DLL4 gene

delta like canonical Notch ligand 4

Normal Function

The *DLL4* gene provides instructions for making a protein that is part of a signaling pathway known as the Notch pathway, which is important for normal development of many tissues throughout the body. The DLL4 protein attaches to a receptor protein called Notch1, fitting together like a key into its lock. When a connection is made between DLL4 and Notch1, a series of signaling reactions is launched (the Notch pathway), affecting cell functions. In particular, signaling stimulated by DLL4 plays a role in development of blood vessels before birth and growth of new blood vessels (angiogenesis) throughout life.

Health Conditions Related to Genetic Changes

Adams-Oliver syndrome

At least nine *DLL4* gene mutations have been found in people with Adams-Oliver syndrome, a condition characterized by areas of missing skin (aplasia cutis congenita), usually on the scalp, and malformations of the hands and feet. Some of these mutations lead to production of an abnormally short protein that is likely broken down quickly, causing a shortage of DLL4. Other mutations change single protein building blocks (amino acids) in the DLL4 protein. These changes are thought to alter the structure of the protein, impairing its ability to function. Loss of DLL4 function may underlie blood vessel abnormalities in people with Adams-Oliver syndrome; however, some people with DLL4-related Adams-Oliver syndrome do not have these abnormalities. It is not clear how loss of DLL4 function leads to the scalp and limb abnormalities characteristic of the condition. Researchers suggest these features may be due to abnormal blood vessel development before birth.

Other Names for This Gene

- AOS6
- delta 4
- delta ligand 4
- delta-like 4 (Drosophila)
- delta-like 4 homolog

- delta-like 4 protein
- delta-like protein 4 precursor
- delta4
- drosophila Delta homolog 4
- hdelta2
- notch ligand delta-2
- notch ligand DLL4

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of DLL4 (https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=54567[geneid])

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28%28DLL4%5BTIAB%5D%29+OR+%28delta-like+4%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+720+days%22%5Bdp%5D)

Catalog of Genes and Diseases from OMIM

- DELTA-LIKE CANONICAL NOTCH LIGAND 4; DLL4 (https://omim.org/entry/605185)

Gene and Variant Databases

- NCBI Gene (https://www.ncbi.nlm.nih.gov/gene/54567)
- ClinVar (https://www.ncbi.nlm.nih.gov/clinvar?term=DLL4[gene])

References

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Genomic Location

The *DLL4* gene is found on chromosome 15 (https://medlineplus.gov/genetics/chromosome/15/).

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