

# CLN6 Gene

Subjects: **Genetics & Heredity**

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CLN6, transmembrane ER protein

genes

## 1. Normal Function

The *CLN6* gene provides instructions for making a protein whose function is not well understood. Within cells, the *CLN6* protein is found in a structure called the endoplasmic reticulum, which is involved in protein processing and transport. Research suggests that the *CLN6* protein regulates the transportation of certain proteins and fats from the endoplasmic reticulum to lysosomes. Lysosomes are compartments in the cell that digest and recycle materials. Based on this function, the *CLN6* protein appears to help cells get rid of materials they no longer need.

## 2. Health Conditions Related to Genetic Changes

### CLN6 Disease

More than 70 mutations in the *CLN6* gene have been found to cause CLN6 disease. This condition impairs motor and mental development, typically starting in early to late childhood, causing gradually worsening problems with movement and a decline in intellectual function. In some cases, signs and symptoms of CLN6 disease do not appear until adulthood.

Most *CLN6* gene mutations result in the production of an abnormal *CLN6* protein that is quickly broken down (degraded). As a result, there is a severe reduction in the amount of functional *CLN6* protein in cells. While it is not known how the loss of this protein causes the signs and symptoms of CLN6 disease, it is likely that the protein's quick degradation contributes to the childhood onset of CLN6 disease.

In the cases in which CLN6 disease develops in adulthood, *CLN6* gene mutations often change single protein building blocks (amino acids), resulting in a *CLN6* protein with reduced function. Research suggests that these *CLN6* gene mutations allow enough functional protein to be produced so that signs and symptoms of the disorder do not develop until later in life.

CLN6 disease is characterized by the accumulation of proteins or peptides and other substances in lysosomes. These accumulations occur in cells throughout the body; however, nerve cells seem to be particularly vulnerable to

their effects. The accumulations can cause cell damage leading to cell death. The progressive death of nerve cells in the brain and other tissues leads to the signs and symptoms of CLN6 disease. However, it is unclear how mutations in the *CLN6* gene are involved in the buildup of substances in lysosomes in CLN6 disease. These accumulations occur in more cells throughout the body in children with CLN6 disease than in affected adults.

## 3. Other Names for This Gene

- ceroid-lipofuscinosis neuronal protein 6
- ceroid-lipofuscinosis, neuronal 6, late infantile, variant
- CLN4A
- CLN6\_HUMAN
- FLJ20561
- HsT18960
- nclf

## References

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