

## MIR145 gene

microRNA 145

### Normal Function

The *MIR145* gene provides instructions for making microRNA-145 (miR-145). MicroRNAs (miRNAs) are short lengths of RNA, a chemical cousin of DNA. These molecules control gene expression by blocking the process of protein production. MiR-145 is abundant in immature blood cells and controls the expression of hundreds of genes. This microRNA is thought to be involved in normal blood cell development. In particular, miR-145 appears to play a role in the growth and division of blood cells called megakaryocytes, which produce platelets, the cells involved in blood clotting.

### Health Conditions Related to Genetic Changes

#### 5q minus syndrome

The *MIR145* gene is involved in a condition called 5q minus (5q-) syndrome. This condition is a type of bone marrow disorder called myelodysplastic syndrome (MDS), in which immature blood cells fail to develop normally. Individuals with 5q- syndrome often have a shortage of red blood cells (anemia) and abnormalities in megakaryocytes. Affected individuals also have an increased risk of developing a fast-growing blood cancer known as acute myeloid leukemia (AML).

5q- syndrome is caused by deletion of a region of DNA from the long (q) arm of chromosome 5. This deletion occurs in immature blood cells during a person's lifetime and affects one copy of chromosome 5 in each cell. Most people with 5q- syndrome are missing a sequence of about 1.5 million DNA building blocks (base pairs), also written as 1.5 megabases (Mb). This deleted region contains 40 genes, including *MIR145*. Loss of one copy of the *MIR145* gene reduces the amount of the microRNA miR-145 in cells. As a result, levels of proteins whose production is normally blocked by miR-145 are elevated, which leads to the abnormal development of megakaryocytes that occurs in 5q- syndrome. Research suggests that the other features of the condition are associated with other genes in the deleted segment of DNA.

### Other Names for This Gene

- hsa-mir-145
- miR-145

- MIRN145
- miRNA145

## Additional Information & Resources

### Tests Listed in the Genetic Testing Registry

- Tests of MIR145 ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=406937\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=406937[geneid]))

### Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28MIR145%5BTIAB%5D%29+OR+%28microRNA+145%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+1080+days%22%5Bdp%5D%29%29%29>)

### Catalog of Genes and Diseases from OMIM

- MICRO RNA 145; MIR145 (<https://omim.org/entry/611795>)

### Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/406937>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=MIR145\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=MIR145[gene]))

## References

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## Genomic Location

The *MIR145* gene is found on chromosome 5 (<https://medlineplus.gov/genetics/chromosome/5/>).

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