The American Diabetes Association’s Pathway to Stop Diabetes® Initiative Brings Cutting Edge Innovation to Diabetes Research.

Today, one in 11 Americans is living with diabetes. The scope of the problem is unprecedented. The solution must match it.

The American Diabetes Association’s Pathway to Stop Diabetes initiative is our approach to developing a new generation of exceptional diabetes researchers with the freedom, autonomy and resources to overcome diabetes.

Made possible through the visionary support of philanthropic individuals, foundations and corporate sponsors, Pathway is transforming the future of diabetes research and care.

The elite, nomination-only Pathway awards attract and cultivate brilliant scientists at the peak of their creativity and accelerate research progress by providing substantial and sustained funding; guiding the researchers with scientific and career mentoring; and creating systems and programs for collaboration and communication to drive advancements.

Three Pathway grant types support scientists focusing on diabetes research:

• **Pathway Initiator**—For scientists currently in training through their transition to independence in diabetes research careers

• **Pathway Accelerator**—For diabetes researchers early in their independent careers

• **Pathway Visionary**—For established scientists who wish to apply their expertise and novel approaches to diabetes research for the first time

More than $47 million in generous gifts from individuals, foundations and corporations, including Pathway Corporate Sponsors Sanofi, Novo Nordisk, the Eli Lilly and Company Foundation, AstraZeneca and Merck, has allowed the American Diabetes Association to select and fund 29 stellar scientists who are accelerating progress in diabetes research.

For the latest information on the Pathway program and exciting updates from Pathway scientists, visit diabetes.org/pathway.

Prestigious. Groundbreaking. Transformative.

“I’m so honored and excited to be part of the new class of Pathway scientists – it’s an amazing start to my dream career!”

– John Nelson Campbell, PhD, 2018 Pathway Initiator Award Recipient
The Pathway Scientists

John Nelson Campbell, PhD
Beth Israel Deaconess Medical Center

Daniel J. Ceradini, MD, FACS
New York University

Mayland Chang, PhD
University of Notre Dame

Paul Cohen, MD, PhD
The Rockefeller University

Thomas Delong, PhD
University of Colorado, Denver

Michael D. Dennis, PhD
Pennsylvania State University, Hershey

Jonathan N. Flak, PhD MD
University of Michigan

Marie-France Hivert, MD
Harvard Medical School

Samie R. Jaffrey, MD, PhD
Weill Cornell Medicine

Zachary A. Knight, PhD
University of California, San Francisco

Aleksander D. Kostic, PhD
Joslin Diabetes Center

Maureen Monaghan, PhD
Children’s National Health System

Alexander R. Nectow, PhD
Princeton University

Kathleen A. Page, MD
University of Southern California

Zhen Gu, PhD
North Carolina State University and University of North Carolina

Sumita Pennathur, PhD
University of California, Santa Barbara

Wolfgang Petl, PhD
University of Arizona

Celine E. Riera, PhD
Cedars-Sinai Medical Center

Andrew Scharenberg, MD
Casebia Therapeutics

Praveen Sethupathy, PhD
Cornell University

David A. Spiegel, PhD
Yale University

Zhen Gu, PhD
North Carolina State University and University of North Carolina

Sumita Pennathur, PhD
University of California, Santa Barbara

Wolfgang Petl, PhD
University of Arizona

Stephanie Stanford, PhD
University of California, San Diego

Stephen C.J. Parker, PhD
University of Michigan

Sarah Stanley, MD, PhD
Mount Sinai Health System

Michael L. Stitzel, PhD
The Jackson Laboratory

Jonathan V. Sweedler, PhD
University of Illinois at Urbana-Champaign

Joshua P. Thaler, MD, PhD
University of Washington

Sui Wang, PhD
Stanford University

Phillip James White, PhD
Duke University

Thomas Delong, PhD
University of Colorado, Denver

Maureen Monaghan, PhD
Children’s National Health System

Praveen Sethupathy, PhD
Cornell University

David A. Spiegel, PhD
Yale University

Stephanie Stanford, PhD
University of California, San Diego

*Dr. Scharenberg relinquished his Pathway award this year to accept an opportunity to become Chief Scientific Officer at Casebia Therapeutics. He credits the Pathway Visionary Award with developing the scientific expertise he needed to translate cell and gene therapies to type 1 diabetes. He continues to aim to apply these novel approaches to the treatment of autoimmune diseases, including type 1 diabetes.
Pathway Progress Through 2017

- **29** Pathway scientists have been funded to date from individuals, nominated as their institution’s single best candidate.

- **> 540** Pathway Initiator awardees have secured their first independent faculty positions.

- **185** scientific presentations delivered by Pathway scientists in 2017 alone.

- **60+** Peer-reviewed publications authored by Pathway awardees through 2017.

- **29** New Pathway awardees were selected from 103 nominees to start funding in 2018.

- **6** average age of Pathway Initiator and Accelerator Awardees (compared to 42 for initial NIH R01 awardees and 51 for R01 awardees overall).

- **6** Patents have been filed by Pathway scientists to date to protect intellectual property and translate discoveries into diabetes tools and cures.

- **7** Patents have been filed by Pathway scientists to date to protect intellectual property and translate discoveries into diabetes tools and cures.

- **> $47M** Raised from corporate sponsors and individual philanthropists to support Pathway.
The Pathway Portfolio

The Pathway initiative supports a strong and diversified research portfolio, representing the full breadth of diabetes-related topics and achieving key program objectives.

- **Diabetes Type**
  - Obesity: 14%
  - Type 1 Diabetes: 38%
  - Both Type 1 and Type 2: 17%
  - Type 2 Diabetes: 21%
  - Gestational Diabetes: 7%
  - Prediabetes: 1%

- **Research Type**
  - Basic Science: 24%
  - Clinical and Translational Science: 76%

- **Award Type**
  - Initiator: 28%
  - Accelerator: 28%
  - Visionary: 44%

- **Awardee Degree**
  - PhD: 28%
  - MD: 14%
  - MD/PhD: 17%
  - Other: 69%
Passion and Drive
to Discover

Sumita Pennathur, PhD, never set out to study diabetes. She was enjoying an extraordinarily successful career as a mechanical engineer. But when her young daughter was diagnosed with type 1 diabetes, her entire life changed. She found herself positioned to bring her unique expertise and personal motivation together to make her daughter’s life with diabetes easier. Now, with the funding and mentorship that Pathway is providing, Dr. Pennathur is working to engineer a safe, pain-free, and inexpensive patch that can monitor blood glucose levels continuously. Such technology holds tremendous promise for improving the lives of millions of people with diabetes.
Key Accomplishments of Pathway Scientists in 2017

The 23 Pathway awardees who were funded during the 2017 calendar year made important contributions to move diabetes research forward.

Communicating Results to Accelerate Scientific Progress

Scientists share their findings with other scientists, accelerating progress by publishing results and delivering scientific presentations. This information sharing allows the field to build and grow. Pathway scientists collectively have published more than 60 original research papers and a dozen reviews. In 2017 alone, they published 28 original research manuscripts and two reviews. All of the Pathway awardees presented their research at the American Diabetes Association's Scientific Sessions, the world's largest diabetes meeting. In total, the Pathway scientists delivered 185 presentations this year.

SELECT 2017 PUBLICATIONS


“Sanofi has long been committed to helping people living with diabetes and we are proud to continue our support of the Pathway to Stop Diabetes program. By funding diabetes research and allowing the grant recipient to focus on the science, this type of program can play a vital role in supporting researchers, progressing our understanding of diabetes and potentially aid in the discovery of new therapeutic options.”

– Holly Schachner, MD, Medical Affairs Head for North America, Diabetes/Cardiovascular (DCV) Business Unit and US Medical Chair, Sanofi

Pathway Scientists Drive Progress

TYPE 1 DIABETES
Pathway Scientist Zhen Gu, PhD, has developed several new glucose-responsive insulin delivery systems as he seeks to optimize a “smart insulin patch” to make diabetes management effortless and safe. He filed three new patent applications this year. Hu X, et al. ACS Nano. 2017 Jan 24;11(1):613-620.

TYPE 2 DIABETES
Pathway Scientist Stephanie Stanford, PhD, has determined how a specific protein is associated with high-fat diet-induced diabetes. She has identified a small-molecule inhibitor that acts on this molecule to reverse diabetes in mice. This exciting finding suggests a potential new therapy to treat type 2 diabetes. Stanford SM, et al. Nat Chem Biol. 2017 Jun;13(6):624-632.

BODY WEIGHT AND DIABETES RISK
Pathway Scientist Celine Riera, PhD, has discovered that the sense of smell is linked to body weight and metabolism in mice, independent of how much they eat or exercise. Her findings were widely reported in the media. Riera CE, et al. Cell Metab. 2017 Jul 5;26(1):198-211.e5.

DIABETES COMPLICATIONS

Sanofi has long been committed to helping people living with diabetes and we are proud to continue our support of the Pathway to Stop Diabetes program. By funding diabetes research and allowing the grant recipient to focus on the science, this type of program can play a vital role in supporting researchers, progressing our understanding of diabetes and potentially aid in the discovery of new therapeutic options.”

– Holly Schachner, MD, Medical Affairs Head for North America, Diabetes/Cardiovascular (DCV) Business Unit and US Medical Chair, Sanofi
In an era when NIH funding and academic institutions are under financial pressure, the number of people who receive funding for diabetes research has diminished. The Pathway Program gives cutting edge researchers a solid financial foundation to get their innovative projects going. Lilly is a corporate supporter because we share a similar commitment to finding new ways to improve outcomes for people with diabetes. We believe in supporting brilliant scientific minds and applaud the American Diabetes Association for its mentorship of this program.

— Dara Schuster, MD, senior director of U.S. Medical Affairs, Lilly Diabetes

We are pleased to help support young scientists who will improve the lives of people affected by diabetes. We like that the Pathway to Stop Diabetes initiative supports the best and brightest scientists and allows them to focus on doing research.

— Rick and Linda Ridley, Pathway Philanthropic Supporters
Announcing the 2018 Pathway Scientists

This year, 103 institutions nominated Pathway candidates. After careful evaluation, the Mentor Advisory Group recommended funding the top six applicants among 36 finalists. These newest Pathway awardees represent the highest quality scientists with bold and innovative approaches to stop diabetes.

INITIATOR AWARDS

Genes, the Brain and Metabolism
John Nelson Campbell, PhD, Beth Israel Deaconess Medical Center, Boston
Project Title: Molecular and functional taxonomy of vagal motor neurons

We know that the brain relays information about the environment to organs throughout the body to coordinate their functions. A specific set of neurons, known as vagal motor neurons, is known to control digestion, insulin release, and glucose production from the liver, but scientists don’t yet understand precisely how they work. Dr. Campbell is profiling gene expression in vagal motor neurons to identify genetically-distinct subtypes, and then matching each subtype to its specific role in organ function. These studies will yield unprecedented insight into how the brain controls digestion and glucose metabolism and identify potential new therapeutic targets for diabetes.

ACCELERATOR AWARDS

Improving Diabetes Health Outcomes in the Transition from Pediatric to Adult Care
Maureen Monaghan, PhD, Children's Research Institute, Children's National Health System, Washington, D.C.
Project Title: Improving health communication during the transition from pediatric to adult diabetes care

Adolescents and young adults (ages 17–21) with type 1 diabetes are at high risk for negative health outcomes, including poor glycemic control and disengagement from the health care system. The period of transition from pediatric to adult diabetes care represents a particularly risky time. Dr. Monaghan aims to leverage innovative technologies to improve youth communication skills and behaviors related to planning for diabetes visits, disclosing diabetes-related concerns, and optimizing glucose data review in preparation for entrance into adult diabetes care. This intervention has the potential to improve diabetes self-care skills. Equipping adolescents and young adults with skills to enhance health communication may hasten the development of key self-advocacy skills needed for successful engagement in adult diabetes care and, thus, establish a lasting pattern of positive health behaviors.

Dissecting the Brain’s Control of Metabolism
Alexander R. Nectow, PhD, Princeton University, Princeton, N.J.
Project Title: Investigation of Brainstem Neurons Regulating Energy Balance

Energy balance is tightly regulated by the brain, which detects changes in nutritional state and in turn modulates food intake, energy expenditure, and metabolic function. This sense-and-control system is comprised of neurons throughout the brain, particularly within the hypothalamus and brainstem. However, the mechanisms through which dysfunction of this system leads to obesity and diabetes are unknown. Dr. Nectow will explore the function of recently characterized inhibitory neurons in the brainstem, and ask whether these neurons are capable of regulating metabolism in healthy and obese mice. The results from this project may lead to a better understanding of the brain’s dysregulation in obesity and diabetes, and could thus have direct implications for the prevention and treatment of these debilitating disorders.

ACCELERATOR AWARDS (CONTINUED)

Understanding How Type 2 Diabetes is Linked to Cellular Changes
Michael L. Stitzel, PhD, The Jackson Laboratory, Farmington, Conn.
Project Title: Deciphering Longitudinal Cell Type-Specific Defects in Diabetes Pathogenesis

The pancreas features cell clusters called islets that contain multiple cell types that perform distinct functions, including the insulin-producing beta cells. Understandably, much diabetes research focuses on the beta cell. However, other cell types within the islet are also disrupted in type 2 diabetes and these changes are associated with disease progression. Dr. Stitzel aims to identify cell-type-specific molecular signatures of islet dysfunction and type 2 diabetes using innovative genomic approaches. His project will profile gene expression in single islet cells to define the cell types and determine differences between islets from individuals with normal glucose, prediabetes, and type 2 diabetes. This work will reveal the fundamental molecular features governing the identity and function of each islet cell type and provide a roadmap of the cell-type-specific changes that accompany diabetes. The results may lead to the identification of novel targets to prevent and treat type 2 diabetes.

Deciphering Longitudinal Cell Type-Specific Defects in Diabetes Pathogenesis

Investigation of Brainstem Neurons Regulating Energy Balance

Exploring a Novel Gene Therapy Approach for Diabetes
Samie R. Jaffrey, MD, PhD, Weill Cornell Medicine, New York
Project Title: Rewiring cellular metabolic networks in diabetes

Diabetes is associated with highly complex changes in cellular metabolism. Dr. Jaffrey sets out to develop a new type of gene therapy that will change gene expression in diabetes-affected cells and tissues. The approach involves expressing a new class of RNA molecules that function as molecular devices that perform corrective therapeutic actions, including sensing glucose and inducing insulin and GLP-1 production; inhibiting insulin resistance; and suppressing glucose production from the liver. The therapeutic devices will be tested in animal models of diabetes to provide critical proof-of-principle data needed to move toward human gene therapy trials to alleviate the burden of diabetes.

Rewiring cellular metabolic networks in diabetes

Cellular Changes Associated with Type 1 and Type 2 Diabetes
Jonathan V. Sweedler, PhD, University of Illinois at Urbana-Champaign
Project Title: Unraveling diabetes progression on a cell at a time

Pancreatic islets play critical roles in both type 1 and type 2 diabetes. Subtypes of pancreatic beta cells are known to respond differently to chemical signals, and Dr. Sweedler seeks to understand how these cellular differences influence chemical signaling in diabetes. By understanding changes that occur during disease progression, we will gain insight into the chemical mechanisms surrounding beta cell destruction in type 1, and insulin resistance and subsequent loss of beta cells in type 2. The project will use advanced technologies to determine the differences between individual human islet cells affected by type 1 diabetes and by type 2 diabetes. The results will elucidate new chemical parameters characteristic of each disease, helping to identify novel therapeutic pathways that can be exploited for the prevention, treatment, and cure of diabetes.
The Mentor Advisory Group

Eminent leaders in diabetes research serve on the Pathway Mentor Advisory Group. They seek in the Pathway applicants the core elements for exceptional science: rigorous thought processes, keen intellect, and capacity for innovation, creativity, and productivity. They mentor the awardees throughout the duration of their grants.

Silvia Corvera, MD
Chair, Mentor Advisory Group
University of Massachusetts Medical School, Worcester, Mass.

Domenico Accili, MD
Columbia University Medical Center, New York

Barbara J. Anderson, PhD
Baylor College of Medicine, Houston

Mark S. Anderson, MD, PhD
University of California, San Francisco

Mark A. Atkinson, PhD
The University of Florida, Gainesville, Fla.

Richard N. Bergman, PhD
Cedars-Sinai Medical Center, Los Angeles

Morris J. Birnbaum, MD, PhD

Charles Burant, MD, PhD
University of Michigan Medical School, Ann Arbor, Mich.

John B. Buse, MD, PhD
University of North Carolina School of Medicine, Chapel Hill, N.C.

Lawrence Chan, MD
Baylor College of Medicine, Houston

David A. D’Alessio, MD
Duke University, Durham, N.C.

Daniel Drucker, MD
Lunefeld-Tanenbaum Research Institute, Toronto, Canada

Robert H. Eckel, MD
University of Colorado Anschutz Medical Campus, Aurora, Colo.

Anthony Ferrante, MD, PhD
Columbia University, New York

Michael S. German, MD
University of California, San Francisco

Margaret Grey, DrPH, RN, FAAN
Yale University School of Nursing, New Haven, Conn.

David M. Harlan, MD
University of Massachusetts Medical School, Worcester, Mass.

Barbara V. Howard, PhD
MedStar Research Institute and Georgetown University, Hyattsville, Md.

Barbara Kahn, MD
Beth Israel Deaconess Medical Center, Boston

Steven E. Kahn, MB, ChB
VA Puget Sound Health Care System and University of Washington School of Medicine, Seattle

Rohit N. Kulkarni, MD, PhD
Joslin Diabetes Center, Boston

Martin G. Myers, MD, PhD
University of Michigan, Ann Arbor, Mich.

Christopher B. Newgard, PhD
Duke University, Durham, N.C.

Susan E. Quaggin, MD
Northwestern University Feinberg School of Medicine, Chicago

Christopher J. Rhodes, PhD
MedImmune, LLC, Gaithersburg, Md.

Stephen S. Rich, PhD
University of Virginia School of Medicine, Charlottesville, Va.

Alan R. Saltiel, PhD
University of California, San Diego School of Medicine

Jean E. Schaffer, MD
Washington University School of Medicine, St. Louis

Philipp E. Scherer, PhD
University of Texas Southwestern Medical Center, Dallas

Michael W. Schwartz, MD
University of Washington, Seattle

Elizabeth R. Seagrist, MD
University of Minnesota, Minneapolis

Randy J. Seeley, PhD
University of Michigan, Ann Arbor, Mich.

Gerald I. Shulman, MD, PhD
Yale University School of Medicine, New Haven, Conn.

Andrew Stewart, MD
Icahn School of Medicine at Mount Sinai, New York

Karen Talmadge, PhD
Nabu Strategic Advisors, Los Altos Hills, Calif.
The Association extends deep appreciation for the generosity of the corporate sponsors and philanthropic supporters who have made the Pathway to Stop Diabetes initiative possible.

**Corporate Sponsors and Philanthropic Supporters**

**CORPORATE SPONSORS**

**VISIONARY**
($15 million and above)

- Pete and Linda Cummin
- Peter and Valerie** Kompaniez
- Drs. Karen Talmadge and John Fiddes
- Don and Arleen Wagner

**ACCELERATOR**
($10–15 million)

**INITIATOR**
($5–10 million)

**BENEFACTOR**
($2–5 million)

**PHILANTHROPIC SUPPORTERS**

**ACCELERATOR**
($100K–999,999)

- Mr. and Mrs. Irvin Angel
- Alan and Elaine Armer, Trust
- Mr. and Mrs. Joseph C. Cook Jr.
- Ginger and Jack Graham
- Mr. Douglas C. Hepper
- Louise S. Hoffman
- George and Judy Huntley
- S. Daniel and Cynthia Johnson
- Richard J. Farber and Janet M. Leahy
- Vivian and Sarita Fonseca
- Gail Fritschle
- John Griffin and Lynn Knaupp
- Dr. and Mrs. Robert R. Henry
- Dwight Holing and Annie Notthoff
- Dr. Emily Holing and Mr. Bill Dillon
- Dr. David M. Kendall
- Karmeen Kulkarni
- Lebherz Family Foundation

**INITIATOR**
($10K–99,999)

- Gladyce Anderson
- Dr. Ron Arky
- Vaneeda and Robert Bennett
- Drs. David and Jane Bloomgarden
- Elly and Roger Brtva
- Dr. William T. Cefalu
- Martha and Peter Clark
- Eileen and Steven Cortese
- Mara Darsow and Anthony Moreau
- Richard J. Farber and Janet M. Leahy
- Vivian and Sarita Fonseca
- Gail Fritschle
- John Griffin and Lynn Knaupp
- Dr. and Mrs. Robert R. Henry
- Dwight Holing and Annie Notthoff
- Dr. Emily Holing and Mr. Bill Dillon
- Dr. David M. Kendall

**VISIONARY**
($1 million and above)

- Mr. and Mrs. Irvin Angel
- Alan and Elaine Armer, Trust
- Mr. and Mrs. Joseph C. Cook Jr.
- Ginger and Jack Graham
- Mr. Douglas C. Hepper
- Louise S. Hoffman
- George and Judy Huntley
- S. Daniel and Cynthia Johnson
- Richard J. Farber and Janet M. Leahy
- Vivian and Sarita Fonseca
- Gail Fritschle
- John Griffin and Lynn Knaupp
- Dr. and Mrs. Robert R. Henry
- Dwight Holing and Annie Notthoff
- Dr. Emily Holing and Mr. Bill Dillon
- Dr. David M. Kendall

**BENEFACTOR**
($2–5 million)

**ACCELERATOR**
($100K–999,999)

- Mr. and Mrs. Irvin Angel
- Alan and Elaine Armer, Trust
- Mr. and Mrs. Joseph C. Cook Jr.
- Ginger and Jack Graham
- Mr. Douglas C. Hepper
- Louise S. Hoffman
- George and Judy Huntley
- S. Daniel and Cynthia Johnson

**INITIATOR**
($10K–99,999)

- Gladyce Anderson
- Dr. Ron Arky
- Vaneeda and Robert Bennett
- Drs. David and Jane Bloomgarden
- Elly and Roger Brtva
- Dr. William T. Cefalu
- Martha and Peter Clark
- Eileen and Steven Cortese
- Mara Darsow and Anthony Moreau

**VISIONARY**
($1 million and above)

- Pete and Linda Cummin
- Peter and Valerie** Kompaniez
- Drs. Karen Talmadge and John Fiddes
- Don and Arleen Wagner
- Richard J. Farber and Janet M. Leahy
- Vivian and Sarita Fonseca
- Gail Fritschle
- John Griffin and Lynn Knaupp
- Dr. and Mrs. Robert R. Henry
- Dwight Holing and Annie Notthoff
- Dr. Emily Holing and Mr. Bill Dillon
- Dr. David M. Kendall

- Novo Nordisk is dedicated to working on excellence in diabetes and diabetes research. And this program, working together with the ADA, and supporting young investigators is important for the future. It's important for nurturing talent. It's important also for supporting science that will increase the understanding we have of the diabetes disease, but also will hopefully lead to better therapies for people with diabetes.

- Peter Kurtzhals, PhD, Senior Vice President and Head of Global Research, Novo Nordisk, Inc.

For More Information

Corporations should contact:
Tricia Cedotal
tcedotal@diabetes.org
1-800-676-4065, ext. 2066

Individuals and family foundations should contact:
Elaine Curran
ecurran@diabetes.org
1-800-676-4065, ext. 3413

*Contributions through December 31, 2017  **Deceased