

Nature Communications publishes study characterizing four subtypes of insulin-producing beta cells found in the human pancreas - July 14, 2016

*A study published this week in Nature Communications has [identified](#) four subtypes of insulin-producing beta cells (β 1-4) in the human pancreas. The study from a team led by stem cell researcher Dr. Markus Grompe (Oregon Stem Cell Center, Portland, OR) challenges the notion of homogeneity among beta cells - the dominant view until now. Initially identified because of their different gene expression profiles for the *ST8SIA1* and *CD9* genes, each beta cell category is characterized by distinct patterns of basal and glucose-stimulated insulin secretion. Furthermore, individuals with type 2 diabetes (n=8) displayed a significantly different distribution of beta cell subtypes (p=0.028) compared to individuals without the disease (n=17). Specifically, patients with type 2 diabetes presented a higher relative abundance of β 3 and β 4 cells, subtypes which are typically less responsive to glucose. Notably, people free of type 2 diabetes but affected by obesity (n=7 individuals with a BMI>30 kg/m²) did not differ from healthy individuals in their beta cell composition, lending additional support to the [notion](#) that diabetes is specifically related to beta cell dysfunction. We'd be curious to see if these differences in beta cell type distribution are also present in those with type 1 diabetes or prediabetes and if these difference persist throughout the course of type 2 diabetes disease progression. Overall, the discovery of a heterogeneous beta cell population adds greatly to our understanding of pancreatic physiology and information on the distribution of these newly-identified beta cell subtypes could help identify those with early-stage type 2 diabetes or high risk earlier.*

-- by Payal Marathe, Abigail Dove, Helen Gao, and Kelly Close