Gene for Goltz syndrome identified

The National Foundation for Ectodermal Dysplasias Helped Fund the Research

We are excited to inform you of recent progress that has been made in Goltz research. Dr. Igna Van den Veyver and her team at Baylor College of Medicine have identified the genetic mutation that causes Goltz syndrome, also called Focal Dermal Hypoplasia.

The National Foundation for Ectodermal Dysplasias (NFED) contributed $25,000 in grant funds and access to patients that were vital to the success of this project.

This is an important step forward in the understanding of the condition that will ultimately lead to more accurate diagnoses and perhaps in the future, better treatment for individuals with Goltz syndrome.

Now that this team has identified the genetic change that causes Goltz syndrome, families can be offered better information about the risk for additional family members to be affected and the risk to have future children with Goltz syndrome. When the genetic change is found in a family, the individuals who have an increased chance of having a child with Goltz syndrome can choose whether to have prenatal diagnosis to determine the status of the baby.

The NFED is in touch with 35 individuals who are affected by Goltz syndrome. It affects skin, bone, eyes and other body systems. The severity of problems resulting from the mutated gene, found on the X chromosome, vary, said Van den Veyver. There can be relatively minor to severe hand and foot abnormalities as well as those affecting the long bones of arm and legs. People with Goltz syndrome can suffer from skin defects on various body parts. In these cases, the skin does not develop normally, and fat, which usually stays under the skin, can come through, causing nodules. They can have eye abnormalities that may cause blindness in severe cases. Other organ systems are also affected. Symptoms can include absent or poorly developed shaped nails, inability to sweat, patches of hair loss, teeth with poor enamel or that are malformed, asymmetry of the face, malformed ears, and hearing loss.

The team of researchers at Baylor College of Medicine in Houston report that a mutation in a gene called PORCN results in Goltz syndrome. PORCN is involved in the secretion of Wnt proteins, which are necessary for proper signaling within the cell that leads to differentiation of tissues into organs and other body parts.

*PORCN* provides the DNA blueprint for making a protein that in the fruit fly and mouse is called porcupine. This protein is critical to the secretion of Wnt proteins, which then contact the membranes of other cells, starting them on the pathway to differentiation into various organs, limbs and other structures in the body. At present, very little is known about the function of *PORCN* in humans or other animals and this discovery holds the opportunity to better understand this gene and its effect on the very important Wnt pathway.

Understanding the protein and gene and confirming that it works the same way in humans that it does in animals is critical to further research. Dr. Van den Veyver said the next step is to generate a mouse model of the syndrome to study the function of the protein in the mouse and investigate possible treatments.
The NFED is grateful to the families affected by Goltz syndrome that volunteered and participated in this research.