KIF7 gene
kinesin family member 7

Normal Function
The *KIF7* gene provides instructions for making a protein that is associated with structures called primary cilia. These microscopic, finger-like projections stick out from the surface of cells and are involved in signaling pathways that transmit information into cells. Studies suggest that the KIF7 protein helps to maintain the proper length and stability of cilia.

Through its association with primary cilia, the KIF7 protein helps regulate a signaling pathway known as Sonic Hedgehog. This pathway is essential for early development. It plays roles in cell growth, cell specialization, and the normal shaping (patterning) of many parts of the body, including the brain and limbs.

Health Conditions Related to Genetic Changes

**Acrocallosal syndrome**
At least 20 mutations in the *KIF7* gene have been identified in people with acrocallosal syndrome. This rare condition is characterized by certain brain abnormalities, the presence of extra fingers and toes (polydactyly), and distinctive facial features, including widely spaced eyes (hypertelorism) and a prominent forehead. Most of the *KIF7* gene mutations that cause acrocallosal syndrome lead to the production of an abnormally short, nonfunctional version of the KIF7 protein or prevent any protein from being produced from the gene. Little is known about the effects of these mutations, although they likely disrupt Sonic Hedgehog signaling during early development. It is unclear how these changes impair the development of the brain, limbs, and other parts of the body in people with acrocallosal syndrome.

**Joubert syndrome**
Chromosomal Location

Cytogenetic Location: 15q26.1, which is the long (q) arm of chromosome 15 at position 26.1

Molecular Location: base pairs 89,627,977 to 89,663,086 on chromosome 15 (Homo sapiens Updated Annotation Release 109.20191205, GRCh38.p13) (NCBI)

Credit: Genome Decoration Page/NCBI

Other Names for This Gene

• ACLS
• AGBK
• EQYK340
• HLS2
• JBTS12
• kinesin-like protein KIF7
• UNQ340

Additional Information & Resources

Educational Resources

• Developmental Biology (sixth edition, 2000): The Hedgehog Pathway

  https://www.ncbi.nlm.nih.gov/books/NBK21698/

Scientific Articles on PubMed

• PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28KIF7%5BTIAB%5D%29+OR+%28kinesin+family+member+7%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22+AND+3600+days%22%5Bdp%5D
Catalog of Genes and Diseases from OMIM

- **KINESIN FAMILY MEMBER 7**
  http://omim.org/entry/611254

Research Resources

- ClinVar
  https://www.ncbi.nlm.nih.gov/clinvar?term=KIF7%5Bgene%5D
- HGNC Gene Symbol Report
- Monarch Initiative
  https://monarchinitiative.org/gene/NCBIGene:374654
- NCBI Gene
- UniProt
  https://www.uniprot.org/uniprot/Q2M1P5

Sources for This Summary

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/21633164
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3223820/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/24952464
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4085576/

- OMIM: KINESIN FAMILY MEMBER 7
  http://omim.org/entry/611254

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