CCN6 gene
cellular communication network factor 6

Normal Function
The CCN6 gene provides instructions for making a protein that appears to be involved in bone growth and the maintenance of cartilage, which covers and protects the ends of bones. The function of the CCN6 protein is not well understood. It is part of a family of proteins that are involved in the growth and maintenance of connective tissues, such as bone, cartilage, and blood vessels. The CCN6 protein is made in cells called chondrocytes, which produce and maintain cartilage, and is associated with the production of certain proteins that make up cartilage, but its role in their production is unclear. CCN6 may also help control signaling pathways involved in the development of cartilage and bone and may help regulate the breakdown of cartilage components.

Health Conditions Related to Genetic Changes

Progressive pseudorheumatoid dysplasia
Mutations in the CCN6 gene cause progressive pseudorheumatoid dysplasia (PPRD), which is a condition that causes stiffness and pain in the joints of the hands, hips, knees, and spine. The joint problems worsen over time, and movement in the joints becomes limited. Most of the mutations involved in this condition lead to production of an abnormally short CCN6 protein that is probably nonfunctional. Other mutations change single protein building blocks (amino acids) in the protein. Loss of CCN6 protein function likely disrupts normal cartilage maintenance and bone growth, leading to the joint problems in PPRD.

Juvenile idiopathic arthritis
Chromosomal Location

Cytogenetic Location: 6q21, which is the long (q) arm of chromosome 6 at position 21
Molecular Location: base pairs 112,052,813 to 112,070,969 on chromosome 6 (Homo sapiens Updated Annotation Release 109.20190905, GRCh38.p13) (NCBI)

Credit: Genome Decoration Page/NCBI

Other Names for This Gene

• CCN family member 6
• LIBC
• PPAC
• PPD
• WISP-3
• WISP3
• WISP3_HUMAN
• WNT1 inducible signaling pathway protein 3
• WNT1-inducible-signaling pathway protein 3

Additional Information & Resources

Clinical Information from GeneReviews
• Progressive Pseudorheumatoid Dysplasia
  https://www.ncbi.nlm.nih.gov/books/NBK327267
Scientific Articles on PubMed

- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28WISP3%5BTIAB%5D%29+OR+%28WNT1+inducible+signaling+pathway+protein+3%5BTIAB%5D%29+OR+%28CCN6%29%29+OR+%28%28WNT1-inducible-signaling+pathway+protein+3%5BTIAB%5D%29+OR+%28WISP-3%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D+OR+Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D

Catalog of Genes and Diseases from OMIM

- WNT1-INDUCIBLE SIGNALING PATHWAY PROTEIN 3
  http://omim.org/entry/603400

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
  http://atlasgeneticsoncology.org/Genes/WISP3ID469ch6q22.html

- ClinVar
  https://www.ncbi.nlm.nih.gov/clinvar?term=CCN6%5Bgene%5D

- HGNC Gene Symbol Report

- Monarch Initiative
  https://monarchinitiative.org/gene/NCBIGene:8838

- NCBI Gene

- UniProt
  https://www.uniprot.org/uniprot/O95389

Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/22294415
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3366172/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/16480948

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17823661
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964511/
- OMIM: WNT1-INDUCIBLE SIGNALING PATHWAY PROTEIN 3 http://omim.org/entry/603400

Reprinted from Genetics Home Reference:

Reviewed: April 2013
Published: October 29, 2019

Lister Hill National Center for Biomedical Communications
U.S. National Library of Medicine
National Institutes of Health
Department of Health & Human Services