

PKP2 gene

plakophilin 2

Normal Function

The *PKP2* gene provides instructions for making a protein called plakophilin 2. This protein is found primarily in cells of the myocardium, which is the muscular wall of the heart. Within these cells, plakophilin 2 is one of several proteins that make up structures called desmosomes. These structures form junctions that attach cells to one another. Desmosomes provide strength to the myocardium and are involved in signaling between neighboring cells.

Health Conditions Related to Genetic Changes

Arrhythmogenic right ventricular cardiomyopathy

More than 230 mutations in the *PKP2* gene have been identified in people with arrhythmogenic right ventricular cardiomyopathy (ARVC). This condition most commonly affects the myocardium surrounding the right ventricle, one of the two lower chambers of the heart. ARVC increases the risk of an abnormal heartbeat (arrhythmia) and sudden death.

Some *PKP2* gene mutations lead to the production of an abnormally short version of plakophilin 2. Other mutations alter the structure of plakophilin 2 by adding, deleting, or changing one or more of its protein building blocks (amino acids). Studies suggest that the altered protein impairs the formation and function of desmosomes.

Without normal desmosomes, cells of the myocardium detach from one another and die, particularly when the heart muscle is placed under stress (such as during vigorous exercise). The damaged myocardium is gradually replaced by fat and scar tissue. As this abnormal tissue builds up, the walls of the right ventricle become stretched out, preventing the heart from pumping blood effectively. These changes also disrupt the electrical signals that control the heartbeat, which can lead to arrhythmia.

Other Names for This Gene

- ARVD9
- MGC177501
- plakophilin-2

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of PKP2 ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=5318\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=5318[geneid]))

Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28PKP2%5BTIAB%5D%29+OR+%28plakophilin+2%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+1800+days%22%5Bdp%5D>)

Catalog of Genes and Diseases from OMIM

- PLAKOPHILIN 2; PKP2 (<https://omim.org/entry/602861>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/5318>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=PKP2\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=PKP2[gene]))

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Genomic Location

The *PKP2* gene is found on chromosome 12 (<https://medlineplus.gov/genetics/chromosome/12/>).

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