

ZMYM2 gene

zinc finger MYM-type containing 2

Normal Function

The *ZMYM2* gene (previously known as *ZNF198*) provides instructions for making a protein whose function is not clearly understood. It is a member of a family of zinc finger proteins, which contain one or more short regions called zinc finger domains. The zinc finger domains in the *ZMYM2* protein are thought to allow it to regulate interactions between other proteins. *ZMYM2* is found in the nucleus of the cell, where it likely associates with other proteins. Through these associations, the *ZMYM2* protein may be involved in repairing DNA errors, controlling gene activity, or forming structures in the nucleus called PML nuclear bodies that block the growth and division of cells and promote their self-destruction (apoptosis).

Health Conditions Related to Genetic Changes

8p11 myeloproliferative syndrome

A genetic change involving the *ZMYM2* gene causes most cases of 8p11 myeloproliferative syndrome. This condition is characterized by an increased number of white blood cells (myeloproliferative disorder) and the development of lymphoma, a blood-related cancer that causes tumor formation in the lymph nodes. The myeloproliferative disorder usually develops into another form of blood cancer called acute myeloid leukemia. 8p11 myeloproliferative syndrome most commonly results from a rearrangement (translocation) of genetic material between chromosome 13 and chromosome 8. This genetic change fuses part of the *ZMYM2* gene on chromosome 13 with part of the *FGFR1* gene on chromosome 8. The translocation is found only in cancer cells.

The protein produced from the normal *FGFR1* gene can turn on cellular signaling that helps the cell respond to its environment, for example by stimulating cell growth. The protein produced from the fused *ZMYM2-FGFR1* gene leads to constant FGFR1 signaling. The uncontrolled signaling promotes continuous cell growth and division, leading to cancer.

Other Names for This Gene

- FIM

- fused in myeloproliferative disorders protein
- MYM
- RAMP
- rearranged in an atypical myeloproliferative disorder
- SCLL
- zinc finger MYM-type protein 2
- zinc finger protein 198
- zinc finger, MYM-type 2
- ZMYM2_HUMAN
- ZNF198

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of ZMYM2 ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=7750\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=7750[geneid]))

Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28ZMYM2%5BTIAB%5D%29+OR+%28ZNF198%5BTIAB%5D%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D%29>)

Catalog of Genes and Diseases from OMIM

- ZINC FINGER, MYM-TYPE 2; ZMYM2 (<https://omim.org/entry/602221>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/7750>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=ZMYM2\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=ZMYM2[gene]))

References

- Gocke CB, Yu H. ZNF198 stabilizes the LSD1-CoREST-HDAC1 complex on chromatin through its MYM-type zinc fingers. PLoS One. 2008 Sep 22;3(9):e3255. doi:10.1371/journal.pone.0003255. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/18806873>) or Free article on PubMed Central (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2532748/>)

- Jackson CC, Medeiros LJ, Miranda RN. 8p11 myeloproliferative syndrome: a review. *Hum Pathol*. 2010 Apr;41(4):461-76. doi: 10.1016/j.humpath.2009.11.003. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/20226962>)
- Kunapuli P, Kasyapa CS, Chin SF, Caldas C, Cowell JK. ZNF198, a zinc finger protein rearranged in myeloproliferative disease, localizes to the PML nuclear bodies and interacts with SUMO-1 and PML. *Exp Cell Res*. 2006 Nov15;312(19):3739-51. doi: 10.1016/j.yexcr.2006.06.037. Epub 2006 Aug 14. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/17027752>)
- Kunapuli P, Somerville R, Still IH, Cowell JK. ZNF198 protein, involved in rearrangement in myeloproliferative disease, forms complexes with the DNA repair-associated HHR6A/6B and RAD18 proteins. *Oncogene*. 2003 May29;22(22):3417-23. doi: 10.1038/sj.onc.1206408. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/12776193>)
- Xiao S, McCarthy JG, Aster JC, Fletcher JA. ZNF198-FGFR1 transforming activity depends on a novel proline-rich ZNF198 oligomerization domain. *Blood*. 2000 Jul15;96(2):699-704. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/10887137>)
- Xiao S, Nalabolu SR, Aster JC, Ma J, Abruzzo L, Jaffe ES, Stone R, Weissman SM, Hudson TJ, Fletcher JA. FGFR1 is fused with a novel zinc-finger gene, ZNF198, in the t(8;13) leukaemia/lymphoma syndrome. *Nat Genet*. 1998 Jan;18(1):84-7. doi:10.1038/ng0198-84. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/9425908>)

Genomic Location

The *ZMYM2* gene is found on chromosome 13 (<https://medlineplus.gov/genetics/chromosome/13/>).

Last updated July 1, 2013