Pages/index.aspx

Beta cell regeneration

Beta cell regeneration involves trying to produce a functional beta cell mass from cells already in the pancreas-e.g. alpha cells (which secrete glucagon) or exocrine pancreatic cells. They have been shown to still have some phenotypic plasticity and the ability to transdifferentiate between different types. Certain GI hormones, such as gastrin, can induce these states.