The United States is in the grip of a rapidly expanding epidemic. According to the Centers for Disease Control and Prevention (CDC), 1 in 10 adults have diabetes, affecting 25.8 million people or 8.3 percent of the U.S. population. It is estimated that as of 2010, 79 million American adults aged 20 years or older had prediabetes. Already an alarming state of health in 2011, it will be dramatically worse if current trends continue, leading to nearly a third of U.S. adults managing diabetes by 2050.

Consider the health and financial ripple effects of diabetes:

• The seventh leading cause of death in the U.S.
• A major cause of heart disease and stroke
• The leading cause of kidney failure, non-traumatic lower-limb amputations and new cases of blindness among adults
• Medical expenses for people diagnosed with diabetes are more than twice the amount than those without the disease
• In 2007, the estimated total cost of diabetes related to medical expenses was $174 billion of which $116 billion were direct medical expenses
• 1 in 3 Medicare dollars is spent on diabetes

Just imagine what 1 in 3 people suffering from diabetes will mean to the health and financial well being of our country. Diabetes is an epidemic that must be stopped.

Decade of Discovery: A Minnesota Partnership to Conquer Diabetes

How can we stop this epidemic? It will require broad implementation of proven strategies for managing the disease as well as discovery of new methods to prevent, treat and cure diabetes. This is the approach University of Minnesota and Mayo Clinic had in mind when, in 2010, we launched Decade of Discovery: A Minnesota Partnership to Conquer Diabetes. Decade of Discovery is a 10-year effort to prevent, optimally treat and ultimately cure type 1 and type 2 diabetes.

Declaring a “cure” as the goal is ambitious, which is why we did not embark on this without careful consideration and evaluation of our institutions’ and Minnesota’s abilities. Decade of Discovery emerged from the work of an eight-year partnership between Mayo Clinic and the University of Minnesota, called the Minnesota Partnership for Biotechnology and Medical Genomics. The partnership was formed with the explicit purpose of enhancing and maximizing the research potential of these two institutions through a high-powered collaboration. It has worked as the Partnership has become a globally-recognized model of collaboration in biomedical research.

After establishing a track record of success, Partnership leaders were asked to raise the bar
on what they could do to tackle a major disease. Based on a thorough review of the University’s and Mayo’s past work in diabetes, unique research strengths among the two institutions and work being done by other potential partners in the state, diabetes was identified as the research area that offered the greatest promise for a major breakthrough.

In addition to the substantial portfolio of diabetes research grants Mayo and the University of Minnesota offer, there are several other factors that provide the foundation to conquer this devastating disease:

• Mayo Clinic is ranked number one in endocrinology/diabetes research
• The University of Minnesota has invested significantly in the science of regeneration, a necessary element of improved treatment and cure
• Both organizations have active programs in islet transplantation, artificial pancreas creation and stem cell biology
• Minnesota has a well-established track record in population-based prevention and wellness initiatives
• A number of the nation’s leading health care providers are in Minnesota
• Minnesota is home to recognized experts in diabetes research

Given these offerings, the question was not “Should we publicly pursue a cure for diabetes?” it was “How can we not take up this ambitious goal?”

The Pathway to Success
The ultimate success for Decade of Discovery is a cure for diabetes, but it’s going to take time to reach that goal. We view Decade of Discovery as a transformational change in how researchers, providers, policy makers and communities address chronic disease. It needs to be broad, inclusive and collaborative. Success will require bold leadership and engagement from organizations and institutions outside of the University and Mayo Clinic interested in advancing diabetes research, prevention, treatment and cure in Minnesota and elsewhere.

With sustained commitment from the Partnership and its collaborating partners along with funding support from public and private entities, the pathway to success will look like this:

• In the short term, we will build knowledge, information-sharing infrastructure and the strategic partnerships necessary to guide population-wide changes. We will also focus on targeted scientific breakthroughs and viable clinical trials.
• In the mid term, we will implement population-wide changes and translate the basic research findings into effective treatment and care-delivery strategies.
• In the long term, a successful preventive strategy will be developed and implemented in those at greatest risk for the disease and new therapies will bring us closer to a cure.

To follow this pathway, Decade of Discovery will involve more than 150 researchers at the two institutions already involved in diabetes research, recruit additional scientists and engage other health provider, public health and community-based partners. The work will focus on two core areas: Prevention and Care Delivery and Discovery and Translation. While a critical element of curing the disease lies in basic research and discoveries, the nature of diabetes demands equal attention to tackling the factors and behaviors that contribute to or cause diabetes. Stopping the epidemic must include intensive, simultaneous work on both tracks.

Prevention and Care Delivery. This work focuses on conducting the public health research necessary
to improve the implementation of optimal prevention and care strategies. In many cases, we know the actions and interventions that can prevent diabetes but they are not always implemented consistently. We will work to enhance the penetration of best practices through:

- Forming a broad-based alliance of those involved in funding and delivering chronic care to diabetes patients.
- Developing the Minnesota Diabetes Atlas that will provide the alliance with baseline data on the state of diabetes in Minnesota and targets for focused improvement. It will also serve as a measure of the alliance’s success.
- Developing and maintaining a catalogue of all diabetes-related initiatives, organizations, and activities across the state to identify synergies, avoid waste and duplication and broaden the impact of prevention initiatives.
- Maintaining a knowledge repository of the best scientific evidence supporting practice redesign toward improved care.
- Executing the vision of prevention and optimal treatment of diabetes through the alliance. This alliance, informed by the best available research evidence as well as the Diabetes Atlas, will advance diabetes care across the state by designing, promoting, and executing high-risk, innovative initiatives and broad-scale and cross-sector projects.

Our expectation is that Decade of Discovery will serve as a convening force to bring ideas and best practices together.

Discovery and Translation. This work focuses on developing new methods to manage and treat diabetes while exploring new approaches to replace the mechanisms in the body that fail to defend against diabetes. Generally, scientists know the what and the why of diabetes. Decade of Discovery will figure out how to change it through the following approaches:

- Basic research into genomics, proteomics, islet cells, stem cells
- Clinical trials based on discoveries in those areas
- Identifying better research methodologies to understand diabetes complications
- Establishing new scientific infrastructure for generating new treatment approaches

As the program advances, these are the indicators that will measure our progress:

- A 50% decrease in the incidence of preventable diabetes as we work toward a cure
- A 30% improvement in the quality of life for people with diabetes
- A 60% decrease in the burden and rate of complications with abolition of end-stage blindness, renal failure, and amputations due to diabetes
- A 50% reduction in the disparities of care and outcomes across gender, race, geography and socioeconomic status
- A 30% decrease in the treatment burden to patients and caregivers
- A 30% improvement in the patient care experience

Beyond the Laboratory
Mayo Clinic and the University of Minnesota can’t do this work alone. The problem is bigger than us so the solution needs to come from an even bigger and broader partnership. The discoveries generated from our laboratories are a critical foundation for this work but achieving Decade of Discovery’s goal demands the involvement of health care providers, health organization, businesses, public health, IT innovators and policymakers.

Our expectation is that Decade of Discovery will serve as a convening force to bring ideas and best practices together. We want to create an environment that encourages information-sharing, shared success and measurable progress. This sense
of collaboration is so important to the success of Decade of Discovery that a significant element of the early work is focused on identifying partners who offer the expertise to effectively and efficiently implement the plan. To prevent and optimally treat diabetes, we seek to create change and improvement through a broad-based alliance comprised of the major organizations involved with diabetes-related work in designing, paying for and delivering care for people at risk and with diabetes.

**Minnesota as Testing Ground**
The driving forces behind this initiative are Minnesota’s capabilities and expertise in diabetes research and the successful collaboration between the University of Minnesota and Mayo Clinic. Decade of Discovery represents a commitment of Minnesota resources, Minnesota institutions, Minnesota talent and the engagement of Minnesotans in an aggressive effort to fight diabetes. However, the results and impact will extend far beyond Minnesota.

Although Minnesota will serve as a statewide laboratory in the battle against diabetes, testing and research that begins in Minnesota will be shared and implemented by providers across the United States and even globally. Using Minnesota’s assets, the scaled approach will establish a testing ground for innovative approaches to be applied more broadly.

**Bold But Achievable...and Necessary**
The goal of Decade of Discovery is bold, but we are well equipped to succeed. The University of Minnesota and Mayo Clinic have already made significant breakthroughs in basic and clinical research on diabetes. Minnesota has been an international leader in diabetes and metabolism-related conditions for generations. Now it’s our obligation as a state and as a recognized leader in biomedical science to elevate that work toward a cure.

Curing a disease isn’t easy and it isn’t cheap. We estimate that a sustained investment of $250 million to $350 million over 10 years will be necessary to build more robust research capabilities, advance the IT infrastructure, implement population-wide changes and fully integrate recognized best practices into clinical practice. These funds will be sought from a range of sources including state and federal government, industry and private donors.

With the additional investment to the focus and collaboration brought by Decade of Discovery, we believe we can conquer diabetes in the coming decade. Our ability to accomplish this goal will have far-reaching impacts beyond the health and financial benefits of finding a cure for the diabetes epidemic — it will change how we address chronic disease moving forward.