JDRF IMPROVING LIVES. CURING TYPE 1 DIABETES.

Informational Webinar:

Development of Islet-Targeted Drug Delivery Strategies in T1D

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Agenda

- Overview of JDRF and JDRF's Research Priorities
- Overview of the RFA
- Application Process Overview
- Questions

JDRF's Purpose

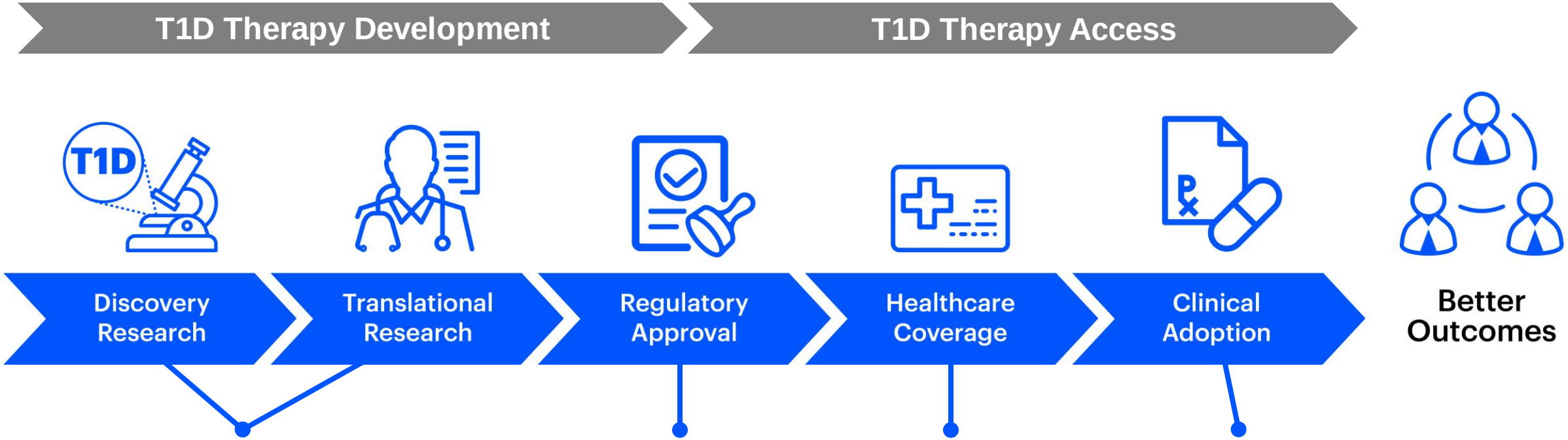
Our Vision:

A world without T1D

Our Mission:

Improving lives today and tomorrow by accelerating life-changing breakthroughs to cure, prevent and treat T1D and its complications.

JDRF Affects Every Step in the Pipeline



- Fund Research
- Advocate for Government Funding of Research
- Invest Alongside For-Profit Funders in T1D Products
- Advance Clinical Trials

- Improve Prospects for Regulatory Approval

- Increase Coverage, Affordability, and Choice

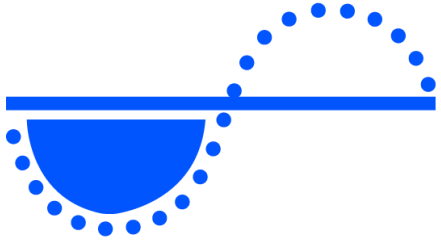
- Support Continuing Healthcare Provider Education
- Education Community

JDRF Research Priorities

Global Universal Screening

Disease Modifying Therapies

Cell Therapies



Improving Lives

Training of Researchers and Clinicians

Disease Modifying Therapies Strategy

Turn off the autoimmune attack against the insulin-producing beta cells

- Therapies that disable the immune attack on beta cells
- Therapies that enhance regulatory immune features that protect beta cells
- Anti-inflammatory or immune deviation therapies to promote beta cell health

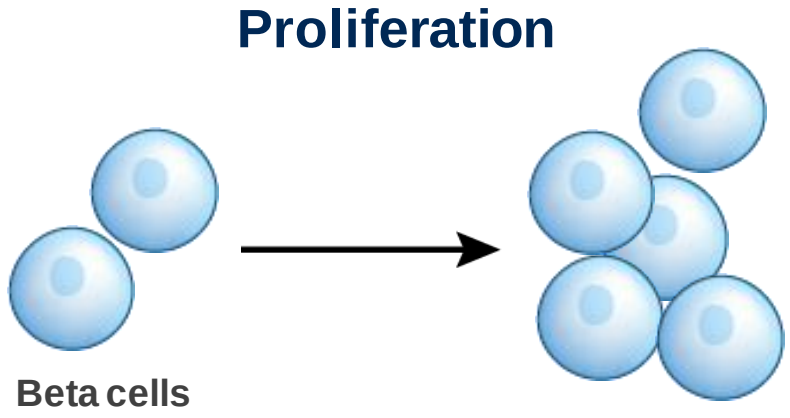
Create and sustain beta cells

- Therapies that stimulate the growth of beta cells
- Therapies that derepress the function of beta cells

Current Strategies for Creating and Sustaining Beta Cells

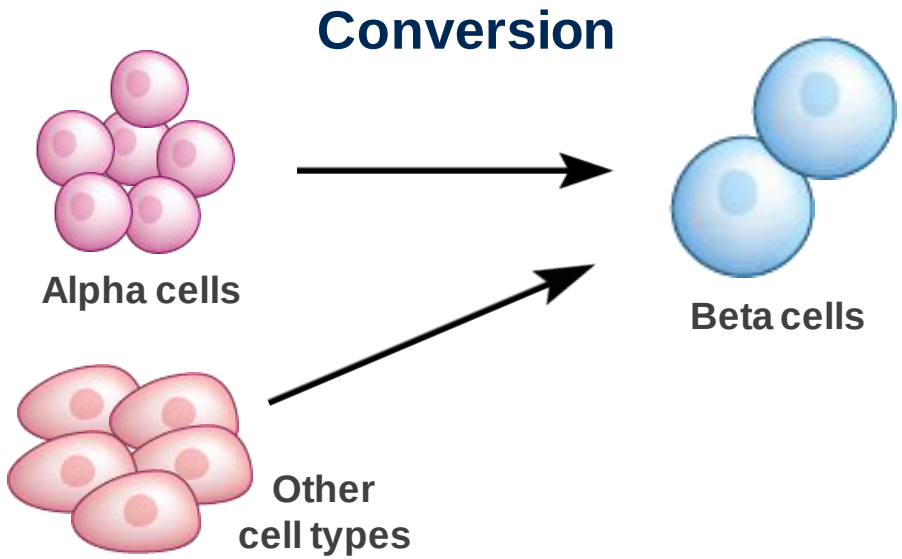
Proliferate Beta Cells

- Functional beta cell mass is lost during T1D because of cell stress and immune cell killing
- We now know how to make human beta cells proliferate in vivo, but we are limited in our ability to convey organ specificity



Convert Other Cells into Beta Cells

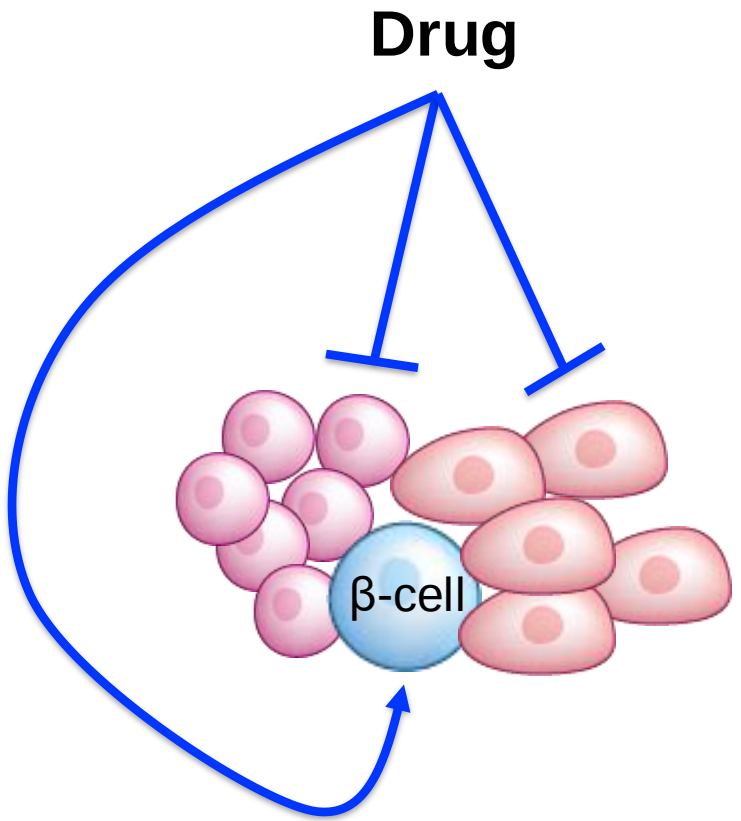
- Replace endogenous insulin production by converting other cell types into insulin secreting beta-like cells.



The Need for Targeted Drug Delivery Systems (TTDs)

- **Proliferating cells in the wrong parts of the body could create major safety concerns**
- **We will need highly controlled delivery methods to ensure the safety of these approaches**

- A Targeted Drug Delivery system is designed so that the drug is selectively delivered ***only to its site of action***.
- The promise of TTDs is that they maximize the safety profile of the drug and improve overall treatment efficiency.



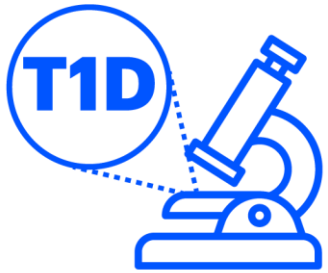
The Need for Targeted Drug Delivery Systems (TTDs)

Existing Challenges

- **There are currently very few beta cell specific surface receptors or other surface markers that have been characterized and validated for drug delivery.**

- **The reagents necessary to implement targeted drug delivery strategies in T1D are limited in quantity, quality, and degree of validation.**

Current Funding Opportunity & Goals of the RFA



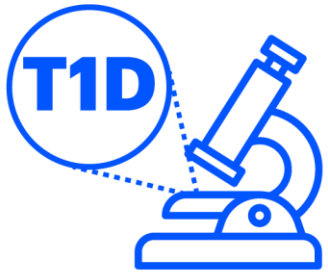
Development of Islet-Targeted Drug Delivery Strategies in T1D

Develop reagents/strategies to deliver drugs/biologics/genes specifically to the human beta cell (or other major pancreatic cell types) promote their survival, induce proliferation, or stimulate hormone-type reprogramming.

Catalyze the identification of novel surface receptors and/or other surface molecules for human islet targeting and development of reagents that can deliver payloads specifically to human beta, alpha or other islet endocrine cell types.

Drive the creation and validation of reagents that convey islet cell type specificity and enable the development of islet cell specific targeted drug delivery systems.

Examples of Relevant Projects



Development of Islet-Targeted Drug Delivery Strategies in T1D

- **Identification of novel surface receptors and/or other surface molecules for human islet targeting and development of reagents for them**
- **Demonstration of proof of concept of targeted drug delivery in human islets with ex vivo and in vivo models**
- **Validate existing transporters in beta cells or other islet cell types for targeted delivery of therapies to human beta, alpha or other islet endocrine types; demonstrate the selectivity of the transporter to islet cells over other tissues or cells**

Out of Scope

Passive drug targeting that relies on the accumulation of a drug around certain sites in the body and which relies on distribution by blood circulation.

Novel therapeutic payload development (such as chemical campaigns to optimize hit or lead molecules to drug target pathways).

Other Considerations

- The proposed work should address the JDRF strategy of targeted stimulation of beta cell growth or reversing repressed beta cell function.
- Demonstrated experience in quantitative proteomics, human beta cell biology, and targeting reagent generation are desired
- Clear rationale (based upon the preliminary data) should be provided for exploration of the target or drug delivery vehicle in T1D
- A concise and realistic assessment of a development path for the proposed work to translate into a therapeutic intervention should be included

The approach and criteria proposed to validate targets in an accelerated timeframe will be specifically assessed.

Investigators and laboratories from other fields, and researchers that are not currently working in T1D are strongly encouraged to apply.

Applicant Eligibility

Investigators, pre-formed teams, organizations, and companies with demonstrated expertise to carry out the proposed research

JDRF welcomes applications from all qualified individuals and encourages applications from members of groups underrepresented in the sciences.

Applicants must hold an M.D., D.M.D., D.V.M., Ph.D., or equivalent and have a faculty position or equivalent at a college, university, medical school, or other research facility.

Domestic and foreign non-profit organizations, public and private, such as universities, colleges, hospitals, laboratories, industry, units of state and local governments, and eligible agencies of the federal government

No citizen requirements for this program.

New to T1D?

Introduction to T1D experts for potential collaborations during full-proposal phase of application.

Guidance on the available resources for human islet cells and tissue (NPOD, HPAP, iPSC-derived beta cells).

Guidance on the use of common T1D-specific animal models (NOD mice, BB rats, streptozotocin-mediated beta cell loss, BDC2.5 Transgenic models, humanize mouse models, etc).

Collaborative discussion on project design, development of specific aims, and research strategy.

Award Mechanisms

Strategic Research Agreement (SRA)

Industry Discovery & Development Partnership (IDDP)

https://grantcenter.jdrf.org/industry-discovery-development-partnerships/

Potential IDDP partners must reach out to JDRF Scientific Staff prior to submitting an LOI.

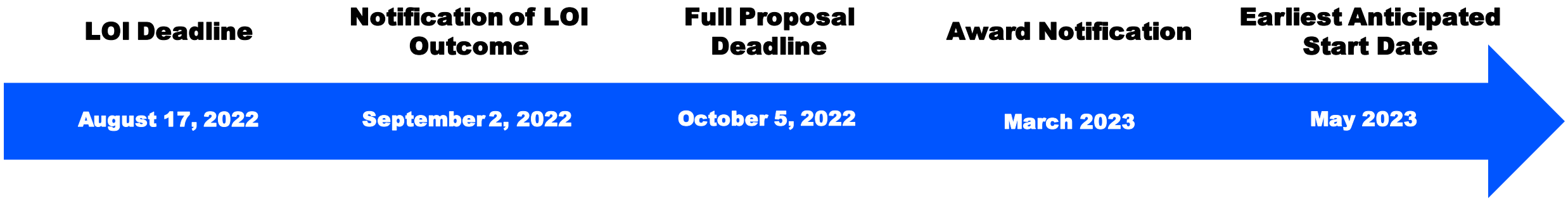
This Award:

Projects should not exceed $900,000.00 USD, including 10% indirect costs (SRA Only), total for up to three years.

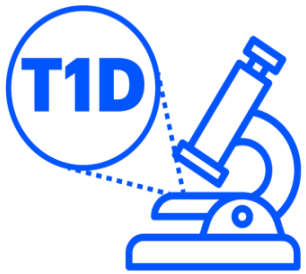
The level of funding will vary depending on the scope and overall objectives of the proposal.

If project costs exceed $900,000.00, you *must* discuss with JDRF scientists prior to submitting an LOI.

Submission/Award Timeline



Tips for Success



Development of Islet-Targeted Drug Delivery Strategies in T1D

1) Familiarize yourself with the T1D literature

2) No need to spend ½ page of 2-page LOI describing T1D

3) Describe the previous work performed in your laboratory on the proposed target ID/reagent development strategy and how this will translate to:
   A. Accelerated discovery or preclinical research in T1D
   B. A novel approach that may represent a breakthrough in T1D research

4) Design a research plan with clear criteria for validating the target or delivery system in T1D

5) If possible, describe how your research plan will move the assessment of the target along the research pipeline (Validation to Proof of Principle, Preclinical Research in animal model to verification in human tissue or a humanized model).

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THANK YOU!

Any Questions?

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