SGCG gene
sarcoglycan gamma

Normal Function

The SGCG gene provides instructions for making the gamma component (subunit) of a group of proteins called the sarcoglycan protein complex. The sarcoglycan protein complex is located in the membrane surrounding muscle cells. It helps maintain the structure of muscle tissue by attaching (binding) to and stabilizing the dystrophin complex, which is made up of proteins called dystrophins and dystroglycans. The large dystrophin complex strengthens muscle fibers and protects them from injury as muscles tense (contract) and relax. It acts as an anchor, connecting each muscle cell's structural framework (cytoskeleton) with the lattice of proteins and other molecules outside the cell (extracellular matrix).

Health Conditions Related to Genetic Changes

Limb-girdle muscular dystrophy

Approximately 40 mutations in the SGCG gene have been identified in people with limb-girdle muscular dystrophy type 2C. Limb-girdle muscular dystrophy is a group of related disorders characterized by muscle weakness and wasting, particularly in the shoulders, hips, and limbs. Forms of limb-girdle muscular dystrophy caused by gene mutations that affect the sarcoglycan complex are called sarcoglycanopathies.

SGCG gene mutations may prevent the sarcoglycan complex from forming or from binding to and stabilizing the dystrophin complex. Problems with these complexes reduce the strength and resilience of muscle fibers and result in the signs and symptoms of limb-girdle muscular dystrophy.
Chromosomal Location

Cytogenetic Location: 13q12.12, which is the long (q) arm of chromosome 13 at position 12.12

Molecular Location: base pairs 23,160,308 to 23,325,165 on chromosome 13 (Homo sapiens Annotation Release 109, GRCh38.p12) (NCBI)

Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- 35 kDa dystrophin-associated glycoprotein
- 35DAG
- 35kD dystrophin-associated glycoprotein
- A4
- DAGA4
- DMDA
- DMDA1
- gamma sarcoglycan
- gamma-sarcoglycan
- gamma-SG
- LGMD2C
- MAM
- MGC130048
- sarcoglycan, gamma (35kDa dystrophin-associated glycoprotein)
- SCARMD2
- SCG3
- SG-gamma
- SGCG_HUMAN
- TYPE
Additional Information & Resources

Educational Resources
- University of Washington Neuromuscular Disease Center
  https://neuromuscular.wustl.edu/musdist/lg.html#2c

Scientific Articles on PubMed
- PubMed
  https://www.ncbi.nlm.nih.gov/pubmed?term=%28SGCG%5BTIAB%5D%29+OR+%28%28gamma-sarcoglycan%5BTIAB%5D%29+OR+%28DMDA%5BTIAB%5D%29+OR+%28SCG3%5BTIAB%5D%29+OR+%28LGMD2C%5BTIAB%5D%29+OR+%2835DAG%5BTIAB%5D%29+OR+%28gamma-SG%5BTIAB%5D%29+OR+%28gamma+sarcoglycan%5BTIAB%5D%29+OR+%2835kDa+dystrophin-associated+glycoprotein%5BTIAB%5D%29+OR+%28gamma-sarcoglycan%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+720+days%22%5Bdp%5D

Catalog of Genes and Diseases from OMIM
- SARCOGLYCAN, GAMMA
  http://omim.org/entry/608896

Research Resources
- ClinVar
  https://www.ncbi.nlm.nih.gov/clinvar?term=SGCG%5Bgene%5D
- HGNC Gene Symbol Report
  https://www.genenames.org/cgi-bin/gene_symbol_report?q=data/hgnc_data.php&hgnc_id=10809
- Monarch Initiative
  https://monarchinitiative.org/gene/NCBIGene:6445
- NCBI Gene
- UniProt
  https://www.uniprot.org/uniprot/Q13326

Sources for This Summary
  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/15479193

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18769252

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/10679964

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17558114

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/15937871

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  http://omim.org/entry/608896

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/19781108 
  Free article on PubMed Central: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3279956/

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/17027860

  Citation on PubMed: https://www.ncbi.nlm.nih.gov/pubmed/18285821

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