



RPS10 gene

ribosomal protein S10

Normal Function

The *RPS10* gene provides instructions for making one of approximately 80 different ribosomal proteins, which are components of cellular structures called ribosomes. Ribosomes process the cell's genetic instructions to create proteins.

Each ribosome is made up of two parts (subunits) called the large and small subunits. The protein produced from the *RPS10* gene is among those found in the small subunit.

The specific functions of the RPS10 protein and the other ribosomal proteins within these subunits are unclear. Some ribosomal proteins are involved in the assembly or stability of ribosomes. Others help carry out the ribosome's main function of building new proteins. Studies suggest that some ribosomal proteins may have other functions, such as participating in chemical signaling pathways within the cell, regulating cell division, and controlling the self-destruction of cells (apoptosis).

Health Conditions Related to Genetic Changes

Diamond-Blackfan anemia

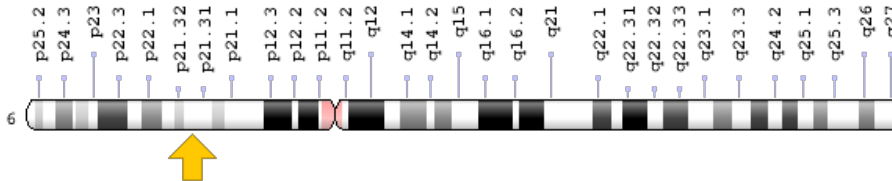
At least five *RPS10* gene mutations have been identified in individuals with Diamond-Blackfan anemia. This disorder primarily affects the bone marrow, which produces new blood cells. People with this condition often also have physical abnormalities affecting various parts of the body.

The *RPS10* gene mutations that cause Diamond-Blackfan anemia are believed to result in an abnormally short, nonfunctional RPS10 protein that may impair the assembly of ribosomes, but the specific effects of the mutations are not known. Studies indicate that a shortage of functioning ribosomes may increase apoptosis of blood-forming cells in the bone marrow, resulting in a low number of red blood cells (anemia). Abnormal regulation of cell division or inappropriate triggering of apoptosis may contribute to the other health problems and unusual physical features that affect some people with Diamond-Blackfan anemia.

Chromosomal Location

Cytogenetic Location: 6p21.31, which is the short (p) arm of chromosome 6 at position 21.31

Molecular Location: base pairs 34,417,454 to 34,426,125 on chromosome 6 (Homo sapiens Annotation Release 109, GRCh38.p12) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- 40S ribosomal protein S10
- DBA9
- MGC88819
- RS10_HUMAN
- S10

Additional Information & Resources

Educational Resources

- Molecular Biology of the Cell (fourth edition, 2002): The RNA Message is Decoded on Ribosomes
<https://www.ncbi.nlm.nih.gov/books/NBK26829/#A1071>

Clinical Information from GeneReviews

- Diamond-Blackfan Anemia
<https://www.ncbi.nlm.nih.gov/books/NBK7047>

Scientific Articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28%28RPS10%5BTIAB%5D%29+OR+%28ribosomal+protein+S10%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5BIa%5D+AND+human%5Bmh%5D+AND+%22last+1440+days%22%5Bdp%5D>

Catalog of Genes and Diseases from OMIM

- RIBOSOMAL PROTEIN S10
<http://omim.org/entry/603632>

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
http://atlasgeneticsoncology.org/Genes/GC_RPS10.html
- ClinVar
<https://www.ncbi.nlm.nih.gov/clinvar?term=RPS10%5Bgene%5D>
- HGNC Gene Symbol Report
https://www.genenames.org/data/gene-symbol-report/#!/hgnc_id/HGNC:10383
- Monarch Initiative
<https://monarchinitiative.org/gene/NCBIGene:6204>
- NCBI Gene
<https://www.ncbi.nlm.nih.gov/gene/6204>
- UniProt
<https://www.uniprot.org/uniprot/P46783>

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