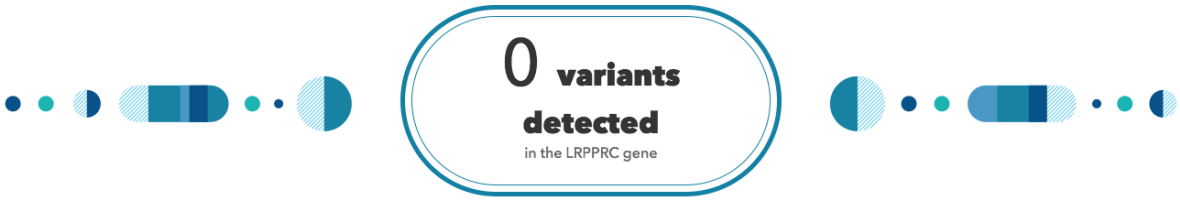
Leigh Syndrome, French Canadian Type

LSFC is a rare genetic disorder. It is characterized by life-threatening periods of lactic acid buildup and brain injury as well as failure to gain weight. A person must have two variants in the LRPPRC gene in order to have this condition.

Erin, you **do not have the variant** 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

- To test for the A354V variant in the LRPPRC gene.
- To identify carrier status for LSFC.

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** other subtypes of Leigh syndrome.

Important Ethnicities

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

You are likely not a carrier.

This result may be less relevant for you because the variants that cause LSFC are rarely found in people of your ethnicity.

We ruled out the tested variant for LSFC.

This variant is most common in people of **French Canadian** descent.

You still have a chance of being a carrier for LSFC.

We cannot estimate your chances because this condition is rare and not well studied in your ethnicity.

About Leigh Syndrome, French Canadian Type

When symptoms develop

Symptoms typically develop during infancy.

How it's treated

There is currently no known cure. Treatment focuses on providing nutritional support, managing symptoms, and preventing complications.

Typical signs and symptoms

- Buildup of lactic acid in the body
- Episodes of brain injury
- Failure to gain weight
- Poor muscle control and muscle spasms
- Distinctive facial features
- Early death

Ethnicities most affected

This condition is most common in people of French Canadian descent, particularly from the Saguenay-Lac-Saint-Jean region of Quebec.

Read more at

Genetics Home Reference

National Organization for Rare Disorders

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.

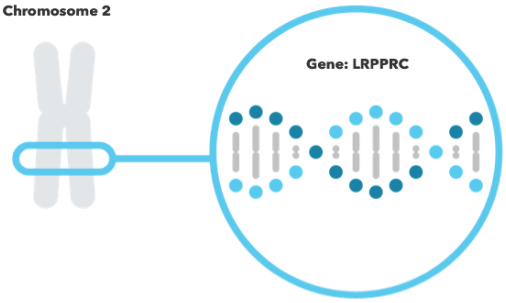
Learn more

LSFC is caused by variants in the LRPPRC gene.

LRPPRC

The LRPPRC gene contains instructions for making a protein called leucine-rich PPR motif-containing protein. This protein controls the levels of an enzyme called complex IV (COX) that is necessary for the cell to generate energy. Certain variants in LRPPRC result in a form of the protein that cannot properly regulate COX levels.

Read more at Genetics Home Reference



You have no variants detected by this test.

Variants Detected	View All Tested Markers
0	1

Marker Tested	Your Genotype*		Additional Information
A354V Gene: LRPPRC Marker: i5012749	**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** [1 , 2 , 4 , 5 , 6 , 7] | 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 French Canadian descent only.

- For people of partial French Canadian descent, post-test carrier risk is less than that for those who are fully French Canadian. The exact post-test risk depends on how much French Canadian ancestry a person has.
- Post-test risk for other ethnicities cannot be provided because sufficient data is not available.

Post-test carrier risk for relevant ethnicities

French Canadian, particularly from the Saguenay-Lac-Saint-Jean region of Quebec	1 in 2,500	[3]

Test Details

Indications for Use

The 23andMe PGS Carrier Status Test for Leigh Syndrome, French Canadian Type is indicated for the detection of the A354V variant in the LRPPRC gene. This test is intended to be used to determine carrier status for LSFC in adults, but cannot determine if a person has two copies of a tested variant. The test is most relevant for people of French Canadian 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.

French Canadian, particularly from the Saguenay-Lac-Saint-Jean region of Quebec	>99%	[1]

Analytical Performance

Accuracy was determined by comparing results from this test with results from sequencing for 45 samples with known variant status. 45 out of 45 genotype results were correct. Fewer than 1 in 100,000 samples may receive a **Not Determined** result. This can be caused by random test error or unexpected DNA sequences that interfere with the test. It can also be caused by having two copies of a variant tested.

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. Debray FG et al. (2011). "LRPPRC mutations cause a phenotypically distinct form of Leigh syndrome with cytochrome c oxidase deficiency." J Med Genet. 48(3):183-9.
2. Mootha VK et al. (2003). "Identification of a gene causing human cytochrome c oxidase deficiency by integrative genomics." Proc Natl Acad Sci U S A. 100(2):605-10.
3. Morin C et al. (1993). "Clinical, metabolic, and genetic aspects of cytochrome C oxidase deficiency in Saguenay-Lac-Saint-Jean." Am J Hum Genet. 53(2):488-96.
4. Sasarman F et al. (2010). "LRPPRC and SLIRP interact in a ribonucleoprotein complex that regulates posttranscriptional gene expression in mitochondria." Mol Biol Cell. 21(8):1315-23.
5. Sasarman F et al. (2015). "Tissue-specific responses to the LRPPRC founder mutation in French Canadian Leigh Syndrome." Hum Mol Genet. 24(2):480-91.
6. Xu F et al. (2004). "The role of the LRPPRC (leucine-rich pentatricopeptide repeat cassette) gene in cytochrome oxidase assembly: mutation causes lowered levels of COX (cytochrome c oxidase) I and COX III mRNA." Biochem J. 382(Pt 1):331-6.
7. Xu F et al. (2012). "LRPPRC mutation suppresses cytochrome oxidase activity by altering mitochondrial RNA transcript stability in a mouse model." Biochem J. 441(1):275-83.