ZNF341 Gene

Subjects: Genetics & Heredity
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Zinc finger protein 341

genes

1. Normal Function

The *ZNF341* gene provides instructions for making a transcription factor, which is a protein that attaches (binds) to specific regions of DNA and helps control the activity of particular genes. The ZNF341 protein is thought to regulate the activity of the *STAT1* and *STAT3* genes, controlling production of the STAT1 and STAT3 proteins, respectively. Both proteins are involved in the immune system. They control pathways in cells that help fight foreign invaders such as viruses, bacteria, and fungi. The STAT3 protein, in particular, transmits signals for the maturation of immune system cells, especially T cells and B cells. STAT3 is also involved in normal development and maintenance of bones and other tissues.

Researchers suspect that the ZNF341 protein controls the activity of other genes, although they have not been identified.

2. Health Conditions Related to Genetic Changes

2.1. Autosomal dominant hyper-IgE syndrome

At least five mutations in the *ZNF341* gene have been found to cause a condition similar to autosomal dominant hyper-IgE syndrome (AD-HIES), which is a disorder of the immune system characterized by recurrent skin and lung infections and abnormally high levels of an immune system protein called immunoglobulin E (IgE) in the blood. AD-HIES is usually caused by *STAT3* gene mutations and follows an autosomal dominant pattern of inheritance, which means one altered copy of the gene is sufficient to cause the disorder. In contrast, the condition caused by *ZNF341* gene mutations follows an autosomal recessive pattern of inheritance, which means both copies of the gene must be altered for immune system problems to develop.

The *ZNF341* gene mutations that cause an AD-HIES-like condition result in production of an abnormally short ZNF341 protein or production of no protein. With little or no ZNF341 protein, production of the STAT1 and STAT3 proteins is impaired. A shortage of functional STAT3 blocks the maturation of T cells (specifically a subset known as Th17 cells) and other immune cells. The resulting immune system abnormalities make people with AD-HIES highly

susceptible to infections, particularly bacterial and fungal infections of the lungs and skin. A shortage of STAT1 protein is not thought to contribute to immune system problems in affected individuals.

3. Other Names for This Gene

- ZNF341 gene

References

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