

Gene Section

Mini Review

TRG (T cell Receptor Gamma)

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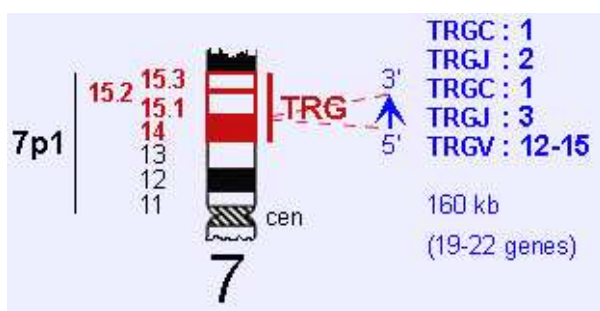
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Identity

HGNC (Hugo): TRG@

Location: 7p15-p14



For complete Figure, see the international ImMunoGeneTics information system; Copyright 1995-2003 IMGT.

Note

The human TRG locus is located on chromosome 7, at band 7p15-p14. The orientation of the locus has been determined by the analysis of chromosome 7 inversions *inv(7)(p15-q35)*, involving the TRG and TRB loci in ataxia telangiectasia patients, and in leukaemia.

DNA/RNA

Description

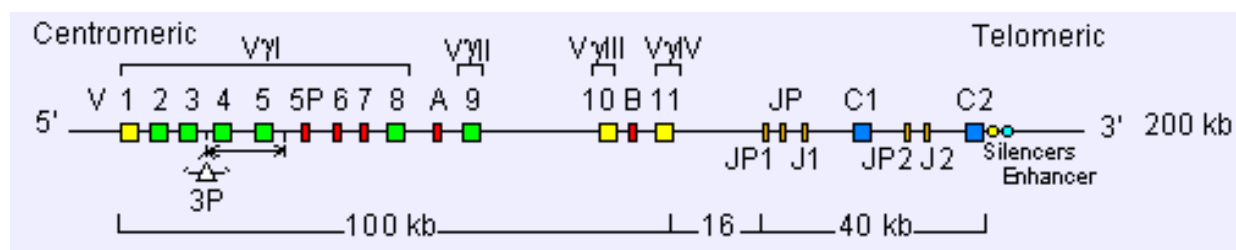
The human TRG locus at 7p15-p14 spans 160 kb. It consists of 12-15 TRGV genes belonging to 6 subgroups, upstream of a duplicated J-C-cluster, which comprises, for the first part, three TRGJ and the TRGC1 gene, and for the second part, two TRGJ and the TRGC2 gene.

The most 5' TRGV genes occupy the most centromeric position, whereas the TRGC2 gene, 3' of the locus, is the most telomeric in the TRG locus.

The potential repertoire consists of 4-6 functional TRGV genes belonging to two subgroups, the 5 TRGJ and the 2 TRGC genes.

Polymorphisms in the number of TRGV genes and in the exon number of the TRGC2 gene have been described in different populations.

Enhancer and silencer sequences have been characterized downstream of the TRGC2 gene.



TRG

V-GENE: Green box: Functional; Yellow box: Open reading frame; Red: Pseudogene; Triangle: Not sequenced.

J-GENE: Grey: Functional.

C-GENE: Blue: Functional.

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Protein

Description

Proteins encoded by the TRG locus are the T cell receptor gamma chains. They result from the recombination (or rearrangement), at the DNA level, of two genes: TRGV and TRGJ, with deletion of the intermediary DNA to create a rearranged TRGV-J gene. The rearranged TRGV-J gene is transcribed with one of the two TRGC genes and translated into an T cell receptor gamma chain.

Translation of the variable germline genes involved in the TRGV-J rearrangements are available at IMGT Repertoire Protein displays. TRG V-J rearrangements can be analysed using the IMGT/V-QUEST tool.

Mutations

Note

Mutations which correspond to allelic polymorphisms of the functional germline TRGV, TRGJ and TRGC genes are described in the IMGT database.

Implicated in

Inversions which result from errors of the recombinase enzyme complex (RAG1, RAG2, etc.), responsible of the Immunoglobulin and T cell receptor V-J and V-D-J rearrangements. TRGV or TRGJ recombination signals or isolated heptamer are observed at the breakpoints.

References

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Lefranc M-P. and Lefranc G. *The T cell Receptor FactsBook* (Review) Academic Press London UK 2001.

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