



## CAN INSULIN-PRODUCING CELLS REGENERATE?

“Together with our previous findings using BMP-7 to stimulate their growth, we believe that we may be able to induce these stem cells to become functional islets.”

*Pancreatic progenitor cells reside within large ducts of the human pancreas. Two such ducts (green), surrounded by three islets (white), are shown in this picture.*

One of the major challenges standing in the way of a biological cure for type 1 diabetes is the need for more insulin-producing cells to replace those destroyed by the immune system. Now, DRI researchers have confirmed that certain stem cells within the pancreas can be stimulated to develop into glucose-responsive beta cells. The findings, published in *Cell Reports*, open the door to developing regenerative cell therapies for those with T1D, potentially eliminating the need to transplant donor cells altogether.

The notion that the pancreas can regenerate islets has been hypothesized for decades, but not conclusively demonstrated. DRI scientists have identified the exact location of these stem cells and validated their ability to turn into glucose-responsive beta cells.

“Our in-depth study of these pancreatic stem cells may help us tap into an endogenous cell supply ‘bank’ for beta cell regeneration purposes and, in the future, lead to therapeutic applications for people living with type 1 diabetes,” said Dr. **Juan Dominguez-Bendala**, director of pancreatic stem cell development for translational research and co-principal investigator of the study, alongside Dr. **Ricardo Pastori**,

director of molecular biology. “Together with our previous findings using BMP-7 to stimulate their growth, we believe that we may be able to induce these stem cells to become functional islets.”

Islet transplantation has allowed some patients with T1D to live without the need for insulin injections after receiving infusions of donor cells, however there are not enough cells to treat the millions who can benefit. Thus far, research efforts have focused primarily on creating more pancreatic cells for transplant. A more efficient and potentially safer solution could lie in regenerating a patient’s own insulin-producing cells.

“The ability to offer regenerative medicine strategies to restore insulin production in the native pancreas could one day replace the need for transplantation of the pancreas or insulin-producing cells. In type 1 diabetes, this would require abrogation of autoimmunity to avoid immune destruction of the newly formed insulin-producing cells. For this reason, our current efforts are converging on immune tolerance induction without the need for lifelong anti-rejection drugs,” said DRI Director Dr. **Camillo Ricordi**.



Leaving a gift in your will costs you nothing today, and you may be able to do more than you thought possible during your lifetime.

## TOP 5 REASONS FOR MAKING A BEQUEST

So many generous people provide for the Diabetes Research Institute through their wills. If you've been thinking about making a gift in this way, check out the Top Five Reasons for Making a Bequest:

1. It's an excellent way to support the DRI beyond your lifetime. It helps to ensure that the DRI's research continues until diabetes no longer poses a threat to any of our loved ones.
2. You can combine your desire to be part of the cure with your overall financial, tax, and estate planning goals.
3. Leaving a gift in your will costs you nothing today, and you may be able to do more than you thought possible during your lifetime.
4. You can take pride in the legacy you have created and enjoy recognition for your gift now while also inspiring others to follow your example.
5. If your circumstances or priorities change, you can make changes to your plans.

Remember, the future of those you care about most is a reflection of the plans you make today. We hope you will consider making the Diabetes Research Institute Foundation part of those plans, and we're here to help you. To learn more or request our complimentary guide "Your Will: A Powerful Tool for Supporting Your Family—And Charity," contact **Jill Shapiro Miller** at (800) 321-3437 or visit [DRI.GiftPlans.org/Wills](http://DRI.GiftPlans.org/Wills).

## DID YOU KNOW...

that if you gift your IRA to family members, your loved ones will be responsible for paying the income taxes? Plus, the value may be further reduced by estate taxes. By designating the Diabetes Research Institute Foundation as the beneficiary, the full value of the IRA will be transferred tax free and your estate will also be entitled to a tax deduction upon your death. It is more advantageous to provide for your family using other assets in your estate that will not be taxed when gifted. To select a beneficiary or beneficiaries for your IRA or other retirement account, request and complete a beneficiary designation form from your plan custodian.



### Supermodel Support

Supermodel and DRI International Ambassador **Izabel Goulart** has been showing "love" for her favorite cause – the Diabetes Research Institute – via a newly relaunched charitable giving app, Elbi. Users can make fast and convenient \$1 micro-donations with Apply Pay and are rewarded with "Love Coins" to get hot items from top luxury brands. In a video message, Izabel said, "I'm very proud of the Diabetes Research Institute because they fight every day...with their scientists, with their doctors – to find a cure." Download Elbi in the App Store to see more.



### Donate Online

Have you seen our new website? We hope you'll check it out to learn more about how the DRI is working toward a biological cure for diabetes, view researcher videos, get support, sign up for e-news, and more in a whole new view! While you're there, help speed progress by clicking the donate button. Visit [DiabetesResearch.org](http://DiabetesResearch.org).



### Donate Your Car

You can now donate your car to the Diabetes Research Institute Foundation via Vehicles for Charity. Regardless of condition, automobiles, trucks, vans, recreational vehicles, motorcycles, dirt bikes, tractors, boats and trailers will be accepted and towed free of charge within two to four days of the request. Vehicles will be sold at auction or to a salvage company with 100 percent of the net proceeds donated to the DRIF, and it's tax deductible. Call 1.833.430.DRIF (1.833.430.3743) or visit: [VehiclesforCharity.org/Donate/DRIF.html](http://VehiclesforCharity.org/Donate/DRIF.html).



## TEAM DRI

It was a team effort all the way for D-mom **Michelle Schincariol** and her group of DRI supporters clad in red tees with the Institute's logo at The Marathon at Treasure Coast in Stuart, FL, on March 4, 2018. Michelle organized the team of more than 40 people in an effort to raise awareness and money for the DRI's work to cure diabetes. Team DRI was one of 11 teams that competed in the marathon. Afterward they all celebrated with medals and big smiles on their faces. They plan to get running again in support of the DRI next year.



## DRI DIPLOMAT

**Leila Perez**, a DRI Diplomat, joined DRI Foundation Vice President **Tom Karlya** for a recent presentation on what it's like to live with type 1 diabetes. Leila, who was diagnosed at age 6, spoke to fellow students at Somerset Academy Bay School at Pinewood Acres and educated them on her day-to-day management, misconceptions, and other information about the disease. She was also joined by her older sister, **Ali**, and mom **Terry Barcelo-Perez**. Tom presented her with a special recognition certificate for her great efforts after the talk.

### WANT TO BE A DRI DIPLOMAT OR PART OF TEAM DRI?

As Tom Karlya always says, **"Just don't do nothing."** Email him at [TomKarlya@drif.org](mailto:TomKarlya@drif.org) today to get started!

## THE TOMSULA FAMILY HELPS THE DRI TACKLE AUTOIMMUNE RESEARCH HEAD ON

**Bear Tomsula** is not your typical 10-year-old. Similar to other fifth grade boys, he's into sports like golf and baseball; and his favorite subject in school is science. What sets him apart, however, is his deep desire to help other people and a maturity that came with a type 1 diabetes diagnosis when he was 7.

"The hardest thing about diabetes was trying to give myself the shots, but it's really made me more mature," said Bear, who from the beginning has injected insulin on his own. He also tests his blood sugar seven times a day. "Sometimes I even see it as a blessing because I can share what I know about diabetes with other people."

His mom, **Julie**, added "Bear took responsibility from day one, but what scared me most was all the other things that could happen when your immune system is compromised. That's what has been driving us."



Julie started making changes to their diets, going wheat free and dairy free, which immediately helped Bear's high blood sugar numbers stabilize. Her husband, **Jim Tomsula**, defensive line coach for the Washington Redskins, scoured the internet to find the most cutting-edge research in type 1 diabetes.

"When it's your child," Julie explained, "there's no stone left unturned." They learned about the cure-focused work being conducted at the Diabetes Research Institute and have since taken two tours of the state-of-the-art facility.

"Once we saw the magnitude of research happening there, I thought – we're home, and I feel like there's definitely going to be a cure in his lifetime," she said.

Jim and Julie have now joined the DRI Foundation's Florida Region Board, and the family made a generous donation to the DRI to support research aimed at overcoming the challenges of the immune system. Not surprisingly, it was Bear who helped decide where to direct the funding.

"There are a lot of people living with autoimmune disorders, and I thought this research might have a chance to help other people, as well," he said selflessly.

*Bear Tomsula is surrounded by his family, Brittney, Jim, Julie, and Brooke.*



## UNDER THE MICROSCOPE

WITH DIEGO CORREA, M.D., PH.D.

Currently, people with type 1 diabetes who receive an islet transplant must take anti-rejection drugs to prevent their immune system from destroying the insulin-producing cells. But what if islets could be protected without these drugs within a site specifically designed to do just that? DRI scientists are engineering BioHub platforms with safer and more targeted technologies that can help islets evade destruction.

Among the methods being tested is the use of certain cells within the body that can provide a variety of therapeutic advantages to the islets and help them survive. One cell type in particular, mesenchymal stem cells (MSCs), have been investigated for years at the DRI due their powerful immunomodulatory properties among other benefits. One of the researchers at the forefront of this work is Dr. **Diego Correa**, DRI assistant professor. An expert in MSCs, Dr. Correa has been working with these cells for more than a decade to understand the way they behave in the body, how they function, and, in particular, how to utilize them in clinical applications for type 1 diabetes and regenerative medicine approaches.

In his lab, Dr. Correa and his team have been pursuing innovative approaches to co-transplant MSCs and islets, which have yielded some striking findings on how these cells block immune responses.

### Q. What is a mesenchymal stem cell?

**A.** Mesenchymal stem cells, or MSCs, are cells present in every tissue of our body, strategically located surrounding blood vessels. MSCs have been historically seen as progenitors (cells able to generate new tissues like bone, cartilage, muscle and fat), however, we have recently discovered that these cells can actually generate also key therapeutic effects after they recognize places of injury. These “medicinal” activities relate to the regulation of the immune system and, at the same time, the formation of new blood vessels and the prevention of scar formation, among other biological advantages. So in the end, these are essential cell types that we have in our bodies, naturally occurring, that we test for therapeutic purposes.

### Q. What benefits can MSCs bring to islet transplantation?

**A.** The DRI has spearheaded an innovative islet transplantation method with a resorbable scaffold in the omentum. We are advancing this strategy by engineering this biologic platform with MSCs as an important component. The premise is that after we transplant islets

into a recipient, we need to induce immune tolerance so that the patient’s immune system does not react against these islets and destroy them. Based on the notion that MSCs have immunomodulatory effects (including local immunosuppression), we are trying to hijack those properties to help the transplanted islets evade the unwelcoming immune system of the recipient while improving their biological performance.

We now know that we have different subtypes of MSCs in our tissues and organs, independent of the source of the cells (e.g., bone marrow, fat tissue, etc.). In our lab, we are interested in identifying and characterizing those subtypes of MSCs based on distinct identities and functions. We documented a specific subpopulation of MSCs with intrinsic powerful activities in terms of modulating, or controlling, immune system responses. Additionally, those MSCs secrete various factors that induce the formation of new blood vessels, which are critical for carrying oxygen and nutrients to islets, assuring their survival and wellbeing. Consequently, by transplanting these MSCs together with islets, we are accomplishing two important goals at the same time: dampening the immune system attack on the islets and accelerating the rate of blood vessel formation that gives the islets an even better chance to survive.

### Q. What results have you seen by combining islets with MSCs?

**A.** Our strategy is to co-culture, or combine, the islets with the MSCs before transplantation. What we have seen so far in some of our analysis performed by various investigators at the DRI is that these two cell types, when they are co-cultured or put together *in vitro* [outside of the body] they actually coalesce and then function together. Some of these MSCs surround the islets, protecting them from an attack by the immune cells, while other MSCs enter inside the islet, stabilizing the blood vessels, which is one of the crucial steps for the durability and viability of the islets. What we want to do is to perfect the cell-based product before it’s transplanted into patients.



## Dr. Camillo Ricordi Named NAI Fellow

DRI Director **Camillo Ricordi**, M.D., was named a Fellow of the National Academy of Inventors (NAI). Election to NAI Fellow status is the highest professional accolade bestowed solely to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and welfare of society. With more than 40 inventions to his credit, Dr. Ricordi has developed numerous technologies for cell processing and transplantation, and has 26 awarded U.S. patents to date. "I have been blessed for being able to go from idea-to-impact, and actually help people suffering with diabetes, a disease that I have dedicated my life to eradicating," he said.

## Scientific Advisory Board Gives High Marks for DRI's Research Program

The Scientific Advisory Board (SAB) of the DRI recently spent two days reviewing the research presentations by the Institute's faculty. The resulting report praised the DRI's leaders for their bench-to-bedside approach and for "independently moving forward with some of the most innovative and promising intervention trials in type 1 diabetes to date." Particularly referencing the five clinical trials underway at the DRI, the members also expressed that "this level of translational impact is unprecedented elsewhere."

The Scientific Advisory Board serves as an external consultant to the DRI, evaluating research programs and progress, as well as providing guidance and assistance in administrative policies and issues.



## Visiting Professor Exchanges Knowledge at DRI

The DRI recently welcomed **Chantal Mathieu**, M.D., professor of medicine and Chair of Endocrinology at the University of Leuven (KUL) in Belgium, as the 2018 Jay S. Skyler Visiting Professor. Dr. Mathieu's research is focused on the prevention of type 1 diabetes and the effects of vitamin D on the disease. During her three-day visit, she gave several lectures and met with scientists at the DRI, potentially creating collaborations that will continue far beyond this visit, according to Dr. Skyler. Dr. Mathieu was excited to learn more about the DRI's POSEIDON study, which is testing the role of high-dose vitamin D and Omega-3 fatty acids to halt the progression of T1D. She said she was "convinced it will yield important data."

# 5 TOP TIPS FOR LIVING POSITIVELY WITH DIABETES

In February of 2018, family therapist **Ilene Vinikoor**, marked her 50th year of living with type 1 diabetes. It hasn't been easy for her, but she always keeps a positive attitude. Here are a few tips from Ilene:

### 1. Be present-focused

Don't worry! Concentrate on what challenge you have the power to address. Ask yourself, "What can I do now?" Living in the moment helps reduce stress.

### 2. Think positively

How you think has a great impact on your ability to cope. Try saying to yourself, "I am frustrated and exhausted, but I will accept this challenge and do everything I can to fix it because that's all I have the power to do at this moment." You just might feel better.

### 3. Be solution-focused

Some people dwell on the problem. It's better to think about how to solve the problem. When you're frustrated about blood sugars being out of range, immediately take actions to address it.

### 4. Exercise

Even if you're not in the mood, push yourself to do it anyway.

### 5. Verbalize

Let your frustrations out! Keeping them in seems to make matters worse. Having someone to share with — the good and bad — helps maintain physical and emotional well-being.





## BOARD SPOTLIGHT Barbara Hatz

**Barbara Hatz** is a longtime, impactful member of the DRI family.

For more than two decades, Barbara has motivated others, encouraged people to give their best and offered unwavering support to parents of children with type 1 diabetes.

"I have dedicated my life to this endeavor in finding a cure for type 1 diabetes," said Barbara, a long-serving Northeast Region Board Member. "It has been the best part of my life and the worst part of my life. I strive every day to raise the necessary funds for diabetes research and there is much more work to be done."

Since her son, **Ben**, was diagnosed at age 10 more than 33 years ago, Barbara has been an advocate for him and has become a well-known voice in the diabetes community. She is described by many as passionate, compassionate and a resource for connecting people.

Over the years, Barbara has become a lighthouse for parents who find themselves lost in darkness after finding out their child has type 1 diabetes. She gives them much-needed direction.

"It is an incredibly, painful situation for newly-diagnosed families and I truly empathize with them, as I have been there," Barbara said. "I try to help to the best of my ability and guide them with their 'new normal.'"

"I have learned that who I am has little to do with what I do and much to do with how I do it – and I do it with a cheer, a smile, a tear, a hug, knowing that I have made a difference. And I truly feel the best hope for a cure is at the DRI."

Barbara and her husband, **Jon**, were among the original families that helped create the Long Island Board of Directors, and she describes her fellow board members as family.

"These parents understand what I feel every day," said Barbara, who served as Chair of the Long Island Board and received the 2007 Gillin Family Humanitarian Award. "There are people in life you can count on, who will go that extra mile for you and you for them. I will not let them down and I know they feel the same way."

Barbara feels there is a need for new Board participation and more help to raise funds for the cure-focused research at the DRI.

"People come to the table for all different reasons," said Barbara, who currently serves on the board's Events Committee. "I would want people to know the importance of being part of the board, giving their time and energy, and feeling the camaraderie of this group. It is truly an honor to be a part of the DRI and Foundation."

Her dedication continues.

"My commitment to find a cure for diabetes is the challenge of my life," said Barbara, a mother of three grown children and seven grandchildren. "I have learned that who I am has little to do with what I do and much to do with how I do it – and I do it with a cheer, a smile, a tear, a hug, knowing that I have made a difference. And I truly feel the best hope for a cure is at the DRI."

## The DAD's Day Tradition

The men and women of North America's Building Trades Unions (NABTU) are passionately committed to supporting the DRI and our mission to find a cure. We'd like to offer special thanks to the Omaha & Southwest Iowa Building & Construction Trades Council, which held their annual DAD's Day Bowling event earlier this year. It began more than 20 years ago and was spearheaded by the late Chair **Terry Zahn** (Sprinklerfitter Local 669). Today, this event, co-chaired by **Ron Oates** of Iron Workers Local 21, and **Brad Bird**, business manager for Fitters Local 464, along with a golf tournament held in September, are held in Terry's memory. We are grateful for their continued work and amazing fundraising efforts each year!





## EVENTS

1. **Kathy Simkins** (center), joined by **Linda Gibb** (left) and **Sandra Levy** (right), was celebrated as the Haute Tea honoree at the 6th annual event.
2. Co-chairs **Ricardo Salmon** and **Troy Gregory** with second-place finisher **Michael Casty**, first-place winner **Omer Gundogdu**, and co-chair **Jordan Dickstein** enjoy the 10th Annual All in for a Cure Texas hold 'em poker tournament.
3. NASCAR Driver **Ryan Reed**, who has type 1 diabetes, poses with **Athina** and her mom **Carleen Pengg** at a special DRI meet and greet, where he shared his journey to NASCAR and spoke of his special relationship with Lilly Diabetes.
4. DRI Director **Camillo Ricordi** celebrated with the 2017 Empire Ball honorees, Structure Tone's **Robert Mullen**, Normandy Real Estate Partners' **Paul H. Teti**, and Alliance Building Services' **Jeffrey A. Duarte**, as the NYC skyline went blue to #LightTheSkyForDRI.
5. Chairwomen **Renee Aronin**, **Gloria Katz**, and **Natalie Olstein** led the sold-out 19th Annual A Gift of Love...A Gift of Hope Luncheon at the Polo Club of Boca Raton, where guests enjoyed boutique shopping, card and table games, raffle prizes and more.
6. Team Andrea's Lazy Pancreas, led by the **Milan family**, was this year's top fundraiser at the DRI Walk for Diabetes and Family Fun Day Presented by Walgreens at Marlins Park.
7. Event co-chairs **Dara Melnick** (with son, **Julian**), **Edra Teppner**, and **Iris Feldman** hosted another Carnival for a Cure at the Dave & Busters in Westbury, where kids and adults enjoyed games, balloon creations, a photo booth, and lots of fun.
8. In anticipation of April's Love and Hope High Rollers event, **Michelle** and **Jason Rubell** (right) hosted a special dinner for sponsors at their Miami Beach home. (Pictured with, from left, **Stephen Alger**, **Kathy Simkins**, **Sandra Levy**, and Dr. Ricordi.)

There are additional photos and event recaps on our website. Please visit [DiabetesResearch.org/Events](https://DiabetesResearch.org/Events)



## CALENDAR

2018

For information on the events or to make reservations, visit  
[DiabetesResearch.org](http://DiabetesResearch.org) or call one of the DRI Foundation offices listed below.

MAY 9

**Don Strock Diabetes  
Golf Classic**  
FLORIDA

JUNE 2 - 4

**Labor of Love &  
Softball Slam**  
PHILADELPHIA

JUNE 3

**Gold Coast Concours /  
Bimmerstock**  
LONG ISLAND

JULY 20 - 23

**Mastering Your Diabetes**  
FLORIDA

SEPTEMBER 23

**Ride for the DRI**  
LONG ISLAND

SEPTEMBER 24

**The Donaldson  
Organization Golf Outing**  
NEW YORK

OCTOBER 19 - 22

**Mastering Your Diabetes**  
FLORIDA

DECEMBER 12

**Empire Ball**  
NEW YORK

For more info visit: [DiabetesResearch.org/Events](http://DiabetesResearch.org/Events)

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