Nomenclature of the Human T Cell Receptor Genes

The human T cell receptors (TcR) α-β and γ-δ are the products of four sets of genes on two chromosomes: T cell receptors α (*TRA*) and δ (*TRD*) on chromosome 14 at 14q11.2, T cell receptor β (*TRB*) on chromosome 7 at 7q35, and T cell receptor γ (*TRG*) on chromosome 7 at 7p15-p14.

This appendix presents tabulated lists of the human TcR α, β, γ, and δ genes (Table A.1O.1, Table A.1O.2, Table A.1O.3, and Table A.1O.4, respectively) named in accordance with the International ImMunoGeneTics database (IMGT; see Internet Resources) and approved by the Human Genome Organization (HUGO) Nomenclature Committee in 1999. Two additional tables list corresponding nomenclatures for these genes (Table A.1O.5 and A.1O.6).

HUMAN T CELL RECEPTOR LOCI

TRA Locus

The human *TRA* locus at 14q11.2 spans 1000 kb (Fig. A.1O.1; Table A.1O.1). It consists of 54 *TRAV* genes belonging to 41 subgroups, 61 *TRAJ* segments localized on 71 kb, and a unique *TRAC* gene (Folch et al., 2000; Scaviner and Lefranc, 2000a,b). The most 5′ *TRAV* genes occupy the most centromeric position, whereas the *TRAC* gene, 3′ of the locus, is the most telomeric gene in the *TRA* locus. The organization of the *TRAJ* genes over a large area is quite unusual and has not been observed in the other immunoglobulin or T cell receptor loci (Lefranc, 1990b). Moreover, the *TRD* locus is nestled in the *TRA* locus between the *TRAV* and *TRAJ* genes. V-J-rearrangements in the *TRA* locus therefore result in deletion of the *TRD* genes localized on the same chromosome (Lefranc, 1990b). Deletion occurs in two steps, i.e., a deletion of the *TRD* genes, involving specific sequences located upstream from *TRDC* (sequence ϕJα; De Villartray et al., 1988; Begley et al., 1989) would take place before the *TRAV-J* rearrangement. The potential repertoire consists of 45 to 47 functional *TRAV* genes belonging to 33 to 35 subgroups, 50 functional *TRAJ* genes, and the unique *TRAC* gene. Among the variable genes, five genes are included, designated as *TRAV/DV*, which belong to five different subgroups and which have been found rearranged either to *TRAJ* or to *TRDD* genes and can therefore be used in the synthesis of α or δ chains.

The total number of human *TRA* genes per haploid genome is 116, of which 96 to 98 genes are functional. Enhancer sequences have been characterized 4.5 kb 3′ from *TRAC* (Ho et al., 1989).

TRB Locus

The human *TRB* locus at 7q35 spans 620 kb (Fig. A.1O.2; Table A.1O.2). It consists of 64 to 67 *TRBV* genes belonging to 32 subgroups. Except for *TRBV30*, localized downstream of the *TRBC2* gene, in inverted orientation of transcription, all the other *TRBV* genes are located upstream of a duplicated D-J-C-cluster, which comprises, for the first part, one *TRBD* gene, six *TRBJ* genes, and the *TRBC1* gene, and for the second part, one *TRBD* gene, eight *TRBJ* genes, and the *TRBC2* gene (Folch and Lefranc, 2000a,b; Folch et al., 2000). The most 5′ *TRBV* genes occupy the most centromeric position, whereas the *TRBV30* gene, 3′ of the locus, is the most telomeric gene in the *TRB* locus. The potential repertoire consists of 40 to 48 functional *TRBV* genes belonging to 21 to 23 subgroups, the two *TRBD* genes, thirteen *TRBJ* genes (6 from the first cluster and 7 from the second cluster), and the two *TRBC* genes. Six *TRBV* orphons have been localized on chromosome 9 at 9p21. The total number of human *TRB* genes per haploid genome is 82 to 85, 88 to 91 if the orphons are included, of which 57 to 65 are functional. Enhancer sequences have been characterized 5.5 kb 3′ from *TRBC2* (Gottschalk and Leiden, 1990).

TRG Locus

The human *TRG* locus at 7p15–p14 spans 160 kb (Fig. A.1O.3; Table A.1O.3). It consists of 12 to 15 *TRGV* genes belonging to 6 subgroups, upstream of a duplicated J-C-cluster, which comprises, for the first part, three *TRGJ* genes and the *TRGC1* gene, and for the second part, two *TRGJ* genes and the *TRGC2* gene (Lefranc and Rabbitts, 1989, 1990a,b; Lefranc et al., 1989; Folch et al., 2000). 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 to 6 functional *TRGV* genes belonging to two subgroups, the

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Current Protocols in Immunology (2000) A.1O.1-A.1O.23
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5 *TRGJ* genes 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 (Buresi et al., 1989; Ghanem et al., 1989, 1991). The total number of human *TRG* genes per haploid genome is 19 to 22 of which 11 to 13 are functional. Enhancer and silencer sequences have been characterized 6.5 kb downstream of the *TRGC2* gene (Lefranc and Alexandre, 1995).

TRD Locus

The human *TRD* locus (Fig. A.1O.1; Table A.1O.4) at 14q11.2 comprises a cluster of one *TRDV* gene (*TRDV2*), three *TRDD* genes, and four *TRDJ* genes, upstream of the unique *TRDC* gene (Table A.1O.4); another *TRDV* gene (*TRDV3*) is localized downstream of the *TRDC* gene, in inverted orientation of transcription (Lefranc, 1990a; Folch et al., 2000). This cluster spans 60 kb and is localized inside the *TRA* locus, between the *TRAV* genes and the *TRAJ* genes (Fig. A.1O.1). The *TRD* locus also consists of one *TRDV* (*TRDV1*) localized at 360 kb upstream of the *TRDC* gene, among the *TRAV* genes, and the five genes described above as *TRAV/DV*. The *TRDV* genes are unique members of different subgroups. All the *TRD* genes are functional, with the exception of one *TRAV/DV*, which has been found either functional or as a pseudogene.

The total number of human *TRD* genes per haploid genome is 11 (16 if the 5 *TRAV/DV* are included). All *TRD* genes are functional. Enhancer sequences have been described between the *TRDJ3* and the *TRDC* gene (Bories et al., 1990; Redondo et al., 1990).

TABLE GUIDE

Gene names are according to the IMGT gene name nomenclature for Ig and TcR of all vertebrates (IMGT Scientific chart; *http://imgt.cines.fr:8104*).

Criteria of functionality (F: functional, P: pseudogene, ORF: open reading frame) are described in the IMGT Scientific chart (Lefranc, 1998).

For each gene, an IMGT reference sequence accession number is given. For the functional or ORF genes, the IMGT reference sequence accession number is that corresponding to the allele *01. Although the IMGT accession numbers are the same as those from the EMBL/GenBank/DDBJ generalist databases, the content of the IMGT/LIGM-DB flat files differs by the expert annotations added by IMGT. IMGT data are available from IMGT/LIGM-DB, IMGT Repertoire, and from SRS sites (available from the IMGT Home page).

The number of alleles is according to the Tables of Alleles and Alignments of Alleles, in the IMGT Repertoire (*http://imgt.cines.fr:8104*), with a dash indicating that the allele polymorphism of the pseudogenes has not been studied.

Gene accession ID in the Genome Database (GDB; *http://www.gdb.org*), and in the NCBI LocusLink (*http://www.ncbi.nlm.nih.gov/LocusLink*; see Internet Resources) are provided.

IMGT gene names and IMGT gene definitions for the human Ig and TcR genes have been approved by the Human Genome Organization (HUGO) Nomenclature Committee in 1999. Note that in the HUGO symbols (*http://www.gene.ucl.ac.uk/nomenclature*) slashes and parentheses are omitted, and capital letters replace the lowercase letters found in some provisional IMGT gene names. Otherwise the gene symbols and all the full names (including slashes and parentheses) are identical in IMGT and HUGO nomenclatures.

ACKNOWLEDGEMENTS

I thank Gérard Lefranc (LIGM) and Claude Boucheix for helpful discussion, as well as Conover Talbot and Chris Porter (GDB), Donna Maglott (NCBI LocusLink), and Ruth Lovering and Sue Povey (HUGO Nomenclature Committee) for their collaboration. I am grateful to Valérie Contet for the editorial work. I am thankful to the IMGT team for its expertise and motivation.

IMGT is funded by the European Union's BIOTECH programme (BIO4CT96-0037) and the 5th PCRD programme (QLG2-2000-01287), the CNRS (Centre National de la Recherche Scientifique), the Ministère de l'Education Nationale, and the Ministère de la Recherche. Subventions have been received from ARC (Association pour la Recherche sur le Cancer) and the Région Languedoc-Roussillon.

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The immunoglobulin gene nomenclature is based on the CLASSIFICATION concept of the IMGT-ONTOLOGY.

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This paper describes the rules for a standardized nomenclature of the T cell receptor genes.

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The immunoglobulin gene nomenclature is part of the data standardization in the international ImMunoGeneTics database.

INTERNET RESOURCES

http://www.gdb.org

The Genome Database.

http://www.gene.ucl.ac.uk/nomenclature

HUGO Gene Nomenclature Committee web site.

http://imgt.cines.fr:8104

IMGT, the international ImMunoGeneTics database. IMGT/LIGM-DB contains the germline and rearranged sequences of the immunoglobulin and T cell receptor genes of human and other vertebrates.

http://imgt.cines.fr:8104/textes/IMGTrepertoire.html

IMGT Repertoire provides locus representations, germline gene tables, potential germline repertoires, correspondence between gene nomenclatures, protein displays, alignments of alleles, and tables of alleles for all the human TRA, TRB, TRG and TRD genes. 2D graphical representations designated as Colliers de Perles are provided for the variable genes.

http://imgt.cines.fr:8104/textes/IMGTScientific Chart.html

IMGT Scientific chart describes the rules for a standardized immunoglobulin and T cell receptor gene and allele nomenclature.

http://www.ncbi.nlm.nih.gov/LocusLink

NCBI LocusLink.

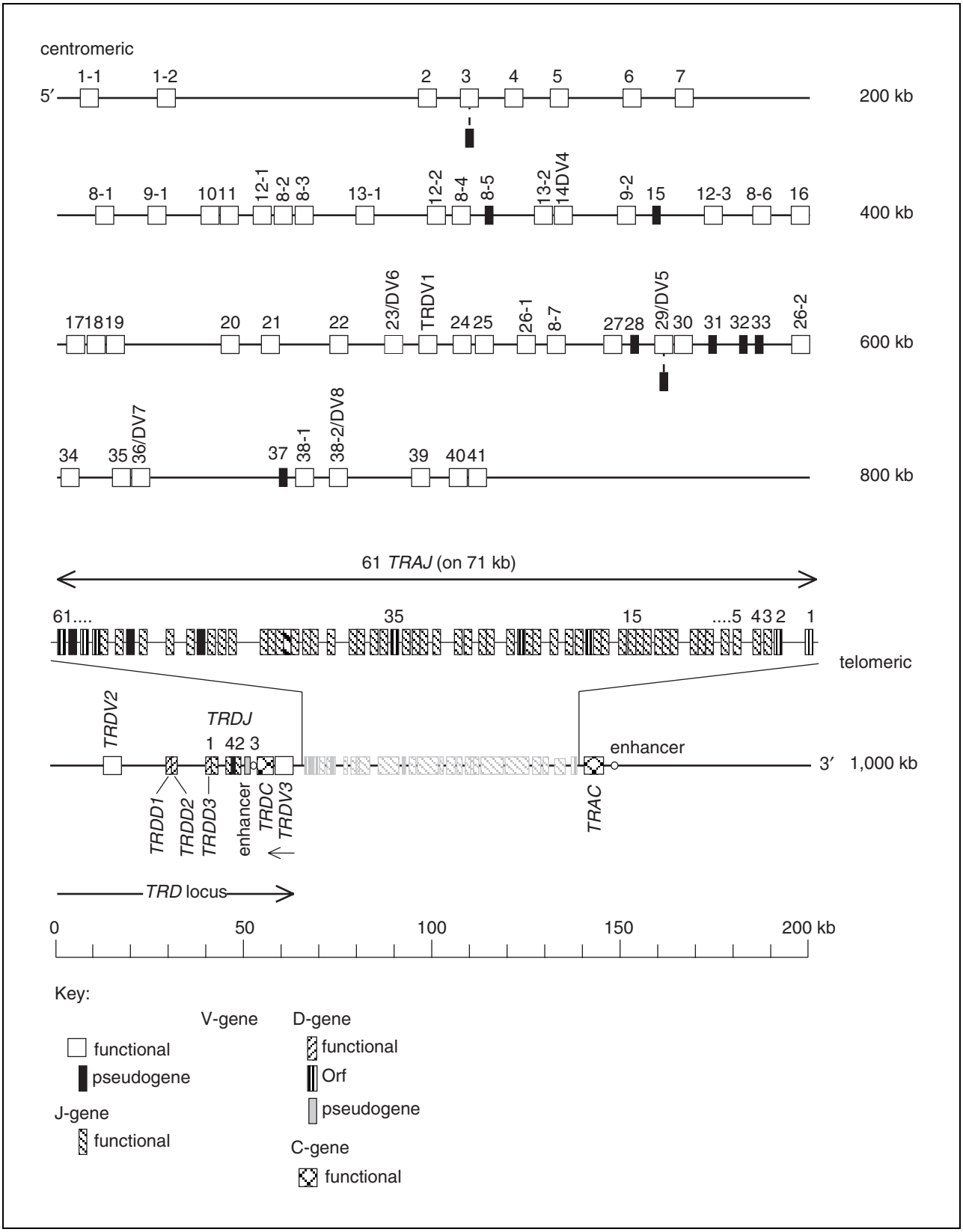

Figure A.1O.1 Human *TRA/TRD*, locus at 14q11.2. The boxes representing the genes are not to scale. The reader is referred to the following references for more information on *TRAV* genes (AE000658-AE000661): Boysen et al. (unpub. observ.); *TRAV* alignments: Folch et al. (2000), *TRAJ* genes: Koop et al. (1994); *TRAC* genes: Baer et al. (1985) and Yoshikai et al. (1985); *TRA* enhancer (4.5 kb *3′* from *TRAC*): Ho et al. (1989); *TRDV* genes (AE000660, AE000661): Boysen et al. (unpub. observ); *TRDD* genes: Loh et al. (1988) and Takihara et al. (1988); *TRDJ* genes: Isobe et al. (1988), Loh et al. (1988), and Satyanarayana et al. (1988); *TRDC* genes: Takihara et al. (1988); *TRD* enhancer (between *TRDJ3* and *TRDC*): Bories et al. (1990) and Redondo et al. (1990).

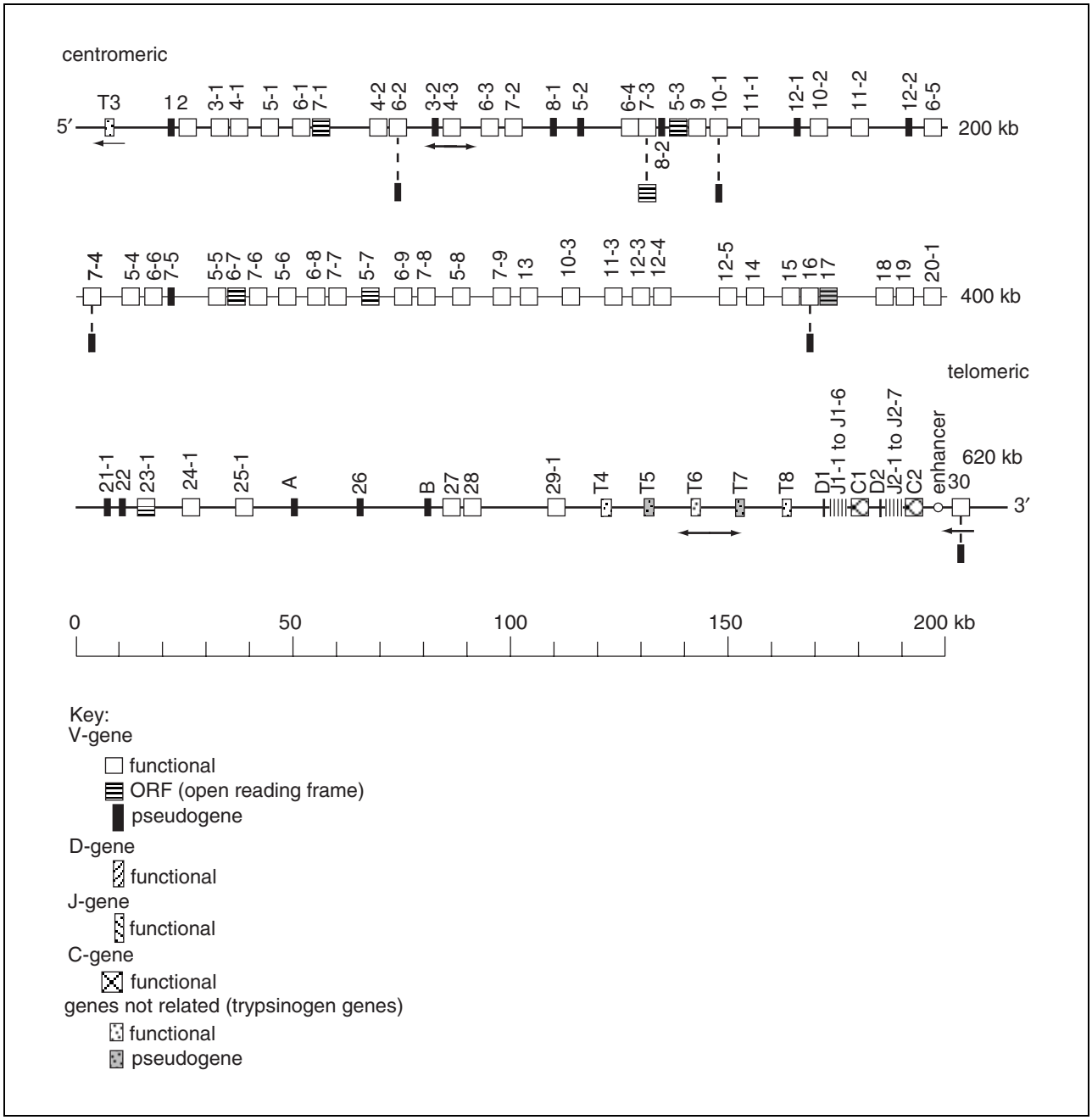

Figure A.1O.2 Human *TRB* locus at 7q35. The boxes representing the genes are not to scale. Exons are not shown. *TRBV* gene designations according to Rowen et al. (1996). Nomenclature adopted by IMGT. Single arrows show genes whose polarity is opposite to that of the D-J-C-CLUSTER. Double arrows indicate insertion/deletion polymorphisms. *TRBV* genes: Wei et al. (1994), Posnett et al. (1996), and Rowen et al. (1996); *TRB* D-J-C-CLUSTER: Toyonaga et al. (1985) and Tunnacliffe et al. (1985); *TRBV* alignments: Folch et al. (2000); *TRBV* enhancer (5.5 kb 3′ from TRBC2): Gottschalk and Leiden (1990).

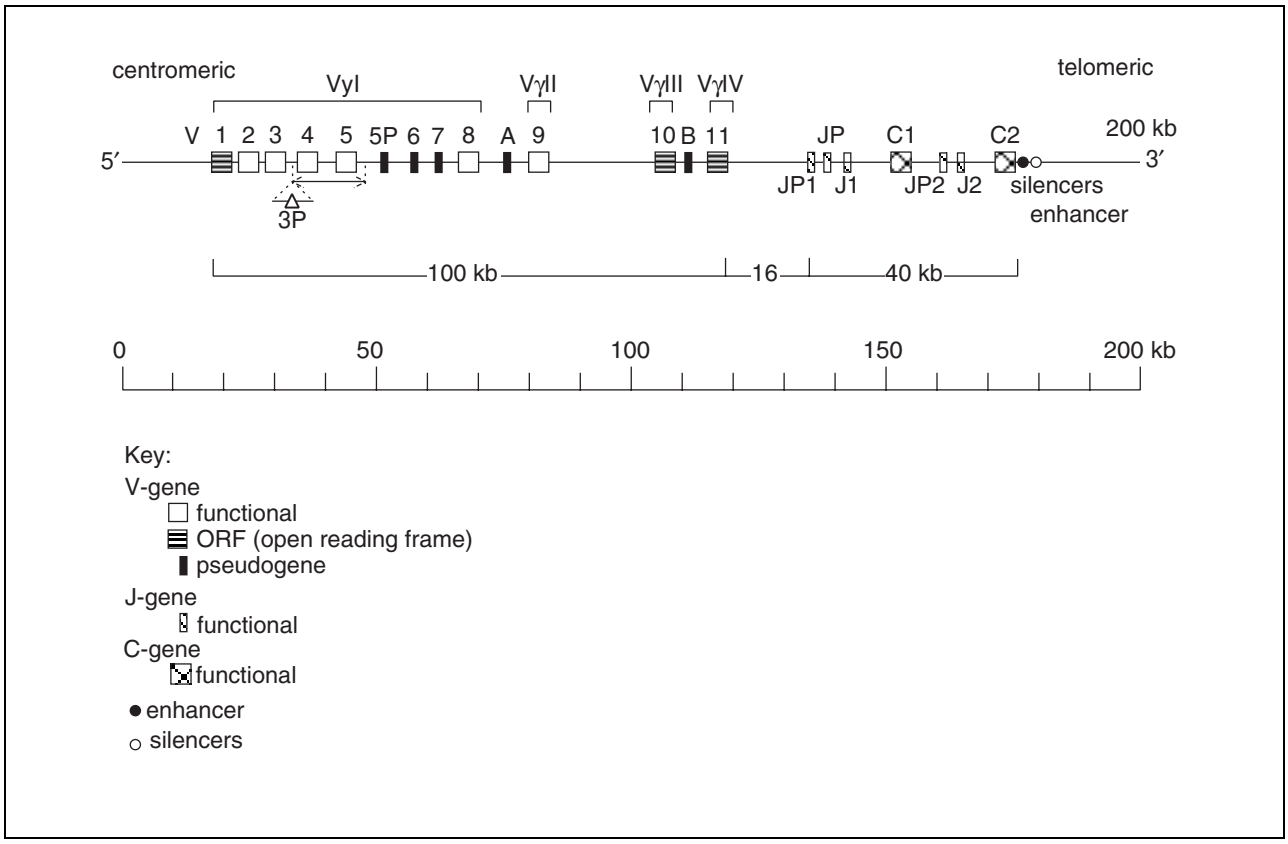

Figure A.1O.3 Human *TRG* locus at 7p15-p14. The boxes representing the genes are not to scale. Exons are not shown. A double arrow indicates an insertion/deletion polymorphism. Lefranc and Rabbitts (1989, 1990a,b) and Lefranc et al. (1989); *TRGV* genes: Lefranc et al. (1986a), Forster et al. (1987), Huck et al. (1988), and Zhang et al. (1994, 1996); *TRGJ* genes: Huck and Lefranc (1987); *TRGC* genes: Lefranc et al. (1986b) and Buresi et al. (1989); Silencers and enhancers: Lefranc and Alexandre (1995); RFLP polymorphisms of the *TRGV* and *TRGC* genes: Buresi et al. (1989) and Ghanem et al. (1989,1991).

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a]

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
TRA locus on chromosome 14 at 14q11.2							
TRAC	*TRAC*	F	X02883	3	T cell receptor α constant	GDB:9953797	28755
TRAJ[d]	*TRAJ1*	ORF	X02884	1	T cell receptor α joining 1	GDB:9953799	28754
	TRAJ2	ORF	X02884	1	T cell receptor α joining 2	GDB:9953801	28753
	TRAJ3	F	X02884	1	T cell receptor α joining 3	GDB:9953803	28752
	TRAJ4	F	M94081	1	T cell receptor α joining 4	GDB:9953805	28751
	TRAJ5	F	M94081	1	T cell receptor α joining 5	GDB:9953807	28750
	TRAJ6	F	M16747	1	T cell receptor α joining 6	GDB:9953809	28749
	TRAJ7	F	M94081	1	T cell receptor α joining 7	GDB:9953811	28748
	TRAJ8	F	M94081	1	T cell receptor α joining 8	GDB:9953813	28747
	TRAJ9	F	M94081	1	T cell receptor α joining 9	GDB:9953815	28746
	TRAJ10	F	M94081	1	T cell receptor α joining 10	GDB:9953817	28745
	TRAJ11	F	M94081	1	T cell receptor α joining 11	GDB:9953819	28744
	TRAJ12	F	X02885	1	T cell receptor α joining 12	GDB:9953821	28743
	TRAJ13	F	M94081	1	T cell receptor α joining 13	GDB:9953823	28742
	TRAJ14	F	M94081	1	T cell receptor α joining 14	GDB:9953825	28741
	TRAJ15	F	X05775	2	T cell receptor α joining 15	GDB:9953827	28740
	TRAJ16	F	M94081	1	T cell receptor α joining 16	GDB:9953829	28739
	TRAJ17	F	X05773	1	T cell receptor α joining 17	GDB:9953831	28738
	TRAJ18	F	M94081	1	T cell receptor α joining 18	GDB:9953833	28737
	TRAJ19	ORF	M94081	1	T cell receptor α joining 19	GDB:9953835	28736
	TRAJ20	F	M94081	1	T cell receptor α joining 20	GDB:9953837	28735
	TRAJ21	F	M94081	1	T cell receptor α joining 21	GDB:9953839	28734
	TRAJ22	F	X02886	1	T cell receptor α joining 22	GDB:9953841	28733

continued

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRAJ23	F	M94081	1	T cell receptor α joining 23	GDB:9953843	28732
	TRAJ24	F	X02887	2	T cell receptor α joining 24	GDB:9953845	28731
	TRAJ25	ORF	X02888	1	T cell receptor α joining 25	GDB:9953847	28730
	TRAJ26	F	M94081	1	T cell receptor α joining 26	GDB:9953849	28729
	TRAJ27	F	M94081	1	T cell receptor α joining 27	GDB:9953851	28728
	TRAJ28	F	M94081	1	T cell receptor α joining 28	GDB:9953853	28727
	TRAJ29	F	X02889	1	T cell receptor α joining 29	GDB:9953855	28726
	TRAJ30	F	M94081	1	T cell receptor α joining 30	GDB:9953857	28725
	TRAJ31	F	M14905	1	T cell receptor α joining 31	GDB:9953859	28724
	TRAJ32	F	M94081	1	T cell receptor α joining 32	GDB:9953861	28723
	TRAJ33	F	M94081	1	T cell receptor α joining 33	GDB:9953863	28722
	TRAJ34	F	M35622	1	T cell receptor α joining 34	GDB:9953865	28721
	TRAJ35	ORF	M94081	1	T cell receptor α joining 35	GDB:9953867	28720
	TRAJ36	F	M94081	1	T cell receptor α joining 36	GDB:9953869	28719
	TRAJ37	F	M94081	1	T cell receptor α joining 37	GDB:9953871	28718
	TRAJ38	F	M94081	1	T cell receptor α joining 38	GDB:9953873	28717
	TRAJ39	F	M94081	1	T cell receptor α joining 39	GDB:9953875	28716
	TRAJ40	F	M35620	1	T cell receptor α joining 40	GDB:9953877	28715
	TRAJ41	F	M94081	1	T cell receptor α joining 41	GDB:9953879	28714
	TRAJ42	F	M94081	1	T cell receptor α joining 42	GDB:9953881	28713
	TRAJ43	F	M94081	1	T cell receptor α joining 43	GDB:9953883	28712
	TRAJ44	F	M35619	1	T cell receptor α joining 44	GDB:9953885	28711
	TRAJ45	F	M94081	1	T cell receptor α joining 45	GDB:9953887	28710

continued

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRAJ46	F	M94081	1	T cell receptor α joining 46	GDB:9953889	28709
	TRAJ47	F	M94081	1	T cell receptor α joining 47	GDB:9953891	28708
	TRAJ48	F	M94081	1	T cell receptor α joining 48	GDB:9953893	28707
	TRAJ49	F	M94081	1	T cell receptor α joining 49	GDB:9953895	28706
	TRAJ50	F	M94081	1	T cell receptor α joining 50	GDB:9953897	28705
	TRAJ51	P	M94081	—	T cell receptor α joining 51	GDB:9953899	28704
	TRAJ52	F	M94081	1	T cell receptor α joining 52	GDB:9953901	28703
	TRAJ53	F	M94081	1	T cell receptor α joining 53	GDB:9953903	28702
	TRAJ54	F	M94081	1	T cell receptor α joining 54	GDB:9953905	28701
	TRAJ55	P	M94081	—	T cell receptor α joining 55	GDB:9953907	28700
	TRAJ56	F	M94081	1	T cell receptor α joining 56	GDB:9953909	28699
	TRAJ57	F	M94081	1	T cell receptor α joining 57	GDB:9953911	28698
	TRAJ58	ORF	M94081	1	T cell receptor α joining 58	GDB:9953913	28697
	TRAJ59	ORF	M94081	1	T cell receptor α joining 59	GDB:9953915	28696
	TRAJ60	P	M94081	—	T cell receptor α joining 60	GDB:9953917	28695
	TRAJ61	ORF	M94081	1	T cell receptor α joining 61	GDB:9953919	28694
TRAV[e]	*TRAV1-1*	F	AE000658	2	T cell receptor α variable 1-1	GDB:9953921	28693
	TRAV1-2	F	AE000658	2	T cell receptor α variable 1-2	GDB:9953923	28692
	TRAV2	F	AE000658	2	T cell receptor α variable 2	GDB:9953925	28691
	TRAV3	F, (P)[f]	AE000658	2	T cell receptor α variable 3	GDB:9953927	28690
	TRAV4	F	AE000658	1	T cell receptor α variable 4	GDB:9953929	28689
	TRAV5	F	AE000659	1	T cell receptor α variable 5	GDB:9953931	28688
	TRAV6	F	AE000659	6	T cell receptor α variable 6	GDB:9953933	28687

continued

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRAV7	F	AE000659	1	T cell receptor α variable 7	GDB:9953935	28686
	TRAV8-1	F	AE000659	2	T cell receptor α variable 8-1	GDB:9953937	28685
	TRAV8-2	F	AE000659	2	T cell receptor α variable 8-2	GDB:9953939	28684
	TRAV8-3	F	AE000659	3	T cell receptor α variable 8-3	GDB:9953941	28683
	TRAV8-4	F	AE000659	7	T cell receptor α variable 8-4	GDB:9953943	28682
	TRAV8-5	P	AE000659	—	T cell receptor α variable 8-5	GDB:9953945	28681
	TRAV8-6	F	X02850	2	T cell receptor α variable 8-6	GDB:9953947	28680
	TRAV8-7	F	AE000660	1	T cell receptor α variable 8-7	GDB:9953949	28679
	TRAV9-1	F	AE000659	1	T cell receptor α variable 9-1	GDB:9953951	28678
	TRAV9-2	F	AE000659	4	T cell receptor α variable 9-2	GDB:9953953	28677
	TRAV10	F	AE000659	1	T cell receptor α variable 10	GDB:9953955	28676
	TRAV11	F	AE000659	1	T cell receptor α variable 11	GDB:9953957	28675
	TRAV12-1	F	AE000659	2	T cell receptor α variable 12-1	GDB:9953959	28674
	TRAV12-2	F	AE000659	3	T cell receptor α variable 12-2	GDB:9953961	28673
	TRAV12-3	F	X06193	2	T cell receptor α variable 12-3	GDB:9953963	28672
	TRAV13-1	F	AE000659	3	T cell receptor α variable 13-1	GDB:9953965	28671
	TRAV13-2	F	AE000659	2	T cell receptor α variable 13-2	GDB:9953967	28670
	TRAV14/DV4[g]	F	M21626	4	T cell receptor α variable 14/δ variable 4	GDB:9953969	28669
	TRAV15	P	AE000659	—	T cell receptor α variable 15	GDB:9953971	28668
	TRAV16	F	AE000659	1	T cell receptor α variable 16	GDB:9953973	28667
	TRAV17	F	AE000660	1	T cell receptor α variable 17	GDB:9953975	28666
	TRAV18	F	AE000660	1	T cell receptor α variable 18	GDB:9953977	28665

continued

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRAV19	F	AE000660	1	T cell receptor α variable 19	GDB:9953979	28664
	TRAV20	F	AE000660	4	T cell receptor α variable 20	GDB:9953981	28663
	TRAV21	F	AE000660	2	T cell receptor α variable 21	GDB:9953983	28662
	TRAV22	F	AE000660	1	T cell receptor α variable 22	GDB:9953985	28661
	TRAV23/DV6[g]	F	AE000660	4	T cell receptor α variable 23/δ variable 6	GDB:9953987	28660
	TRAV24	F	AE000660	2	T cell receptor α variable 24	GDB:9953989	28659
	TRAV25	F	AE000660	1	T cell receptor α variable 25	GDB:9953991	28658
	TRAV26-1	F	AE000660	3	T cell receptor α variable 26-1	GDB:9953993	28657
	TRAV26-2	F	AE000660	2	T cell receptor α variable 26-2	GDB:9953995	28656
	TRAV27	F	AE000660	3	T cell receptor α variable 27	GDB:9953997	28655
	TRAV28	P	AE000660	1	T cell receptor α variable 28	GDB:9953999	28654
	TRAV29/DV5[g]	F, (P)[f]	AE000660	3	T cell receptor α variable 29/δ variable 5	GDB:9954001	28653
	TRAV30	F	AE000660	4	T cell receptor α variable 30	GDB:9954003	28652
	TRAV31	P	AE000660	—	T cell receptor α variable 31	GDB:9954005	28651
	TRAV32	P	AE000660	—	T cell receptor α variable 32	GDB:9954007	28650
	TRAV33	P	AE000660	—	T cell receptor α variable 33	GDB:9954009	28649
	TRAV34	F	AE000660	1	T cell receptor α variable 34	GDB:9954011	28648
	TRAV35	F	AE000660	2	T cell receptor α variable 35	GDB:9954013	28647
	TRAV36/DV7[g]	F	AE000660	4	T cell receptor α variable 36/δ variable 7	GDB:9954015	28646
	TRAV37	P	AE000661	—	T cell receptor α variable 37	GDB:9954017	28645
	TRAV38-1	F	AE000661	4	T cell receptor α variable 38-1	GDB:9954019	28644

continued

Table A.1O.1 T Cell Receptor α (*TRA*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRAV38-2/DV8[g]	F	AE000661	1	T cell receptor α variable 38-2/δ variable 8	GDB:9954021	28643
	TRAV39	F	AE000661	1	T cell receptor α variable 39	GDB:9954023	28642
	TRAV40	F	X73521	1	T cell receptor α variable 40	GDB:9954025	28641
	TRAV41	F	AE000661	1	T cell receptor α variable 41	GDB:9954027	28640

[a]See Table Guide, above, for explanations of abbreviations and nomenclature; also see discussion of *TRA* Locus, above, Folch et al. (2000), and Scaviner and Lefranc (2000a,b) for more information.

[b]IMGT *TRA* gene names have been approved by the HUGO Nomenclature Committee in 1999. Note that, in the HUGO symbols, slashes of the *TRAV/DV* gene names are omitted. Otherwise all the gene names (gene symbols) are identical in IMGT and HUGO nomenclatures.

[c]Gene definitions (full names) are identical (including slashes) in IMGT and HUGO nomenclatures. Note that in the databases, the Greek letters are written in full (e.g., α = alpha, δ = delta).

[d]*TRAJ* genes are designated by a number for the localization from 3′ to 5′ in the locus.

[e]*TRAV* genes are designated by a number for the subgroup followed, whenever there are several genes belonging to the same subgroup, by a hyphen and a number for their relative localization in the locus. Numbers increase from 5′ to 3′ in the locus.

[f]Functionality is shown between parentheses when the germline *TRAV* genes have not yet been isolated.

[g]The *TRAV14/DV4*, *TRAV23/DV6*, *TRAV29/DV5*, *TRAV36/DV7*, and *TRAV38-2/DV8* genes have been found rearranged to J genes of the *TRA* locus, and to D and J genes of the *TRD* locus.

Table A.1O.2 T Cell Receptor β (*TRB*) Genes[a]

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
TRB locus on chromosome 7 at 7q35							
TRBC	*TRBC1*	F	M12887	2	T cell receptor β constant 1	GDB:9954029	28639
	TRBC2	F	M12888	2	T cell receptor β constant 2	GDB:9954031	28638
TRBD	*TRBD1*	F	X00936	1	T cell receptor β diversity 1	GDB:9954033	28637
	TRBD2	F	X02987	2	T cell receptor β diversity 2	GDB:9954035	28636
TRBJ[d]	*TRBJ1-1*	F	X00936	1	T cell receptor β joining 1-1	GDB:9954037	28635
	TRBJ1-2	F	X00936	1	T cell receptor β joining 1-2	GDB:9954039	28634
	TRBJ1-3	F	M14158	1	T cell receptor β joining 1-3	GDB:9954041	28633
	TRBJ1-4	F	M14158	1	T cell receptor β joining 1-4	GDB:9954043	28632
	TRBJ1-5	F	M14158	1	T cell receptor β joining 1-5	GDB:9954045	28631
	TRBJ1-6	F	M14158	1	T cell receptor β joining 1-6	GDB:9954047	28630
	TRBJ2-1	F	X02987	1	T cell receptor β joining 2-1	GDB:9954049	28629
	TRBJ2-2	F	X02987	1	T cell receptor β joining 2-2	GDB:9954051	28628
	TRBJ2-2P	ORF	X02987	1	T cell receptor β joining 2-2P	GDB:9954053	28627
	TRBJ2-3	F	X02987	1	T cell receptor β joining 2-3	GDB:9954055	28626
	TRBJ2-4	F	X02987	1	T cell receptor β joining 2-4	GDB:9954057	28625
	TRBJ2-5	F	X02987	1	T cell receptor β joining 2-5	GDB:9954059	28624
	TRBJ2-6	F	X02987	1	T cell receptor β joining 2-6	GDB:9954061	28623
	TRBJ2-7	F, ORF	M14159	2	T cell receptor β joining 2-7	GDB:9954063	28622
TRBV[e]	*TRBV1*	P	L36092	—	T cell receptor β variable 1	GDB:9954065	28621
	TRBV2	F	L36092	3	T cell receptor β variable 2	GDB:9954067	28620
	TRBV3-1	F	U07977	2	T cell receptor β variable 3-1	GDB:9954069	28619
	TRBV3-2	P	L36092	—	T cell receptor β variable 3-2	GDB:9954071	28618
	TRBV4-1	F	U07977	2	T cell receptor β variable 4-1	GDB:9954073	28617

continued

Table A.1O.2 T Cell Receptor β (*TRB*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRBV4-2	F	U07975	2	T cell receptor β variable 4-2	GDB:9954075	28616
	TRBV4-3	F	U07978	4	T cell receptor β variable 4-3	GDB:9954077	28615
	TRBV5-1	F	L36092	2	T cell receptor β variable 5-1	GDB:9954079	28614
	TRBV5-2	P	L36092	—	T cell receptor β variable 5-2	GDB:9954081	28613
	TRBV5-3	ORF	X61439	2	T cell receptor β variable 5-3	GDB:9954083	28612
	TRBV5-4	F	L36092	4	T cell receptor β variable 5-4	GDB:9954085	28611
	TRBV5-5	F	L36092	3	T cell receptor β variable 5-5	GDB:9954087	28610
	TRBV5-6	F	L36092	1	T cell receptor β variable 5-6	GDB:9954089	28609
	TRBV5-7	ORF	L36092	1	T cell receptor β variable 5-7	GDB:9954091	28608
	TRBV5-8	F	L36092	2	T cell receptor β variable 5-8	GDB:9954093	28607
	TRBV6-1	F	X61446	1	T cell receptor β variable 6-1	GDB:9954095	28606
	TRBV6-2	F, (P)[f]	X61445	3	T cell receptor β variable 6-2	GDB:9954097	28605
	TRBV6-3	F	U07978	1	T cell receptor β variable 6-3	GDB:9954099	28604
	TRBV6-4	F	X61653	2	T cell receptor β variable 6-4	GDB:9954101	28603
	TRBV6-5	F	L36092	1	T cell receptor β variable 6-5	GDB:9954103	28602
	TRBV6-6	F	L36092	5	T cell receptor β variable 6-6	GDB:9954105	28601
	TRBV6-7	ORF	L36092	1	T cell receptor β variable 6-7	GDB:9954107	28600
	TRBV6-8	F	L36092	1	T cell receptor β variable 6-8	GDB:9954109	28599
	TRBV6-9	F	X61447	1	T cell receptor β variable 6-9	GDB:9954111	28598
	TRBV7-1	ORF	X61444	1	T cell receptor β variable 7-1	GDB:9954113	28597
	TRBV7-2	F	X61442	4	T cell receptor β variable 7-2	GDB:9954115	28596
	TRBV7-3	F, ORF	X61440	5	T cell receptor β variable 7-3	GDB:9954117	28595
	TRBV7-4	F, (P)[f]	L36092	3	T cell receptor β variable 7-4	GDB:9954119	28594

continued

Table A.1O.2 T Cell Receptor β (*TRB*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRBV7-5	P	L36092	—	T cell receptor β variable 7-5	GDB:9954121	28593
	TRBV7-6	F	L36092	2	T cell receptor β variable 7-6	GDB:9954123	28592
	TRBV7-7	F	L36092	2	T cell receptor β variable 7-7	GDB:9954125	28591
	TRBV7-8	F	M11953	3	T cell receptor β variable 7-8	GDB:9954127	28590
	TRBV7-9	F	L36092	7	T cell receptor β variable 7-9	GDB:9954129	28589
	TRBV8-1	P	L36092	—	T cell receptor β variable 8-1	GDB:9954131	28588
	TRBV8-2	P	L36092	—	T cell receptor β variable 8-2	GDB:9954133	28587
	TRBV9	F	L36092	3	T cell receptor β variable 9	GDB:9954135	28586
	TRBV10-1	F, (P)[f]	U17050	3	T cell receptor β variable 10-1	GDB:9954137	28585
	TRBV10-2	F	U17049	2	T cell receptor β variable 10-2	GDB:9954139	28584
	TRBV10-3	F	U03115	4	T cell receptor β variable 10-3	GDB:9954141	28583
	TRBV11-1	F	M33233	1	T cell receptor β variable 11-1	GDB:9954143	28582
	TRBV11-2	F	L36092	3	T cell receptor β variable 11-2	GDB:9954145	28581
	TRBV11-3	F	M33234	4	T cell receptor β variable 11-3	GDB:9954147	28580
	TRBV12-1	P	X07224	—	T cell receptor β variable 12-1	GDB:9954149	28579
	TRBV12-2	P	X06936	—	T cell receptor β variable 12-2	GDB:9954151	28578
	TRBV12-3	F	X07192	1	T cell receptor β variable 12-3	GDB:9954153	28577
	TRBV12-4	F	K02546	2	T cell receptor β variable 12-4	GDB:9954155	28576
	TRBV12-5	F	X07223	1	T cell receptor β variable 12-5	GDB:9954157	28575
	TRBV13	F	U03115	2	T cell receptor β variable 13	GDB:9954159	28574
	TRBV14	F	X06154	2	T cell receptor β variable 14	GDB:9954161	28573
	TRBV15	F	U03115	3	T cell receptor β variable 15	GDB:9954163	28572
	TRBV16	F, P	L26231	3	T cell receptor β variable 16	GDB:9954165	28571

continued

Table A.1O.2 T Cell Receptor β (*TRB*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRBV17	ORF	U03115	1	T cell receptor β variable 17	GDB:9954167	28570
	TRBV18	F	L36092	1	T cell receptor β variable 18	GDB:9954169	28569
	TRBV19	F	U48260	3	T cell receptor β variable 19	GDB:9954171	28568
	TRBV20-1[g]	F	M11955	7	T cell receptor β variable 20-1	GDB:9954173	28567
	TRBV21-1[g]	P	L36092	—	T cell receptor β variable 21-1	GDB:9954175	28566
	TRBV22[g]	P	L36092	—	T cell receptor β variable 22	GDB:9954177	28565
	TRBV23-1[g]	ORF	L36092	1	T cell receptor β variable 23-1	GDB:9954179	28564
	TRBV24-1[g]	F	M11951	1	T cell receptor β variable 24-1	GDB:9954181	28563
	TRBV25-1[g]	F	L36092	1	T cell receptor β variable 25-1	GDB:9954183	28562
	TRBV26	P	L36092	—	T cell receptor β variable 26	GDB:9954185	28561
	TRBV27	F	L36092	1	T cell receptor β variable 27	GDB:9954187	28560
	TRBV28	F	U08314	1	T cell receptor β variable 28	GDB:9954189	28559
	TRBV29-1[g]	F	L36092	3	T cell receptor β variable 29-1	GDB:9954191	28558
	TRBV30	F, P	L36092	5	T cell receptor β variable 30	GDB:9954193	28557
	TRBVA	P	L36092	—	T cell receptor β variable A	GDB:9954195	28556
	TRBVB	P	L36092	—	T cell receptor β variable B	GDB:9954197	28555
TRBV orphons on chromosome 9 at 9p21							
TRBV	*TRBV20/OR9-2*	ORF	L05149	2	T cell receptor β variable 20/OR9-2	GDB:9954199	6962
	TRBV21/OR9-2	ORF	L05151	1	T cell receptor β variable 21/OR9-2	GDB:9954201	6959
	TRBV23/OR9-2	ORF	L27615	1	T cell receptor β variable 23/OR9-2	GDB:9954203	28552
	TRBV24/OR9-2	ORF, P	L05153	2	T cell receptor β variable 24/OR9-2	GDB:9954205	6961

continued

Table A.1O.2 T Cell Receptor β (*TRB*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
	TRBV25/OR9-2	P	L05152	2	T cell receptor β variable 25/OR9-2	GDB:9954207	6960
	TRBV29/OR9-2	ORF	L05150	2	T cell receptor β variable 29/OR9-2	GDB:9954209	6958

[a]See Table Guide, above, for explanations of abbreviations and nomenclature; also see discussion of *TRB* Locus, above, Folch and Lefranc (2000a,b), and Folch et al. (2000) for more information.

[b]IMGT *TRB* gene names have been approved by the HUGO Nomenclature Committee in 1999. Note that, in the HUGO symbols, slashes of the orphon names are omitted. Otherwise all the gene names (gene symbols) are identical in IMGT and HUGO nomenclatures.

[c]Gene definitions (full names) are identical (including slashes) in IMGT and HUGO nomenclatures. Note that in the databases, the Greek letters are written in full (β = beta).

[d]*TRBJ* genes are designated by a number for the cluster followed by a hyphen and a number for their relative localization in the locus. Numbers increase from 5′ to 3′ in the locus.

[e]*TRBV* genes are designated by a number for the subgroup followed, whenever there are several genes belonging to the same subgroup, by a hyphen and a number for their relative localization in the locus. Numbers increase from 5′ to 3′ in the locus.

[f]Functionality is shown between parentheses when the accession number refers to a rearranged sequence and the corresponding germline gene has not yet been isolated; brackets when the accession number refers to a DNA genomic sequence, but not known as being germline or rearranged.

[g]Since orphons (OR) have been described for each of the following *TRBV* subgroups: 20, 21, 23, 24, 25, and 29 (see *TRBV* orphons), the single member gene in the main locus is designated by the subgroup number followed by a hyphen and the number 1. To date, no orphon has been reported which belongs to subgroup 22; therefore, the IMGT designation of the single member gene is *TRBV22*.

Table A.1O.3 T Cell Receptor γ (*TRG*) Genes[a]

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
TRG locus on chromosome 7 at 7p15-p14							
TRGC	*TRGC1*	F	M14996,97,98	2	T cell receptor γ constant 1	GDB:120408	6966
	TRGC2 (2×)	F	M15002/M13231	3	T cell receptor γ constant 2 (2×)	GDB:120409	6967
	TRGC2 (3×)	F	M17323/M25318	1	T cell receptor γ constant 2 (3×)	GDB:120409	6967
TRGJ	*TRGJ1*	F	M12960	2	T cell receptor γ joining 1	GDB:120410	6968
	TRGJ2	F	M12961	1	T cell receptor γ joining 2	GDB:120411	6969
	TRGJP	F	M12950	1	T cell receptor γ joining P	GDB:120412	6970
	TRGJP1	F	X08084	1	T cell receptor γ joining P1	GDB:120413	6971
	TRGJP2	F	M16016	1	T cell receptor γ joining P2	GDB:120414	6972

continued

Table A.1O.3 T Cell Receptor γ (*TRG*) Genes[a], continued

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession number	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
TRGV[d,e]	*TRGV1*	ORF	M12949	1	T cell receptor γ variable 1	GDB:120415	6973
	TRGV2	F	M13429	1	T cell receptor γ variable 2	GDB:120418	6974
	TRGV3	F	M13430	1	T cell receptor γ variable 3	GDB:120419	6976
	TRGV4	F	X15272	2	T cell receptor γ variable 4	GDB:120420	6977
	TRGV5	F	X13555	1	T cell receptor γ variable 5	GDB:120421	6978
	TRGV5P	P	M13431	—	T cell receptor γ variable 5P	GDB:120422	6979
	TRGV6	P	M13432	—	T cell receptor γ variable 6	GDB:120423	6980
	TRGV7	P	M13433	—	T cell receptor γ variable 7	GDB:120424	6981
	TRGV8	F	M13434	1	T cell receptor γ variable 8	GDB:120425	6982
	TRGV9	F	X07205	2	T cell receptor γ variable 9	GDB:120426	6983
	TRGV10	ORF	X07206	2	T cell receptor γ variable 10	GDB:120416	6984
	TRGV11	ORF	Y11227	1	T cell receptor γ variable 11	GDB:120417	6985
	TRGVA	P	X07208	—	T cell receptor γ variable A	GDB:9953127	6986
	TRGVB	P	X07209	—	T cell receptor γ variable B	GDB:9953128	6987

[a]See Table Guide, above, for explanations of abbreviations and nomenclature; also see discussion of *TRG* Locus, above, Lefranc et al. (1989), Lefranc and Rabbits (1989, 1990a,b), and Folch et al. (2000) for more information.

[b]IMGT *TRG* gene names have been approved by the HUGO Nomenclature Committee in 1999. All the gene names (gene symbols) are identical in IMGT and HUGO nomenclatures.

[c]Gene definitions (full names) are identical in IMGT and HUGO nomenclatures. Note that in the databases, the Greek letters are written in full (e.g., γ = gamma).

[d]*TRGV* genes are designated by a number (or a letter, for pseudogenes that are single members of their subgroup) for their position from 5′ to 3′ in the locus (Lefranc et al., 1989; Lefranc and Rabbits, 1989, 1990a,b).

[e]The *IGHV3P* gene, a polymorphic gene by insertion, has been identified by Southern hybridization in a rare haplotype but has not been sequenced (Ghanem et al., 1991).

Table A.1O.4 T cell Receptor δ (*TRD*) Genes[a]

IMGT gene group	IMGT gene name[b]	Functionality	IMGT reference sequence accession numbers	Number of alleles	IMGT gene definition[c]	GDB accession ID	LocusLink number
TRD locus on chromosome 14 at 14q11.2							
TRDC	*TRDC*	F	M22148-M22151	1	T cell receptor δ constant	GDB:9954211	28526
TRDD	TRDD1	F	M23325	1	T cell receptor δ diversity 1	GDB:9954213	28525
	TRDD2	F	M22153	1	T cell receptor δ diversity 2	GDB:9954215	28524
	TRDD3	F	M22152	1	T cell receptor δ diversity 3	GDB:9954217	28523
TRDJ	*TRDJ1*	F	M20289	1	T cell receptor δ joining 1	GDB:9954219	28522
	TRDJ2	F	L36386	1	T cell receptor δ joining 2	GDB:9954221	28521
	TRDJ3	F	M21508	1	T cell receptor δ joining 3	GDB:9954223	28520
	TRDJ4	F	AJ249814	1	T cell receptor δ joining 4	GDB:9953677	28519
TRDV[d]	*TRDV1*	F	M22198	1	T cell receptor δ variable 1	GDB:9953671	28518
	TRDV2	F	X15207	2	T cell receptor δ variable 2	GDB:9953287	28517
	TRDV3	F	M23326	2	T cell receptor δ variable 3	GDB:9953273	28516

[a]See Table Guide, above, for explanations of abbreviations and nomenclature; also see discussion of *TRD* Locus, above, Lefranc (1990a), and Folch et al. (2000) for more information.

[b]IMGT *TRD* gene names have been approved by the HUGO Nomenclature Committee in 1999. All the gene names (gene symbols) are identical in IMGT and HUGO nomenclatures.

[c]Gene definitions (full names) are identical in IMGT and HUGO nomenclatures. Note that in the databases, the Greek letters are written in full (e.g., δ = delta).

[d]*TRDV* genes are designated by a number for their position from 5′ to 3′ in the locus. The *TRAV14/DV4*, *TRAV23/DV6*, *TRAV29/DV5*, *TRAV36/DV7*, and *TRAV38-2/DV8* genes, which have been found rearranged to J genes of the *TRA* locus, and to D and J genes of the *TRD* locus, are displayed in the human *TRAV* table (Table A.1O.1).

Table A.1O.5 Correspondence Between *TRAV* Nomenclatures[a,b]

IMGT *TRAV* gene name (Scaviner and Lefranc, 2000a)	Boysen et al. (unpub. observ.)[c]	Arden et al. (1995)
TRAV41	41S1	19S1
TRAV40	40S1	31S1
TRAV39	39S1	27S1
TRAV38-2/DV8	hADV38S2	14S1-ADV14S1
TRAV38-1	38S1	14S2
TRAV37	37S1	—
TRAV36/DV7	hADV36S1	28S1-DV28S1
TRAV35	35S1	25S1
TRAV34	34S1	26S1

continued

Table A.1O.5 Correspondence Between *TRAV* Nomenclatures[a,b], continued

IMGT *TRAV* gene name (Scaviner and Lefranc, 2000a)	Boysen et al. (unpub. observ.)[c]	Arden et al. (1995)
TRAV26-2	26S2	4S1
TRAV33	33S1	—
TRAV32	32S1	—
TRAV31	31S1	—
TRAV30	30S1	29S1
TRAV29/DV5	hADV29S1	21S1-ADV21S1
TRAV28	28S1	—
TRAV27	27S1	10S1
TRAV8-7	8S7	—
TRAV26-1	26S1	4S2
TRAV25	25S1	32S1
TRAV24	24S1	18S1
TRAV23/DV6	hADV23S1	17S1-ADV17S1
TRAV22	22S1	13S1
TRAV21	21S1	23S1
TRAV20	20S1	30S1
TRAV19	19S1	12S1
TRAV18	18S1	—
TRAV17	17S1	3S1
TRAV16	16S1	9S1
TRAV8-6	8S6	1S3
TRAV12-3	12S3	2S2
TRAV15	15S1	—
TRAV9-2	9S2	22S1
TRAV14/DV4	hADV14S1	6S1-ADV6S1
TRAV13-2	13S2	8S2
TRAV8-5	8S5	—
TRAV8-4	8S4	1S2
TRAV12-2	12S2	2S1
TRAV13-1	13S1	8S1
TRAV8-3	8S3	1S4
TRAV8-2	8S2	1S5
TRAV12-1	12S1	2S3
TRAV11	11S1	—
TRAV10	10S1	24S1
TRAV9-1	9S1	—
TRAV8-1	8S1	1S1
TRAV7	7S1	—
TRAV6	6S1	5S1
TRAV5	5S1	15S1
TRAV4	4S1	20S1
TRAV3	3S1	16S1
TRAV2	2S1	11S1
TRAV1-2	1S2	7S2
TRAV1-1	1S1	7S1

[a]*TRAV* genes are listed from 3′ (top of the table) to 5′ (bottom of the table). Cells with dashes indicate that no name exists for the gene in that system of nomenclature.

[b]See *TRA* Locus and Table A.1O.1 for more information.

[c]IMGT reference sequence accession numbers: AE000658-AE000661.

Table A.1O.6 Comparison of *TRBV* Gene Nomenclatures[a,b]

IMGT *TRBV* gene name (Folch and Lefranc, 2000a)	Wei et al. (1994)	Arden et al. (1995)	Rowen et al. (1996)
TRBV30	20S1	20S1	30
TRBV29-1	4S1	4S1	29-1
TRBV28	3S1	3S1	28
TRBV27	14S1	14S1	27
TRBVB	—	34S1	—
TRBV26	—	28S1	26
TRBVA	—	33S1	—
TRBV25-1	11S1	11S1	25-1
TRBV24-1	15S1	15S1	24-1
TRBV23-1	19S1	19S1	23-1
TRBV22	—	29S1	22-1
TRBV21-1	10S1	10S1	21-1
TRBV20-1	2S1	2S1	20-1
TRBV19	17S1	17S1	19
TRBV18	18S1	18S1	18
TRBV17	26S1[c]	26S1	17
TRBV16	25S1	25S1	16
TRBV15	24S1	24S1	15
TRBV14	16S1	16S1	14
TRBV12-5	8S3	8S3	12-5
TRBV12-4	8S2	8S2	12-4
TRBV12-3	8S1	8S1	12-3
TRBV11-3	21S4	21S2	11-3
TRBV10-3	12S2	12S1	10-3
TRBV13	23S1	23S1	13
TRBV7-9	6S5	6S4	7-9
TRBV5-8	5S8	5S4	5-8
TRBV7-8	6S3	6S2	7-8
TRBV6-9	13S4	13S4	6-9
TRBV5-7	5S7	5S7	5-7
TRBV7-7	6S14	6S6	7-7
TRBV6-8	13S7	13S7	6-8
TRBV5-6	5S2	5S2	5-6
TRBV7-6	6S4	6S3	7-6
TRBV6-7	13S8	13S8	6-7
TRBV5-5	5S3	5S3	5-5
TRBV7-5	6S12	6S9	7-5
TRBV6-6	13S6	13S6	6-6
TRBV5-4	5S6	5S6	5-4
TRBV7-4	6S11	6S8	7-4
TRBV6-5	13S1	13S1	6-5
TRBV12-2	8S5	8S5	12-2
TRBV11-2	21S3	21S3	11-2
TRBV10-2	12S3	12S3	10-2
TRBV12-1	8S4	8S4	12-1
TRBV11-1	21S1	21S1	11-1
TRBV10-1	12S4	12S2	10-1

continued

Table A.1O.6 Comparison of *TRBV* Gene Nomenclatures[a,b], continued

IMGT *TRBV* gene name (Folch and Lefranc, 2000a)	Wei et al. (1994)	Arden et al. (1995)	Rowen et al. (1996)
TRBV9	1S1	1S1	9
TRBV5-3	5S5	5S5	5-3
TRBV8-2	—	32S1	8-2
TRBV7-3	6S1	6S1	7-3
TRBV6-4	13S5	13S5	6-4
TRBV5-2	—	31S1	5-2
TRBV8-1	—	30S1	8-1
TRBV7-2	6S7	6S5	7-2
TRBV6-3	13S2b	13S2b	6-3
TRBV4-3	7S2	7S2	4-3
TRBV3-2	9S2	9S2	3-2
TRBV6-2	13S2a	13S2a	6-2
TRBV4-2	7S3	7S3	4-2
TRBV7-1	6S10	6S7	7-1
TRBV6-1	13S3	13S3	6-1
TRBV5-1	5S1	5S1	5-1
TRBV4-1	7S1	7S1	4-1
TRBV3-1	9S1	9S1	3-1
TRBV2	22S1	22S1	2
TRBV1	—	27S1	1

[a]*TRBV* genes are listed from 3′ in the *TRB* locus (top of the table) to 5′ (bottom of the table). Blank cells indicate that no corresponding name exists.
[b]See *TRB* Locus and Table A.1O.2 for more information.
[c]IMGT note: *26S1* was defined in Slightom et al. (1994).

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