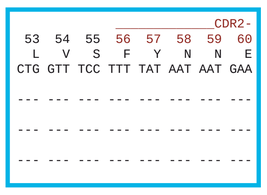
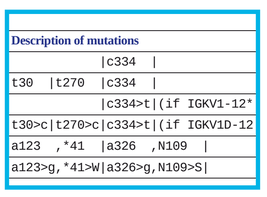
IMGT Repertoire

Sequences

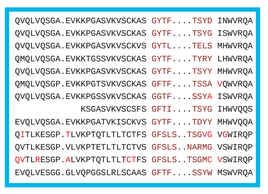


Alignments of alleles

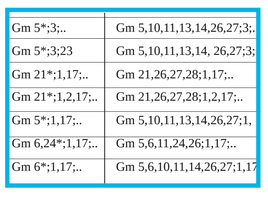


Description of mutations
|c334 |
t30 |t270 |c334 |
|c334>t|(if IGKV1-12*
t30>c|t270>c|c334>t|(if IGKV1D-12
a123 ,*41 |a326 ,N109 |
a123>g,*41>W|a326>g,N109>S|

Tables of alleles



Protein displays



Gm 5*;3;..	Gm 5,10,11,13,14,26,27;3;.
Gm 5*;3;23	Gm 5,10,11,13,14, 26,27;3;
Gm 21*;1,17;..	Gm 21,26,27,28;1,17;..
Gm 21*;1,2,17;..	Gm 21,26,27,28;1,2,17;..
Gm 5*;1,17;..	Gm 5,10,11,13,14,26,27;1,
Gm 6,24*;1,17;..	Gm 5,6,11,24,26;1,17;..
Gm 6*;1,17;..	Gm 5,6,10,11,14,26,27;1,17

Allotypes Isotypes

Lefranc, M.-P. et al., In Silico Biology, 5, 45-60 (2005)
Lefranc, M.-P., Leukemia, 17, 260-266 (2003)

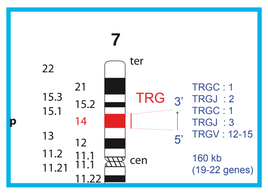
Alignments of alleles are nucleotide and amino acid alignments of the core (V-REGION, D-REGION, J-REGION and C-REGION) of all immunoglobulin (IG) and T cell receptor (TR) genes which have, at least, one open reading frame (ORF) or one functional allele. Alignments of alleles are displayed with gaps according to the IMGT unique numbering. All known sequences for the different alleles are displayed by comparison to the IMGT reference sequence of allele *01.

Tables of alleles show the description of allelic polymorphisms for IG and TR V-REGION, D-REGION, J-REGION or C-REGION. Allele names are defined at the "species" level.

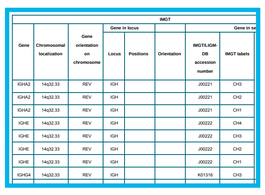
Protein displays are alignments of translated sequences of IG, TR and major histocompatibility complex (MHC).

Allotypes and isotypes provide information that bridges the gap between serological markers and genes and alleles. Isotypes are IG chains encoded by genes present in all individuals of a same species. Isotypes of the constant domain are a criterion of the identification of the IG or TR chain types. This does not exclude that these same IG or TR chains be characterized by different isotypes of the variable domain. Allotypes are encoded by alleles of a gene and differ between individuals.

Genome



Chromosomal localizations



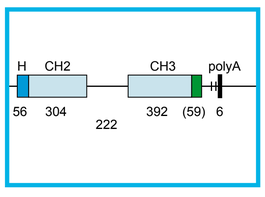
IMGT								
Gene	Chromosomal localization	Gene orientation on chromosome	Gene in locus				Gene in su	
			Locus	Positions	Orientation	IMGT/LIGM-DB accession number	IMGT labels	
IGHA2	14q32.33	REV	IGH			J00221	CH3	
IGHA2	14q32.33	REV	IGH			J00221	CH2	
IGHA2	14q32.33	REV	IGH			J00221	CH1	
IGHE	14q32.33	REV	IGH			J00222	CH4	
IGHE	14q32.33	REV	IGH			J00222	CH3	
IGHE	14q32.33	REV	IGH			J00222	CH2	
IGHE	14q32.33	REV	IGH			J00222	CH1	
IGHG4	14q32.33	REV	IGH			K01316	CH3	

Gene positions

Mouse IMGT IGHV subgroups	Related human IGHV subgroups
IGHV1	IGHV1
IGHV2	
IGHV3	IGHV4 (IGHV6)
IGHV4	IGHV3
IGHV5	
IGHV6	
IGHV7	
IGHV8	IGHV2
IGHV9	IGHV7
IGHV10	IGHV3
IGHV11	

Correspondence between species

Locus representations



Gene exon/intron organization

IMGT IGHV gene name	Matsuda et al.
IGHV6-1	6-1
IGHV(II)-1-1	4-1.1P
IGHV1-2	1-2
IGHV(III)-2-1	3-2.1P
IGHV1-3	1-3
IGHV4-4	4-4
IGHV2-5	2-5
IGHV(III)-5-1	3-5.1P
IGHV(III)-5-2	3-5.2P
IGHV3-6	3-6P
IGHV3-7	3-7

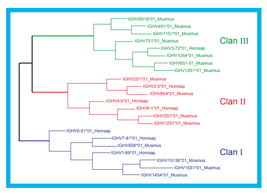
Correspondence between nomenclatures

TRGV subgroup	TRGV gene name	Fct	R	T	P	Reference sequences
1	TRGV1	ORF(11)	-	-	-	**V1**
	TRGV2	F	+	+	+	**V2**
		(F)	+	+	+	Vgamma1.1
	TRGV3	F	+	+	+	**V3**
		F	+	+	+	**Vgamma1.**
	TRGV4	F	+	+	+	**V4**
		F	+	+	+	**V4**
	TRGV5	F	+	+	+	**V5**
	TRGV5P	P(2)	-	-	-	**V5P**

Gene tables

Subgroup	Functional	ORF	Pseudogene	Total
IGHV1	9	-	5	14
IGHV2	3	-	1	4
IGHV3	18-20**(+1)*	3	25(+1)*	47-49**
IGHV4	6-9**(+1)*	(+1)*	2	9-12**
IGHV5	1	-	1	2
IGHV6	1	-	-	1
IGHV7	0-1**	1	4	5-6**
IGHV(II)	-	-	22	22
IGHV(III)	-	-	18	18
IGHV(IV)	-	-	1	1
Total	38-44(+2)*	4(+1)*	79(+2)*	123-129**

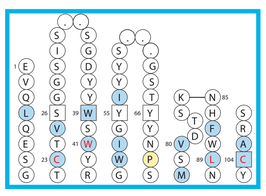
Potential germline repertoires



Clans

Duroux, P. et al., Biochimie, 90, 570-583 (2008)

2D and 3D structure analysis

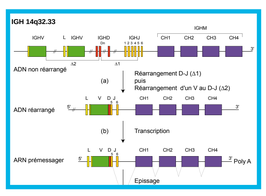


IMGT Colliers de Perles 3D representation FR-IMGT and CDR-IMGT

Kaas, Q. et al.,
Brief. Funct. Genomic Proteomic, 6, 253-264 (2007)

IMGT Colliers de Perles are 2D graphical representations based on the IMGT unique numbering. They are provided for the V-REGION, V-DOMAIN and C-DOMAIN of the IG and TR, the V-LIKE-DOMAIN and C-LIKE-DOMAIN of proteins other than IG or TR, the G-DOMAIN of the MHC, and the G-LIKE-DOMAIN of the proteins other than MHC.
IMGT Colliers de Perles and 3D representations of IG, TR and MHC domains allow to bridge the gap between sequences and 3D structures and to delimit standardized framework regions (FR-IMGT) and complementarity determining regions (CDR-IMGT) of the V type domains.

IMGT Other Web resources



IMGT Scientific chart
IMGT Index
IMGT Bloc-notes
IMGT Education

Lefranc, M.-P. et al.,
Nucl. Acids Res., 37, D1006-D1012 (2009)

The IMGT Medical page
The IMGT Veterinary page
The IMGT Biotechnology page
The IMGT Immunoinformatics page

IMGT® founder and director: Marie-Paule Lefranc (Marie-Paule.Lefranc@igh.cnrs.fr)
Bioinformatics manager: Véronique Giudicelli (Veronique.Giudicelli@igh.cnrs.fr)
Computer manager: Patrice Duroux (Patrice.Duroux@igh.cnrs.fr)
Webmaster: Chantal Ginestoux (Chantal.Ginestoux@igh.cnrs.fr)