What is the TEDDY study?
TEDDY (short for **T**he **E**nvironmental **D**eterminants of **D**iabetes in the **Y**oung) is an ambitious, long-term study begun in 2002 that aims to understand what environmental factors cause type 1 diabetes in children. TEDDY researchers from across the United States—Colorado, Georgia, Florida, and Washington—and from European countries where rates of type 1 diabetes are the same as or even higher than in the United States, are currently following over 8,000 newborns until they are 15 years old. During the study, the researchers are collecting samples from TEDDY participants to create a unique biological database that will give unprecedented insight into type 1 diabetes and children’s health. TEDDY is anticipated to continue through 2023. It is led by the NIDDK and supported in full by the Special Statutory Funding Program for Type 1 Diabetes Research.

***Type 1 diabetes is a chronic disease in which the immune system destroys the insulin-producing beta cells of the pancreas. TEDDY is uniquely positioned to identify environmental factors that protect against or trigger type 1 diabetes in children, and can potentially revolutionize the ability to prevent the disease.***

Why do the TEDDY study?
Right now, there is no known way to prevent type 1 diabetes. Scientists know that a complex interplay of genetic and environmental factors underlies the development of the disease, and research has identified many genes that play a role. However, scientists do not know what environmental factor or factors may protect against, or “trigger,” the development of type 1 diabetes. TEDDY was started to answer that critical question.

Why is it important to identify environmental triggers of type 1 diabetes?
Identifying environmental triggers would allow researchers to develop prevention strategies. For instance, if exposure to a certain bacterium or virus is found to cause type 1 diabetes, researchers may be able to produce a protective vaccine. If a dietary factor is involved, then dietary changes could be recommended. In short, TEDDY potentially can revolutionize the ability to prevent type 1 diabetes.

How does the TEDDY study work?
First, TEDDY scientists had to screen over 425,000 newborns to find those at high genetic risk of developing type 1 diabetes. Of those screened, over 8,000 were enrolled in the study.

The study takes an enormous commitment by families: each child’s family records information about illnesses, diet, and other environmental exposures in their “TEDDY Book”; collects frequent stool, toenail, and other samples; and makes regular visits to have their child’s blood tested.

This herculean effort by the families and researchers has already paid off–TEDDY has collected over 2.5 million samples to date. These samples are a treasure trove of information that are now being analyzed to find similarities and differences between children who develop type 1 diabetes and those who do not.

How are TEDDY samples being analyzed?TEDDY investigators are using TEDDY samples and data to determine what causes or protects against type 1 diabetes and other autoimmune diseases. To identify causative or protective factors, they are studying:

* genes, gene expression, proteins, and metabolites (products of metabolism);
* environmental data; and
* bacteria, viruses, and other infectious agents.

Will TEDDY only help those with type 1 diabetes?TEDDY also will benefit people with other diseases and disorders. For example, the genetic predisposition to type 1 diabetes also predisposes children to celiac disease, and TEDDY is studying both diseases. TEDDY recently found that more than one quarter of children with two copies of a high risk variant in a specific group of genes develop an early sign of celiac disease by age 5—results that could have future implications for celiac disease screening in young children.

***Samples from TEDDY participants will give unprecedented and unique insight into type 1 diabetes and children’s health.***

Additionally, once it has achieved its study goals, TEDDY samples will be available to the larger research community. This rich and comprehensive resource will provide a unique opportunity to study varied topics such as childhood diseases, human development, and development of the immune system, among others.

**TEDDY – BY THE NUMBERS**

 **Number of children screened for TEDDY** 425,104

**Number of children enrolled in TEDDY** 8,677

**Number of samples collected for analysis** 2.5 million and counting

**Expected length of the TEDDY study** 21years

**Expected TEDDY completion date** 2023

