

RSPO4 gene

R-spondin 4

Normal Function

The *RSPO4* gene provides instructions for making a protein called R-spondin-4. R-spondin-4 plays a role in the Wnt signaling pathway, a series of steps that affect the way cells and tissues develop. Wnt signaling is important for cell division, attachment of cells to one another (adhesion), cell movement (migration), and many other cellular activities. The role of R-spondin-4 is to increase Wnt signaling.

During early development, Wnt signaling plays a critical role in the growth and development of nails. R-spondin-4 is active in the skeleton and contributes to limb formation, particularly at the ends of the fingers and toes, where nail development occurs.

Different regions (domains) of R-spondin-4 have different functions; two regions known as furin-like domains are required for turning on (activating) and stabilizing proteins that play integral roles in the Wnt pathway.

Health Conditions Related to Genetic Changes

Anonychia congenita

At least 17 mutations in the *RSPO4* gene have been found to cause anonychia congenita. This condition is characterized by the absence of fingernails and toenails (anonychia) from birth. Nearly all of the *RSPO4* gene mutations that cause this condition affect the furin-like domains, impairing protein function. Some mutations disrupt the structure of the furin-like domains, and others lead to the production of an abnormally short protein that does not contain these domains. As a result, R-spondin-4 cannot participate in the Wnt signaling pathway and nails develop improperly or not at all.

Other Names for This Gene

- C20orf182
- CRISTIN4
- dJ824F16.3
- hRspo4

- R-spondin family, member 4
- roof plate-specific spondin-4

Additional Information & Resources

Tests Listed in the Genetic Testing Registry

- Tests of RSPO4 ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=343637\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=343637[geneid]))

Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28RSPO4%5BTIAB%5D%29+OR+%28R-spondin+4%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%29%29>)

Catalog of Genes and Diseases from OMIM

- R-SPONDIN 4; RSPO4 (<https://omim.org/entry/610573>)

Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/343637>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=RSPO4\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=RSPO4[gene]))

References

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Genomic Location

The *RSPO4* gene is found on chromosome 20 (<https://medlineplus.gov/genetics/chromosome/20/>).

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