

Future of Personal Health

Immune System Poses Greatest Threat to Diabetes Cure

When it comes to uncovering a cure for Type 1 diabetes, the immune system poses the biggest obstacle.



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For those with Type 1 diabetes who meet strict selection criteria, islet transplantation has been a game changer. Not only has the procedure eliminated severe hypoglycemia, but many patients have been able to discontinue insulin injections altogether, some for more than a decade.

However, several challenges remain before this therapy can be offered to millions living with this disease, chief among them is the need for life-long immunosuppression. These harsh drugs cause unwanted side effects and, while effective at preventing the body from rejecting the transplant, do not address the underlying disease process that triggers the attack on the insulin-producing cells.



“The widespread application of islet transplantation for Type 1 diabetes will be a limited approach we can offer until there are less toxic immunosuppressive regimens, more robust ways of inducing immune tolerance to the transplanted islets, and, ultimately, the development of strategies to block autoimmunity,” explains Camillo Ricordi, M.D., director of the Diabetes Research Institute (DRI) at the University of Miami Miller School of Medicine. “If we can ensure that new islets will not be destroyed by autoimmune disease, then we can even think about regenerating insulin-producing cells from the patient’s own tissues.”

Using safer methods

Scientists have learned a great deal about the immune system thanks to decades of experience in clinical islet transplantation and other diabetes research trials. Now, they are developing novel approaches that are designed to be safer and more effective in tackling the immune system head-on.

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The idea behind these new immunotherapies is to use naturally occurring molecules and other agents to correct autoimmunity and halt the attack on the insulin-producing cells. Some of the most innovative strategies aim to better regulate the immune system and target the multiple immune pathways that are implicated in T1D.

Looking ahead

This area of research has been under intense investigation at the Diabetes Research Institute, where many promising initiatives are ready to be tested in patients. Recently, DRI scientists have received approval from the Food and Drug Administration (FDA) to proceed with several new clinical trials, while other studies are pending approval and funding.

“It is an exciting time in diabetes research because we will have five clinical trials progressing in parallel at the DRI, which is unprecedented in our history,” said Dr. Ricordi. “We are directing our new clinical research efforts towards the challenge of immune tolerance, reversal of autoimmunity and islet regeneration. We’ve built a network of like-minded scientists committed to eradicating T1D; we’re focused more than ever on linking all these centers with us as we hone in on the immune system as a central player on that stage.”

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