

The pancreas in diabetes.

Peter C. Butler

Larry L. Hillblom Islet Research Center, David Geffen School of Medicine,
University of California Los Angeles

The pancreas is composed of the exocrine and endocrine compartment, the former being ~98% of the organ. In individuals with type 1 and type 2 diabetes the exocrine pancreas is decreased in size, has an increased risk of pancreatitis and pancreatic cancer. The islets in type 1 diabetes are largely but not always devoid of beta cells and in type 2 diabetes islets are ~60% deficient in beta cells. In both type 1 and type 2 diabetes there is increased beta cell apoptosis that appears to be ongoing over a long period. It is possible that the chemokines released by processes related to beta cell apoptosis in type 1 and 2 diabetes may drive regeneration programs comparable to those in ulcerative colitis. If so, then it would be predicted that there is a stem niche in the pancreas that may be chronically stimulated in both type 1 and 2 diabetes.

The possible role of such a stem cell niche in the link between diabetes and pancreatic cancer, and the role of drugs used for treatment of type 2 diabetes will be discussed.