

## IL31RA gene

interleukin 31 receptor A

### Normal Function

The *IL31RA* gene provides instructions for making a protein called interleukin-31 receptor alpha subunit (IL-31RA). This protein is one piece (subunit) of the IL-31 receptor, which is embedded in the cell membrane of many types of cells throughout the body.

At the cell surface, the IL-31 receptor interacts with a protein called interleukin 31 (IL-31). The receptor and IL-31 fit together like a lock and its key, triggering a series of chemical signals inside the cell. These signals stimulate itching (pruritus) and an immune system response called inflammation, although the mechanism is not completely understood.

### Health Conditions Related to Genetic Changes

#### Primary localized cutaneous amyloidosis

At least one mutation in the *IL31RA* gene has been found to cause primary localized cutaneous amyloidosis (PLCA) type 2, an itchy skin condition in which clumps of abnormal proteins called amyloids build up in the skin. This mutation changes a single protein building block (amino acid) in IL-31RA, replacing the amino acid serine with the amino acid phenylalanine at protein position 521 (written as Ser521Phe or S521F). This change occurs in a region of the protein thought to interact with the other subunit of the IL-31 receptor and may impair the receptor's formation.

The *IL31RA* gene mutation that causes PLCA reduces the chemical signals triggered by IL-31. While IL-31 signaling plays a role in itching, it is unclear how a reduction of this signaling is involved in itchy skin or the buildup of amyloids in PLCA.

### Other Names for This Gene

- class I cytokine receptor
- CRL
- CRL3
- cytokine receptor-like 3

- GLM-R
- GLMR
- gp130-like monocyte receptor
- GPL
- hGLM-R
- IL-31 receptor subunit alpha
- IL-31R subunit alpha
- IL-31RA
- PLCA2
- PRO21384
- soluble type I cytokine receptor CRL3
- zcytoR17

## Additional Information & Resources

### Tests Listed in the Genetic Testing Registry

- Tests of IL31RA ([https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=133396\[geneid\]](https://www.ncbi.nlm.nih.gov/gtr/all/tests/?term=133396[geneid]))

## Scientific Articles on PubMed

- PubMed (<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28IL31RA%5BTIAB%5D%29+OR+%28interleukin+31+receptor+A%5BTIAB%5D%29%29+OR+%28%28IL-31+receptor+subunit+alpha%5BTIAB%5D%29+OR+%28IL-31R+subunit+alpha%5BTIAB%5D%29+OR+%28IL-31RA%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+3600+days%22%5Bdp%5D>)

## Catalog of Genes and Diseases from OMIM

- INTERLEUKIN 31 RECEPTOR A; IL31RA (<https://omim.org/entry/609510>)

## Gene and Variant Databases

- NCBI Gene (<https://www.ncbi.nlm.nih.gov/gene/133396>)
- ClinVar ([https://www.ncbi.nlm.nih.gov/clinvar?term=IL31RA\[gene\]](https://www.ncbi.nlm.nih.gov/clinvar?term=IL31RA[gene]))

## References

- Chang YT, Wong CK, Chow KC, Tsai CH. Apoptosis in primary

cutaneous amyloidosis. Br J Dermatol. 1999 Feb;140(2):210-5. doi:10.1111/j.1365-2133.1999.02611.x. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/10733268>)

- Hermanns HM. Oncostatin M and interleukin-31: Cytokines, receptors, signal transduction and physiology. Cytokine Growth Factor Rev. 2015 Oct;26(5):545-58. doi: 10.1016/j.cytogfr.2015.07.006. Epub 2015 Jul 3. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/26198770>)
- Kasraie S, Niebuhr M, Baumert K, Werfel T. Functional effects of interleukin31 in human primary keratinocytes. Allergy. 2011 Jul;66(7):845-52. doi:10.1111/j.1398-9995.2011.02545.x. Epub 2011 Jan 25. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/21261663>)
- Lin MW, Lee DD, Liu TT, Lin YF, Chen SY, Huang CC, Weng HY, Liu YF, Tanaka A, Arita K, Lai-Cheong J, Palisson F, Chang YT, Wong CK, Matsuura I, McGrath JA, Tsai SF. Novel IL31RA gene mutation and ancestral OSMR mutant allele in familial primary cutaneous amyloidosis. Eur J Hum Genet. 2010 Jan;18(1):26-32. doi: 10.1038/ejhg.2009.135. Citation on PubMed (<https://pubmed.ncbi.nlm.nih.gov/19690585>) or Free article on PubMed Central (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2987153/>)

## Genomic Location

The *IL31RA* gene is found on chromosome 5 (<https://medlineplus.gov/genetics/chromosome/5/>).

**Last updated March 1, 2017**