FBN2 gene
fibrillin 2

Normal Function

The FBN2 gene provides instructions for making a large protein called fibrillin-2. This protein is transported out of cells into the extracellular matrix, which is an intricate lattice of proteins and other molecules that forms in the spaces between cells. In this matrix, fibrillin-2 binds to other proteins to form threadlike filaments called microfibrils. Microfibrils become part of elastic fibers which enable the skin, ligaments, and blood vessels to stretch. Researchers have suggested that fibrillin-2 plays a role in directing the assembly of elastic fibers during embryonic development. Microfibrils also contribute to more rigid tissues that support the lens of the eye, nerves, and muscles. Additionally, microfibrils hold certain growth factors called transforming growth factor-beta (TGF-beta) proteins, which keeps them inactive. When released from microfibrils, TGF-beta growth factors are activated and affect the growth and repair of tissues throughout the body.

Health Conditions Related to Genetic Changes

Congenital contractural arachnodactyly

More than 20 mutations in the FBN2 gene have been found to cause congenital contractural arachnodactyly. Most of these mutations change one protein building block (amino acid) in the fibrillin-2 protein, usually replacing the amino acid cysteine with a different amino acid. The substitution of another amino acid for cysteine can alter the structure or function of fibrillin-2. Most other FBN2 mutations disrupt the way the FBN2 gene’s instructions are used to make the fibrillin-2 protein. All of these mutations reduce the amount of fibrillin-2 available to form microfibrils. Decreased microfibril formation probably weakens the elastic fibers and causes overactivation of TGF-beta growth factors, which leads to the signs and symptoms of congenital contractural arachnodactyly.
Chromosomal Location

Cytogenetic Location: 5q23.3, which is the long (q) arm of chromosome 5 at position 23.3

Molecular Location: base pairs 128,257,909 to 128,538,245 on chromosome 5 (Homo sapiens Updated Annotation Release 109.20190905, GRCh38.p13) (NCBI)

Credit: Genome Decoration Page/NCBI

Other Names for This Gene

• CCA
• DA9
• FBN2_HUMAN
• fibrillin 2 (congenital contractual arachnodactyly)

Additional Information & Resources

Educational Resources

• Eurekah Bioscience: Interaction Epitopes Important for Fibrillin Assembly
  https://www.ncbi.nlm.nih.gov/books/NBK5960/#A22112

Clinical Information from GeneReviews

• Congenital Contractural Arachnodactyly
  https://www.ncbi.nlm.nih.gov/books/NBK1386

Scientific Articles on PubMed

• PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28FBN2%5BTIAB%5D%29+OR+%28fibrillin+2%5BTIAB%5D%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+720+days%22+AND+human%5Bmh%5D

Catalog of Genes and Diseases from OMIM

• FIBRILLIN 2
  http://omim.org/entry/612570
Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
  http://atlasgeneticsoncology.org/Genes/GC_FBN2.html
- ClinVar
- HGNC Gene Symbol Report
- Monarch Initiative
  https://monarchinitiative.org/gene/NCBIGene:2201
- NCBI Gene
- UniProt
  https://www.uniprot.org/uniprot/P35556

Sources for This Summary


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