

Study finds some insulin production in long-term Type 1 diabetes

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Massachusetts General Hospital (MGH) research has found that insulin production may persist for decades after the onset of type 1 diabetes. Beta cell functioning also appears to be preserved in some patients years after apparent loss of pancreatic function. The study results appear in the March issue of *Diabetes Care*.

"Traditionally, it was thought that beta cell function completely ceased in patients with advanced type 1 diabetes. However, data from this study and others suggest that the pancreas continues to function at some level even decades after the onset of type 1 diabetes," says Denise Faustman, MD, PhD, director of the MGH [Immunobiology](#) Laboratory, who led the study.

In the current study, blood samples from 182 individuals with type 1 diabetes were evaluated using an ultrasensitive assay for C-peptide, a marker of [insulin secretion](#), to test for residual beta cell function. The study revealed that C-peptide production can persist for decades after disease onset and remains functionally responsive to [blood sugar levels](#). Although C-peptide levels were lower among those who had longer duration of diabetes, the decrease over time was gradual and not the abrupt decline predicted by the conventional picture of type 1 diabetes. Even among patients with disease duration of 31 to 40 years, 10 percent still produced C-peptide. In addition, beta cell functioning remained intact at very low C-peptide levels.

The novel assay – which is 22 times more sensitive than the current

standard – also was able to detect C-peptide in 34 of 54 weekly [blood samples](#) from four participants in Faustman's trial of the generic drug BCG (bacillus Calmette-Guerin) to treat advanced [type 1 diabetes](#), while the standard assay was unable to detect C-peptide in any of those samples. The researchers conclude that this ultrasensitive assay offers a novel approach to identify patients, even with advanced disease, who may benefit from treatments to retain or enhance beta cell function. They further note that patients with low C-peptide levels or advanced disease may benefit from new interventions to preserve or enhance beta cell function and prevent complications.

"Our results contribute to a growing body of evidence suggesting there might be a longer window for therapeutic intervention in this disease and also may help explain the transient restoration of [insulin production](#) we saw in patients who received BCG in our Phase I clinical trial," says Faustman, an associate professor of Medicine at Harvard Medical School.

Provided by Massachusetts General Hospital

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