FBLN5 gene

fibulin 5

Normal Function

The *FBLN5* gene provides instructions for making a protein called fibulin-5. This protein is part of a group of proteins called fibulins. Fibulins have a variety of functions in the extracellular matrix, which is the intricate lattice of proteins and other molecules that forms in the spaces between cells.

In the extracellular matrix, fibulin-5 appears to play a critical role in the assembly of elastic fibers. These slender bundles of proteins provide strength and flexibility to connective tissue (tissue that supports the body's joints and organs). Fibulin-5 is found in tissues and organs that are rich in elastic fibers, including developing arteries and the heart valves, lungs, and skin.

Health Conditions Related to Genetic Changes

Cutis laxa

At least four mutations in the *FBLN5* gene have been identified in people with cutis laxa. Mutations in this gene can cause two different types of cutis laxa: an autosomal dominant form and an autosomal recessive form. In autosomal dominant cutis laxa, one copy of the altered *FBLN5* gene in each cell is sufficient to cause the characteristic features of the disorder. In autosomal recessive cutis laxa, both copies of the gene in each cell must be altered to result in the disease.

The *FBLN5* mutation known to cause autosomal dominant cutis laxa leads to the production of an abnormally long, nonfunctional version of fibulin-5. This abnormal protein interferes with the normal fibulin-5 produced from the other, unaltered copy of the *FBLN5* gene. As a result, the amount of functional fibulin-5 in the extracellular matrix is severely reduced. A shortage of this protein prevents the assembly of elastic fibers, which weakens connective tissue in the skin, arteries, lungs, and other organs. These defects in connective tissue underlie the major features of cutis laxa.

Autosomal recessive cutis laxa results from *FBLN5* mutations that change single protein building blocks (amino acids) in fibulin-5. These mutations alter the structure of the protein, trapping it within the cell. Because the defective fibulin-5 never makes it to the extracellular matrix, it is not available for the assembly of elastic fibers. A shortage of normal elastic fibers weakens connective tissue throughout the body, leading to the signs and symptoms of cutis laxa.

Age-related macular degeneration

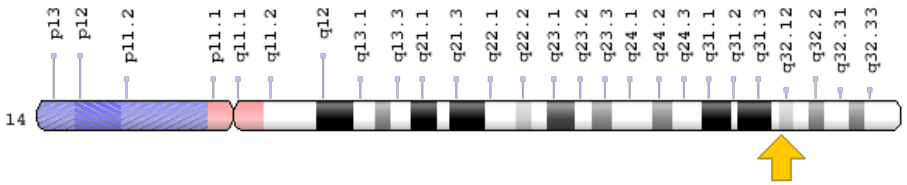
Other disorders

Researchers have been studying *FBLN5* mutations as a possible risk factor for age-related macular degeneration, an eye disease that is a leading cause of vision loss among older people worldwide. Mutations in the *FBLN5* gene have been found in a small number of people with age-related macular degeneration, but changes in this gene are probably not a major risk factor for this common eye disorder. A combination of genetic and environmental factors likely determine the risk of developing this disease.

Chromosomal Location

Cytogenetic Location: 14q32.12, which is the long (q) arm of chromosome 14 at position 32.12

Molecular Location: base pairs 91,869,411 to 91,947,702 on chromosome 14 (Homo sapiens Annotation Release 109, GRCh38.p12) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- ARMD3
- DANCE
- developmental arteries and neural crest epidermal growth factor-like
- EVEC
- FBLN5_HUMAN
- FIBL-5
- FLJ90059
- UP50
- urine p50 protein

Additional Information & Resources

Educational Resources

- Madame Curie Bioscience Database: Fibulins
  https://www.ncbi.nlm.nih.gov/books/NBK6448/#A22215
- National Eye Institute: Age-Related Macular Degeneration
  https://nei.nih.gov/health/maculardegen/armd_facts

GeneReviews

- FBLN5-Related Cutis Laxa
  https://www.ncbi.nlm.nih.gov/books/NBK5201

Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28FBLN5%5BTIAB%5D%29+OR+%28fibulin+5%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+3600+days%22%5Bdp%5D

OMIM

- FIBULIN 5
  http://omim.org/entry/604580
- NEUROPATHY, HEREDITARY, WITH OR WITHOUT AGE-RELATED MACULAR DEGENERATION
  http://omim.org/entry/608895

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
  http://atlasgeneticsoncology.org/Genes/FBLN5ID46779ch14q32.html
- ClinVar
  https://www.ncbi.nlm.nih.gov/clinvar?term=FBLN5%5Bgene%5D
- HGNC Gene Family: Fibulins
  https://www.genenames.org/cgi-bin/genefamilies/set/556
- HGNC Gene Symbol Report
  https://www.genenames.org/cgi-bin/gene_symbol_report?q=data/hgnc_data.php&hgnc_id=3602
- NCBI Gene
  https://www.ncbi.nlm.nih.gov/gene/10516
- UniProt
  http://www.uniprot.org/uniprot/Q9UBX5

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