Neuronal Ceroid Lipofuscinosis (PPT1-Related)

PPT1-related NCL is a rare genetic disorder. It is characterized by seizures, vision loss, and intellectual disability. A person must have two variants in the PPT1 gene in order to have this form of NCL.

Overview Scientific Details

Jamie, you **do not have the variants** we tested.

You could still have a variant not covered by this test.

How To Use This Test

This test does not diagnose any health conditions.

Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Review the Carrier Status tutorial

See Scientific Details

Intended Uses

- Tests for **multiple variants** in the PPT1 gene.
- To identify carrier status for PPT1-related NCL.

Limitations

- Does **not test** for all possible variants for the condition.
- Does **not report** if someone has two copies of a tested variant.
- Does **not cover** NCL caused by variants in other genes.

Important Ethnicities

- This test is most relevant for people of **Finnish** descent.

You are likely not a carrier.

We ruled out the tested variants for PPT1-related NCL.

You still have a chance of being a carrier for PPT1-related NCL.

You may still have up to a **1 in 780 chance** of carrying a variant not covered by this test.

See Scientific Details

About Neuronal Ceroid Lipofuscinosis (PPT1-Related)

Also known as: Batten Disease

When symptoms develop

Symptoms typically develop during infancy or in early childhood.

Ethnicities most affected

This condition is most common in people of Finnish, Northern European, and Western European descent.

Typical signs and symptoms

- Intellectual decline
- Seizures
- Loss of ability to control muscles
- Muscle spasms
- Vision loss leading to blindness
- Death in childhood

How it's treated

There is currently no known cure. Treatment focuses on managing symptoms, providing physical therapy, and using seizure medications as needed.

Read more at: Genetics Home Reference GeneReviews National Institute of Neurological Disorders and Stroke

Consider talking to a healthcare professional if you are concerned about your results.

If you're starting a family, a genetic counselor can help you and your partner understand if additional testing might be appropriate.

Connect with a GC

Share your results with a healthcare professional.

Print report

Learn more about this condition and connect with support groups.

Learn more

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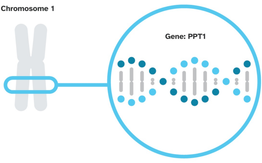
Overview | Scientific Details

PPT1-related NCL is caused by variants in the PPT1 gene.

PPT1

The PPT1 gene contains instructions for making an enzyme called palmitoyl-protein thioesterase 1. This enzyme is found within compartments of the cell called lysosomes, where it helps break down proteins. Certain variants in PPT1 disrupt this function and result in a harmful buildup of proteins inside cells.

Read more at Genetics Home Reference*



You have no variants detected by this test.

Variants Detected | View All Tested Markers

Marker Tested	Your Genotype*		Additional Information
R151X **Gene:** PPT1 **Marker:** i5912624	**G** Typical copy from one of your parents	**G** Typical copy from your other parent	Biological explanation Typical vs. variant DNA sequence(s) Percent of 23andMe customers with variant References [2, 4, 5, 7, 10] | ClinVar*
T75P **Gene:** PPT1 **Marker:** i5912622	**T** Typical copy from one of your parents	**T** Typical copy from your other parent	Biological explanation Typical vs. variant DNA sequence(s) Percent of 23andMe customers with variant References [1, 2, 5, 10] | ClinVar*
R122W **Gene:** PPT1 **Marker:** i5912623	**T** Typical copy from one of your parents	**T** Typical copy from your other parent	Biological explanation Typical vs. variant DNA sequence(s) Percent of 23andMe customers with variant References [2, 3, 9] | ClinVar*

*This test cannot distinguish which copy you received from which parent. This test also cannot determine whether multiple variants, if detected, were inherited from only one parent or from both parents. This may impact how these variants are passed down.

23andMe always reports genotypes based on the 'positive' strand of the human genome reference sequence (build 37). Other sources sometimes report genotypes using the opposite strand.

Test Interpretation

This report provides an estimate of the chances of still being a carrier for people who do not have the variant(s) tested. This is known as the **post-test carrier risk**.

Post-test carrier risk is based on the average chance of being a carrier for a given ethnicity and the carrier detection rate of the test for a given ethnicity.

View technical article on estimating post-test carrier risk.

Post-Test Carrier Risk

This report provides an estimate of the post-test carrier risk for people of Finnish, Northern European, and Western European descent only.

- For people with partial ethnicity from one or more groups mentioned above, post-test carrier risk depends on the exact mixture in the person's background.
- Post-test risk for other ethnicities cannot be provided because sufficient data is not available.

Post-test carrier risk for relevant ethnicities

Finnish	1 in 3,799	[8]
Northern European	1 in 789	[8]
Western European	1 in 789	[8]

Test Details

Indications for Use

The 23andMe PGS Carrier Status Test for Neuronal Ceroid Lipofuscinosis (PPT1-Related) is indicated for the detection of three variants in the PPT1 gene. This test is intended to be used to determine carrier status for PPT1-related NCL in adults, but cannot determine if a person has two copies of a tested variant. The test is most relevant for people of Finnish descent.

Special Considerations

- There are currently no professional guidelines in the U.S. for carrier testing for this condition.

Test Performance Summary

Carrier Detection Rate & Relevant Ethnicities

The "carrier detection rate" is an estimate of the percentage of carriers for this condition that would be identified by this test. Carrier detection rate differs by ethnicity and is provided only where sufficient data is available.

Finnish	98%	[6]
Northern European	59%	[2]
Western European	59%	[2]

Analytical Performance

Accuracy was determined by comparing results from this test with results from sequencing. Greater than 99% of test results were correct. While unlikely, this test may provide false positive or false negative results. For more details on the analytical performance of this test, refer to the package insert.

Warnings and Limitations

- This test does not cover all variants that could cause this condition.*
- This test does not diagnose any health conditions.
- Positive results in individuals whose ethnicities are not commonly associated with this condition may be incorrect. Individuals in this situation should consider genetic counseling and follow-up testing.
- Share results with your healthcare professional for any medical purposes.
- If you are concerned about your results, consult with a healthcare professional.

See the **Package Insert** for more details on use and performance of this test.

* Variants not included in this test may be very rare, may not be available on our genotyping platform, or may not pass our testing standards.

References

1. **Bellizzi JJ 3rd et al. (2000). "The crystal structure of palmitoyl protein thioesterase 1 and the molecular basis of infantile neuronal ceroid lipofuscinosis." Proc Natl Acad Sci U S A. 97(9):4573-8.** ^
2. **Das AK et al. (1998). "Molecular genetics of palmitoyl-protein thioesterase deficiency in the U.S." J Clin Invest. 102(2):361-70.** ^
3. **Das AK et al. (2001). "Biochemical analysis of mutations in palmitoyl-protein thioesterase causing infantile and late-onset forms of neuronal ceroid lipofuscinosis." Hum Mol Genet. 10(13):1431-9.** ^
4. **Miller JN et al. (2015). "The novel Cln1(R151X) mouse model of infantile neuronal ceroid lipofuscinosis (INCL) for testing nonsense suppression therapy." Hum Mol Genet. 24(1):185-96.** ^
5. **Mitchison HM et al. (1998). "Mutations in the palmitoyl-protein thioesterase gene (PPT; CLN1) causing juvenile neuronal ceroid lipofuscinosis with granular osmiophilic deposits." Hum Mol Genet. 7(2):291-7.** ^
6. **Mole SE et al. (2001). "Neuronal Ceroid-Lipofuscinoses." [Updated 2013 Aug 1].** ^
7. **Mole SE et al. (2005). "Correlations between genotype, ultrastructural morphology and clinical phenotype in the neuronal ceroid lipofuscinoses." Neurogenetics. 6(3):107-26.** ^
8. **Sleat DE et al. (2016). "Analysis of large-scale whole exome sequencing data to determine the prevalence of genetically-distinct forms of neuronal ceroid lipofuscinosis." Gene. 593(2):284-91.** ^
9. **Vesa J et al. (1995). "Mutations in the palmitoyl protein thioesterase gene causing infantile neuronal ceroid lipofuscinosis." Nature. 376(6541):584-7.** ^
10. **Wallany S et al. (2000). "Identification of three novel mutations of the palmitoyl-protein thioesterase-1 (PPT1) gene in children with neuronal ceroid-lipofuscinosis." Hum Mutat. 15(2):206-7.** ^

Change Log

Your report may occasionally be updated based on new information. This Change Log describes updates and revisions to this report.

Date	Change
March 2, 2018	The carrier frequency was updated for customers who self-report having Finnish ancestry. The chances of still being a carrier were also updated for customers with no variants detected who self-report having Finnish ancestry. Information specific to people of Northern European and Western European descent was added. Customers who self-report having Northern European or Western European ancestry may now see carrier frequency and post-test carrier risk information specific to that ancestry.
Feb. 16, 2016	Due to improvements in data analysis, some customers who previously received a "Not Determined" result for one or more of the following genetic markers may see a genotype at these markers: i5912622, i5912624. This may also update the overall report result for these customers.
Oct. 21, 2015	Neuronal Ceroid Lipofuscinosis (PPT1-Related) report created.