

CYLD gene

CYLD lysine 63 deubiquitinase

Normal Function

The *CYLD* gene provides instructions for making an enzyme that helps regulate numerous signaling pathways, many of which are involved in cell growth. These pathways include nuclear factor-kappa-B (NF- κ B), Wnt, c-Jun N-terminal kinase (JNK), transforming growth factor beta-1 (TGFB1), and Notch signaling pathways. By regulating these signaling pathways, the CYLD enzyme helps cells respond properly to signals that promote cell growth and division (proliferation) or self-destruction (apoptosis), as necessary. By regulating signals that control cell growth, the CYLD enzyme acts as a tumor suppressor, which means that it helps prevent cells from growing and dividing too fast or in an uncontrolled way.

Health Conditions Related to Genetic Changes

CYLD cutaneous syndrome

More than 100 mutations in the *CYLD* gene have been identified in individuals with *CYLD* cutaneous syndrome. This condition is characterized by multiple noncancerous (benign) tumors that develop in structures associated with the skin (skin appendages), such as hair follicles. More than one type of skin tumor often develops, including benign growths called cylindromas, spiradenomas, and trichoepitheliomas. Cylindromas were previously thought to derive from sweat glands, but they are now generally believed to begin in hair follicles and often appear on the scalp. Spiradenomas are related to cylindromas and it is common to find features of both of these benign growths in a single tumor. Trichoepitheliomas arise from hair follicles and typically develop on the skin around the nose and upper lip.

Most people with *CYLD* cutaneous syndrome are born with a mutation in one of the two copies of the *CYLD* gene in each cell. This mutation prevents the cell from making functional CYLD enzyme from the altered copy of the gene. However, enough enzyme is usually produced from the other, normal copy of the gene to regulate cell growth effectively. For tumors to develop, a second mutation that alters or removes (deletes) the normal copy of the *CYLD* gene must occur. The second mutation, called a somatic mutation, occurs during a person's lifetime and is found in only certain cells in the body.

When both copies of the *CYLD* gene are mutated, the cell cannot produce any functional CYLD enzyme. The loss of this enzyme impairs the regulation of signaling pathways, allowing the cell to grow and divide in an uncontrolled way to form a tumor. In people with *CYLD* cutaneous syndrome, somatic *CYLD* gene mutations typically occur in multiple types of cells in the skin over an affected person's lifetime, leading to the growth of several types of skin appendage tumors.

Cancers

Somatic mutations of the *CYLD* gene have also been found in certain cancers, including cancer of the bone marrow (multiple myeloma), salivary glands, kidneys, liver, colon, or uterus. These mutations result in a reduction of *CYLD* gene activity and likely impairs the tumor suppressor function of the CYLD enzyme, allowing cells to grow and divide in an uncontrolled way and become cancerous.

Other Names for This Gene

- BRSS
- CDMT
- CYLD1
- CYLD_HUMAN
- CYLDI
- EAC
- HSPC057
- KIAA0849
- MFT
- MFT1
- SBS
- TEM
- USPL2

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of CYLD ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=1540\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=1540[geneid]))

Scientific Articles on PubMed

- PubMed ([https://pubmed.ncbi.nlm.nih.gov/?term=\(CYLD%5BTI%5D\)+AND+\(\(Gene%5BMH%5D\)+OR+\(Genetic+Phenomena%5BMH%5D\)\)+AND+english%5Bla%5D](https://pubmed.ncbi.nlm.nih.gov/?term=(CYLD%5BTI%5D)+AND+((Gene%5BMH%5D)+OR+(Genetic+Phenomena%5BMH%5D))+AND+english%5Bla%5D))

+AND+human%5Bmh%5D)

Catalog of Genes and Diseases from OMIM

- CYLD LYSINE-63 DEUBIQUITINASE; CYLD (<https://omim.org/entry/605018>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/1540>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=CYLD\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=CYLD[gene]))

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Genomic Location

The *CYLD* gene is found on chromosome 16 (<https://medlineplus.gov/genetics/chromosome/16/>).

Last updated December 16, 2020