Juvenile Diabetes Cure Alliance
The Voice of the Donor For a Cure

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A Practical Cure Perspective on Doug Melton's Reserach

Dr. Douglas Melton, co-director of the Harvard Stem Cell Institute, and his colleagues published a paper in the October 9th issue of Cell detailing their recent generation of insulin-producing beta cells from stem cells. The news has attracted a fair bit of attention within the T1D community and national media. Below we share some background about the research and evaluate the findings from a Practical Cure perspective.

Finding Summary: Fully Functioning Beta Cells

The study results indicate that Melton's lab is able to produce insulin-producing beta cells from a human embryonic stem cell line. Highlights:

- Previously scientists have used stem cells to derive beta cells that could produce insulin but couldn't adequately respond to changing blood glucose levels.
- Unlike previous stem-cell-derived beta cells, these new ones respond to changes in glucose and automatically produce proper amounts of insulin. They are 'fully functioning'.
- In theory, this cell line could be replicated indefinitely to yield a sustainable beta cell supply for future transplantation therapy.

Hurdles: Protection and Human Trials

This is good news but there is still a long way to go. Melton's research must overcome two hurdles before it can be a Practical Cure:

Add protection: Melton's research addresses beta cell supply only. It does not provide a solution for keeping the cells alive once they are transplanted into the body. It could conceivably be combined with other islet cell transplantation research, which is also still in development.

Get into human trials: The beta cells from this stem cell line have not yet been tested in humans, and there is not a public timetable to clinical trials. Only once we have test results from human clinical trials will we know how effective these stem-cell-derived beta cells will turn out to be.

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