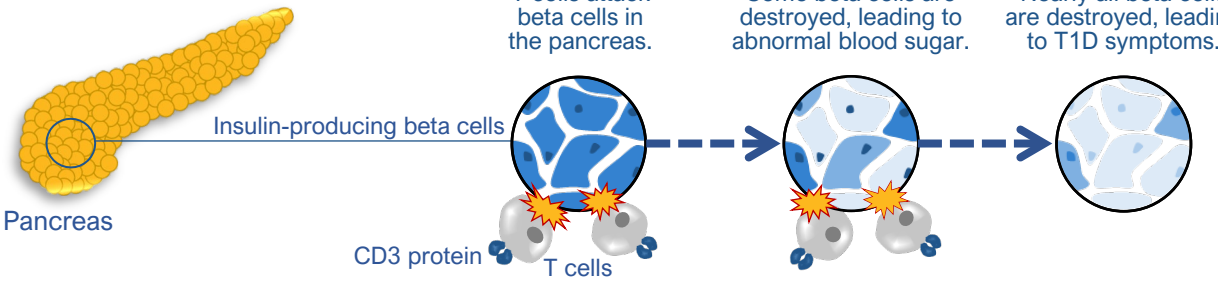
NIAID RESEARCH JOURNEYS: new medication to delay T1 diabetes

Type 1 Diabetes (T1D) is a life-threatening condition that occurs when the immune system's T cells destroy insulin-producing beta cells in the pancreas.

To survive, people with T1D must take insulin for the rest of their lives. Insulin is used to control blood sugar levels and reduce the risk of severe complications.

STAGES OF T1D



STAGE 1
T cells attack beta cells in the pancreas.

STAGE 2
Some beta cells are destroyed, leading to abnormal blood sugar.

STAGE 3
Nearly all beta cells are destroyed, leading to T1D symptoms.

JOURNEY TO T1D TREATMENT

*Since the 1970s discovery that the immune system causes T1D, scientists have worked to **develop medications that prevent the immune attack**.*

1970s
NIH-funded and private sector scientists discovered the **antibody OKT3 binds the CD3 protein on T cells.**

1980s
NIH-funded investigators showed that **mice treated with an OKT3-like antibody prevented T1D.** However, OKT3 caused unwanted side effects in humans.

1990s
Researchers discovered **how OKT3 caused unwanted side effects** and **designed a safer antibody**.

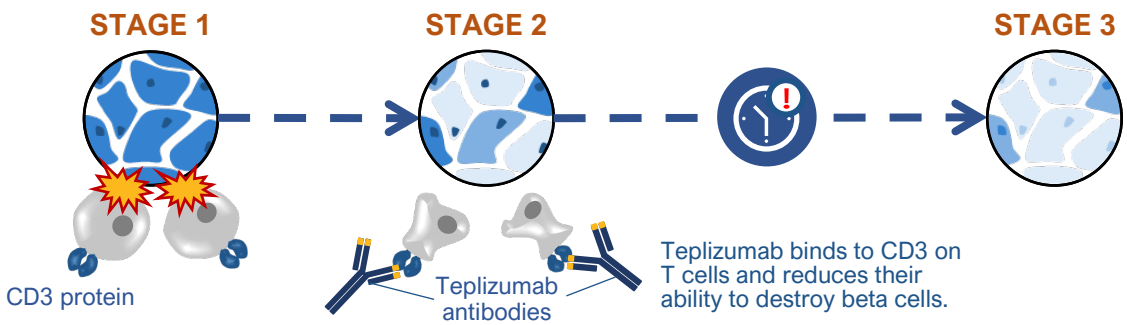
2000s
NIH-funded clinical trials evaluated the **modified, safer antibody, which was named teplizumab.**

2010s
NIH-funded and industry **clinical trials evaluated the safety and efficacy of teplizumab** in children in Stage 2 T1D.

2020s
FDA approved teplizumab in November 2022 to delay progression of T1D from Stage 2 to Stage 3.

Decades of NIH investment in basic research and clinical trials through the **NIAID Immune Tolerance Network** and the **NIDDK T1D TrialNet,** in addition to industry partnerships, led to the approval of teplizumab.

HOW TEPLIZUMAB WORKS



Teplizumab is the **first drug approved for delaying T1D** onset in at-risk patients. This delay reduces the potential for severe long-term complications, thereby improving quality of life of these patients.

National Institute of Allergy and Infectious Diseases

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