



MCM6 gene

minichromosome maintenance complex component 6

Normal Function

The *MCM6* gene provides instructions for making part of the MCM complex, a group of proteins that functions as a helicase. Helicases attach to particular regions of DNA and temporarily unwind the two spiral strands of these molecules. When a cell prepares to divide to form two cells, helicases unwind the DNA so that it can be copied. The DNA that makes up the chromosomes is duplicated (replicated) so that each new cell will get a complete set of chromosomes. Helicases are also involved in the production of RNA, a chemical cousin of DNA.

Health Conditions Related to Genetic Changes

Lactose intolerance

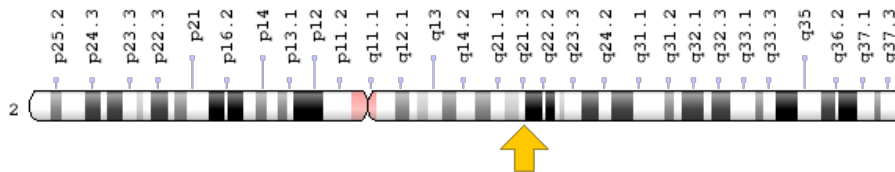
A specific DNA sequence within the *MCM6* gene called a regulatory element helps control the activity (expression) of a nearby gene called *LCT*. The *LCT* gene provides instructions for making an enzyme called lactase. This enzyme helps to digest lactose, a sugar found in milk and other dairy products. Lactose intolerance in adulthood is caused by gradually decreasing expression of the *LCT* gene after infancy, which occurs in most humans.

At least four variations have been identified in the regulatory element that modulates *LCT* gene expression. These variations change single DNA building blocks (nucleotides) in the regulatory element. Each of the variations results in sustained lactase production in the small intestine and the ability to digest lactose throughout life. People without these changes have a reduced ability to digest lactose as they get older, resulting in the signs and symptoms of lactose intolerance.

Chromosomal Location

Cytogenetic Location: 2q21.3, which is the long (q) arm of chromosome 2 at position 21.3

Molecular Location: base pairs 135,839,626 to 135,876,443 on chromosome 2 (Homo sapiens Updated Annotation Release 109.20190905, GRCh38.p13) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- DNA replication licensing factor MCM6
- MCG40308
- MCM6 minichromosome maintenance deficient 6 (MIS5 homolog, *S. pombe*)
- MCM6_HUMAN
- minichromosome maintenance deficient (mis5, *S. pombe*) 6
- minichromosome maintenance deficient 6 homolog
- Mis5
- MIS5 homolog
- P105MCM

Additional Information & Resources

Educational Resources

- Biochemistry (fifth edition, 2002): Many Adults are Intolerant of Milk Because They Are Deficient in Lactase
<https://www.ncbi.nlm.nih.gov/books/NBK22593/#A2242>

Scientific Articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28MCM6%5BTIAB%5D%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5BIa%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D>

Catalog of Genes and Diseases from OMIM

- MINICHROMOSOME MAINTENANCE COMPLEX COMPONENT 6
<http://omim.org/entry/601806>

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
http://atlasgeneticsoncology.org/Genes/GC_MCM6.html
- ClinVar
<https://www.ncbi.nlm.nih.gov/clinvar?term=MCM6%5Bgene%5D>
- HGNC Gene Symbol Report
https://www.genenames.org/data/gene-symbol-report/#!/hgnc_id/HGNC:6949
- Monarch Initiative
<https://monarchinitiative.org/gene/NCBIGene:4175>
- NCBI Gene
<https://www.ncbi.nlm.nih.gov/gene/4175>
- UniProt
<https://www.uniprot.org/uniprot/Q14566>

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