

The Future in the Past

Looking at heredity's role in diabetes-related kidney disease

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Occupation

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Focus

Diabetic kidney disease

Funding

ADA Clinical Research Award

Blood glucose control is an important tool in avoiding diabetes-related kidney disease.

In the 1990s, data from the Diabetes Control and Complications Trial revealed that tight control can cut the risk of both the development and the progression of kidney disease (nephropathy) by as much as 50 percent.

But other factors besides blood glucose affect risk, including heredity, says Jeffrey Schelling, MD, associate professor of medicine at Case Western Reserve University in Cleveland. "There are a handful of genes linked to diabetic nephropathy," he says. "Some may determine the rate of progression [of kidney disease], others may offer protection."

With his researchers and an associated team at Wake Forest University in Winston-Salem, N.C., Schelling is conducting



Jeffrey Schelling is studying genes linked to diabetic nephropathy.

JONATHAN WAYNE

a study to determine which genes have the strongest association with kidney disease and whether the genetic risk differs according to race.

Study Design

Schelling's study will involve analyzing the DNA of 1,200 participants who have either type 1 or type 2 diabetes and no signs of early kidney disease such as microscopic amounts of protein in the urine (microalbuminuria). Half of the participants will have a family history of diabetic kidney disease; half will not. Overall, half the participants will be African American and half will be white.

The study began 6 years ago, and Schelling's team is still recruiting participants. (See "Interested in Participating?" above for details on how you can enroll.) So far, approximately 400 participants with a family history of diabetic kidney disease and 350 participants with no such family history have enrolled.

The researchers will obtain the participants' DNA through white blood cells in blood samples taken when the participants enroll in the study. Once a year, participants will return to the study center to have their kidney function tested through blood and urine tests.

To sponsor an ADA research project at the Research Foundation's Pinnacle Society level of \$50,000 or more, call Elly Brtva, MPH, managing director of Individual Giving, at (703) 253-4377, or e-mail her at ebrtva@diabetes.org.

Interested in Participating?

Jeffrey Schelling, MD, and his team of researchers at Case Western Reserve University in Cleveland are still recruiting participants for this study. You don't have to live in Cleveland to sign up, he says. Most labs can handle the blood work and urine tests required.

To find out if you're eligible, contact the study's coordinator, Alicia O'Brien, RN, at aobrien@metrohealth.org or call (216) 778-2469.

The team will track each participant for an average of 4 years to see who develops kidney disease and what particular mix of genes they have. From there, the researchers hope to learn which genes have the strongest association with the development of diabetic kidney disease.

"Different studies have looked at different populations and used different methods, so it's difficult to see a genetic link from study to study," Schelling says. "The challenge is to get everyone looking at the same genes. That's really the holy grail."

He notes that this is the largest study of its kind to date, which will help confirm the results of smaller studies, particularly with respect to race.

"We know that African Americans have a higher rate of nephropathy than whites and need dialysis in disproportion to whites," he says. "There could be a number of reasons for that, including unequal access to health care.

"But there is also a perception that genes could play a role," Schelling adds. "I'm not aware

of a study that has documented well the rates of progression in African Americans according to genes."

Implications for Treatment

Schelling hopes that his research will provide a vast quantity of information that doctors can use in caring for their patients.

"If those with a family history of diabetic kidney disease and those who are African American have a higher risk of developing kidney disease, they would be the prime groups to focus on in providing preventive care," he says. "It would hammer the point home that certain groups require focused care."

He adds that further down the line, pharmaceutical companies may be able to use the information gathered in his study to develop drug treatments for these special populations.

"If we can identify a specific gene that is associated with the development of diabetic kidney disease, then we can think about therapeutic maneuvers to inhibit or enhance the way that gene works," he says. "But first we need to find out what the progression rates are for different groups and who is most at risk."