IMGT overview: the mouse T cell receptor delta TRD genes

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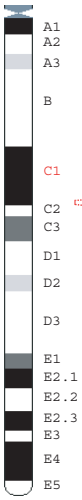
How many TRD genes?

Chromosome 14 C1

The total number of T cell receptor delta TRD genes per haploid genome in *Mus musculus* laboratory mice is 11 (21 including 10 upstream TRAV/DV).



TRAV/DV: 10
TRDV: 5
TRDD: 2
TRDJ: 2
TRDC: 1
TRDV: 1
275 kb
(21 genes)

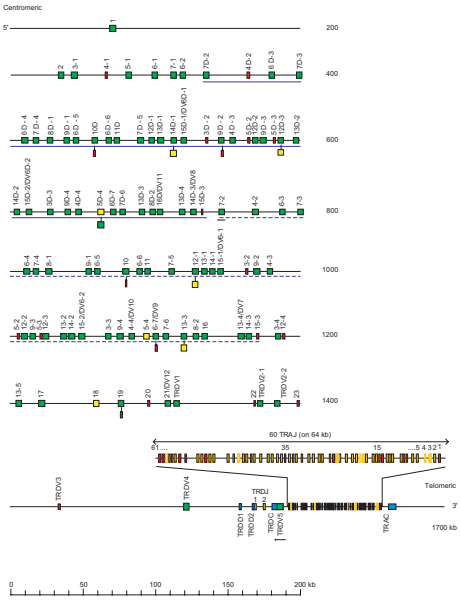
The mouse TRD spans 275 kb, nestled in the TRA locus. It comprises 6 TRDV (16 including 10 upstream TRAV/DV), 2 TRDD, 2 TRDJ, 1 TRDC. One TRDV is in inverted orientation in 3' of TRDC.

Lefranc, M.-P. et al., In Silico Biology, 5, 45-60 (2005)

How are TRD genes organized?

TRD locus

Locus representation: Mouse *(Mus musculus)* TRA on chromosome 14 C1



Bosc, N. et al., Dev. Comp. Immunol., 27, 465-497 (2003)

How many TRD functional genes?

Potential repertoire

The potential TRD repertoire per haploid genome comprises 10 functional genes (19-20 with the TRAV/DV): 5 TRDV (14-15 with the TRAV/DV), 2 TRDD, 2 TRDJ and 1 TRDC.

Overview

	Number of genes	Functional genes
TRDV	6	5
TRAV/DV	10	9-10
TRDD	2	2
TRDJ	2	2
TRDC	1	1
Total	21	19-20

The definitive IMGT nomenclature of the mouse TRDV genes and the correspondence with the provisional nomenclature have been established.

The mouse TRD genes and alleles and the corresponding IMGT reference sequences were provided to Mouse Genome Informatics MGD in July 2002 and are available in IMGT/GENE-DB.

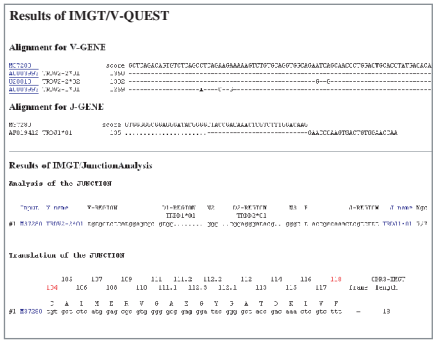
Giudicelli, V. et al., Nucl. Acids Res., 33, D256-D261 (2005)

IMGT tools to analyse expressed variable genes

IMGT/V-QUEST IMGT/JunctionAnalysis

Sequence analysis

Analysis of the TRDV genes (germline or rearranged) can be performed by IMGT/V-QUEST and analysis of the V-D-J junctions by IMGT/JunctionAnalysis.


Results of IMGT/V-QUEST

Alignment for V-GENE

Alignment for J-GENE

Results of IMGT/JunctionAnalysis

Analysis of the JUNCTION

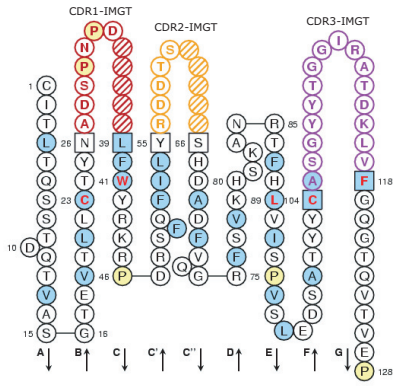
Translation of the JUNCTION

Giudicelli, V. et al., Nucl. Acids Res., 32, W435-W440 (2004)
Yousfi Monod, M. et al., Bioinformatics, 20, I379-I385 (2004)

IMGT Colliers de Perles

2D representations

Mus musculus (Mouse) TRDV-TRDD-TRDJ
CDR-IMGT lengths [8.6.12] X13315



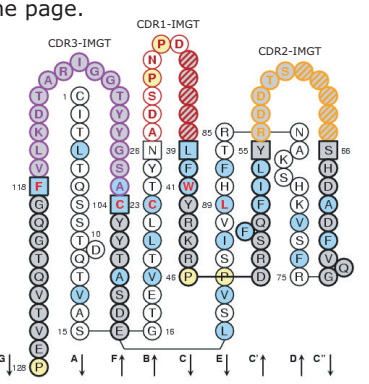
IMGT Colliers de Perles are according to the IMGT unique numbering for V-DOMAIN.

Lefranc, M.-P. et al., Dev. Comp. Immunol., 25, 55-77 (2003)
Lefranc, M.-P. et al., Dev. Comp. Immunol., 29, 185-203 (2005)

IMGT/3Dstructure-DB IMGT/Collier de perles tool

Towards 3D structures

There is no known three dimensional structure of V-DELTA domains or TR-DELTA chain, but IMGT Colliers de Perles can be constructed with the tool available at the IMGT/3Dstructure-DB home page.



Kaas, Q. et al., Nucl. Acids Res., 32, D208-210 (2004)
Kaas, Q. and Lefranc, M.-P., In Silico Biol., 5, 0046 (2005)

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