Team Titin information sheet

This letter is for families with variant(s) in the **Titin gene** (***TTN)***. Changes in a gene are called ***mutations*** or ***variants***. These changes *may* cause **muscle weakness as well as heart problems**. You will need to discuss with your medical team to see *if* and *how* your Titin variant affects your health.

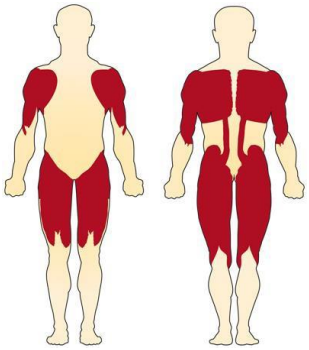
What is Titin?

Titin is a very large protein. It's huge! In fact, Titin is the largest protein in the human body. The Titin protein is located in muscle cells in our bodies. It is also found in the heart, which is a specialized muscle. Muscles need Titin in order to work and move. You can learn more about Titin here: **http://titinmyopathy.com**.

Welcome to Team Titin. You are not alone.

Titin variants often cause problems with the heart's pumping ability (dilated cardiomyopathy) and can also cause abnormalities of the heart rhythm, such as atrial fibrillation. There are many different types of titin variants, and heart disorders are usually associated with a specific subset of variants that shorten the titin protein. These are called "truncating" variants. Other types of titin variants, such as missense variants (that change a single "letter" in the titin gene) are common and are less likely to be harmful. If a person is born with two truncating titin variants, they may develop muscle weakness and heart problems from an early age. More frequently, however, people carry only a single truncating variant. It is a good idea for **everyone** who carries a titin truncating variant to have a **checkup from a heart doctor, even if they feel well.**

Titin abnormalities can cause a wide spectrum of muscle disorders called "**Titinopathy**". These disorders may be also called a "myopathy" or a "dystrophy" including limb-girdle muscular dystrophy (LGMD) and tibial muscular dystrophy. Some forms of titin-related myopathies may include centronuclear myopathy, multi-minicore myopathy, hereditary myopathy with early respiratory failure, Salih myopathy, core myopathy with heart disease, Emery-Dreifuss-like phenotype without cardiomyopathy and likely more. Muscle weakness may start in childhood or come on later as an adult. Weakness can range from mild to severe.



How to make sense of your Genetic Test Results for Titin

Some variants in a gene may lead to health problems, while others may not. Not all variants are equally problematic. Many truncating titin variants are clearly associated with a high risk of heart or muscle disease, and these are often classified as "pathogenic" or "likely-pathogenic" in the clinical genetic test report. On the other hand some variants are clearly not harmful and are classified as "benign" or "likely-benign". Often however, there is insufficient information about variants to tell if they are harmful and these are classified as "variants of uncertain significance" (VUS or VOUS). These variants need follow up by experts (see resources).

Created May 2021 by Diane Fatkin, MD, Renee Johnson, PhD , MGC and Sarah Foye, (Titin Family Advocate)

Resources

Research

For all people with Titin related muscle weakness:
[Beggs Laboratory](#)
Boston Children's Hospital
Casie Genetti, Genetic Counselor Ph: 617-919-2169
BeggsLabGC@chidlrens.harvard.edu

For help with diagnosis:
Prof Bjarne Udd, MD, PhD
Tampere Neuromuscular Center
Folkhälsan Research Institute, Helsinki
bjarne.udd@netikka.fi

Gene and heart disease research:
Prof. Diane Fatkin, MD
Victor Chang Cardiac Research Institute and St Vincent's Hospital, Australia
d.fatkin@victorchang.edu.au

Study of atypical titinopathies, including persons with skeletal or cardioskeletal symptoms and single TTN variants.
Jen Roggenbuck, MS, CGC
Ohio State University
Jennifer.Roggenbuck@osumc.edu

Some Genetic testing options:

[Free program](#) via Patient Insights Network
[Paid genetic testing](#) program through Invitae
[GeneDx](#) genetic testing

The [Lantern Project](#)

Please enroll in **The Congenital Muscle Disease International Registry!**
http://www.cmdir.org

CMDIR
congenital muscle disease international registry
leading the way to a treatment and cure

Connect with families/resources

Team Titin on **Facebook**
[Private discussion group](#) for families
[Public Facebook page](#)

[ZNM - Zusammen stark! e.V.](#)
An association for centronuclear myopathies in Germany, the Netherlands and Austria.

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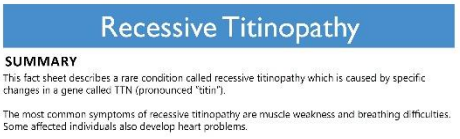
Titin Family Advocate
FoyeSarah@gmail.com
973-797-9305

Titin Information **Website** [link](#)

Recessive [titinopathy fact sheet](#) for families.



Care

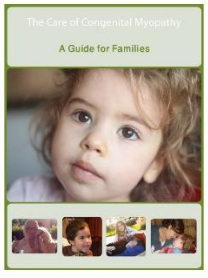
Heart health information
DCM Foundation
https://dcmfoundation.org/

DCM Foundation
Hope for People with Dilated Cardiomyopathy

Children's Cardiomyopathy Foundation

[Children's Cardiomyopathy Foundation](#)

The Care of Congenital Myopathy: A guide for families [link](#).



Summary of Evidence-based Guideline for patients and their families Limb-Girdle and distal muscular dystrophies [link.](#)