8,000 kids to be in study

MCG conducting diabetes research

By Tom Corwin | *Staff Writer*

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Thaniel Raynack doesn't yet realize he can't eat a piece of cereal while he has a pacifier in his mouth. But insights from the 7-month-old Martinez boy could one day lead to ways of avoiding developing type 1 diabetes. And he will have a lot of help with that.

Thaniel is one of what will someday be 8,000 children worldwide with genes that put them at high risk for the disease who will be followed during the next 15 years through a study based at the Medical College of Georgia.

Called The Environmental Determinants of Diabetes in the Young, or TEDDY, it might be the largest study of its kind into the interaction between genes and the environment, principal investigator Jin-Xiong She said.

"If it's not the biggest study it's one of the biggest studies. And it's not just the number and duration, it's the intensity of the protocol."

The children will have blood drawn every few months and stool samples submitted monthly for the first four years, and then less frequently up to age 15.

"It's a daunting task," Dr. She said.

The samples will be drawn from more than 300,000 screenings done on newborns in Augusta, Atlanta, Seattle, Florida and Colorado, and in Europe at centers in Finland, Sweden and Germany. The incidence of type 1 diabetes is highest in Scandanavia for unknown reasons, where the environment and diet is different from the U.S., Dr. She said.

The study will try to resolve why only one in 15 people who carry the high-risk genes goes on to develop the disease, in which the body's immune system attacks the insulin-producing cells in the pancreas.

"Environmental factors are definitely important for type 1 diabetes. There's almost no doubt," Dr. She said. "The question is whether we design the study correctly to find the triggers."

Different studies have linked type 1 diabetes with such seemingly innocuous factors as early introduction of gluten or cow's milk, but none of it has proved conclusive. And it might not just be a trigger such as frequent infections but when it happens.

"The genetic predisposition is only one part of the story. But the timing, maybe the frequency of the infection, can play a role in triggering the unwanted immune response," Dr. She said.

This kind of comprehensive follow-up could be the best way of unraveling that mystery, said Teri A. Manolio, a senior adviser to the director for population genomics at the National Human Genome Research Institute.

"This is probably the only way to really find out what are the environmental exposures from birth that lead to type 1 diabetes," she said.

That's why it's important to include other countries, Dr. She said.

"One of the advantages of TEDDY is the nature of international collaboration," he said. "The triggers may be different in different countries. What we find in Finland may or may not be true in Georgia. (There is) already evidence suggesting that is indeed the case."

"It's always good to have a wide variety of environments," said Dr. Manolio, who applauded the study's diverse patient population.

Finding that environmental trigger could then provide its own solution, Dr. She said.

"But if we can identify the environmental triggers, they can become the primary intervention tools, by avoiding certain environmental triggers," he said.

It would certainly be the easier solution than genetic modification, Dr, Manolio said.

At least that's what the Raynacks are hoping for Thaniel, who gurgles away in his high chair while his parents sit at the kitchen table and talk of his future, which now includes visits to MCG.

Mrs. Raynack, who is the director of pediatric rehab at the Hitchcock Health Center in Aiken, has a family history of diabetes. "I also have past experience of working with a child who had juvenile diabetes, and I know how difficult it was on the family."

The gene-environment interaction theory makes sense to her.

"It's not so far-fetched for me to believe that there might be some other factors to diabetes besides just the genetic component," she said.

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WANT TO JOIN?
The TEDDY study is open to any expectant parents who want to have their baby screened for diabetes, particularly those who have a family history. The study is also open to newborns up to three months old. For more information, call (706) 721-4161 or 1-888-225-7785