



Moving Forward: T1 Diabetes Research Then, Now and Beyond

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Impact of Research

- For 100 Years all we had to treat T1 Diabetes was insulin
- Now we have the 1st approved therapy to delay or stop the progression of T1
- What happened in-between? What did research get us?

Insulin - Then

Insulin from Beef and Pork was all that was available for the first 60 years



Insulin - Now

Human Insulin



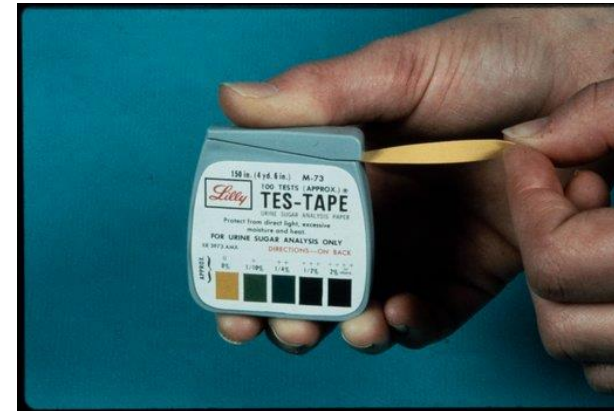
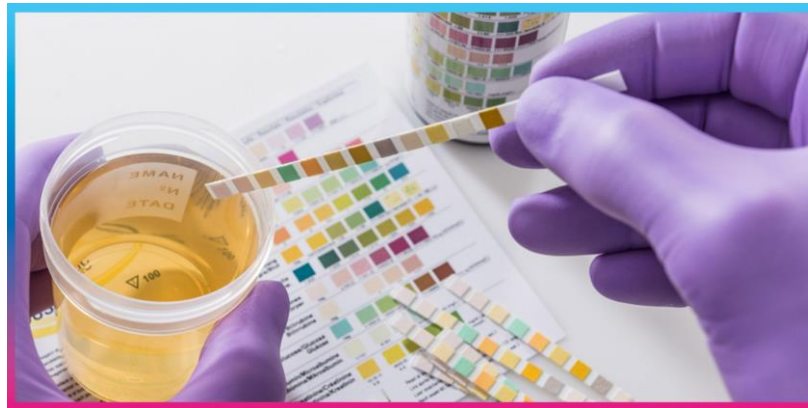
Glucose Testing - Then

Urine Glucose Testing



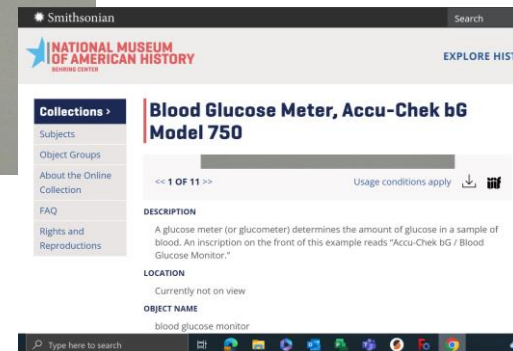
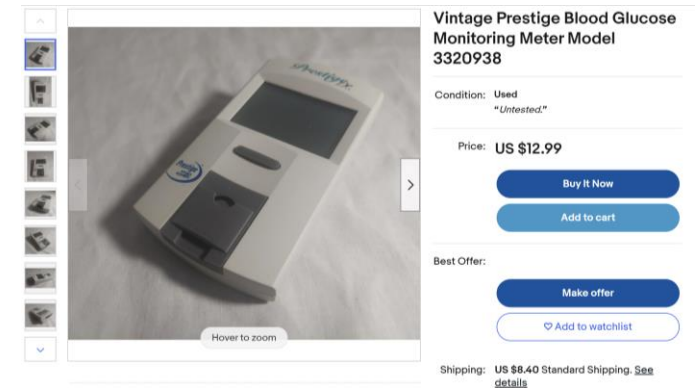
Glucose Testing - Then

Urine - Glucose Testing



Glucose Testing - Then

1st Blood Glucose Testing



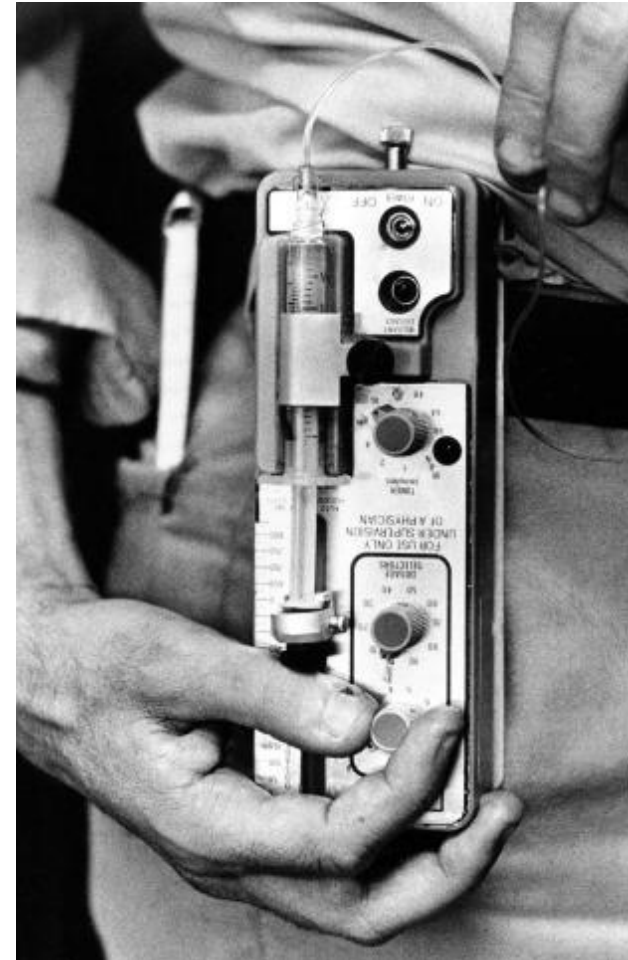
Glucose Testing - Now

Glucose Testing



Insulin Pumps - Then

Pumps



Insulin Pumps - Now

Pumps

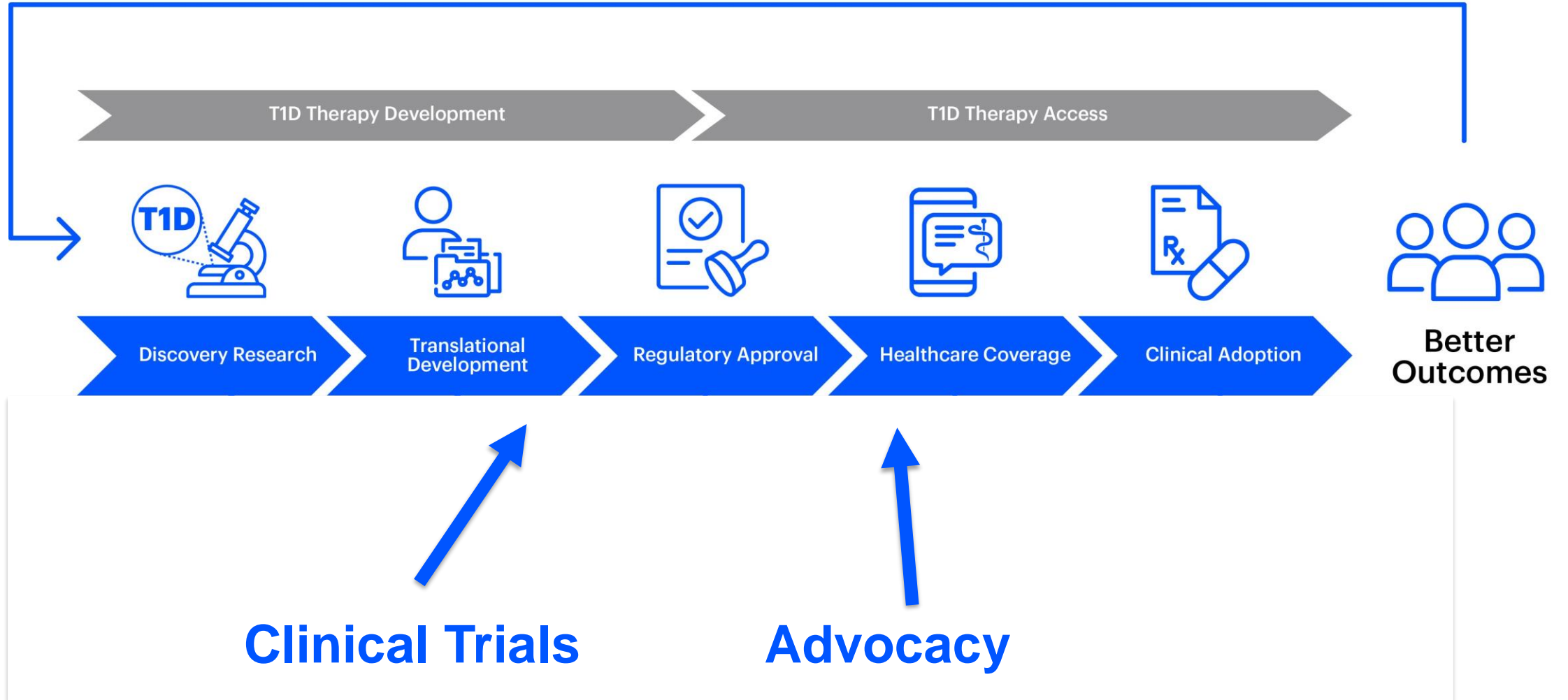


Impact of Research

- All of these life improving devices and therapies were made possible by research and the support of participants in clinical trials

Getting Therapies to the T1D Community

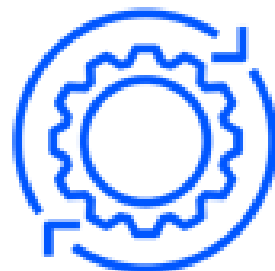
Cycle of Next Generation T1D Therapies



JDRF Research Priorities



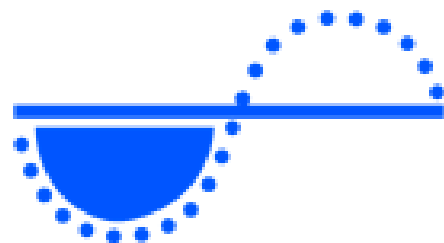
**Global Universal
Screening**



**Disease Modifying
Therapies**



Cell Therapies



Improving Lives



**Training of
Researchers and Clinicians**

Screening

What Is Screening?

- T1D is an autoimmune disease
- This means that the body makes antibodies against itself
- In T1D, 5 islet autoantibodies (AABs) have been identified
- The presence or absence of those AABs helps doctors and researchers estimate a person's risk of developing T1D in the future

Why Screen?

- Help prevent diabetic ketoacidosis (DKA) at diagnosis
- Intervene early to delay a clinical diagnosis of T1D and the need for insulin
- Identify people who may benefit from early-intervention clinical trials
- Give individuals and families time to prepare

How to Screen?

- Screening involves a simple blood test
- There are several different options for screening, including:
 - TrialNet
 - Autoimmunity Screening for Kids (ASK)
 - Enable Biosciences
 - Commercial Labs

T1D Risk Screening Available TODAY until 1pm!

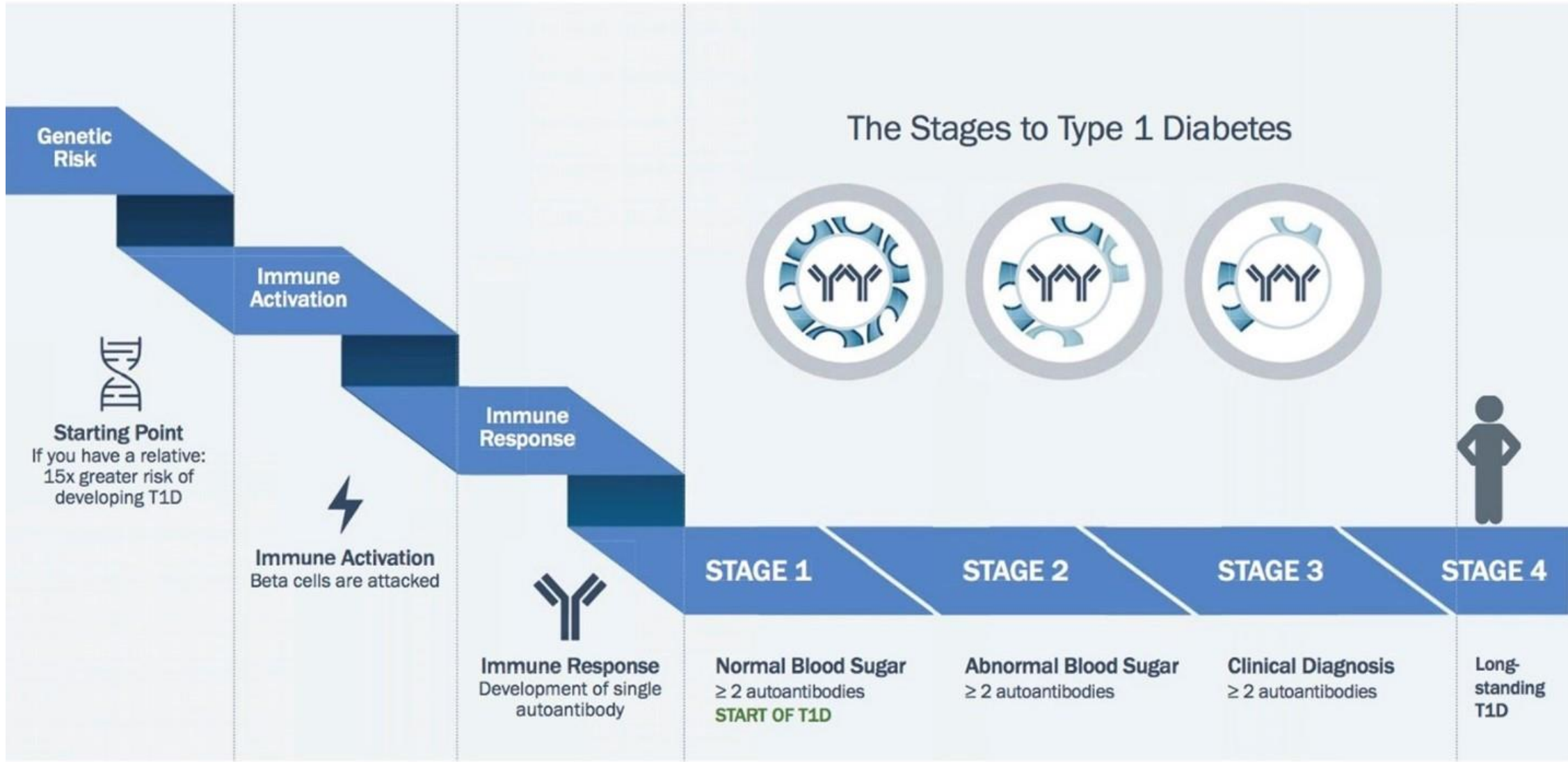
Visit the TrialNet Table

Who can be screened:

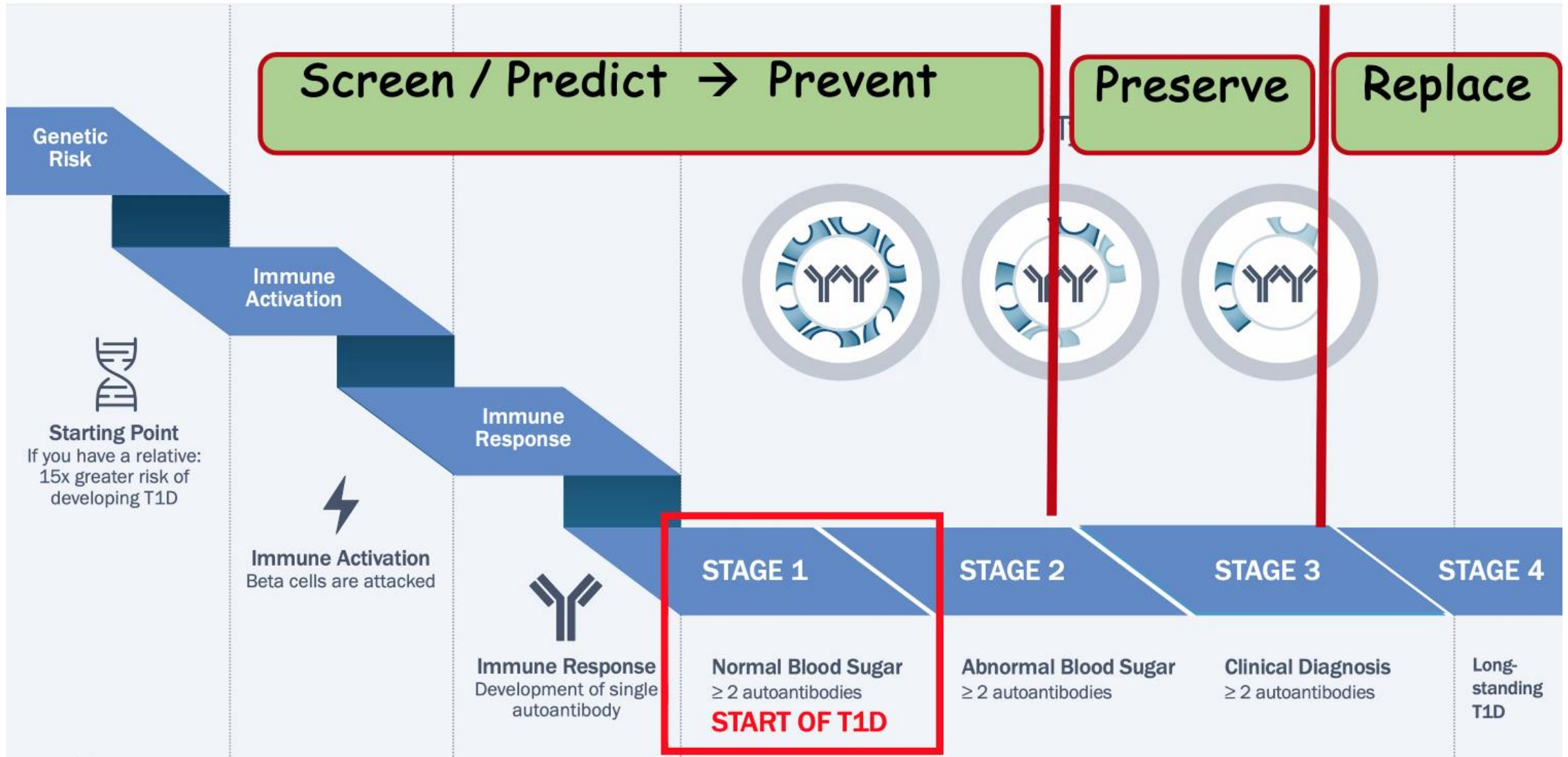
- Anyone age 2.5 through 45 years with a sibling, child or parent with T1D.
- Anyone age 2.5 through 20 years with a cousin, uncle, aunt, niece, nephew, grandparent or half-sibling with T1D.



T1D Disease Progression



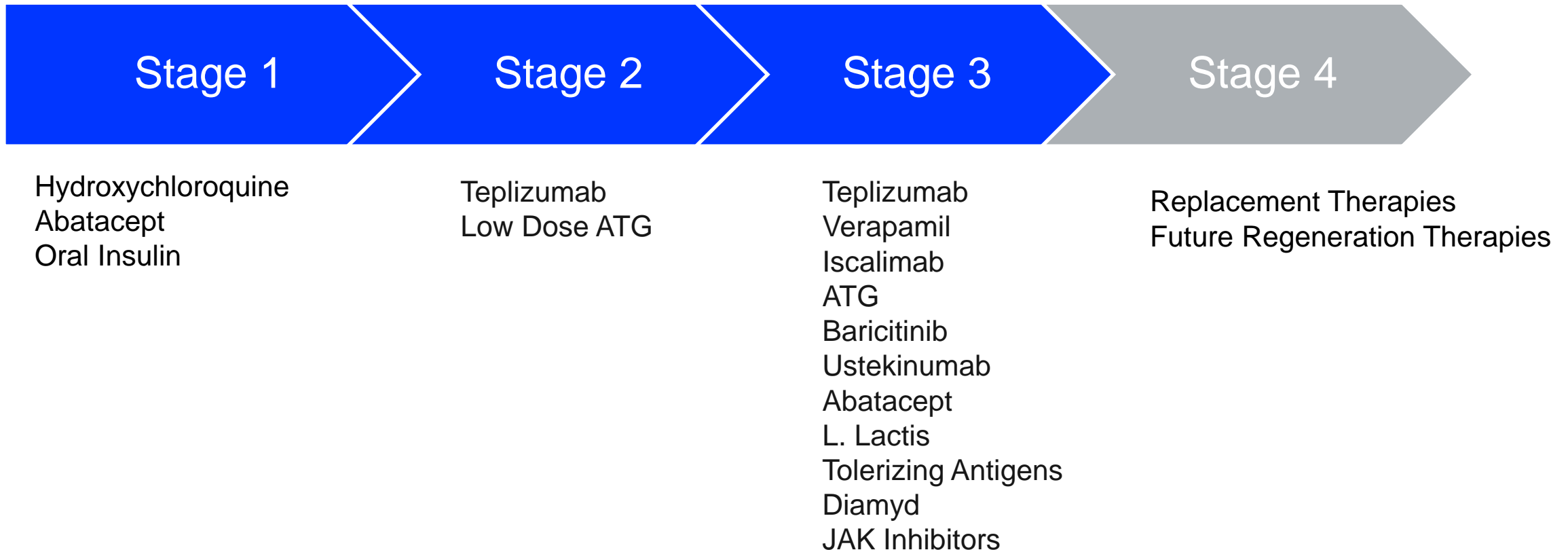
T1D Disease Progression



Disease-Modifying Therapies

Multiple Disease Modifying Therapies Currently in Clinical Trials

It's an Unprecedented Exciting Time!



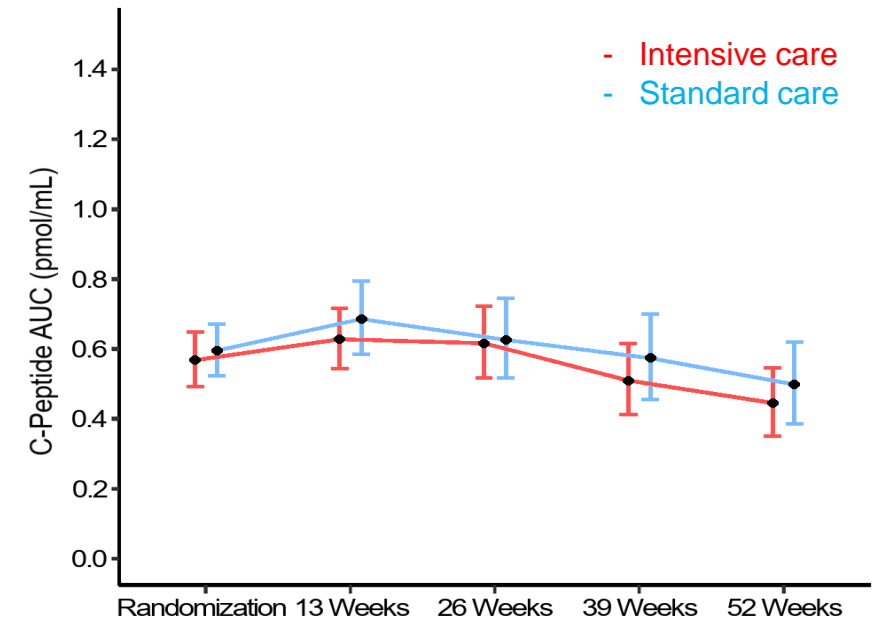
TzielTM approved!

- Teplizumab (Tziel), is approved for use in delaying T1D in high-risk individuals aged 8 and above:
 - 2+ islet autoantibodies
 - Abnormal glucose control
- PROTECT Trial also showed that Tziel benefits children/teens with new-onset T1D, slowing the loss of beta cells and prolonging insulin production
- JDRF led research into Tziel for over 30 years

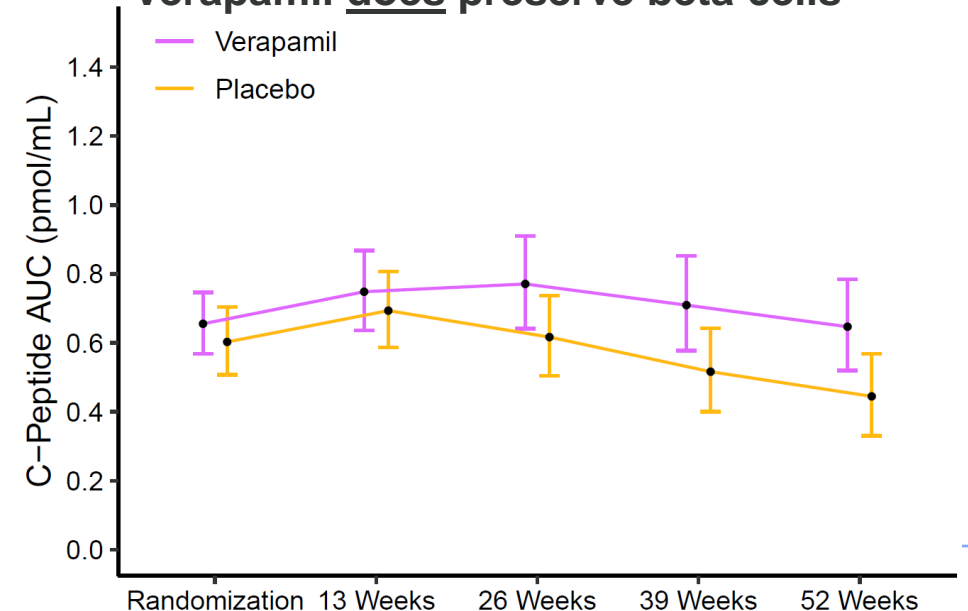


CLVer Trial: Verapamil

- Can AP systems and/or verapamil preserve beta cells (i.e. extend the honeymoon period) in the new-onset population?
- The results are in!
 - AP systems did not preserve beta cells but did provide exceptionally good glucose control in the new onset period
 - Verapamil preserved beta cells—meaning they make more insulin for longer!
 - JDRF will continue to pursue research into verapamil, including using it with other drugs and looking at whether verapamil can be used with people at high-risk, before they develop T1D



Verapamil does preserve beta cells

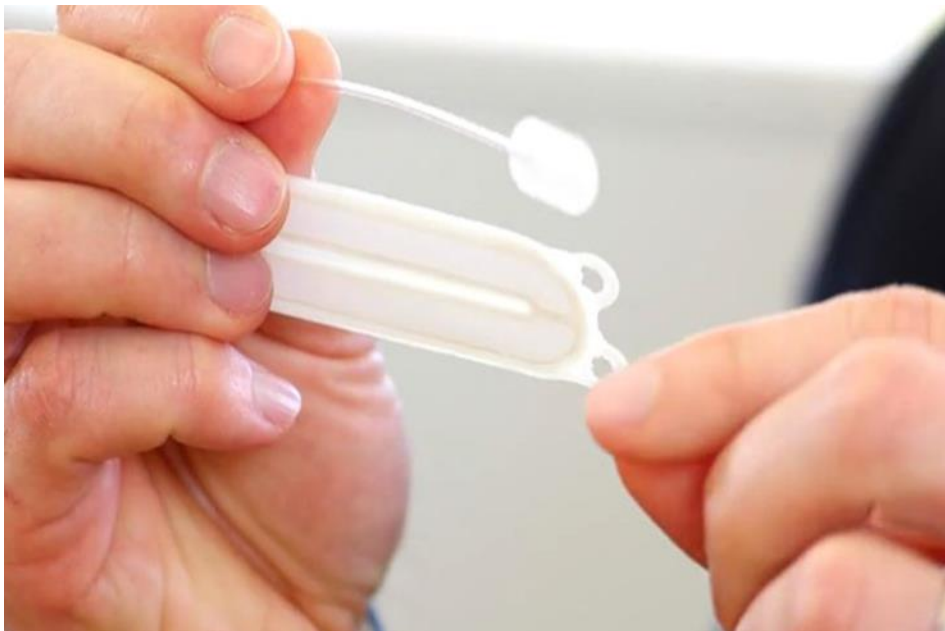


Cell Therapies

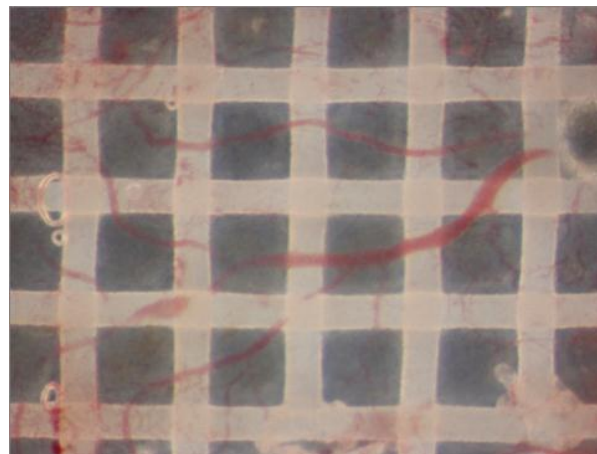
Encapsulation Concept



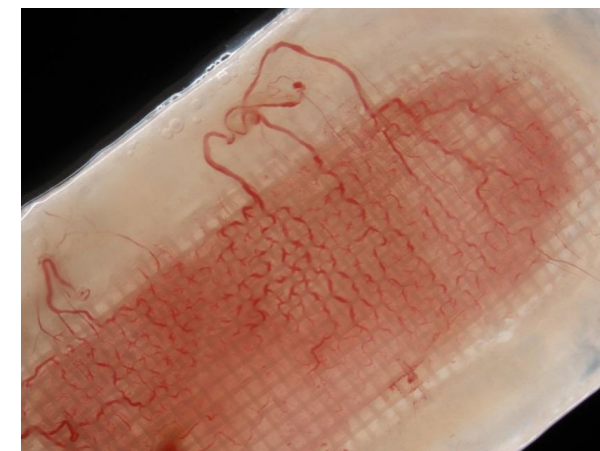
Beta Cell Replacement



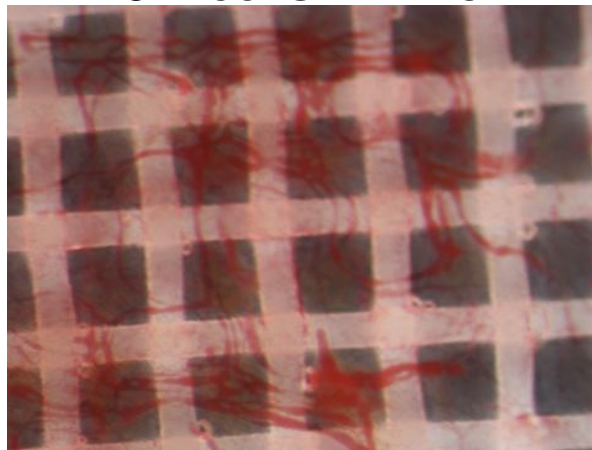
4 Weeks *In Vivo*



18 Weeks *In Vivo*



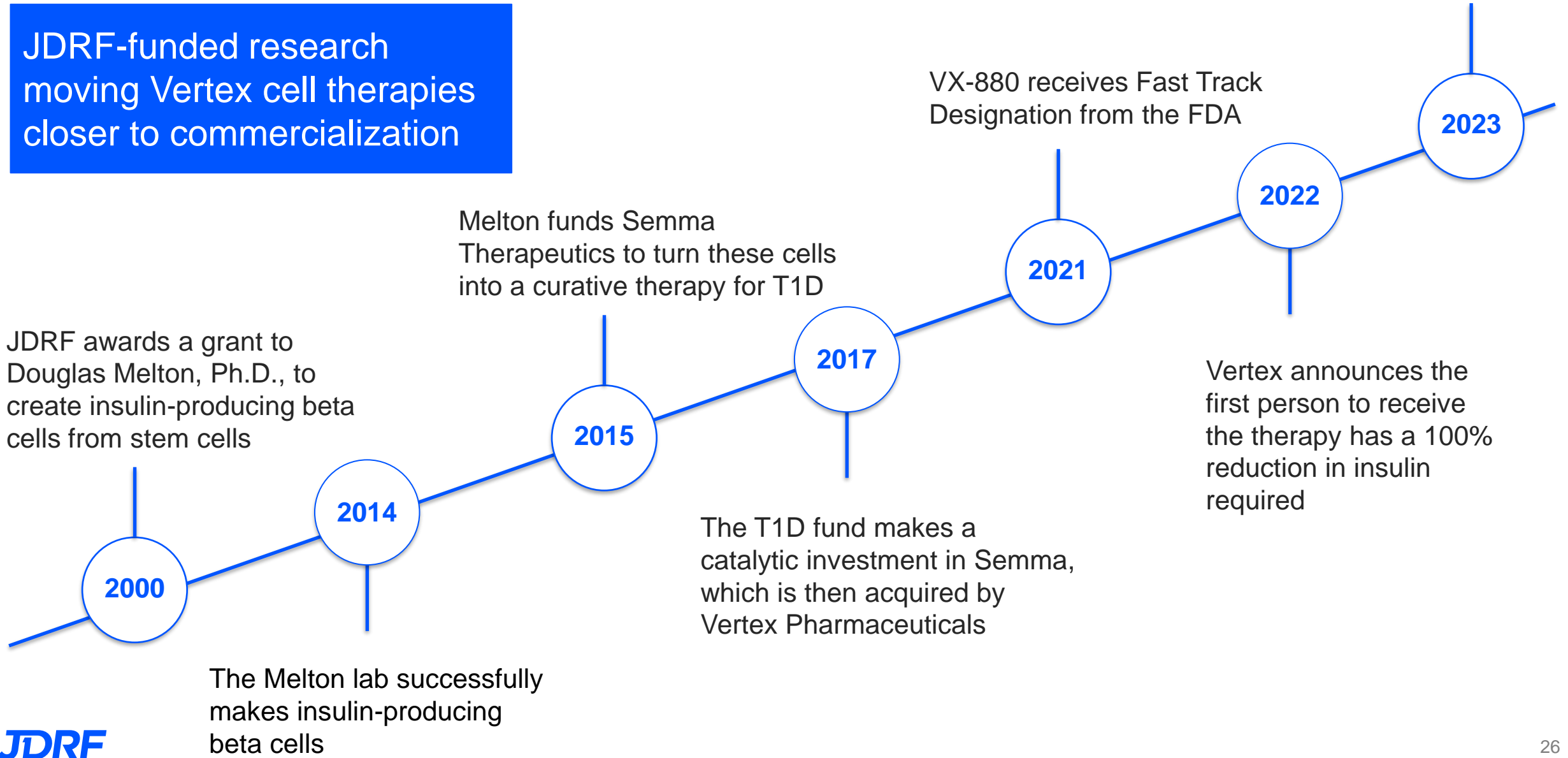
8 Weeks *In Vivo*



Vertex Progress

Clinical trial for VX-264, an encapsulated cell therapy, to begin in US

JDRF-funded research moving Vertex cell therapies closer to commercialization



Aspect and Novo Team up

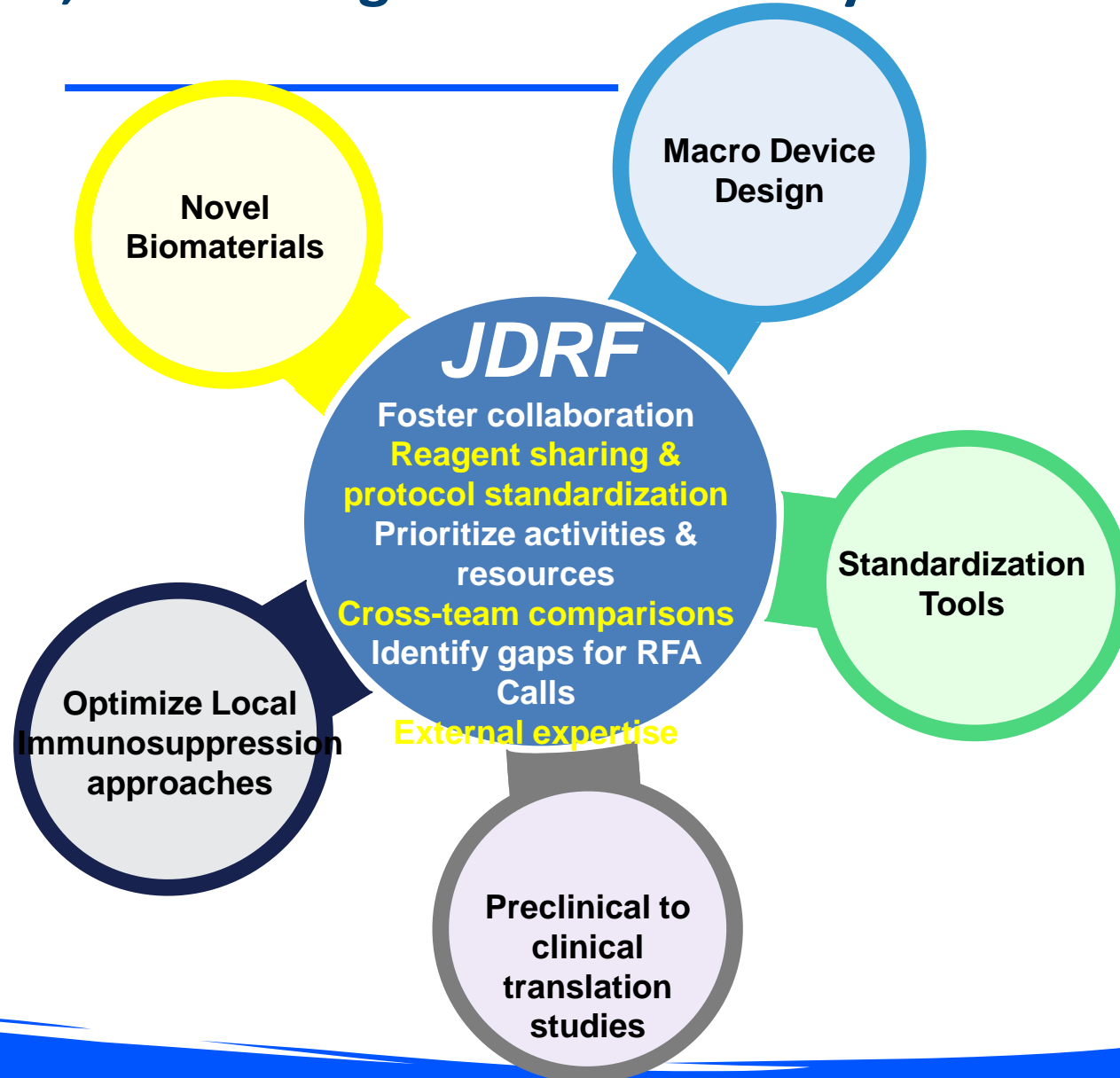
- Aspect Biosystems has developed a novel 3D printer that can be used to produce implants made from various biomaterials and cells of interest.
- JDRF began providing support to Aspect in early 2022.
- In April, Novo Nordisk and Aspect announced a \$2.6 billion deal that will combine Aspect's technology with Novo Nordisk's expertise in differentiating stem cells and manufacturing capabilities.
- The Partnership's initial focus will be on creating an implantable encapsulated islet therapy for T1D, designed to maintain normal blood-sugar levels without the need for immunosuppression.



JDRF Beta Cell Replacement Consortium: Sharing Data, Maximizing Resources, and Saving Time and Money

Over 50 members
2 Core Facilities

Industry Members



Improving Lives

Thriving Device Market



Medtronic 780G



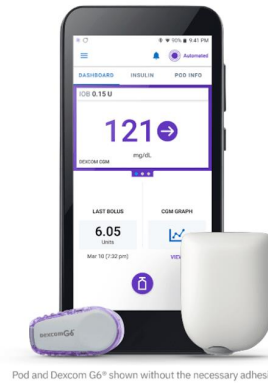
Abbot
Freestyle Libre 3



Beta Bionics iLet



Dexcom G7



Omnipod 5
Approved in kids 2+



Tandem Mobi

Tidepool Loop



- The FDA Authorized Tidepool Loop on January 24
- JDRF has prioritized interoperable, or open protocol artificial pancreas systems, working with the FDA to create the regulatory pathways and with industry partners to encourage development
- JDRF and Helmsley Charitable Trust – Foundational funders of Loop
- Next step: Partnership with pump companies to incorporate the Loop algorithm

Psychosocial Impact

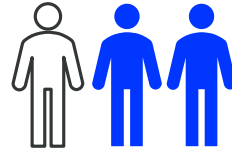
- There is increasing awareness of the emotional toll of living with T1D
- Research is focusing on developing programs and interventions to help reduce negative mental health effects
- Areas of focus include:
 - Stress on interpersonal relationships (spouse, parent-child)
 - Depression
 - Anxiety
 - Disordered eating

Insulin Therapy Is Not Enough

Among people with T1D in the US:



~70% do not consistently achieve target blood-glucose control levels



2/3 of adults have obesity or overweight



~1 in 3 will develop kidney disease



~2 in 3 will develop heart disease

- **The future of T1D care is multiple drugs taken safely and conveniently for glucometabolic control and long-term health**
- JDRF is funding clinical trials in T1D for medications already available for Type 2 Diabetes, such as GLP-1 agonists (e.g. Ozempic) and SGLT-2 inhibitors (e.g. Jardiance). In the T2D population, these medications been shown to reduce heart and kidney complications

Clinical Trials

Golden Age for T1D Trials



150 trials actively
recruiting in the US



70+ JDRF-supported
trials around the world

Fostering a Culture of Clinical Trial Participation

JDRF Clinical Trials Connection tool (jdrf.org/clinical-trials) can match you with T1D trials for which you may be eligible and help you contact the study site to learn more

Find a Clinical Trial



A clinical trial matching tool for the T1D community


Explore additional clinical trial resources from JDRF and our partners at Beyond Type 1 to learn more about clinical trials and their phases.

Match to clinical trials in 60 seconds

- Know your options
- Access the latest treatments
- Receive world class care

START

Powered by  



Looking Ahead

Looking Ahead

Screening

- Develop a simple genetic risk test for identifying at-risk individuals
- Develop a protocol for general population screening

DMT

- Develop combination approaches that will stop the immune attack ***and*** preserve or regrow beta cells

Cell Therapies

- Create a JDRF beta cell factory, which will provide greater access for teams working to develop new products

Improving Lives

- Fully close the loop



JDRF Accelerating Breakthroughs in ALL areas

Sneak Peak at FY24

- There's a LOT to look forward in FY24, including:
- Several DMT clinical trials will be reading out, including:
 - BANDIT – JAK inhibitors in newly diagnosed individuals
 - DiViD – Combination of two antivirals (pleconaril and ribavirin) in newly diagnosed individuals
- Updates from Vertex VX-880 and VX-264
- Sernova Cell Pouch results
- New devices
 - Ypsomed ACE pump

THANK YOU
