

Mount Sinai inside



Brian D. Brown, PhD

On the Path to a Cure

A new kind of grant offers new opportunities

Pathfinder. The word itself conjures up images of pioneers, discoveries, and uncharted territories. Brian D. Brown, PhD, Assistant Professor of Genetics and Genomic Sciences, did not necessarily view himself as a pathfinder, but the National Institute of Diabetes and Digestive and Kidney Diseases did—Dr. Brown just received the Diabetes Pathfinder Award, a new, five-year federal grant that supports creative new investigators who present innovative research projects focused on type 1 diabetes.

Type 1 diabetes, an autoimmune disease, affects more than 300,000 Americans, and another 30,000 will be diagnosed this year alone. “Diabetes is a disease in serious need of attention,” says Dr. Brown. “We can predict susceptibility for type 1 diabetes, and there are antibodies that can be detected years before people develop the disease, but we need to find ways to stop the progression.”

Dr. Brown has been working in the field of gene transfer and gene therapy to induce immunologic tolerance. In his lab, he and his team are trying to find a way for susceptible people to be given preventive treatment that will boost their immune system, like a vaccine would, so they will not develop type 1 diabetes.

“Your body has mechanisms for naturally maintaining tolerance and preventing autoimmunities,” Dr. Brown says. “These mechanisms break down in type 1 diabetes patients. The idea is to develop

a vaccination that puts the antigen, in this case, insulin, into a pathway to boost the immune system’s tolerance and reduce the chance that the immune system is going to respond against this antigen.”

Dr. Brown and his colleagues will determine if they can target the vaccine to specific cell types that have a physiologic role in maintaining immunologic tolerance. Then they will assess whether their approach can induce tolerance to insulin. Finally, they will use a mouse model of diabetes to evaluate the effectiveness of the vaccine.

The hope is to change the future of type 1 diabetes care.

“Ideally, health care providers would one day be able to screen adults or children at risk, based on a parent or sibling having the disease,” says Dr. Brown. “There will come a time when you can prick someone’s finger, take blood, and do a genetic screen to determine the likelihood of developing type 1 diabetes. Ultimately, this novel vaccine could be administered.”