

SNCB gene

synuclein beta

Normal Function

The *SNCB* gene provides instructions for making a protein called beta-synuclein. The exact function of this protein is unknown, but it is likely involved in a process called synaptic plasticity. Synaptic plasticity is the ability of the connections between nerve cells (called synapses) to change and adapt over time in response to experience. This process is critical for learning and memory. Beta-synuclein may also prevent harmful accumulation of a similar protein called alpha-synuclein in nerve cells (neurons).

Health Conditions Related to Genetic Changes

Dementia with Lewy bodies

At least two mutations in the *SNCB* gene have been found to cause dementia with Lewy bodies. This condition is characterized by intellectual decline (dementia); visual hallucinations; sudden changes in attention and mood; and movement problems such as rigidity of limbs, tremors, and impaired balance and coordination.

SNCB gene mutations lead to the production of a protein with impaired function. It is thought that this altered protein may not be able to prevent alpha-synuclein accumulation. A decrease in functional beta-synuclein likely results in alpha-synuclein accumulation and the formation of Lewy bodies. These abnormal protein clusters are present throughout the brain, where they impair neuron function and ultimately cause cell death. Over time, the loss of neurons increasingly impairs intellectual and motor function and the regulation of emotions, resulting in the signs and symptoms of dementia with Lewy bodies.

Other Names for This Gene

- beta-synuclein

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of SNCB ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=6620\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=6620[geneid]))

Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28SNCB%5BTIAB%5D%29+OR+%28synuclein+beta%5BTIAB%5D%29+OR+%28beta+synuclein%5BTIAB%5D%29%29+OR+%28beta-synuclein%5BTIAB%5D%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D%29%29%29>)

Catalog of Genes and Diseases from OMIM

- SYNUCLEIN, BETA; SNCB (<https://omim.org/entry/602569>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/6620>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=SNCB\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=SNCB[gene]))

References

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- Brown JW, Buell AK, Michaels TC, Meisl G, Carozza J, Flagmeier P, Vendruscolo M, Knowles TP, Dobson CM, Galvagnion C. beta-Synuclein suppresses both the initiation and amplification steps of alpha-synuclein aggregation via competitive binding to surfaces. *Sci Rep*. 2016 Nov 3;6:36010. doi: 10.1038/srep36010. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/27808107>) or Free article on PubMed Central (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5093550/>)
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Genomic Location

The SNCB gene is found on chromosome 5 (<https://medlineplus.gov/genetics/chromosome5>)

me/5/).

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