

# All Projects funded by LaunchPad for Diabetes Program

Updated Jan. 2023

## **2022**

### **(Renewal) Voxelated 3D Bioprinting of Multiscale Porous Scaffolds for Islet Transplantation**

Liheng Cai PhD, Material Science and Chemical Engineering  
Yong Wang MD, Surgery  
Jose Oberholzer MD, Surgery

### **(Renewal) Lacritin 'N-104' for the Reversal of Type 1 Diabetes**

Gordon Laurie, PhD, Cell Biology  
Ken Brayman, MD, Surgery

### **Unwinding a 3'UTR to treat diabetes**

Jianjie Ma, PhD, Surgery  
Philip Bourne, PhD, School of Data Science

### **Identification of biomarkers that predict myocardial perfusion and dysfunction in Type 1 Diabetes**

Zhenqi Liu, MD, Endocrinology and Metabolism  
Kaitlin Love, MD, Endocrinology and Metabolism

### **Dual immunomodulatory scaffold to improve beta cell suspension survival by reducing local acute inflammation and promoting tolerogenic Foxp3+ T cells**

Don Griffin, PhD, BME  
Ken Brayman MD, Surgery

### **T Regulatory Cells (TREGs) In Type 1 Diabetes (T1D) Patients**

Larry Lum, MD, Hematology and Oncology  
David Repaske, MD, Pediatric Endocrinology  
John Zheng Fu, PhD, Pharmacology  
Archana Thakur, PhD, Hematology and Oncology

### **Crosstalk between circulating glucose, pancreatic insulin and glucagon during insulin-induced hypoglycemia in healthy people at risk for type 1 diabetes (Ignite)**

Leon S Farhy, PhD, Endocrinology and Metabolism

## **2021**

### **Algorithmic Development, Prototyping, and Pilot Clinical Testing of a Therapy Optimization Platform to Support Healthcare Providers in the Management of Type 2 Diabetes**

Chiara Fabris, PhD, Psychiatry/Neurobehavioral Science and Center for Diabetes Technology  
Patricio Colmegna, PhD, Psychiatry/Neurobehavioral Science, Center for Diabetes Technology  
Sue Brown, MD, Endocrinology  
Ralf Nass, MD, Endocrinology

### **Using Closed-Loop Artificial Pancreas Technology to Reduce Glycemic Variability and Subsequently Improve Cardiovascular Health in Type 1 Diabetes**

William Horton, MD, Endocrinology  
Boris Kovatchev, PhD, Psychiatry/Neurobehavioral Science, Center for Diabetes Technology

### **Renewal: Lacritin 'N-104' for the Reversal of Type 1 Diabetes**

Gordon Laurie, PhD, Cell Biology  
Ken Brayman, MD, Surgery

**Renewal: Analytics for Detection and Early Warning of Hypoglycemia in Intensive Care Units**

William Horton, MD, Endocrinology  
Randall Moorman, MD, Cardiovascular Medicine

**Renewal: Voxelated 3D Bioprinting of Multiscale Porous Scaffolds for Islet Transplantation**

Liheng Cai, PhD, Material Science and Chemical Engineering  
Yong Wang, MD, Surgery  
Jose Oberholzer, MD, Surgery

**Development and Testing of Conversion Algorithms for a More Rapidly Acting Insulin in an Artificial Pancreas System in Adolescents with T1D**

Mark DeBoer MD, Endocrinology-Pediatrics  
Marc Breton, PhD, PhD, Psychiatry/Neurobehavioral Science, Center for Diabetes Technology  
Patricio Colmegna, PhD, Psychiatry/Neurobehavioral Science, Center for Diabetes Technology

**Urinary extracellular vesicle analysis to assess early diabetic kidney disease phenotypes as a novel precision medicine tool (Ignite)**

Uta Erdbrügger, MD, Medicine/Nephrology  
Julia Scialla, MD, Medicine/Nephrology

**Formulation of nervonic acid delivery system for complications of diabetes mellitus (Ignite)**

Mark Kester, PhD, Pharmacology  
Todd Fox, PhD, Pharmacology

**Quantifying the heterogeneity of immune cell activation from islet transplantation and drug induced immunomodulation (Ignite)**

Nathan Swami, PhD, Electrical and Computer Engineering)  
José Oberholzer, MD, Surgery

**2020**

**(Renewal) AAV-mediated gene therapy for diabetes**

Edward Perez-Reyes, PhD, Pharmacology  
Jennifer Kirby, MD, Endocrinology and Metabolism  
Thurl Harris, PhD, Pharmacology

**A Biochip to Model Personalized Inflammatory Responses in Cell-Based Therapy for Diabetes**

Jose Oberholzer, MD, Surgery  
Huiwang Ai, PhD, Molecular Physiology and Biophysics  
Melur Ramasubramanian, PhD, Vice President for Research  
Yong Wang, MD, Surgery

**Renewal Lacritin 'N-104' for the Reversal of Type 1 Diabetes**

Gordon Laurie, PhD, Cell Biology  
Ken Brayman, MD, Surgery

**Predictive Analytics for Detection and Early Warning of Hypoglycemia in Intensive Care Units**

William Horton, MD, Endocrinology  
Randall Moorman, MD, Cardiovascular Medicine

**Voxelated 3D Bioprinting of Multiscale Porous Scaffolds for Islet Transplantation**

Liheng Cai, PhD, Material Science and Chemical Engineering  
Yong Wang, PhD, Surgery  
Jose Oberholzer, MD, Surgery

**T Regulatory Cells Suppress Autoreactive B Cells from Type 1 Diabetes Patients**

Larry Lum, MD, Hematology and Oncology  
David Repaske, MD, Pediatric Endocrinology  
John Fu, PhD, Pharmacology

**Proximity of adipocytes to endothelial cells influences metabolism in type 2 diabetes (Ignite)**

Brant Isakson, PhD, Molecular Physiology and Biophysics

**Topical ophthalmological drug delivery of a glucosylceramide synthase inhibitor for diabetic retinopathy (Ignite)**

Mark Kester, PhD, Pharmacology  
Todd Fox, PhD, Pharmacology  
Michael Cusick, MD, Ophthalmology

**Single-cell biophysical metrics for selection of  $\beta$ -like cells to construct stem cell-derived islets (Ignite)**

Nathan Swami, PhD, Electrical and Computer Engineering  
José Oberholzer, MD, Surgery

**Development of an Injectable Microporous Pancreatic Islet Niche (Ignite)**

Donald Griffin, PhD, Biomedical Engineering  
Kenneth Brayman, MD, PhD, Surgery

**NanoPlatyx: a Stent-Free Solution for Peripheral Arterial Disease (PAD) and PostIntervention Management in Diabetic Population (Ignite)**

Bowen Wang, PhD, Surgery  
K. Craig Kent, MD, EVP for Health Affairs  
Lian-Wang Guo, PhD, Surgery

**2019**

**Automated Meal Detection & Appropriate Insulin Delivery for Adolescents with Type 1 Diabetes: Connecting the Klue Watch & UVa Artificial Pancreas System (revised after Medtronic purchased Klue)**

Mark DeBoer, MD, Pediatric Endocrinology  
Marc Breton, PhD, Psychiatry and Neurobehavioral Sciences

**Exploration of Lacripep™ Inspired 'Tearpep3/C-6' for the Reversal of Type 1 Diabetes**

Gordon Laurie, PhD, Cell Biology  
Ken Brayman, MD, Surgery

**Bispecific Antibody Targeted T Regulatory Cells (TREGs) for Type 1 Diabetes**

Larry Lum, MD, Hematology and Oncology  
David Repaske, MD, Pediatric Endocrinology  
Archana Thakur, PhD, Hematology and Oncology  
Udai Singh, PhD, Hematology and Oncology

**(Renewal) Novel Cytokine Therapy for Type 1 Diabetes**

Rahul Sharma, PhD, Center for Inflammation and Regeneration  
Mark Okusa, MD, Nephrology

**(Renewal) AAV mediated gene therapy for diabetes**

Edward Perez-Reyes, PhD, Pharmacology  
Jennifer Kirby, MD, Endocrinology and Metabolism  
Thurl Harris, PhD, Pharmacology

**A scaleable microfluidic approach for controlled manufacturing of microcapsulated human islets for transplantation in T1D therapy**

Melur Ramasubramanian, PhD, Vice President for Research  
Jose Oberholzer, MD, Surgery  
Yong Wang, PhD, Surgery

**2018**

**(Renewal) Novel Cytokine Therapy for Type 1 Diabetes**

Rahul Sharma, PhD, Center for Inflammation and Regeneration  
Mark Okusa, MD, Nephrology

**(Renewal) AAV mediated gene therapy for diabetes**

Edward Perez-Reyes, PhD-Pharmacology  
Jennifer Kirby MD Endocrinology and Metabolism  
Thurl Harris, PhD, Pharmacology.

**A Multiparametric Biosensor Assay for Standardized Characterization of Islets**

Huiwang Ai, PhD, Molecular Physiology & Biological Physics  
Jose Oberholzer, MD and Yong Wang, PhD Transplant Surgery

**2017**

**Novel Cytokine Therapy for Type 1 Diabetes**

Rahul Sharma, PhD, Center for Inflammation and Regeneration  
Mark Okusa, MD, Nephrology

**Microfluidic Selection of Functional Islets for Transplantation in Diabetes**

Shayn Peirce-Cottler, PhD, BME  
Nathan Swami, PhD, Electrical and Computer Engineering  
Ken Brayman, MD, Surgery.

**Improve islet transplant outcomes for Type 1 diabetes by minimizing rapamycin immunotoxicity**

Jose Oberholzer, MD, Chief of Transplant and Director of Transplant Center  
Yong Wang, PhD, Transplant Surgery

**AAV mediated gene therapy for diabetes**

Edward Perez-Reyes, PhD, Pharmacology  
Jennifer Kirby, MD, Endocrinology and Metabolism  
Thurl Harris, PhD, Pharmacology.

**Enhancement of glucagon counterregulation in type 1 diabetes by basal amylin replacement**

Leon Farhi, PhD, Endocrinology and Metabolism

Stacy Anderson, MD, Medical Director of the Center for Diabetes Technology.

**2016**

**RENEWAL: Targeting adipose tissue lipolysis to prevent postoperative hyperglycemia and improve recovery in rodent model of T1DM**

Thurl Harris PhD, Pharmacology

Alex Kadl MD, Pulmonary and Critical Care Medicine

**Microfluidic Selection of Functional Islets for Transplantation in Diabetes**

Shayn Peirce-Cottler, PhD, Biomedical Engineering

Nathan Swami, PhD, Electrical Engineering

**Novel Cytokine Therapy for Type-1 Diabetes**

Rahul Sharma, PhD, Nephrology

Mark Okusa, MD, Nephrology

**Role of Extracellular Vesicle for Vascular Health in Adults with Prediabetes**

Steven Malin, PhD, Kinesiology

Uta Erdbrugger, MD, Nephrology

**Modulating Diacylglycerol Kinase Activity to Enhance Insulin Secretion in Type 2 Diabetes (pilot project)**

Ken Hsu, PhD, Chemistry & Pharmacology

**Application of Machine Learning to Identify Diabetic Patients at Risk for High Atherosclerotic Burden in Coronary Arteries (pilot project)**

Coleen McNamara, MD, Cardiovascular Medicine

Michael Lawrence, PhD, Biomedical Engineering

**2015**

**Development of Dendritic cell (DC) therapeutic intervention for type 1 Diabetes (T1D)**

Amandeep Bajwa PhD, Nephrology

Mark Okusa MD, Nephrology

**Design and Testing of a Closed-Loop System for Control of Type 1 Diabetes in Young Children 5-8 years old**

Mark DeBoer MD, Pediatrics-Division of Pediatric Endocrinology & Diabetes

Daniel Chernavsky MD, Psychiatry and NB Sciences

**Treatment of diabetic retinopathy with microRNA-let-7b inhibitor**

Bijan Dey PhD, Biochemistry and Molecular Genetics

Paul Yates MD, Ophthalmology

**Targeting adipose tissue lipolysis to prevent postoperative hyperglycemia and improve recovery in rodent model of T1DM**

Thurl Harris PhD, Pharmacology

Alex Kadl MD, Pulmonary and Critical Care Medicine

**2014**

**Oral-Insulin: IN VIVO Pharmacokinetics and Pharmacodynamics**

Mark Kester, PhD, Pharmacology and Biomedical Engineering Director of the NanoSTAR Institute

**Reversal of Conduit Artery Stiffness in Type 1 Diabetes by Mineralocorticoid Receptor Blockade**

Gene Barrett, MD, Medicine - Endocrinology and Metabolism and Pediatrics

**Vesicular Nucleotide Transporter as a Marker for Mature Functional Pancreatic Beta-cells**

Chein Li, PhD, Pharmacology

Arazdordi Toumadje, PhD, Biochemistry and Molecular Genetics

**Development of a Comprehensive AP Training Curriculum for Adults:**

Sue Brown, MD, Center for Diabetes Technology

**Maternal Autoantibody and Neonatal NK-1 Cells in Type 1 Diabetes**

Kenneth Tung, MD, Pathology and Microbiology

Michael Brown, PhD, Michael Brown, PhD, Nephrology

**2013**

**Maternal Autoantibody and Neonatal NK-1 Cells in Type 1 Diabetes**

Kenneth Tung, MD, Pathology and Microbiology

Michael Brown, PhD, Medicine-Nephrology

**Evaluation of Novel Sphingosine Kinase 2 Inhibitor for the Treatment of Diabetic Nephropathy**

Kevin Lynch, PhD, Pharmacology

**Optimizing Closed-Loop Control of Type 1 Diabetes Mellitus in Adolescents**

Mark DeBoer MD, Pediatrics-Division of Pediatric Endocrinology & Diabetes

Daniel Chernavsky MD, Psychiatry and NB Sciences

Mark Breton, PhD, Psychiatry and Neurobehavioral Sciences

Boris Kovatchev, PhD, Director University of Virginia Center for Diabetes Technology

**Novel Hybrid Cytokine for Therapy of Type 1 Diabetes**

Mark Okusa, MD, Medicine- Nephrology

Rahul Sharma, PhD, Medicine- Nephrology

**2012**

**Development of an advisory system to improve glycemic control during the menstrual cycle in women with Type 1DM**

Michael Brown, PhD, Medicine-Nephrology

Marc Breton, PhD, Psychiatry and Neurobehavioral Sciences

**Enhanced Artificial - Pancreas Program**

Anthony McCall, MD, Internal Medicine

Leon Farhy, PhD, Medicine- Endocrinology and Metabolism

**RENEWAL: Treatment of diabetic retinopathy with adipose-derived stem cells**

Shayn Peirce-Cottler, PhD, Biomedical Engineering

Paul Yates, MD, Ophthalmology and Biomedical Engineering

## 2011

### **Biomarker development for management of diabetic chronic wounds**

Adam Katz, MD, Plastic Surgery

### **Targeted Contrast-enhanced MRI of Pancreatic Cells in Type 1 Diabetes Mellitus**

Kim Kelly, PhD, Biomedical Engineering

Fred Epstein, PhD, Biomedical Engineering

### **Sphingosine 1-phosphate type 1 Receptor Antagonists and T1DM**

Kevin Lynch, PhD, Pharmacology

### **RENEWAL: Treatment of diabetic retinopathy with adipose-derived stem cells**

Shayn Peirce-Cottler, PhD, Biomedical Engineering

Paul Yates, MD, Ophthalmology and Biomedical Engineering

## 2009-2010

### **Modulation of the cascular endothelial growth factor ligand-receptor family to facilitate islet cell transplantation**

Brian Annex, MD, Cardiovascular Medicine and Biomedical Engineering

Ayotunde Dokun, M.D. Medicine-Endocrinology and Metabolism

### **Bioengineering strategies to improve islet cell transplantation**

Ed Botchwey, PhD, Biomedical Engineering

Kenneth L. Brayman, MD, PhD Surgery

### **Identification of novel energy expenditure agonists for the treatment of diabetes**

Kevin Lynch, PhD, Pharmacology

Kyle L. Hoehn, PhD, Pharmacology

### **Treatment of diabetic retinopathy with adipose-derived stem cells**

Shayn Peirce-Cottler, PhD, Biomedical Engineering

Paul Yates, MD, Ophthalmology and Biomedical Engineering

### **Use of Rho-kinase inhibitors for treatment of peripheral diabetic neuropathy**

James Mandell, MD, PhD, Pathology

Slobodan M. Todorovic, MD, PhD, Anesthesiology