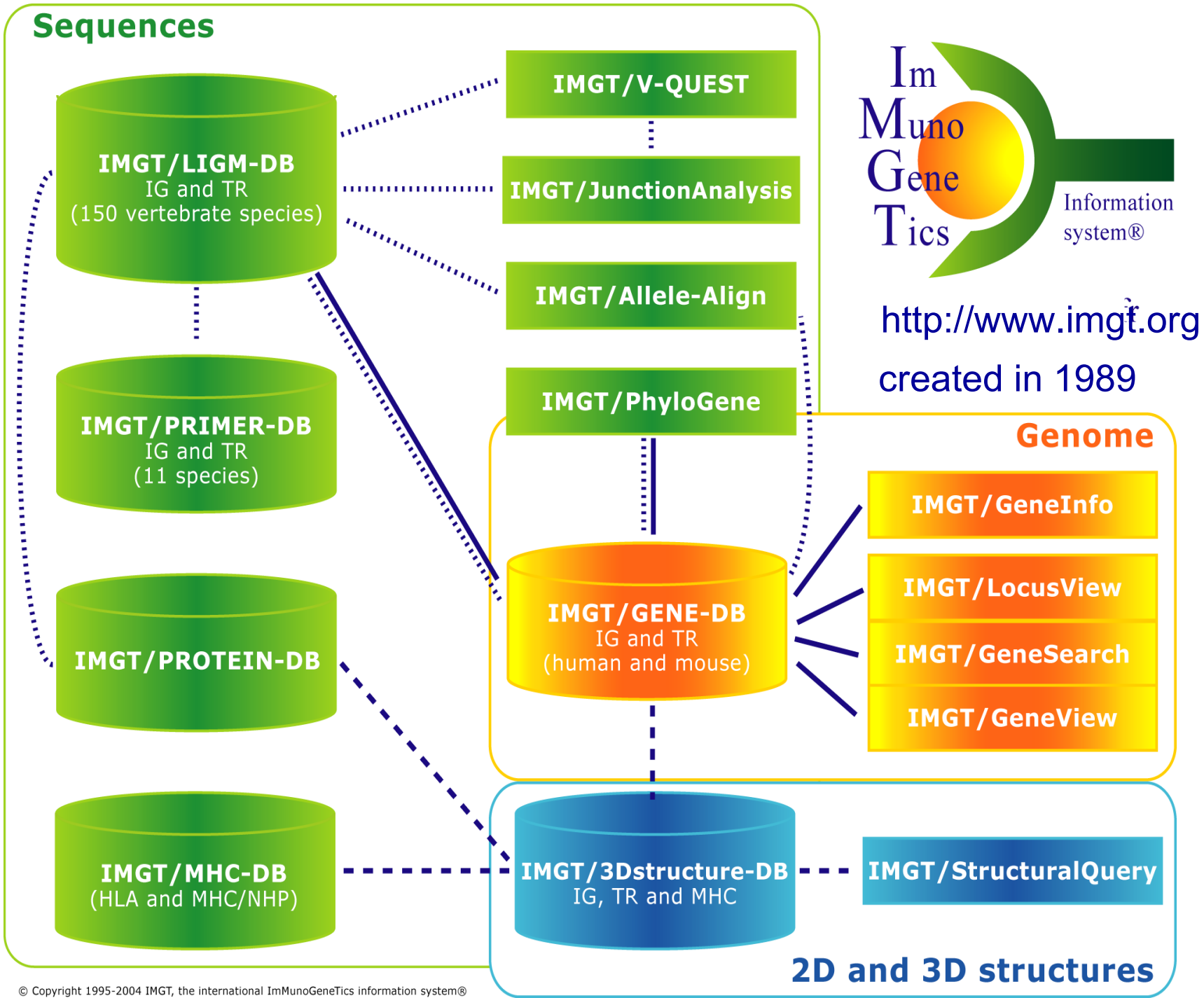
http://www.imgt.org

IMGT/mAb-DB et IMGT/2Dstructure-DB

François Ehrenmann, Yan Wu, Chantal Ginestoux,
Gérard Lefranc and Marie-Paule Lefranc

1ère Réunion du GDR 3260 - ACCITH 'Anticorps et ciblage thérapeutique'
22-23 Octobre 2009, PARIS



Outline

- IMGT® standards based on IMGT-ONTOLOGY
  - classification: gene nomenclature
  - description: labels et prototypes
  - numerotation: IMGT unique numbering

- IMGT/DomainGapAlign
  IMGT Collier de Perles
  IMGT/3Dstructure-DB

- **IMGT/2Dstructure-DB**
  IMGT/mAb-DB

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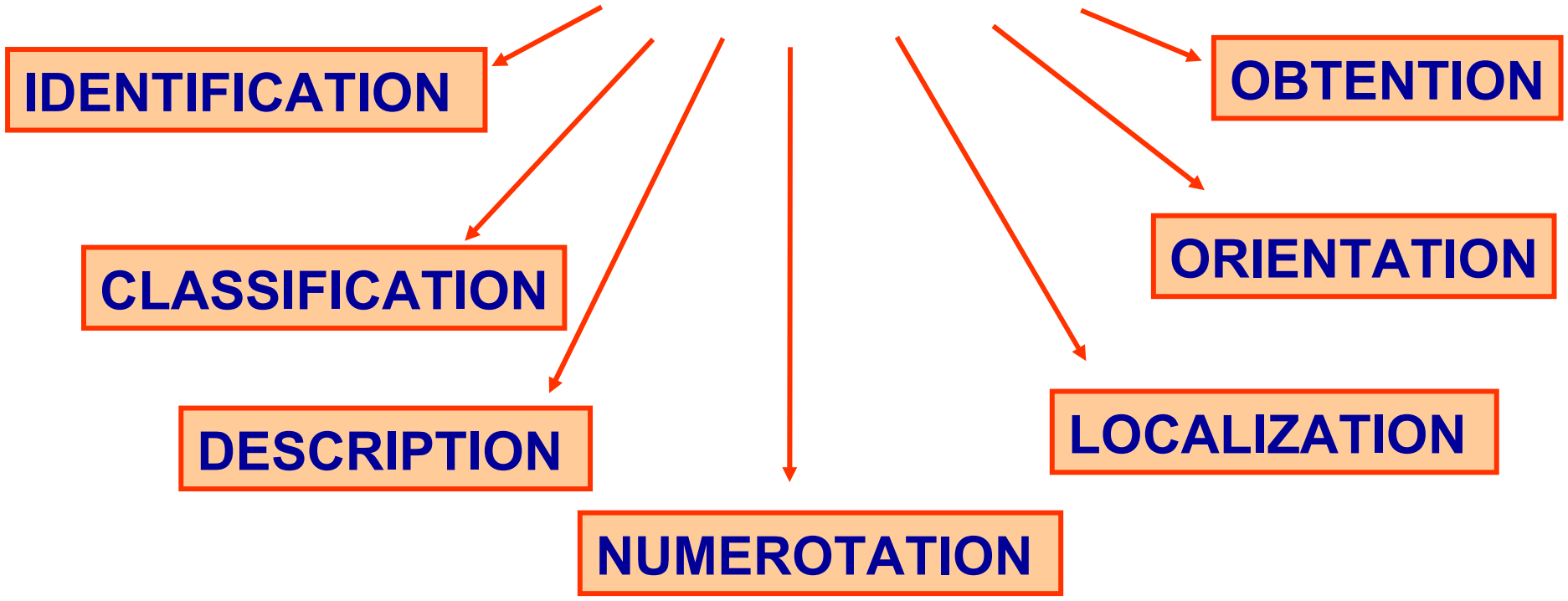
IMGT-ONTOLOGY
axioms and concepts

http://www.imgt.org

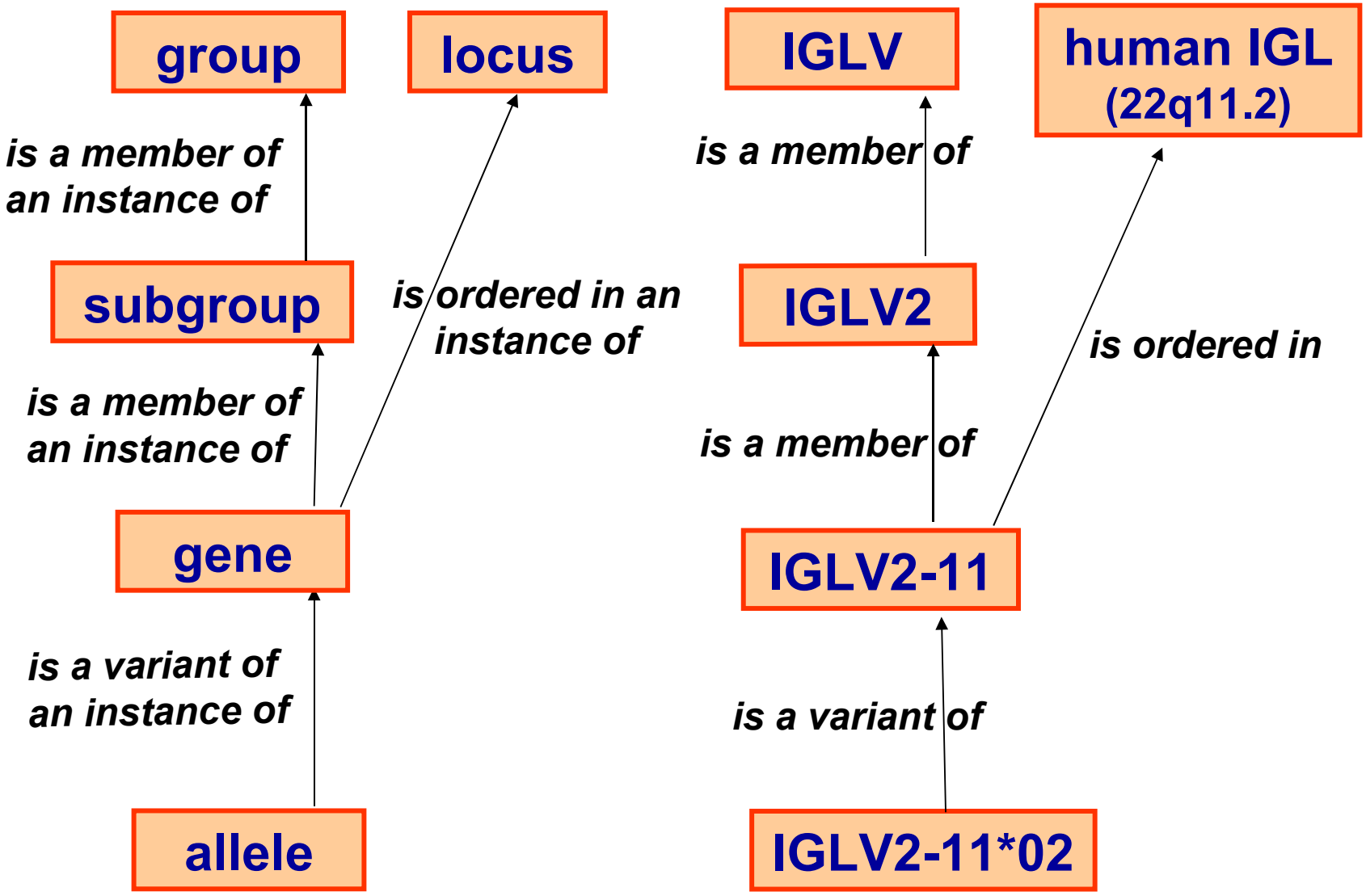
IMGT-ONTOLOGY seven axioms:

To share, reuse and represent knowledge in Immunogenetics and Life Sciences



Giudicelli and Lefranc, Bioinformatics 1999

CLASSIFICATION axiom



CLASSIFICATION axiom

http://www.imgt.org

1. The IMGT-ONTOLOGY main concepts of classification
   - include ‘group’, ‘subgroup’, ‘gene’, ‘allele’.
   - have allowed to set up the nomenclature of the immunoglobulin (IG) genes (V, D, J, C genes).

2. IMGT gene names have been approved by the HUGO Nomenclature Committee (HGNC) in 1999.

3. New alleles are validated by the WHO-IUIS/IMGT nomenclature committee and entered in IMGT/GENE-DB.

4. IMGT/GENE-DB is the international reference database for IG genes (direct links from NCBI Entrez Gene) and alleles.

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DESCRIPTION axiom

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1. The IMGT-ONTOLOGY concepts of description:
   - comprise the standardized IMGT labels and their relations.
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2. IMGT labels are used in all IMGT® databases and tools for the description of:
   - nucleotide and amino acid sequences (IMGT/LIGM-DB…)
   - 2D and 3D structures (IMGT/3Dstructure-DB…).

3. Sequence Ontology (SO) includes IMGT labels.

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NUMEROTATION axiom

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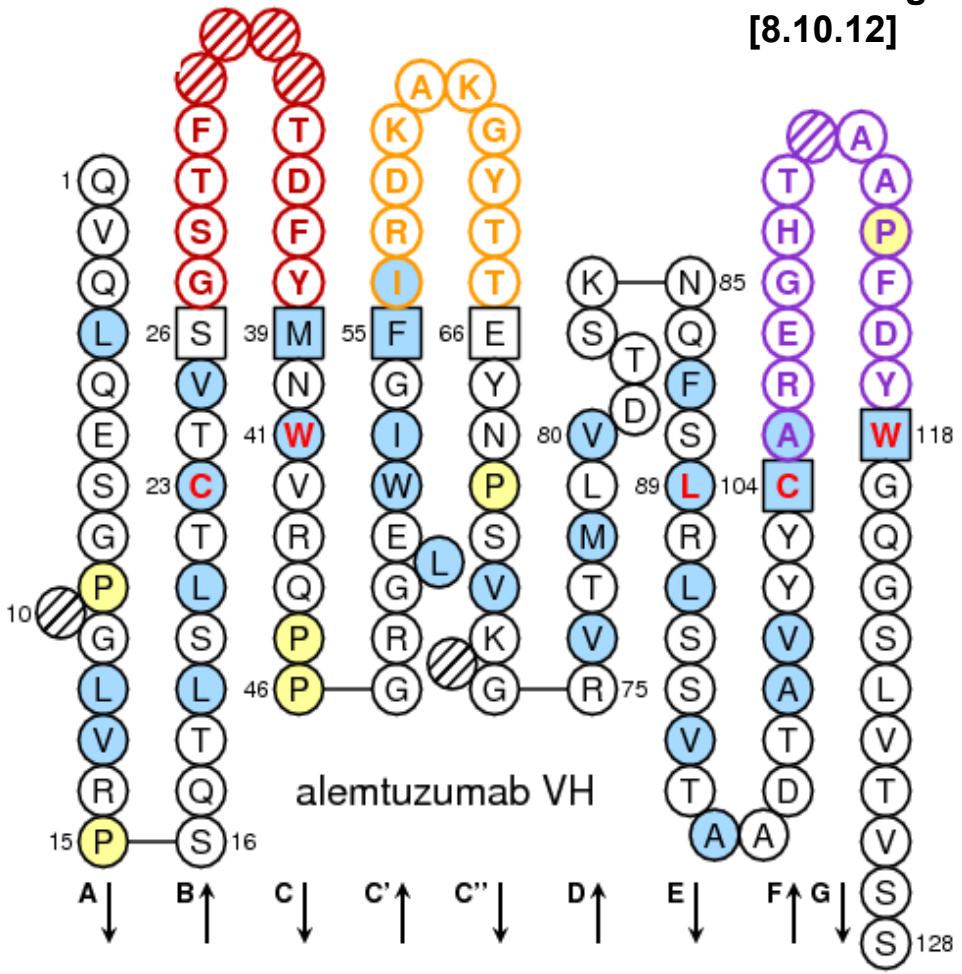
CDR-IMGT lengths [8.10.12]



*Lefranc et al. Dev. Comp. Immunol. **27**, 55-77 (2003)*

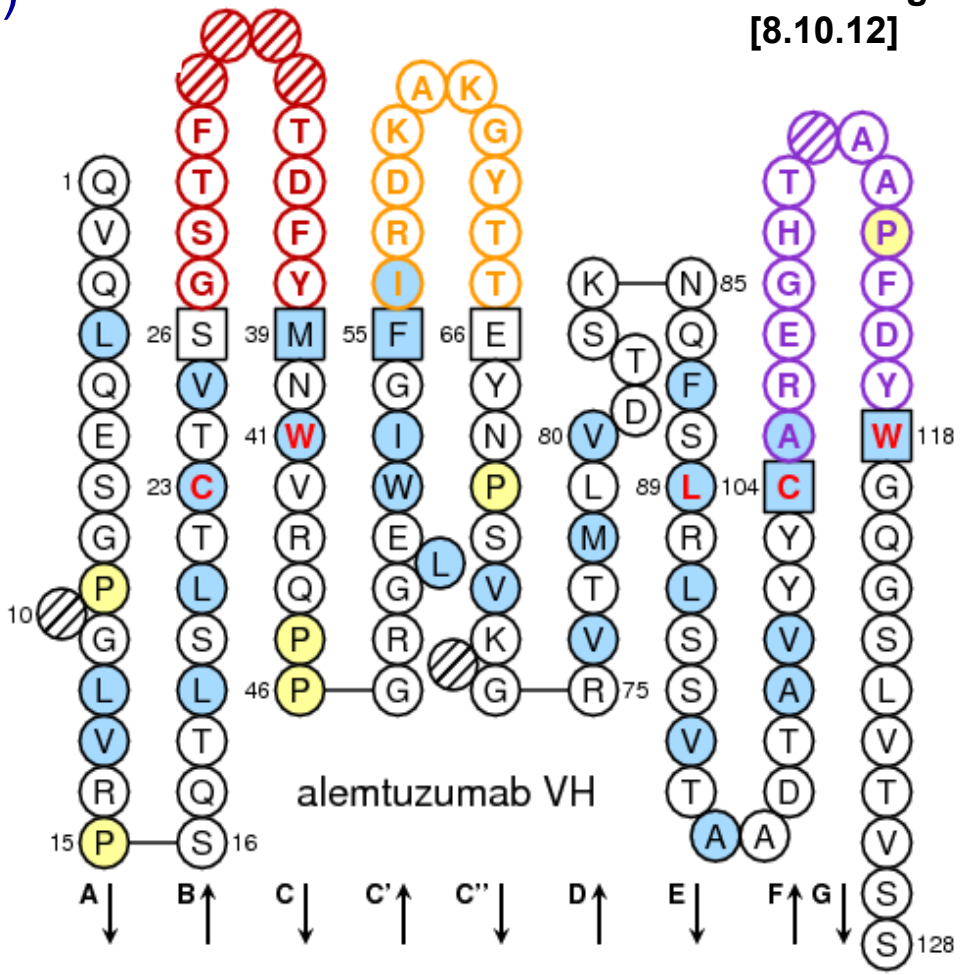
NUMEROTATION axiom

http://www.imgt.org

1. IMGT unique numbering

- conserved AA (and codons) at the same positions:
  - 1st-CYS **23**
  - 2nd-CYS **104**
  - J-PHE, J-TRP **118**

CDR-IMGT lengths [8.10.12]



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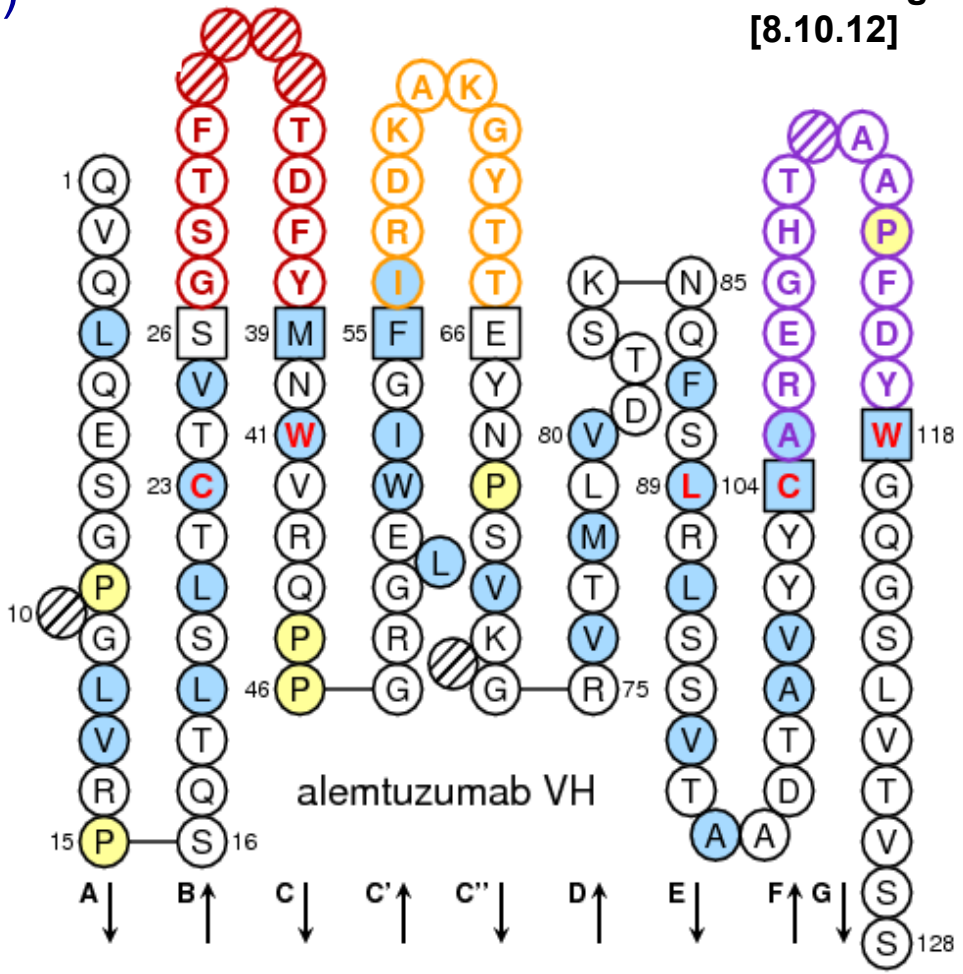
2. IMGT Collier de Perles

- standardized delimitation of the FR-IMGT and CDR-IMGT.
- CDR-IMGT lengths.

CDR-IMGT lengths [8.10.12]



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NUMEROTATION axiom

1. The IMGT-ONTOLOGY concepts of numerotation include:
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- IMGT Collier de Perles.

2. The concepts bridge the gap between sequences and 3D structures, at the amino acid (codon) level, for:
- the variable domains (V-DOMAIN)
- the constant domains (C-DOMAIN).

4. The concepts are used for:
- Mutations, polymorphisms
- CDR-IMGT lengths
- contact analysis, paratope definition.

5. WHO-INN programme requires the CDR-IMGT lengths for antibody.

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IMGT/DomainGapAlign

IMGT
Information system®
http://www.imgt.org

Sequence name: ALEMTUZUMAB

V-REGION identity percent

Closest reference gene and allele(s) from the IMGT domain directory

V gene and allele	Species	Domain	Smith-Waterman Score	Identity percentage	Overlap	
IGHV4-59*01	Homo sapiens	1	494	73.0	100	
J gene and allele	**Species**	**Domain**	**Smith-Waterman Score**	**Identity percentage**	**Overlap**	**Align your sequence with**
IGHJ4*01	Homo sapiens	1	94	92.9	14	◉
IGHJ4*02	Homo sapiens	1	94	92.9	14	○
IGHJ4*03	Homo sapiens	1	94	92.9	14	○

Alignment with the closest V gene and allele from the IMGT domain directory

```
                      FR1-IMGT            CDR1-IMGT    FR2-IMGT     CDR2-IMGT             FR3-IMGT                    CDR3-IMGT
                       (1-26)              (27-38)      (39-55)      (56-65)              (66-104)                    (105-117)
                    A              B          BC        C        C'         C'C"      C"        D         E          F        FG
                 (1-15)         (16-26)    (27-38)  (39-46)  (47-55)    (56-65)   (66-74)   (75-84)   (85-96)   (97-104)
                 ------------>  ---------->         ------> -------->             -------> --------> ---------> -------->
                1        10  15 16    23 26 27      38 3941  46 47     55 56     65 66     74 75   80 84 85 89    96 97   104 105
ALEMTUZUMAB     QVQLQESGP.GLVRP SQTLSLTCTVS GFTF....TDFY MNWVRQPP GRGLEWIGF IRDKAKGYTT EYNPSVK.G RVTMLVDTSK NQFSLRLSSVTA ADTAVYYC AR
IGHV4-59*01     QVQLQESGP.GLVKP SETLSLTCTVS GGSI....SSYY WSWIRQPP GKGLEWIGY IYYS...GST NYNPSLK.S RVTISVDTSK NQFSLKLSSVTA ADTAVYYC AR
(Homo sapiens)             R    Q           FTF     TDF MN V         R      F RDK    YT  E    V G   ML          R
```

Alignment with the closest J gene and allele from the IMGT domain directory

```
ALEMTUZUMAB     .FDYWGQGSLVTVSS     J-REGION
IGHJ4*01        YFDYWGQGTLVTVSS
(Homo sapiens)  -       S
```

14 / 91 FR-IMGT AA differences

IMGT/DomainGapAlign provides analysis of IG amino acid sequences, per domain (V, C)

Towards «Potential immunogenicity evaluation »

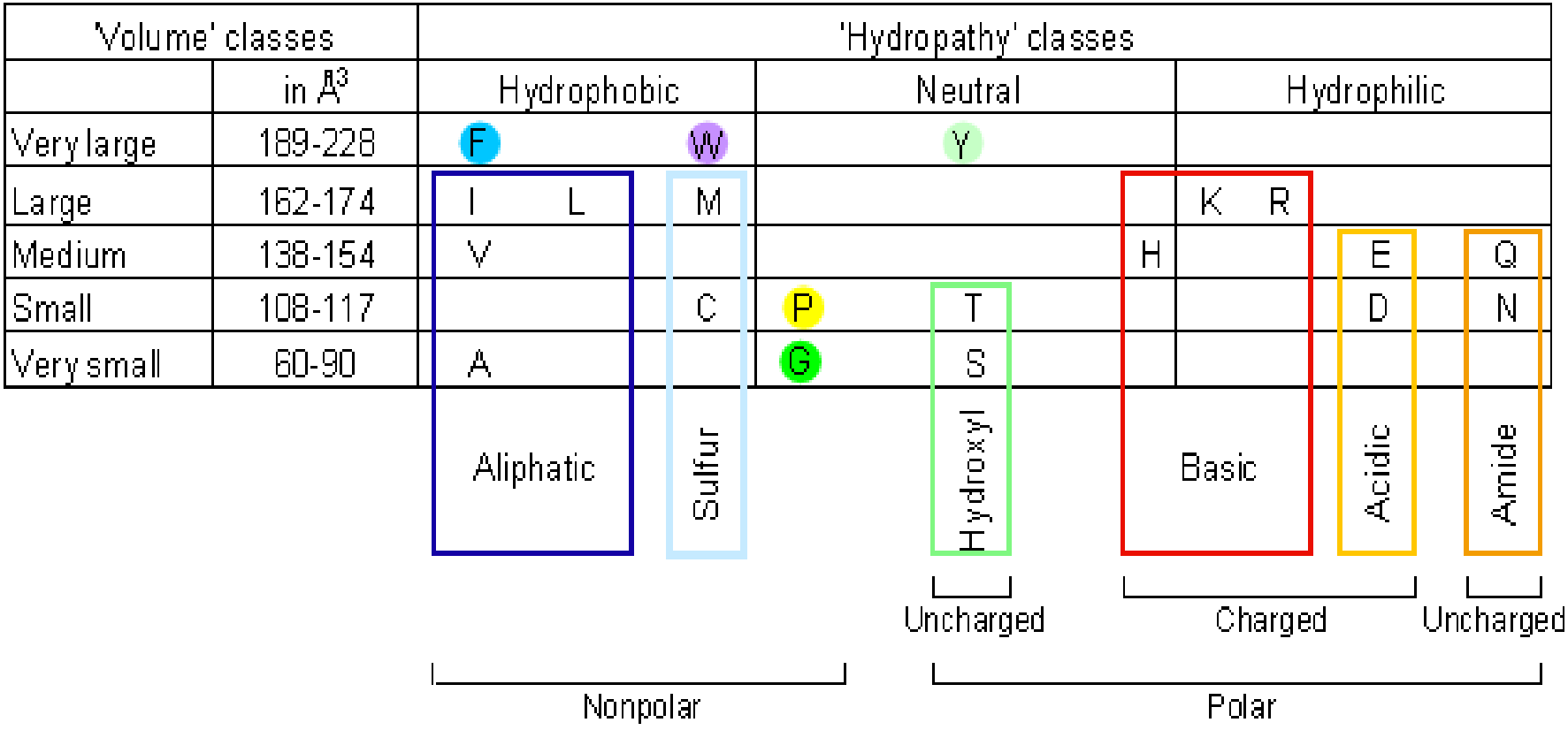
http://www.imgt.org

Comparison with the closest human germline genes:

		V-REGION identity percent	FR-IMGT AA differences
VH	alemtuzumab	73 %	**14 /91**
	bevacizumab	72.40 %	**23**
	trastuzumab	81.63 %	**9**
V-KAPPA	alemtuzumab	86.32 %	**2 /89**
	bevacizumab	87.40 %	**7**
	trastuzumab	86.32 %	**6**

Magdelaine-Beuzelin C. et al. Crit. Rev. Oncol. Hemat. ***64****, 210-225 (2007)*

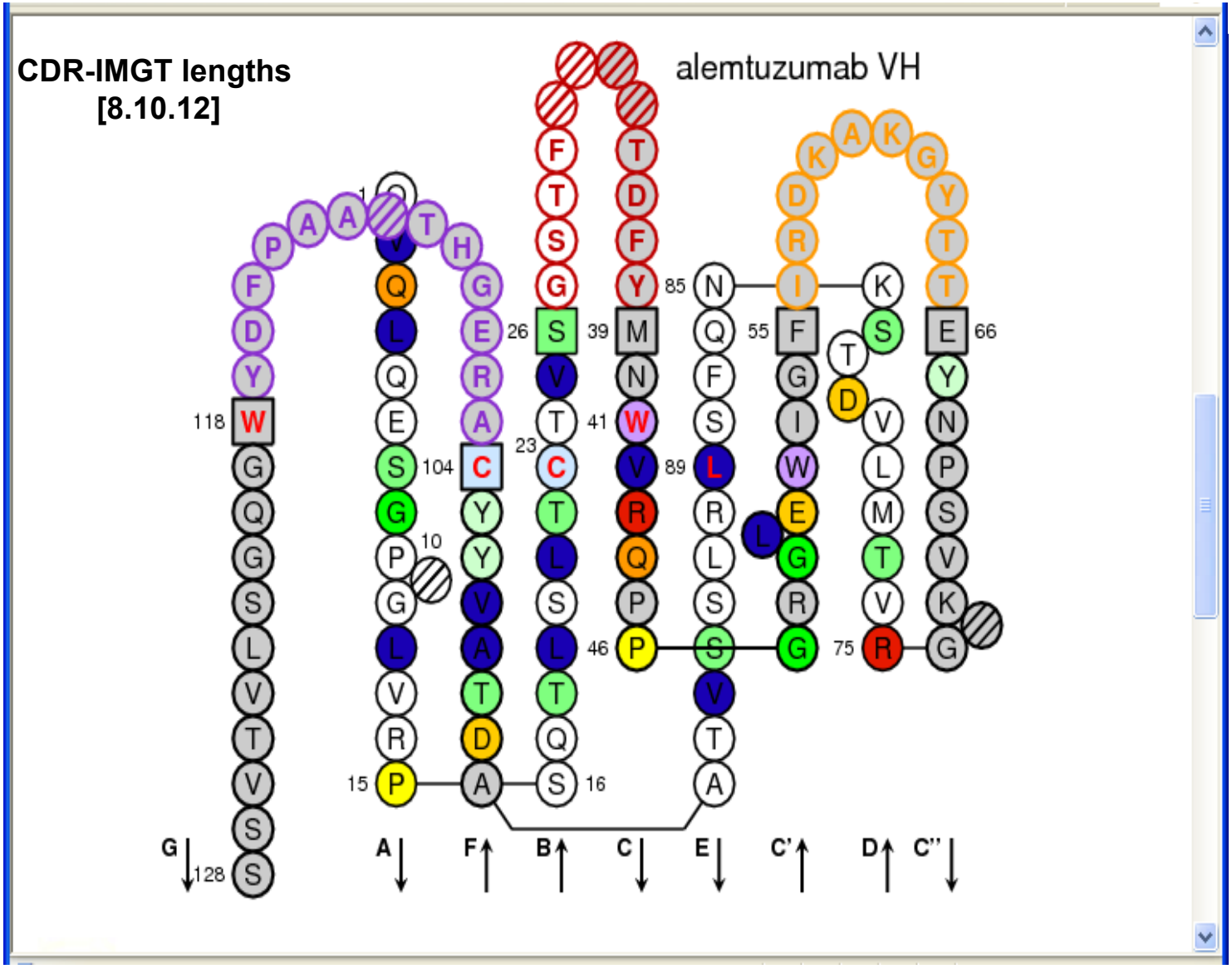
The eleven IMGT amino acid classes according to the physicochemical properties



Pommié et al. J. Mol Recognit. ***17****, 17-32, 2004*

IMGT Collier de Perles amino acid profile

http://www.imgt.org



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IMGT/3Dstructure-DB

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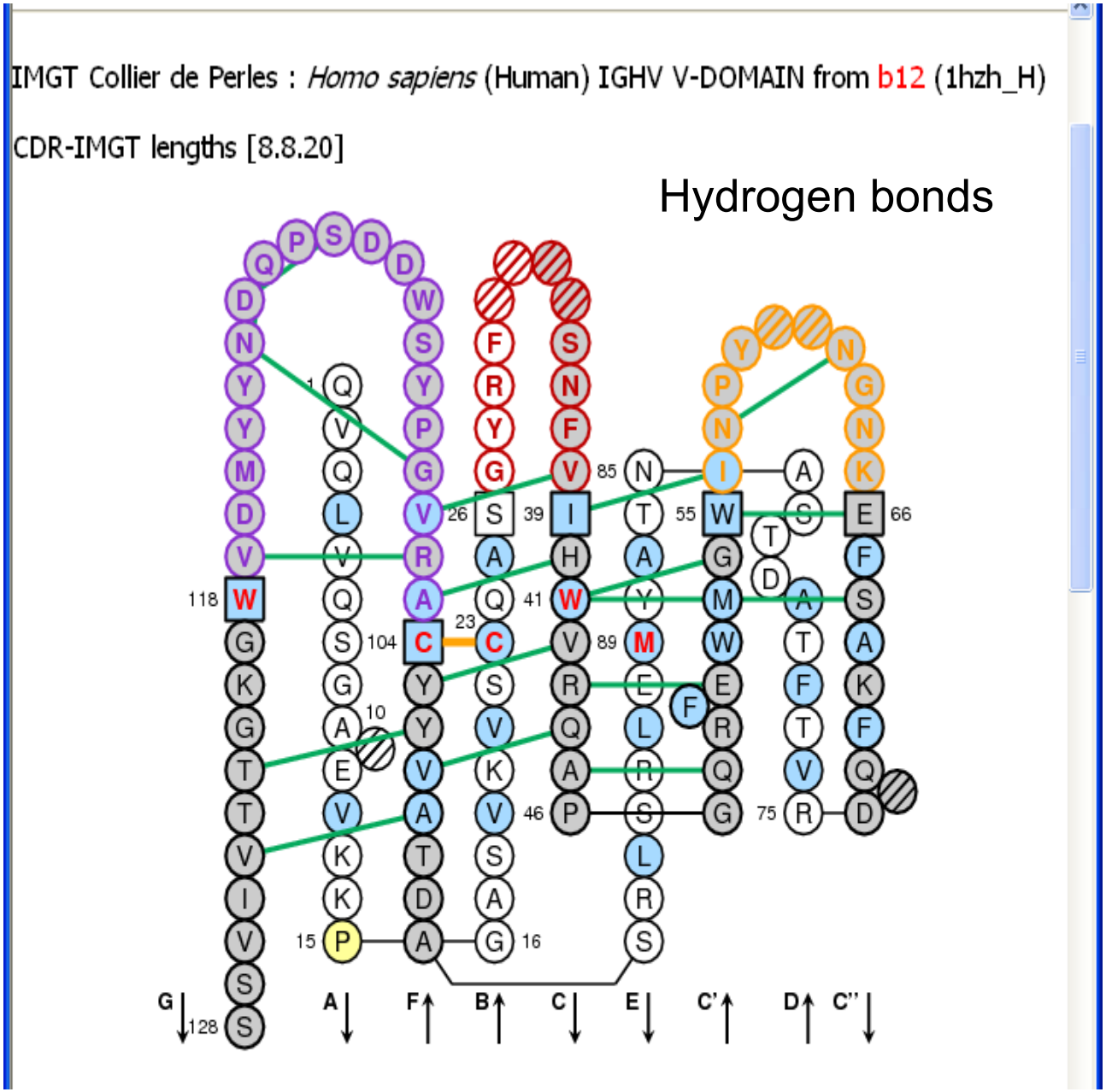


Contacts VH-(Ligand), V-KAPPA-(Ligand)

IMGT molecule name	IMGT description	Chain ID	IMGT chain description	Domain number	IMGT domain description
CAMPATH-1H, alemtuzumab, MABCAMPATH®	FAB-GAMMA-1_KAPPA	1ce1_H	VH-CH1	[D1]	VH
				[D2]	CH1
		1ce1_L	L-KAPPA	[D1]	V-KAPPA
				[D2]	C-KAPPA
CD52 (synthetic peptide)	Peptide	1ce1_P	Peptide		

	Unit 1		Unit 2		Residue contacts	Number of residues			Atom contact types		
	Domain	Chain	Domain	Chain		Total	From 1	From 2	Total	Polar	Hydrogen
DomPair	VH	1ce1_H	CH1	1ce1_H	19	17	8	9	125	9	1
DomPair			V-KAPPA	1ce1_L	63	45	24	21	532	61	6
DomPair			(Ligand)	1ce1_P	25	19	12	7	216	40	9
DomPair	CH1	1ce1_H	VH	1ce1_H	19	17	9	8	125	9	1
DomPair			C-KAPPA	1ce1_L	68	58	28	30	498	40	6
DomPair	V-KAPPA	1ce1_L	VH	1ce1_H	63	45	21	24	532	61	6
DomPair			C-KAPPA	1ce1_L	18	18	8	10	137	19	2
DomPair			(Ligand)	1ce1_P	16	14	7	7	171	37	5
DomPair	C-KAPPA	1ce1_L	CH1	1ce1_H	68	58	30	28	498	40	6
DomPair			V-KAPPA	1ce1_L	18	18	10	8	137	19	2

Kaas Q. et al.2004

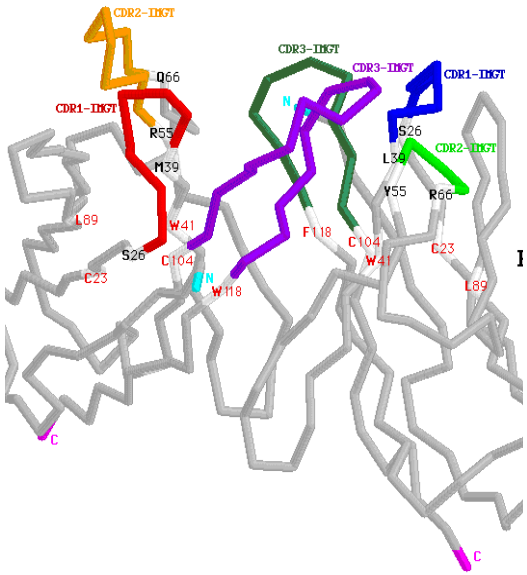
Contacts V-KAPPA-(Ligand)

Residue contacts	Number of residues			Atom contact types		
	Total	From 1	From 2	Total	Polar	Hydrogen
16	14	7	7	171	37	5

List of the Residue@Position pair contacts:

Click 'R@P' for IMGT Residue@Position cards

	Order					Order				Atom contacts		
	IMGT Num	Residue		Domain	Chain	IMGT Num	Residue		Domain	Chain	Total	Polar	Hydrogen
R@P	38	TYR	Y	V-KAPPA	1ce1_L	3	SER	S		1ce1_P	1	0	0
R@P	38	TYR	Y	V-KAPPA	1ce1_L	5	PRO	P		1ce1_P	21	0	0
R@P	56	ASN	N	V-KAPPA	1ce1_L	3	SER	S		1ce1_P	3	2	0
R@P	107	HIS	H	V-KAPPA	1ce1_L	4	SER	S		1ce1_P	20	4	1
R@P	107	HIS	H	V-KAPPA	1ce1_L	5	PRO	P		1ce1_P	12	2	0
R@P	107	HIS	H	V-KAPPA	1ce1_L	6	SER	S		1ce1_P	14	3	1
R@P	108	ILE	I	V-KAPPA	1ce1_L	5	PRO	P		1ce1_P	12	1	0
R@P	108	ILE	I	V-KAPPA	1ce1_L	6	SER	S		1ce1_P	12	3	0
R@P	109	SER	S	V-KAPPA	1ce1_L	6	SER	S		1ce1_P	11	2	0
R@P	114	ARG	R	V-KAPPA	1ce1_L	6	SER	S		1ce1_P	18	3	1
R@P	114	ARG	R	V-KAPPA	1ce1_L	7	ALA	A		1ce1_P	4	2	0
R@P	114	ARG	R	V-KAPPA	1ce1_L	8	ASP	D		1ce1_P	6	2	0
R@P	116	ARG	R	V-KAPPA	1ce1_L	2	THR	T		1ce1_P	1	1	0
R@P	116	ARG	R	V-KAPPA	1ce1_L	4	SER	S		1ce1_P	9	4	1
R@P	116	ARG	R	V-KAPPA	1ce1_L	6	SER	S		1ce1_P	20	6	1
R@P	116	ARG	R	V-KAPPA	1ce1_L	7	ALA	A		1ce1_P	7	2	0



Kaas Q. et al. 2004

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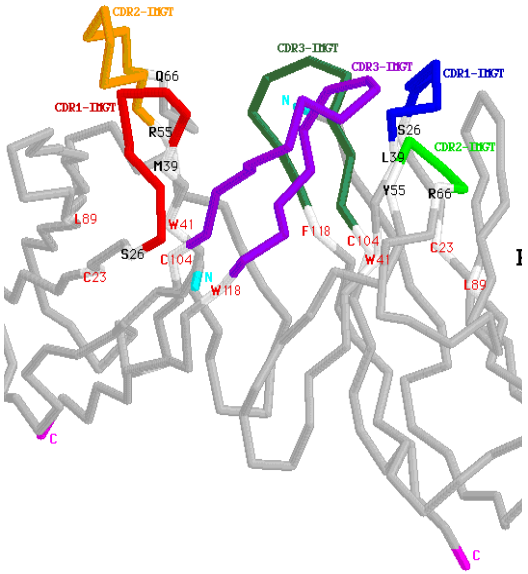
	IMGT Num	Residue		Domain	Chain		IMGT Num	Residue		Domain	Chain	Total	Polar	Hydrogen
R@P	38	TYR	Y	VH	1ce1_H	R@P	2	THR	T		1ce1_P	4	0	0
R@P	38	TYR	Y	VH	1ce1_H	R@P	7	ALA	A		1ce1_P	13	1	0
R@P	38	TYR	Y	VH	1ce1_H	R@P	8	ASP	D		1ce1_P	14	2	2
R@P	55	PHE	F	VH	1ce1_H	R@P	6	SER	S		1ce1_P	5	0	0
R@P	55	PHE	F	VH	1ce1_H	R@P	7	ALA	A		1ce1_P	16	0	0
R@P	55	PHE	F	VH	1ce1_H	R@P	8	ASP	D		1ce1_P	1	0	0
R@P	57	ARG	R	VH	1ce1_H	R@P	7	ALA	A		1ce1_P	9	3	2
R@P	57	ARG	R	VH	1ce1_H	R@P	8	ASP	D		1ce1_P	20	6	1
R@P	61	LYS	K	VH	1ce1_H	R@P	8	ASP	D		1ce1_P	11	2	1
R@P	66	GLU	E	VH	1ce1_H	R@P	7	ALA	A		1ce1_P	1	0	0
R@P	107	GLU	E	VH	1ce1_H	R@P	2	THR	T		1ce1_P	13	2	1
R@P	107	GLU	E	VH	1ce1_H	R@P	4	SER	S		1ce1_P	5	2	0
R@P	107	GLU	E	VH	1ce1_H	R@P	7	ALA	A		1ce1_P	5	0	0
R@P	108	GLY	G	VH	1ce1_H	R@P	1	GLY	G		1ce1_P	2	1	0
R@P	108	GLY	G	VH	1ce1_H	R@P	2	THR	T		1ce1_P	9	2	0
R@P	109	HIS	H	VH	1ce1_H	R@P	1	GLY	G		1ce1_P	24	4	0
R@P	109	HIS	H	VH	1ce1_H	R@P	2	THR	T		1ce1_P	21	5	0
R@P	109	HIS	H	VH	1ce1_H	R@P	3	SER	S		1ce1_P	9	2	1
R@P	110	THR	T	VH	1ce1_H	R@P	1	GLY	G		1ce1_P	1	1	0
R@P	110	THR	T	VH	1ce1_H	R@P	3	SER	S		1ce1_P	11	4	1
R@P	112	ALA	A	VH	1ce1_H	R@P	3	SER	S		1ce1_P	3	1	0
R@P	113	ALA	A	VH	1ce1_H	R@P	2	THR	T		1ce1_P	3	0	0
R@P	113	ALA	A	VH	1ce1_H	R@P	3	SER	S		1ce1_P	7	2	0
R@P	113	ALA	A	VH	1ce1_H	R@P	4	SER	S		1ce1_P	4	0	0
R@P	114	PRO	P	VH	1ce1_H	R@P	4	SER	S		1ce1_P	5	0	0



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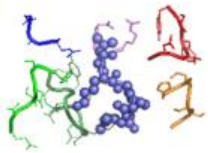
Overview

IMGT/2Dstructure-DB



Your query: INN entries.

Number of results: 53

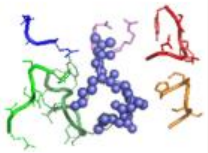
Click on IMGT entry ID (2nd column) for entry card

	IMGT entry ID	IMGT molecule name	IMGT entry type	IMGT receptor description	Species	Proposed list	Recommended list	CAS number
1	7637	trastuzumab, 4D5V8, HERCEPTIN®	INN	IG-GAMMA-1_KAPPA	*Humanized*	L78 (1997)	R40 (1998)	180288-69-1
2	7906	cetuximab, Fab C225, IMC-225, ERBITUX™	INN	IG-GAMMA-1_KAPPA	*Chimeric*	L82 (1999)	R44 (2000)	205923-56-4
3	8005	alemtuzumab, Campath-1H, LDP-03, CAMPATH®/MABCAMPATH®	INN	IG-GAMMA-1_KAPPA	*Humanized*	L83 (2000)	R45 (2001)	216503-57-0
4	8017	bevacizumab, 12-IgG1, F(ab)-12 IgG1, Fab-12 IgG1, rhuMAb-VEGF, AVASTIN®	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L83 (2000)	R45 (2001)	216974-75-3
5	8313	ranibizumab, Fab-12 variant Y0317, RhuFab, LUCENTIS®	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L90 (2004)	R52 (2004)	347396-82-1
6	8380	pertuzumab, rhuMAB 2C4	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L89 (2003)	R51 (2004)	380610-27-5
7	8598	naptumomab estafenatox	INN	FAB-GAMMA-1-SAG_KAPPA	*Mus musculus*	L96 (2006)	R58 (2007)	676258-98-3
8	8651	tadocizumab	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L94 (2005)	R56 (2006)	339086-80-5
9	8658	efungumab	INN	SCFV-HEAVY-KAPPA	*Homo sapiens*	L95 (2006)	R57 (2007)	762260-74-2
10	8659	abagovomab	INN	IG-GAMMA-1_KAPPA	*Mus musculus*	L95 (2006)	R57 (2007)	792921-10-9
11	8669	atacicept	INN	FUSION-TNFRSF13B-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	845264-92-8
12	8693	motavizumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L95 (2006)	R57 (2007)	677010-34-3
13	8734	bavituximab	INN	IG-GAMMA-1_KAPPA	*Chimeric*	L95 (2006)	R57 (2007)	648904-28-3
14	8739	aflibercept	INN	FUSION-FLT1-KDR-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	862111-32-8
15	8750	rilonacept, ARCALYST™	INN	FUSION-IL1RAP-IL1R1-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	501081-76-1
16	8753	lexatumumab	INN	IG-GAMMA-1_LAMBDA	*Homo sapiens*	L95 (2006)	R57 (2007)	845816-02-6
17	8818	ibalizumab	INN	IG-GAMMA-4_KAPPA	*Humanized*	L97 (2007)	R59 (2008)	680188-33-4
18	8832	tenatumomab, ST2146	INN	IG-GAMMA-2B_KAPPA	*Mus musculus*	L98 (2007)	R60 (2008)	592557-43-2 592557-41-0
19	8836	canakinumab	INN	IG-GAMMA-1_KAPPA	*Homo sapiens*	L97 (2007)	R59 (2008)	402710-27-4 402710-25-2
20	8862	etaracizumab, MEDI-522, hLM609	INN	IG-GAMMA-1_KAPPA	*Humanized*	L99 (2008)	R61 (2009)	892553-42-3
21	8864	otelixizumab	INN	IG-GAMMA-1_LAMBDA	*Humanized*	L98 (2007)	R60 (2008)	881191-44-2
22	8869	teplizumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L97 (2007)	R59 (2008)	876387-05-2
23	8887	lucatumumab	INN	IG-GAMMA-1_KAPPA	*Homo sapiens*	L98 (2007)	R60 (2008)	903512-50-5
24	8888	panobacumab, Aerumab 11	INN	IG-MU_KAPPA_J-CHAIN	*Homo sapiens* *Mus musculus*	L100 (2008)	Unpublished	885053-97-4
25	8894	gantenerumab	INN	IG-GAMMA-1_KAPPA	*Homo sapiens*	L97 (2007)	R59 (2008)	89957-37-9
26	8922	milatuzumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L98 (2007)	R60 (2008)	899796-83-9
27	8932	veltuzumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L98 (2007)	R60 (2008)	728917-18-8
28	8941	tanezumab, RN624	INN	IG-GAMMA-2_KAPPA	*Humanized*	L99 (2008)	R61 (2009)	880266-57-9
29	8942	aprukinzumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L98 (2007)	R60 (2008)	910649-32-0

Overview

Your query: INN entries.

IMGT/2Dstructure-DB



Number of results: 53

International Nonproprietary Name (INN)
Dénomination Commune Internationale (DCI)

Click on IMGT entry ID (2nd column) for entry card

	IMGT entry ID	IMGT molecule name	IMGT entry type	IMGT receptor description	Species	Proposed list	Recommended list	CAS number
1	7637	trastuzumab, 4D5V8, HERCEPTIN®	INN	IG-GAMMA-1_KAPPA	*Humanized*	L78 (1997)	R40 (1998)	180288-69-1
2	7906	cetuximab, Fab C225, IMC-225, ERBITUX™	INN	IG-GAMMA-1_KAPPA	*Chimeric*	L82 (1999)	R44 (2000)	205923-56-4
3	8005	alemtuzumab, Campath-1H, LDP-03, CAMPATH®/MABCAMPATH®	INN	IG-GAMMA-1_KAPPA	*Humanized*	L83 (2000)	R45 (2001)	216503-57-0
4	8017	bevacizumab, 12-IgG1, F(ab)-12 IgG1, Fab-12 IgG1, rhuMAb-VEGF, AVASTIN®	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L83 (2000)	R45 (2001)	216974-75-3
5	8313	ranibizumab, Fab-12 variant Y0317, RhuFab, LUCENTIS®	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L90 (2004)	R52 (2004)	347396-82-1
6	8380	pertuzumab, rhuMAB 2C4	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L89 (2003)	R51 (2004)	380610-27-5
7	8598	naptumomab estafenatox	INN	FAB-GAMMA-1-SAG_KAPPA	*Mus musculus*	L96 (2006)	R58 (2007)	676258-98-3
8	8651	tadocizumab	INN	FAB-GAMMA-1_KAPPA	*Humanized*	L94 (2005)	R56 (2006)	339086-80-5
9	8658	efungumab	INN	SCFV-HEAVY-KAPPA	*Homo sapiens*	L95 (2006)	R57 (2007)	762260-74-2
10	8659	abagovomab	INN	IG-GAMMA-1_KAPPA	*Mus musculus*	L95 (2006)	R57 (2007)	792921-10-9
11	8669	atacicept	INN	FUSION-TNFRSF13B-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	845264-92-8
12	8693	motavizumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L95 (2006)	R57 (2007)	677010-34-3
13	8734	bavituximab	INN	IG-GAMMA-1_KAPPA	*Chimeric*	L95 (2006)	R57 (2007)	648904-28-3
14	8739	aflibercept	INN	FUSION-FLT1-KDR-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	862111-32-8
15	8750	rilonacept, ARCALYST™	INN	FUSION-IL1RAP-IL1R1-FC-GAMMA-1	*Homo sapiens*	L95 (2006)	R57 (2007)	501081-76-1
16	8753	lexatumumab	INN	IG-GAMMA-1_LAMBDA	*Homo sapiens*	L95 (2006)	R57 (2007)	845816-02-6
17	8818	ibalizumab	INN	IG-GAMMA-4_KAPPA	*Humanized*	L97 (2007)	R59 (2008)	680188-33-4
18	8832	tenatumomab, ST2146	INN	IG-GAMMA-2B_KAPPA	*Mus musculus*	L98 (2007)	R60 (2008)	592557-43-2 592557-41-0
19	8836	canakinumab	INN	IG-GAMMA-1_KAPPA	*Homo sapiens*	L97 (2007)	R59 (2008)	402710-27-4 402710-25-2
20	8862	etaracizumab, MEDI-522, hLM609	INN	IG-GAMMA-1_KAPPA	*Humanized*	L99 (2008)	R61 (2009)	892553-42-3
21	8864	otelixizumab	INN	IG-GAMMA-1_LAMBDA	*Humanized*	L98 (2007)	R60 (2008)	881191-44-2
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27	8932	veltuzumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L98 (2007)	R60 (2008)	728917-18-8
28	8941	tanezumab, RN624	INN	IG-GAMMA-2_KAPPA	*Humanized*	L99 (2008)	R61 (2009)	880266-57-9
29	8942	anrukinzumab	INN	IG-GAMMA-1_KAPPA	*Humanized*	L98 (2007)	R60 (2008)	910649-32-0

IMGT/2Dstructure-DB card for INN: 7637

Entry code [ ] Search

Query page

IMGT molecule name		IMGT receptor type	IMGT receptor description	Ligand(s)	Species	CC	Chain ID
INN name	trastuzumab	IG	IG-GAMMA-1_KAPPA		Humanized	1	[7637_H 7637_L]
Common name	4D5V8						
Commercial name	HERCEPTIN®						

Proposed list L78 (1997) Recommended list R40 (1998)

IMGT note	Trastuzumab has been engineered with two amino acid changes IGHG1 CH3 D12>E, L14>M to convert the G1m1 allotype to the iso-allotype nG1m1, the resulting gamma1 chain being Gm17, nG1m1, in an attempt to reduce the risk of anti-G1m1 antibodies interfering with therapy. Carter P. et al. Proc. Natl Acad. Sci. USA, 89, 4285-4289 (1992) PMID: 1350088 Trastuzumab constant genes and alleles, and allotypes, based on sequence analysis are: IGHG1*01, CH3 D12>E, L14>M Allotype G1m17nG1m1 IGKC*01 (100%) Allotype Km3 The allotypes have been confirmed serologically.

INN definitions | Chain details | Contact analysis | 3D visualization Jmol or QuickPDB | Renumbered IMGT file | References and links | Printable card

Chain details

Differences with the closest IMGT allele sequence are in orange.

Chain details of trastuzumab, 4D5V8, IG, IG-GAMMA-1_KAPPA Humanized [7637_H,7637_L]

Chain ID	**INN 7637_H**
Chain length	450
IMGT chain description	H-GAMMA-1 = VH(1-120) + CH1(121-218) + HINGE-REGION(219-233) + CH2(234-343) + CH3(344-450)
	[V-REGION EVQLVESGGGLVQPGGSLRLSCAASGFNIKDTYIHWVRQAPGKGLEWVARIYPTNGYTRYADSVKGRFTISADTSKNTAYLQMNSLRAED]N-AND[J-REGION][CH1 TAVYYCSRWGGDGFYAMDYWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSS][HINGE-REGION][

Chain details of trastuzumab, 4D5V8, IG, IG-GAMMA-1_KAPPA Humanized [7637_H,7637_L]

Chain ID	**INN 7637_H**
Chain length	450
IMGT chain description	H-GAMMA-1 = VH(1-120) + CH1(121-218) + HINGE-REGION(219-233) + CH2(234-343) + CH3(344-450)
Chain sequence	[V-REGION EVQLVESGGGLVQPGGSLRLSCAASGFNIKDTYIHWVRQAPGKGLEWVARIYPTNGYTRYADSVKGRFTISADTSKNTAYLQMNSLRAED]N-AND[J-REGION][CH1 TAVYYCSRWGGDGFYAMDYWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSS][HINGE-REGION][GLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCDTPPPCPRCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVS CH2][HEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDE CH3] LTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK *Sequence in FASTA format* *Sequence in IMGT format*
V-DOMAIN	IMGT domain description: VH IMGT gene and allele name: IGHV3-66*01 (81.60%)(Human) , IGHV3-66*02 (81.60%)(Human) , IGHV3-66*04 (81.60%)(Human) *Alignment details* IMGT gene and allele name: IGHJ6*01 (76.50%)(Human) , IGHJ6*02 (76.50%)(Human) *Alignment details* 2D representation: IMGT Collier de Perles or IMGT Collier de Perles on 2 layers Contact analysis: *Not available* CDR-IMGT lengths: [8.8.13] Sheet composition: *Not available* [CDR1] [CDR2] EVQLVESGG.GLVQPGGSLRLSCAASGFNI....KDTYIHWVRQAPGKGLEWVARIYPT..NGYTRYADSVK.GRFTISADTSKNTAYLQ [CDR3] MNSLRAEDTAVYYCSRWGGDGFYAMDYWGQGTLVTVSS *IMGT/DomainGapAlign results*
	IMGT domain description: CH1

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14 - cept

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INN number	6345	Proprietary name	-

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Origin clone species	-		Origin clone name		
Specificity (target)	-		Specificity origin	-	
Company			Development status	-	
Clinical indication			Regulatory agency	-	
Expression system			Year	-	
Application	-		Clinical domain	-	

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Isotype and format ☑	Fusion protein format ☐	Origin clone species ☐	Origin clone name ☐	Specificity and origin ☑		
Company ☑	Clinical indication ☑	Development status ☑	Regulatory agency status and year ☑			
Expression system ☐	FDA number ☐	EMEA number ☐	ATC code ☐	NCI number ☐	Drug number ☐	References ☐
Application ☑	Clinical domain ☐					

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Your query: IMGT/mAb-DB INN = trastuzumab

Number of results: 1

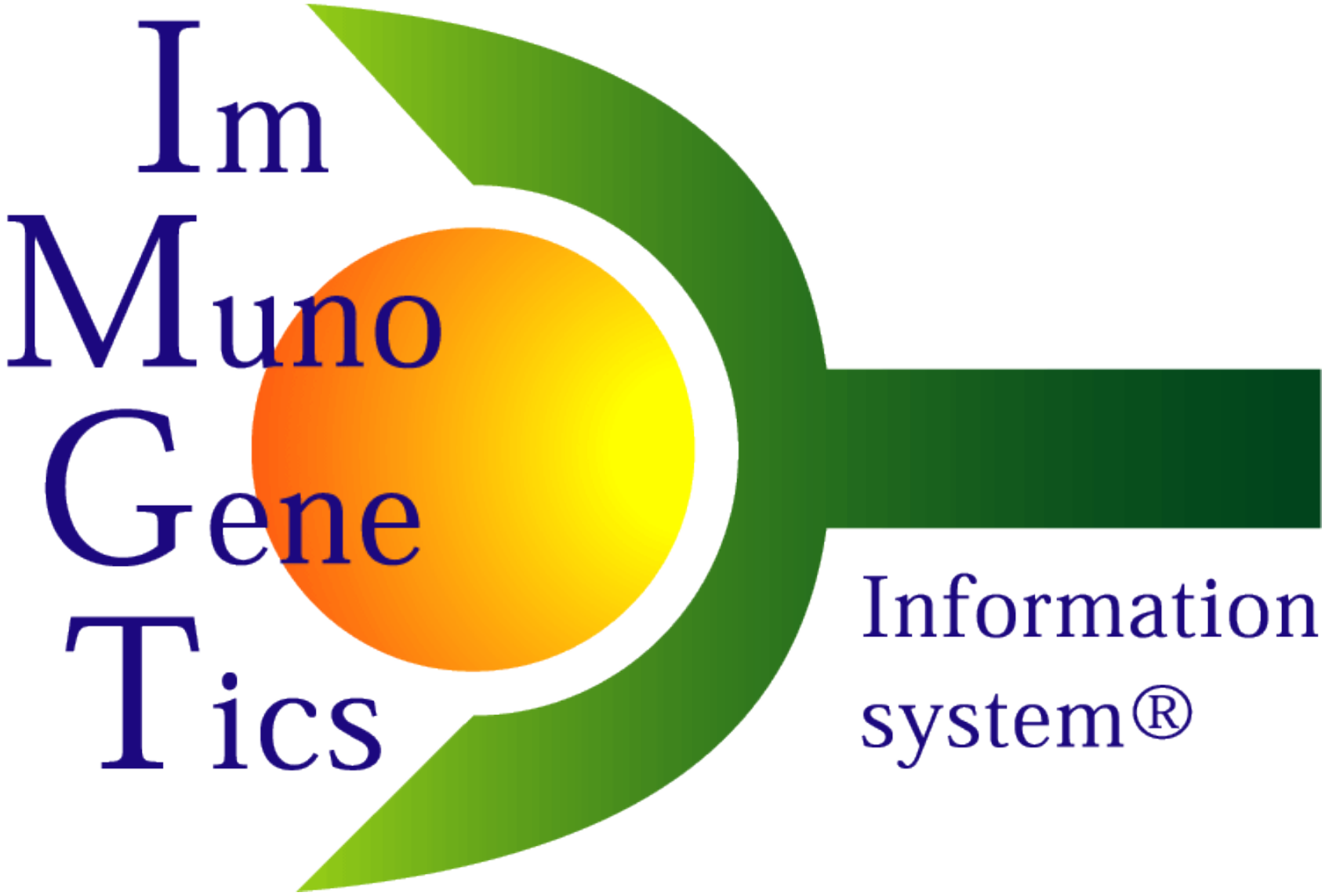
IMGT/ mAb-DB id	INN (International Nonproprietary Name)	INN Num.	INN Prop. list	INN Rec. list	Common name	Proprietary name	IMGT/mAb-DB section	IMGT/ 2D	IMGT/ 3D	Isotype and format	Specificity (target) [origin]	Company	Clinical indication	Development status	Regulatory agency status and year	Application
97	trastuzumab	7637	78 (1997)	40 (1998)	4D5V8, Herceptin	HERCEPTIN®	Humanized	7637	1n8z	IgG1κ	ERBB2 (Epidermal Growth Factor Receptor 2; HER-2; p185c-erbB2; NEU; EGFR2) [*Homo sapiens*]	F. Hoffmann-La Roche Ltd. (Basel Switzerland) (EU) / Genentech Inc. (S. San Francisco CA USA) (US)	Breast cancers (as adjuvant)	Phase III		
													Metastatic breast cancers overexpressing ERBB2	Phase M	AMM Market authorization (Roche) August 2000, FDA approval October 1998	Therapeutic
													Non-small-cell lung cancers	Phase II		

Created: 03/04/2009
Last updated:

IMGT/mAb-DB has been developed by Yan Wu and Patrice Duroux (LIGM, Montpellier, France)
IMGT/mAb-DB scientific officer: Marie-Paule Lefranc (Marie-Paule.Lefranc@igh.cnrs.fr)

IMGT/mAb-DB Documentation
Monoclonal antibodies with clinical indications

Many thanks to the IMGT® team at Montpellier, France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