Congenital Disorder of Glycosylation Type 1a (PMM2-CDG)

PMM2-CDG is a rare genetic disorder that affects the nervous system and other parts of the body. It is characterized by developmental delay, muscle weakness, and failure to gain weight. A person must have two variants in the PMM2 gene in order to have this condition.

play+e4c02fa51f, you have **two of the variants** we tested.

You will most likely pass a variant on to each of your children.

This test **does not diagnose** PMM2-CDG. If this result is unexpected, please discuss this report with a healthcare professional.

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 PMM2 gene.
- To identify carrier status for PMM2-CDG.

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 CDG.

Important Ethnicities

- This test is most relevant for people of **Danish** descent.
- This test does **not** include a large fraction of PMM2 variants that cause PMM2-CDG in people of Dutch descent.

You will most likely pass a variant on to each of your children.

Your results may be relevant for you and your family.

If your partner is a carrier for PMM2-CDG, each child most likely has a **50% chance** of having this condition. Your relatives may also wish to consider testing if they plan to have children.

Talk to a healthcare professional.

A healthcare professional can answer questions you may have about your results.

About Congenital Disorder of Glycosylation Type 1a (PMM2-CDG)

Also known as: Carbohydrate-Deficient Glycoprotein Syndrome Type 1a, Jaeken Syndrome, Phosphomannomutase 2 Deficiency, CDG1a

When symptoms develop

Symptoms typically develop in infancy.

Typical signs and symptoms

- Developmental delay
- Muscle weakness
- Failure to gain weight
- Small head size and distinct facial features

Ethnicities most affected

This condition is most common in people of European descent, particularly of Danish and Dutch descent.

How it's treated

There is currently no known cure. Treatment focuses on nutritional, occupational, speech, and physical therapy.

Read more at: Genetics Home Reference GeneReviews National Organization for Rare Disorders

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

If you think you might have symptoms or if this condition runs in your family, consult with a healthcare professional.

Print report

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 your family.

Share your report

Learn more about this condition and connect with support groups.

Learn more

Congenital Disorder of Glycosylation Type 1a (PMM2-CDG)

Scientific Details

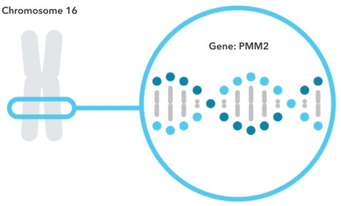
PMM2-CDG is a rare genetic disorder that affects the nervous system and other parts of the body. It is characterized by developmental delay, muscle weakness, and failure to gain weight. A person must have two variants in the PMM2 gene in order to have this condition.

PMM2-CDG is caused by variants in the PMM2 gene.

PMM2

The PMM2 gene contains instructions for making an enzyme called phosphomannomutase (PMM). PMM plays a role in the process of attaching sugar molecules to proteins. This modification is necessary for the stability and proper function of many proteins. Certain variants in the PMM2 gene lead to lower activity of the PMM enzyme.

Read more at Genetics Home Reference



You have two variants detected by this test.

Variants Detected | View All Tested Markers

Marker Tested	Genotype*			Additional Information
R141H **Gene:** PMM2 **Marker:** i5012680	**A** Variant 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, 3, 4, 8] | ClinVar
F119L **Gene:** PMM2 **Marker:** i5012679	**A** Variant copy from one of your parents		**C** 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] | 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 Details

Indications for Use

The 23andMe PGS Carrier Status Test for Congenital Disorder of Glycosylation Type 1a (PMM2-CDG) is indicated for the detection of two variants in the PMM2 gene. This test is intended to be used to determine carrier status for PMM2-CDG in adults, but cannot determine if a person has two copies of a tested variant. The test is most relevant for people of Danish descent.

Special Considerations

- Severity of symptoms can vary in people with this disorder, even when the same variants are involved.
- 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.

Danish	89%	[6]
Dutch	55%	[6]

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. Andreotti G et al. (2013). "Biochemical phenotype of a common disease-causing mutation and a possible therapeutic approach for the phosphomannomutase 2-associated disorder of glycosylation." Mol Genet Genomic Med. 1(1):32-44.
2. Bjursell C et al. (2000). "PMM2 mutation spectrum, including 10 novel mutations, in a large CDG type 1A family material with a focus on Scandinavian families." Hum Mutat. 16(5):395-400.
3. Kjaergaard S et al. (1998). "Absence of homozygosity for predominant mutations in PMM2 in Danish patients with carbohydrate-deficient glycoprotein syndrome type 1." Eur J Hum Genet. 6(4):331-6.
4. Kjaergaard S et al. (2001). "Congenital disorder of glycosylation type Ia (CDG-Ia): phenotypic spectrum of the R141H/F119L genotype." Arch Dis Child. 85(3):236-9.
5. Matthijs G et al. (2000). "Mutations in PMM2 that cause congenital disorders of glycosylation, type Ia (CDG-Ia)." Hum Mutat. 16(5):386-94.
6. Schollen E et al. (2000). "Lack of Hardy-Weinberg equilibrium for the most prevalent PMM2 mutation in CDG-Ia (congenital disorders of glycosylation type Ia)." Eur J Hum Genet. 8(5):367-71.
7. Sparks SE et al. (2005). "PMM2-CDG (*CDG-Ia*)." [Updated 2015 Oct 29].
8. Vega AI et al. (2011). "Expression analysis revealing destabilizing mutations in phosphomannomutase 2 deficiency (PMM2-CDG): expression analysis of PMM2-CDG mutations." J Inherit Metab Dis. 34(4):929-39.

Change Log

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

Date	Change
[redacted]	Due to improvements in data analysis, some customers who previously received a "Not Determined" result for i5012680 may see a genotype at this marker. This may also update the overall report result for these customers.
[redacted]	Congenital Disorder of Glycosylation Type 1a (PMM2-CDG) report created.