

### Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/diabetes-discourse/investigating-type-1-diabetes-and-its-chronic-impacts/12232/>

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### Investigating Type 1 Diabetes & Its Chronic Impacts

Dr. Anderson:

Welcome to *Diabetes Discourse* on ReachMD. I'm Dr. John Anderson, and I recently had the chance to speak with Dr. Matthias Hebrok, a Professor in Diabetes Research and Director of the Diabetes Center at the University of California, San Francisco. Here's Dr. Hebrok providing some insight type 1 diabetes and its chronic impacts.

Dr. Hebrok:

In a body of a patient who has his or her full set of beta cells, these are cells that are sitting within an organ that we call the pancreas in a mini organ in the pancreas that we call the Islet of Langerhans. These cells release a hormone, and this hormone be called "insulin". So, what insulin does is it regulates the glucose levels that we have in our bodies and glucose is just a fancy term for sugars. So, if we go and have some food that has carbohydrates or glucose or sugar in it, then the insulin-producing beta cells in our islets, they spring into action, they release insulin, insulin goes through our body and leads to the uptake of these sugars from the blood into our organs. What happens in a patient who has type 1 diabetes, they are born with the same number or a similar number of beta cells that other people have, but unfortunately, their immune system, for whatever reason that we don't fully understand yet, seems to recognize these beta cells as something that does not belong to our own body and so these beta cells, over time are being destroyed, they are eliminated by our own immune system, we call this an auto-immune disease and the consequence of that is that these cells that's in the patient who has the full set of beta cells, so rapidly responds to the increase in glucose levels. Those cells are gone which means the hormone that's produced by these cells, the insulin, regulates the glucose levels is also missing. And as a consequence, the glucose levels can spike to very high levels in patients who have type 1 diabetes, if they are not able to control this by injecting themselves with insulin. So, there are some number of complications that we know of. We do know that the levels of glucose that exist in the body, they essentially cause the dysfunction of organs over time, particularly in the vascular system, the microvascular system, as well as in the macrovascular system. And the microvascular system, for example, have or can have, unfortunately, consequences like blindness, essentially in the retina, the cells don't function very well, anymore, and therefore all retina cells do not function anymore. Or we can have problems with the kidney, kidney complications, or you can have, strokes or essentially changes in our hearts that lead to long-term complications there, as well. So, it's a plethora of different complications that would develop over time.

Dr. Anderson:

That was Dr. Matthias Hebrok from the University of California talking about his recent research on type 1 diabetes and insulin-producing stem cells. For ReachMD, I'm Dr. John Anderson. To hear my full conversation with Dr. Hebrok or to find other episodes in this series, visit [ReachMD.com/DiabetesDiscourse](https://ReachMD.com/DiabetesDiscourse), where you can Be Part of the Knowledge. Thanks for listening!