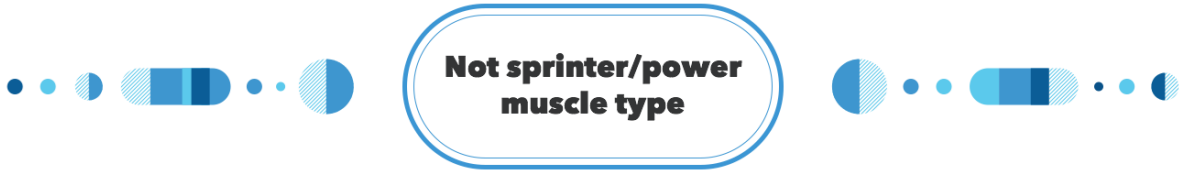


Muscle Composition

Our muscles are made up of two main types of muscle fibers: "fast-twitch" and "slow-twitch." Exercise performance may, in part, be due to individual differences in muscle composition. Endurance athletes tend to have more slow-twitch muscle, while sprinters tend to have more fast-twitch muscle. Some of the variation in fast-twitch muscle depends on a protein called alpha-actinin-3.

Erin, your fast-twitch muscle fibers likely do not have the alpha-actinin-3 protein.



How To Use This Test

This test does not diagnose any health conditions or provide medical advice. Consult with a healthcare professional before making any major lifestyle changes or if you have any other concerns about your results.

[Review the Wellness tutorial](#)
[See Scientific Details](#)

+ Intended Uses

- To test for the R577X variant in the ACTN3 gene.

- Limitations

- Does **not** test for all possible variants related to muscle composition.
- Does **not** account for lifestyle or other factors that may affect muscle composition.

🌐 Important Ethnicities

- This report is relevant to people of all ethnicities.

About Muscle Composition

Muscle fibers come in several types. Fast-twitch fibers contract muscles more quickly and produce more force compared to slow-twitch fibers. The proportion of different types of fast-twitch fibers can vary from person to person and helps determine how much power a muscle can generate.



Biology

The alpha-actinin-3 protein is only found in certain types of fast-twitch muscle fibers. Less of this protein is associated with lower power output, which may help explain why few elite sprinters and power athletes lack this protein.



History

The variant is rare in people of African ancestry, and is most common in people of Native American ancestry. Some researchers think that lacking alpha-actinin-3 was actually an advantage to early peoples in the Americas.



Other factors

Other factors can contribute to muscle composition and performance.



Genetics



Training

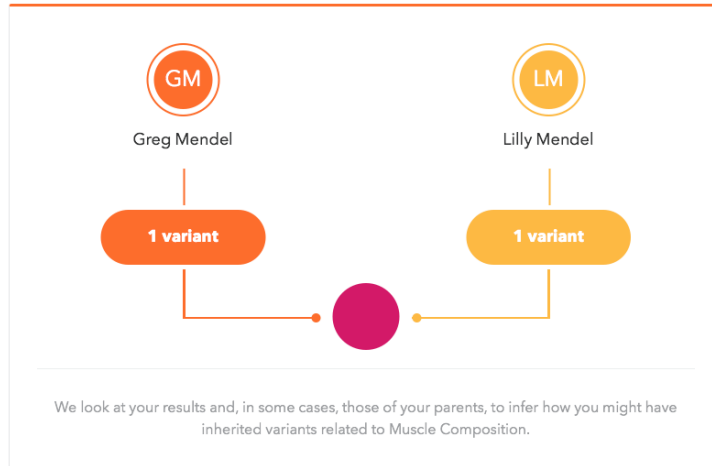


Overall athleticism



You inherited two variants from your parents.

Because you have two copies of the variant that we tested, you almost certainly inherited one from each of your parents.



Keep exploring your Wellness results.



Learn more about muscle composition.

[Learn more](#)



Compare your results to your family and friends.

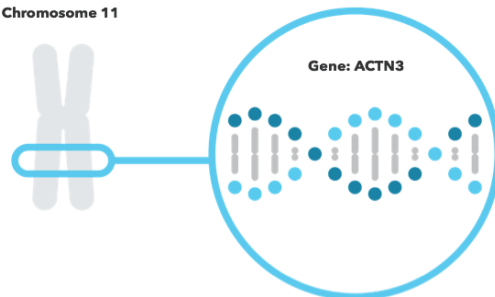
[Compare](#)

Muscle composition is influenced by variants in the ACTN3 gene.


ACTN3

The ACTN3 gene contains instructions for making alpha-actinin-3, a protein found in certain types of fast-twitch muscle fibers. People who make this protein tend to have a greater proportion of fast-twitch muscle than people who don't make the protein. Thus, they can generate more power when their muscles contract.

Chromosome 11



You have two variants included in this report.

Variants Detected		View All Tested Markers	
2		1	
Marker Tested	Your Genotype*	Additional Information	
R577X Gene: ACTN3 Marker: rs1815739	T Variant copy from one of your parents		T Variant copy from your other parent
<p>> Biological explanation</p> <p>> Typical vs. variant DNA sequence(s)</p> <p>> Percent of 23andMe customers with variant</p> <p>> References [3 , 4 , 7 , 9 , 10 , 12] ClinVar</p>			

*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.

We estimate how you inherited your variants using basic principles of genetics.

We look at your results and, in some cases, those of your parents, to infer how you might have inherited these variants.

A. If you have one copy of a variant, and:

- **You don't have any parents connected:**

1. There is not enough information to determine which parent you inherited the variant from. You might have inherited the variant from either parent.

- **You have one parent connected, and if your connected parent:**

1. **Doesn't have the trait variant:** You likely inherited the variant from your other parent.
2. **Has one copy of the trait variant:** There is not enough information to determine which parent you inherited the variant from. You might have inherited the variant from either parent.
3. **Has two copies of the trait variant:** You likely inherited the variant from your connected parent.

- **You have both parents connected, and:**

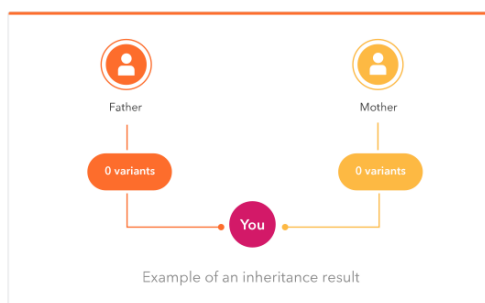
1. **Only one parent has the trait variant:** You likely inherited the variant from this parent.
2. **Both parents have one copy of the trait variant:** There is not enough information to determine which parent you inherited the variant from. You might have inherited the variant from either parent.
3. **One parent has two copies of the variant:** You likely inherited the variant from this parent.

B. If you have two copies of a trait variant:

- **You likely received one copy of the variant from each parent.**

C. If you do not have any copies of a trait variant:

- **You didn't inherit any copies of this variant from either parent. However, this does not mean that they didn't have any variants to pass on to you.**



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