SGO1 gene

shugoshin 1

Normal Function

The *SGO1* gene provides instructions for making part of a protein complex called cohesin. This protein complex helps control the placement of chromosomes during cell division. Before cells divide, they must copy all of their chromosomes. The copied DNA from each chromosome is arranged into two identical structures, called sister chromatids, which are attached to one another during the early stages of cell division. Cohesin holds the sister chromatids together, and in doing so helps maintain the stability of chromosomal structure during cell division.

Health Conditions Related to Genetic Changes

Chronic atrial and intestinal dysrhythmia

At least one *SGO1* gene mutation has been identified in people with chronic atrial and intestinal dysrhythmia (CAID), a disorder affecting the normal rhythmic movements of the heart and the digestive system. The *SGO1* gene mutation that causes CAID replaces a protein building block (amino acid) called lysine with the amino acid glutamic acid at protein position 23, written as Lys23Glu or K23E. Researchers suggest that the mutation may result in a cohesin complex that is less able to hold sister chromatids together, resulting in decreased chromosomal stability during cell division. This instability is thought to cause early aging (senescence) of cells in the intestinal muscle and in the heart's natural pacemaker (the sinoatrial node), resulting in problems maintaining proper rhythmic movements of the heart and intestines and leading to the signs and symptoms of CAID.

It is unclear why *SGO1* gene mutations specifically affect the heart and intestines in CAID. Researchers suggest that the activity (expression) of the *SGO1* gene in certain embryonic tissues or a particular function of the SGO1 protein in the sinoatrial node and in cells that help control the rhythm of intestinal movements may account for the features of the disorder.

Other Names for This Gene

- hSgo1
- NY-BR-85

- serologically defined breast cancer antigen NY-BR-85
- SGO
- Sgo1
- SGOL1
- SGOL1_HUMAN
- shugoshin-like 1
- shugoshin-like 1 (S. pombe)

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of SGO1 (https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=151648[geneid])

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28SGOL1%5BTIAB%5D%29+OR+%28%28NY-BR-85%5BTIAB%5D%29+OR+%28SGO%5BTIAB%5D%29+OR+%28Sgo1%5BTIAB%5D%29+OR+%28hSgo1%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+1440+days%22%5Bdp%5D)

Catalog of Genes and Diseases from OMIM

- SHUGOSHIN-LIKE 1; SGOL1 (https://omim.org/entry/609168)

Gene and Variant Databases

- NCBI Gene (https://www.ncbi.nlm.nih.gov/gene/151648)
- ClinVar (https://www.ncbi.nlm.nih.gov/clinvar?term=SGO1[gene])

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Genomic Location

The *SGO1* gene is found on chromosome 3 (https://medlineplus.gov/genetics/chromosome/3/).

Last updated May 1, 2015