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Database launched to gather, study DNA from Midwestern twins

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Researchers who study how genes and the environment influence people's health are hoping that twins who live in the Midwest will contribute DNA to a new database that might provide insight about traits and diseases specific to the region.

The database, known as a twin register, was launched Wednesday by Sioux Falls-based Avera Health. It is seeking DNA samples from identical and fraternal twins of all ages in the Midwest, primarily in the Great Plains, and it comes after the health system processed thousands of samples belonging to twins from the Netherlands through a collaboration with researchers in that country.

"Why does one twin get a disease and the other doesn't? That's what we are studying. We look at both the genetics and environmental influences on diseases such as type 1 diabetes, behavioral disorders and cardiovascular disease," said Gareth Davies, chief scientific officer at the Avera Institute for Human Genetics.

The health system believes the database could potentially allow for more accurate diagnoses, development of better treatment and prevention of diseases. The DNA of the participants will be analyzed by researchers, but the individuals won't receive any additional care or compensation. A couple that has begun the process of enrolling their 16-month-old identical twins believes the potential of contributing to a breakthrough in science is enough motivation to participate.

"We already have them and it doesn't hurt them, so, why not help the research?" said Sioux Falls resident Craig McCarthy, dad to Kamper and Sayers. McCarthy said he knows the parents of other twins and would recommend they participate as well.

The twins or their parents, depending on their age, will periodically submit information about their health and environment and answer questions from the researchers. Avera occasionally will host gatherings for the twins and collect information in person.

Twin registers have been used for years to study the roles that genetics and the environment play in people's health. In the mid-1980s, the government sought information from 30,000 veterans who were twins to compare the health of men who served in Vietnam with brothers who did not. Other studies have used twin registers to try to determine who gets Alzheimer's disease, why some people develop attention deficit hyperactivity disorder and what influences a woman's ability to orgasm.

Among the issues Avera plans to focus on are cardiovascular disease and obesity. All identical or fraternal twins, triplets and multiples and their immediate family members can sign up. DNA will be collected with a cheek swab.

The University of Colorado Boulder, the University of Southern California and Michigan State University are among the U.S. institutions that have maintained twin registers. Similar databases, varying in the number of participants, can be found around the world.

Among them is the Netherlands Twin Register at Vrije University, established in 1987. Avera has processed more than 80,000 DNA samples from twins listed in the Netherlands database since 2009. Researchers in both countries will have access to the database with information from Midwestern twins. Davies said the populations in the

Midwest and the Netherlands make for an interesting comparison because they share a large number of genes, though Avera is by no means looking only for U.S. twins of Dutch ancestry.

"In genetics, collaboration is the norm," Dr. Dorret Boomsma, the founder of the Netherlands Twin Register, said in a statement. "Each population doesn't have the cohorts and resources to achieve the next breakthrough, so we need to work together and I'm excited to do that with Avera."

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