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The Human Immunoglobulin Lambda Variable (IGLV) Genes and Joining (IGLJ) Segments

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Key Words

Human
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Abstract

The first report of the 'IMGT Locus on Focus' section comprises five tables entitled: (1) 'Number of human germline IGLV genes at 22q11.1-q11.2 and potential repertoire'; (2) 'Human germline IGLV gene table'; (3) 'Human IGLV allele table', (4) 'Human germline IGLJ table' and (5) 'Human IGLJ allele table'. These tables are available at the Marie-Paule page from IMGT, the international ImMunoGeneTics database (<http://imgt.cnusc.fr:8104>) created by Marie-Paule Lefranc, CNRS, Université Montpellier II, Montpellier, France.
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Table 1

Number of human germline IGLV genes at 22q11.1-q11.2 and potential repertoire

References

Williams, Fripiat et al. J. Mol. Biol., 264, 220-232 (1996)
Kawasaki et al. Genome Res., 7, 250-261 (1997)

69-70 IGLV genes on 900 kilobases :

30 FUNCTIONAL
4-5 ORF (Open Reading Frame)
31 PSEUDOGENE
3 FUNCTIONAL or PSEUDOGENE
1 ORF or PSEUDOGENE

Potential repertoire : 30-33 FUNCTIONAL IGLV genes belonging to 11 subgroups

Subgroup	Functional	ORF	Pseudogene	Total
IGLV1 (B) (C)	5	1(+1)*	(+1)*	7
	-	-	1	1
IGLV2 (A)	5	1	3	9
IGLV3 (A)	8(+2)*	1	12(+2)*	23
IGLV4 (A) (C)	1	-	-	1
	2	-	-	2
IGLV5 (B)	3	1-2**	-	4-5**
IGLV6 (C)	1	-	-	1
IGLV7 (B)	1(+1)*	-	1(+1)*	3
IGLV8 (C)	1	-	-	1
IGLV9 (B)	1	-	-	1
IGLV10 (C)	1	-	1	2
IGLV11 (C)	1	-	-	1
IGLV(I) (A) (B) (C)	-	-	1	1
	-	-	2	2
	-	-	4	4
IGLV(IV) (C)	-	-	4	4
IGLV(V) (C)	-	-	2	2
Total	30(+3)*	4-5(+1)*	31(+4)*	69-70

* ORF or PSEUDOGENE (IGLV1-41)

FUNCTIONAL or PSEUDOGENE (IGLV3-9, IGLV3-22, IGLV7-46)

** Allelic polymorphism by insertion/deletion : IGLV5-39 [Fripiat et al. Human Molecular Genetics, 4, 983-991 (1995)].

A, B, C (in parentheses) refer to three distinct V-CLUSTERS based on the IGLV gene subgroup content [Williams, Fripiat et al. J. Mol. Biol., 264, 220-232 (1996)].

I, IV, V (in parentheses) refer to the clans [Kawasaki et al., Genome Res., 7, 250-261 (1997)] for the pseudogenes which could not be assigned to subgroups with functional genes.

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Table 2

Human germline IGLV gene table

Fct: FUNCTIONALITY
 F : Functional
 P : Pseudogene
 ORF : Open Reading Frame
 R : Rearranged
 T : Transcribed
 P : Translated into protein

Part 1 - Sequences assigned to germline IGLV genes by sequence comparison

Sequences in bold have been mapped ; "mapped" refers to sequences which have been obtained from clones (phages, cosmids, YACs...) either by subcloning or PCR, and does not apply to sequences obtained directly from genomic DNA.
 A, B, C in the IGLV subgroup column refer to the three distinct V-CLUSTERS in the IGL locus at 22q11.1-q11.2 [Williams, Frippiat et al. J. Mol. Biol., 264, 220-232 (1996)].
 The ORPHON IGLV8/OR8-1 has been identified at 8q11.2 [Frippiat et al., Eur. J. Immunol., 27, 1260-1265 (1997)].

IGLV subgroup	IGLV gene name	Fct	R	T (4)	P	Reference sequences	Accession numbers	Sequences from the literature
1 (B)	1-36	F	+	+		1a(1a.11.2) [1]	Z73653	V1-11 [D87009][D87010][26], DPL1 [Z22187] [12], V1c2 [U03900] [2], V1c2c [U03901] [2]
	1-40	F	+	+		Humiv1042 [7]	M94116	1e(1e.10.2) [Z73656] [1], V1-13 [D87010][26], DPL8 [Z22194][12]
		F	+	+		Vlambda1.2 (IGLV1S2)[13]	X53936	DPL7 [Z22193] [12]
		F	+	+		DPL6 [12]	Z22192	
	1-41	OFF				Humiv1041 [5]	M94118	Vlambda1.1(IGLV1S1) [X14615] [7], 1d(1d.8.3) [Z73655] [1], DPL4 [Z22212] [12]
1 (C)	1-44	F	+	+		V1-14P [26]	D87010	
	1-47	F	+	+		1c(1c.10.2) [1]	Z73654	V1-16 [D86999][26], DPL2 [Z22188] [12], Humiv1L [X59707] [7], V1L1a [U03902] [2]
		F	+	+		1g(1g.400B5) [1]	Z73663	DPL3 [Z22189] [12], Humiv122 [M94114] [7]
	1-50	OFF				V1-17 [26]	D87016	
	1-51	F	+	+		Humiv101 [7]	M94112	1f(1f.366F5) [Z73662] [1], V1-18 [D87018][26], DPL9 [Z22195] [12]
		F	+	+	1b(1b.366F5) [1]	Z73661	V1-19 [D87018][26], DPL5 [Z22191] [12], V117q [U03870] [10]	
		F	+	+	Humiv117 [20]	M30446	Humiv119 (1) [7]	
	1-62	P			V1-23P [26]	D87022		

IGLV subgroup	IGLV gene name	Fct	R	T	P	Reference sequences	Accession numbers	Sequences from the literature
2 (A)	2-5	P				2a1(2a1.51E6) [1]	Z73641	V1-1P[D87024][26], DPL15[Z22201] [12], Iv2120[L27696] [22]
		P				psi Vlambda II.1 [11]	X57825	
	2-8	F	+	+		2c(2c.118D9) [1]	X97462	V1-2[D87021][18], EKL2046[Y12417]
		F	+	+		Iv2046[22]	L27695	
	2-11	F				RXL2046	Y12418	
		F	+	+		2e(2e.2.2) [1]	Z73657	V1-3[D86998][26], EKL12[Y12414]
		F	+	+		DPL12[12]	Z22198	
	2-14	F				RXL12	Y12415	
		F	+	+		2a2(2a2.272A12) [1]	Z73664	V1-4[D87015][26], DPL11[Z22197] [12], Iv215.23[L27693] [22]
		F	+	+		Iv2018[22]	L27822	
	2-18	F				EKL11	Y12412	
		F				RXL11	Y12413	
		F	+	+		2d(2d.29D11) [1]	Z73642	V1-5[D87007][D87015][26], DPL13[Z22199] [12], Iv2132[L27689] [22]
	2-23	F	+	+		Iv216.21[22]	L27697	
		F	+	+		Iv2007[22]	L27694	RXL13[Y12416]
F		+	+		Iv2113[22]	L27692		
F		+	+		Vlambda2.1(IGLV2S1) [17.18]	X14616		
F		+	+		2b2(2b2.400B5) [1]	Z73665	EKL10[Y12411]	
F		+	+		V1-7[26]	D86994	DPL10[Z22196] [12], Iv2066[L27688] [22]	
2-28	P			2b1(2b1.22E4) [1]	X97466	V1-8P[D86994][26]		
2-33	OFF				2f(2f.61E11) [1]	Z73643	V1-9[D87014][26], DPL14[Z22200] [12], Iv2011[L27687] [22]	
	OFF				Iv2110[22]	L27823		
	OFF				Iv2031[22]	L27691		
2-34	P			V1-10P[26]	D87013	Iv216.376[L27690] [22]		
NL	P					DPL25[Z22209] [12]		
3 (A)	3-1	F	+	+	VLIII.1 [11]	X57826	3r(3r.9C5) [Z73647] [1], V2-1[D87023][26], DPL23[Z22208][12], BHGL18-21[L26402][27] (2), BHGL6-13[L26403][27] (2)	
		P				X97468		
	3-2	P				3q(3q.127E5) [1]	X97468	V2-2P[D87024][26]
		P				psiVlambdaN.1 [11]	X57828	
	3-4	P				V2-3P [26]	D87024	
		P				3a2(3a2.51E6) [1]	X97465	V2-4P[D87024][26]
	3-6	P				psiVlambdaII.2 [11]	X57827	
		P				3n(3n.118D9) [1]	X97470	V2-5P[D87024][26]
	3-7	P	+	+		3j(3j.118D9) [1]	X97473	V2-6[D87021][26]
		F	+	+		IGLV356[18]	X74288	
3-9	F	+	+		psiVlambda.I[21]	X51754		
	P				3p(3p.81A4) [1]	X97464	V2-7[D87021][26]	
3-10	F	+	+		IGLL295[15]	L29166		
	F	+	+					

(continued)

Table 2 (continued)

IGLV subgroup	IGLV gene name	Fct	R	T	P	Reference sequences	Accession numbers	Sequences from the literature
	3-12	F				3i(3i.2.2) [1] V2-8 [26]	Z73658 D86998	
	3-13	P				3f(3f.119B4) [1]	X97463	V2-9P[D86998][D87015][26]
	3-15	P				V2-10P[26]	D87015	
	3-16	F	+	+		3a(3a.119B4) [1]	X97471	V2-11[D87015][26]
	3-17	P				3g(3g.29D11) [1]	X97472	V2-12P[D87015][26], HumIv413[M94117][4]
	3-19	F	+	+		Vlambda3.1 (IGLV3S1)[3,18]	X56178	V2-13[D87007][26], DPL16[Z22202] [12], HumIv418[M94113] [4], IGLV4BR[L35919][28]
	3-21	F	+	+		IGLV3S2 [18]	X71966	
			F	+	+	V2-14[26]	D87007	
			F	+	+	HumIv318[4]	M94115	
	3-22	F	+	+		3e(3e.272A12) [1]	Z73666	V2-15[D87007][26]
			P			IGLV3S3P [18]	X71967	
	3-24	P				IGLV3S4P [18]	X71968	
			P			V2-16P[26]	D86994	
	3-25	F	+	+		3m(3m.102D1) [1]	X97474	
			F	+	+	V2-17[26]	D86994	
			F			IGLL150[15]	L29165	
	3-26	P				3b(3b.57F5) [1]	X97467	V2-18P[D86994][26]
3-27	F	+	+		V2-19[26]	D86994		
3-29	P				3c(3c.97H8) [1]	Z73644	V2-20P[D87002][D87006] [26]	
3-30	P				3o(3o.75H1) [1]	Z73646		
		P			V2-21P[26]	D87014		
3-31	P				3k(3k.61E11) [1]	X97469	V2-22P[D87014][26]	
		P				DPL17[Z22203] [12]		
3-32	OFF				3i1(3i1.61E11) [1]	Z73645	V2-23P[D87014][26]	
4 (A)	4-3	F	+	+	Vlambda N.2[11] (3)	X57828	4c(4c.127E5)[Z73652] [1] (3), V5-1[D87024][26] (3), DPL24[Z22211] [12]	
4 (C)	4-60	F	+	+	4a(4a.366F5) [1]	Z73667		
		F	+	+	V5-4[26]	D87000		
	4-69	F	+	+	4b(4b.68B6) [1]	Z73648	V5-6[D86993][26], IGLV8A1[L29806] [16]	
		F	+	+	Iv601[10]	U03868		
5 (B)	5-37	F	+	+	5e(5e.366F5) [1]	Z73672	V4-1[D87009][D87010][26]	
	5-39	OFF			5a(5a.366F5) [1]	Z73668		
	5-45	F	+	+	5c(5c.366F5) [1]	Z73670		
		F	+	+	5c(5c.400B5) [1]	Z73671	IGLV5-1[U93494][30]	
		F	+	+	V4-2[26]	D86999		
5-48	OFF				5d(5d.75A1) [1]	Z73649	V4-3[D87016][26]	
5-52	F	+	+		5b(5b.366F5) [1]	Z73669	V4-4[D87018][26]	

IGLV subgroup	IGLV gene name	Fct	R	T (4)	P	Reference sequences	Accession numbers	Sequences from the literature
6 (C)	6-57	F	+	+		6a(6a.366F5) [1]	Z73673	V1-22[D86996][26], IGLV6S1[M87320] [19], LV6SW-G[X92337] [19], VlambdaVI-3.6[X92338] [29]
	7-35	P				7c(7c.11.2) [1]	Z73660	V3-1P[D87009][26]
7 (B)	7-43	F	+	+		Vlambda7.1 [5]	X14614	7a(7a.2.3)[Z73659] [1], V3-2[D86999][26], DPL18[Z22204] [12], 4A[X01015] [6]
	7-46	F	+	+		7b(7b.400B5) [1]	Z73674	DPL19[Z22205] [12]
		F	+	+		V3-3[26]	D86999	
8 (C)	8-61	P				DPL20[12]	Z22210	
		F	+	+		8a(8a.88E1) [1]	Z73650	V3-4[D87022][26], DPL21[Z22206] [12], VL8[S39395] [8], FL7[U03639] [9], TL7[U03635] [9]
8 (8q11.2)	8/OR8-1	F	+	+		BL7[9]	U03637	
		P				orphee 1[25]	Y08831	
9 (B)	9-49	OFF						TL6[U03636], FL6[U03640]
		F	+	+		9a(9a.366F5) [1] (3)	Z73675	DPL22[Z22207] [12],lv901m [10]
10 (C)	10-54	F	+	+		V5-2[26] (3)	D87016	
		F	+	+		lv901e[10] (3)	U03889	
		F	+	+		10a(10a.872F9) [1]	Z73676	
		F	+	+		V1-20[26]	D86996	
		F				gVlambdaX-4.4[14]	S70116	
11 (C)	11-55	P				10b(10b.4E7) [1]	Z73651	V1-25P[D86993][26]
		F				V4-6[26]	D86996	gVlambdaX-5.5[X92335] [14]

Pseudogenes not assigned to subgroups with functional genes

(A)	(I)-20	P				V1-6P [26]	D87007	
(B)	(I)-38	P				V1-12P [26]	D87009	
	(I)-42	P	-	-		VlambdaA [5]	X14613	V1-15P[D86999][26]
(C)	(I)-56	P				V1-21P [26]	D86996	
	(I)-63	P				V1-24P [26]	D87022	
	(I)-68	P				V1-26P [26]	D86993	
	(I)-70	P				V1-27P [26]	D86996	
(C)	(IV)-53	P				V4-5P [26]	D87000	
	(IV)-59	P				V4-7P [26]	D87000	
	(IV)-64	P				V4-8P [26]	D87022	
	(IV)-65	P				V4-9P [26]	D87022	
(C)	(V)-58	P				V5-3P [26]	D87000	
	(V)-66	P				V5-5P [26]	D87004	

(continued)

Table 2 (continued)

IGLV gene names are designated by a number for the subgroup [1] [23] [24], followed by a dash and a number for the localisation from 3' to 5' in the locus. In the IGLV gene name column, the IGLV genes are listed, for each subgroup, according to their position from 3' to 5' in the locus.

Pseudogenes which could not be assigned to subgroups with functional genes are designated by a roman number between parentheses, corresponding to the clans [26], followed by a dash and a number for the localisation from 3' to 5' in the locus.

Clans comprise, respectively:

- clan I : IGLV1, IGLV2, IGLV6 and IGLV10 subgroup genes, and pseudogenes IGLV(I)-20, -38, -42, -56, -63, -68 and -70
- clan II : IGLV3 subgroup genes
- clan III : IGLV7 and IGLV8 subgroup genes
- clan IV : IGLV5 subgroup genes, and pseudogenes IGLV(IV)-53, -59, -64 and -65
- clan V : IGLV4 and IGLV9 subgroup genes, and pseudogenes IGLV(V)-58 and -66

ORPHON genes are designated by a number for the subgroup followed by a slash, OR (for ORPHON), the chromosome number, a dash and a specific gene number.

Notes

- (1) Sequence of HumIV119 identical to that reported for HumIV117 but restriction maps are dissimilar
- (2) BHGL18-21 and BHGL6-13 overlap by 49 nucleotides, BHGL18-21 corresponding to 5'UTR and 6 nucleotides from FRI1.
- (3) Since the STOP-CODON at the 3' end of the V-REGION can be deleted by rearrangement, the V-GENE is considered as functional.
- (4) For frequencies of expression of the functional IGLV genes, see Ignatovich et al., J. Mol. Biol., 268, 69-77 (1997).

The highly diverged vestigial pseudogenes lambda davgl (X99566) [5] and lamdavg2 (X71351) [18] are excluded from this table.

References

- [1] Williams, Frippiat et al., J. Mol. Biol., 264, 220-232 (1996)
- [2] Deftos et al., J. Clin. Invest., 93, 2545-2553 (1994)
- [3] Frippiat et al., Nucl. Acids Res., 18, 7134 (1990)
- [4] Daley et al., Mol. Immunol., 29, 1515-1518 (1992)
- [5] Alexandre et al., Nucl. Acids Res., 17, 3975 (1989)
- [6] Anderson et al., Nucl. Acids Res., 12, 6647-6661 (1984)
- [7] Daley et al., Mol. Immunol., 29, 1031-1042 (1992)
- [8] Winkler et al., Eur. J. Immunol., 22, 1719-1728 (1992)
- [9] Lee et al., J. Neuroimmunol., 51, 45-52 (1994)
- [10] Deftos et al., Scand. J. Immunol., 39, 95-103 (1994)
- [11] Combratio and Klobeck, Eur. J. Immunol., 21, 1513-1522 (1991)
- [12] Williams and Winter, Eur. J. Immunol., 23, 1456-1461 (1993)
- [13] Bernard et al., Nucl. Acids Res., 18, 7139 (1990)
- [14] Sternholm et al., J. Immunol., 152, 4969-4975 (1994)
- [15] Fang et al., J. Exp. Med., 179, 1445-1456 (1994)
- [16] Chang et al., Mol. Immunol., 32, 49-55 (1995)
- [17] Brockly et al., Nucl. Acids Res., 17, 3976 (1989)
- [18] Frippiat and Lefranc, Mol. Immunol., 31, 657-670 (1994)
- [19] Chang et al., Mol. Immunol., 31, 531-536 (1994)
- [20] Siminovich et al., J. Clin. Invest., 84, 1675-1678 (1989)
- [21] Vasicek and Leder, J. Exp. Med., 172, 609-620 (1990)
- [22] Irigoyen et al., J. Clin. Invest. 94, 532-538 (1994)
- [23] Chuchana et al., Eur. J. Immunol., 20, 1317-1325 (1990)
- [24] Frippiat et al., Hum. Mol. Genet., 4, 983-991 (1995)
- [25] Frippiat et al., Eur. J. Immunol., 27, 1260-1265 (1997)
- [26] Kawasaki et al., Genome Res. 7, 250-261 (1997)
- [27] Harmer et al., Arthritis Rheum., 38, 1068-1076 (1995)
- [28] Eulitz et al., J. Immunol., 154, 3256-3265 (1995)
- [29] Sternholm and Berinstein, J. Immunol., 154, 1748-1761 (1995)
- [30] Solomon et al., Mol. Immunol., 6, 463-470 (1997)

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Table 3

Human IGLV allele table

Fc: FUNCTIONALITY
 F: Functional
 P: Pseudogene
 ORF: Open Reading Frame

The IMGT allele table refers to the V-REGION polymorphism. It does not include polymorphisms in the other parts of the V-GENE. V-REGION alleles are only described for genes which have at least one Functional or ORF allele. The accession number of a reference is given for each allele.

IGLV subgroup	IGLV Gene name	Fct	IGLV allele name	Accession number	confirmed by genetics and/or data	Description of mutations
1	1-36	F	V1-36*01	Z73653	+	
	1-40	F	V1-40*01	M94116	+	g9_c10..t4..a253..T85..I
		F	V1-40*02	X59336	+	g9>c10>g..t4>vI
	1-41	F	V1-40*03	Z22192	+	g9>c10>g..t4>vI/a253>g..T85>aI
		ORF	V1-41*01	M94118	+	g295..e99..c332..P111..I
	1-44	P	V1-41*02	D87010	+	g295>t..e99>*I/c332>t..P111>L-I
		F	V1-44*01	Z73654	+	
	1-47	F	V1-47*01	Z73663	+	g168..e56..I
		F	V1-47*02	D87016	+	g168>t..e56>sI
	1-50	ORF	V1-50*01	M94112	+	
		F	V1-51*01	Z73661	+	t162..c168..d56..I
	2-8	F	V1-52*02	M30446	+	t162>c1c168>a..d56>eI
		F	V2-8*01	X97462	+	g37..g13..c230..s77..I
	2-11	F	V2-8*02	L27695	+	g37>a..g13>rI
F		V2-11*01	Z73657	+	t96..g132..I	
2-14	F	V2-11*02	Z22198	+	t96>gI	
	F	V2-11*03	Y12415	+	g132>aI	
2-18	F	V2-14*01	Z73664	+	c87..t93..g94..g32..t103..a104..Y35..g132..g168..e56..t170..y57>c1c198>g..N66..I	
	F	V2-14*02	L27822	+	c87>t..t93>g g94>a..g32>sI t103>c..a104>t..Y35>L	
2-23	F	V2-14*03	Y12412	+	g132>aI g168>t..e56>eI	
	F	V2-14*04	Y12413	+	t227..e76..t249..t272..i91..t317..L106..I	
2-33	F	V2-8*01	Z73662	+	g168>t..e56>eI	
	F	V2-8*02	L27697	+	t317>c..L106>sI	
2-23	F	V2-8*03	L27694	+	t272>c..t91>t..t317>c..L106>sI	
	F	V2-23*01	X14616	+	t227>c..e76>sI t249>cI	
2-33	F	V2-23*02	Z73665	+	g170..g57..a339..L113..I	
	ORF	V2-33*01	Z73643	+	g170>t..g57>vI/a339>c..L113>F	
2-33	ORF	V2-33*02	L27623	+	a339>c..L113>F	
	ORF	V2-33*03	L27691	+	a3..tL96..a256..M86..I	
						t96>c1a256>g..M86>vI

(continued)

Table 4**Human germline IGLJ table**

All sequences in this table have been mapped

Fct : FUNCTIONALITY

F : Functional

ORF : Open Reading Frame

IGLJ name	Fct	Reference sequences	Accession numbers	Sequences from the literature
IGLJ1	F	J1	X04457[1]	X51755[5](2428-2465)*, X06877[4], D87023[9]
IGLJ2	F	J2	M15641[3]	X51755[5](8249-8286)*, X06878[4], D87023[9]
IGLJ3	F	J3	M15642[3]	X51755[5](13639-13676)*
	F		D87023[9]	
IGLJ4	ORF	J4	X51755[5](19209-19246)*	D87023[9], D87017[9]
IGLJ5	ORF	J5	X51755[5](22918-22955)*	X57808[8]
	ORF		D87017[9]	
IGLJ6	ORF	J6	M18338[2]/X58181[6]	M61768[7], X57808[8], D87017[9]
IGLJ7	F	J7	X51755[5](30017-30054)*	X57808[8], M61770[7]
	F		D87017[9]	

* Positions of the J-REGION in the sequence

- References**
- [1] Chang et al., J. Exp. Med., 163, 425-435 (1986).
 - [2] Dariavach et al., Proc. Natl. Acad. Sci. USA, 84, 9074-9078 (1987).
 - [3] Udey and Blomberg, Immunogenetics, 25, 63-70 (1987).
 - [4] Udey and Blomberg, Nucleic Acids Res., 16, 2959-2969 (1988).
 - [5] Vasicek and Leder, J. Exp. Med., 172, 609-620 (1990).
 - [6] Poul et al., Nucleic Acids Res., 19, 4785-4785 (1991).
 - [7] Bauer and Blomberg, J. Immunol.146, 2813-2820 (1991).
 - [8] Combriato and Klobeck, Eur. J. Immunol., 21, 1513-1522 (1991).
 - [9] Kawasaki et al., Genome Res., 7, 250-261 (1997).

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Table 5

Human IGLJ allele table

Fct : FUNCTIONALITY
 F : Functional
 ORF : Open Reading Frame

The accession number of a reference sequence is given for each allele.
 IMGT numbering and description of alleles for germline J-REGIONS start with the first nucleotide of the first codon.

IGLJ name	Fct	IGLJ allele name	Accession number	confirmed by genetics and/or data	Description of mutations
IGLJ1	F	J1*01	X04457	+	
IGLJ2	F	J2*01	M15641	+	
IGLJ3	F	J3*01	M15642	+	g1 ,t2 a6 ,V2
	F	J3*02	D87023(1)		g1>t,t2>g a6>g,V2>w
IGLJ4	ORF	J4*01	X51755	+	
	ORF	J5*01	X51755	+	c21
	ORF	J5*02	D87017		c21>g
IGLJ6	ORF	J6*01	M18338	+	
IGLJ7	F	J7*01	X51755	+	t32 ,V11
	F	J7*02	D87017		t32>c,V11>A

(1) The g1>t and t2>g substitutions (inversion of two nucleotides) in D87023 EMBL flat file are probably typing or sequencing errors.

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