

IMGT-ONTOLOGY

for immunogenetics and immunoinformatics information systems

Véronique Giudicelli

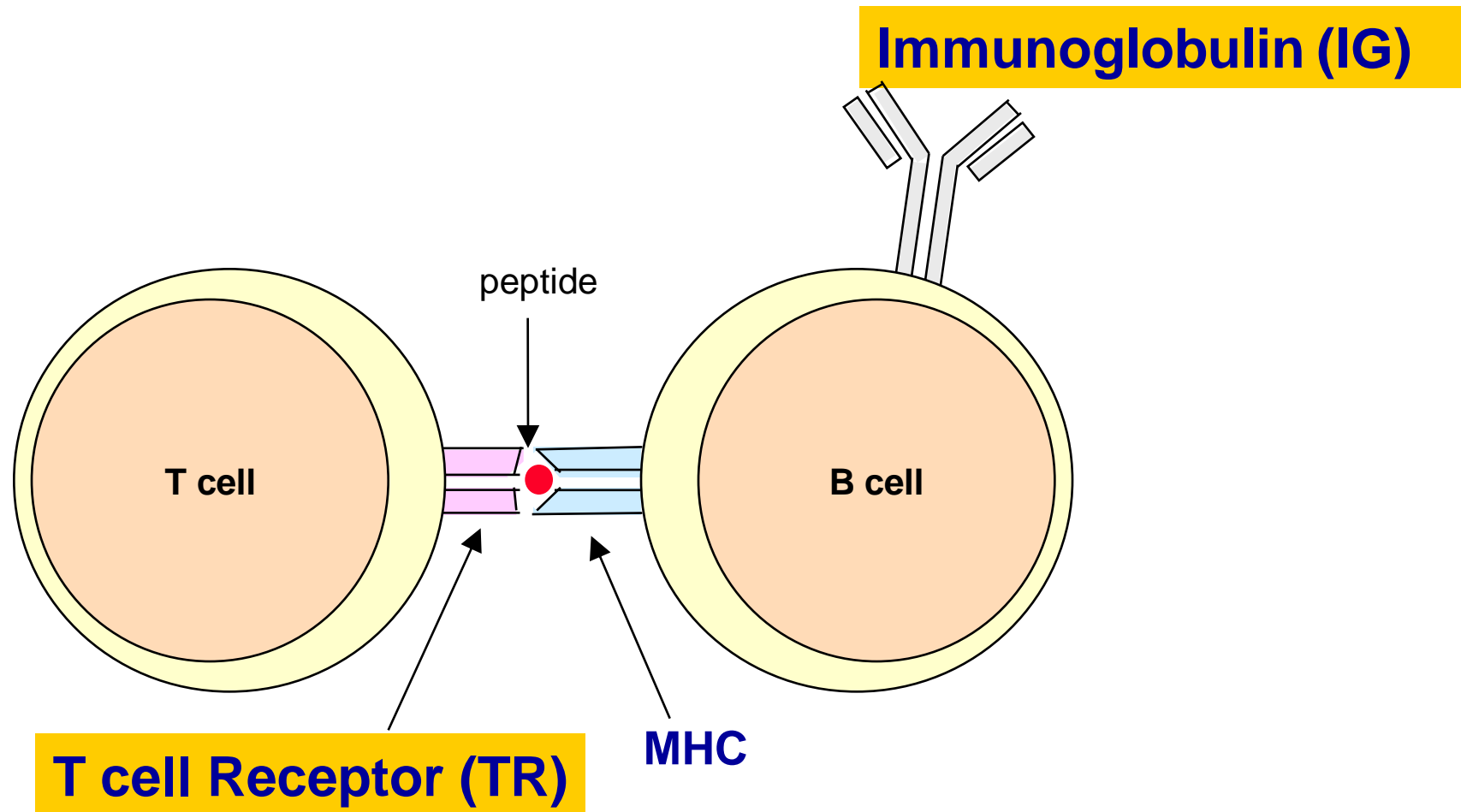
IMGT®, the international ImMunoGeneTics information system®

<http://www.imgt.org>
Montpellier, France

September 7 2010

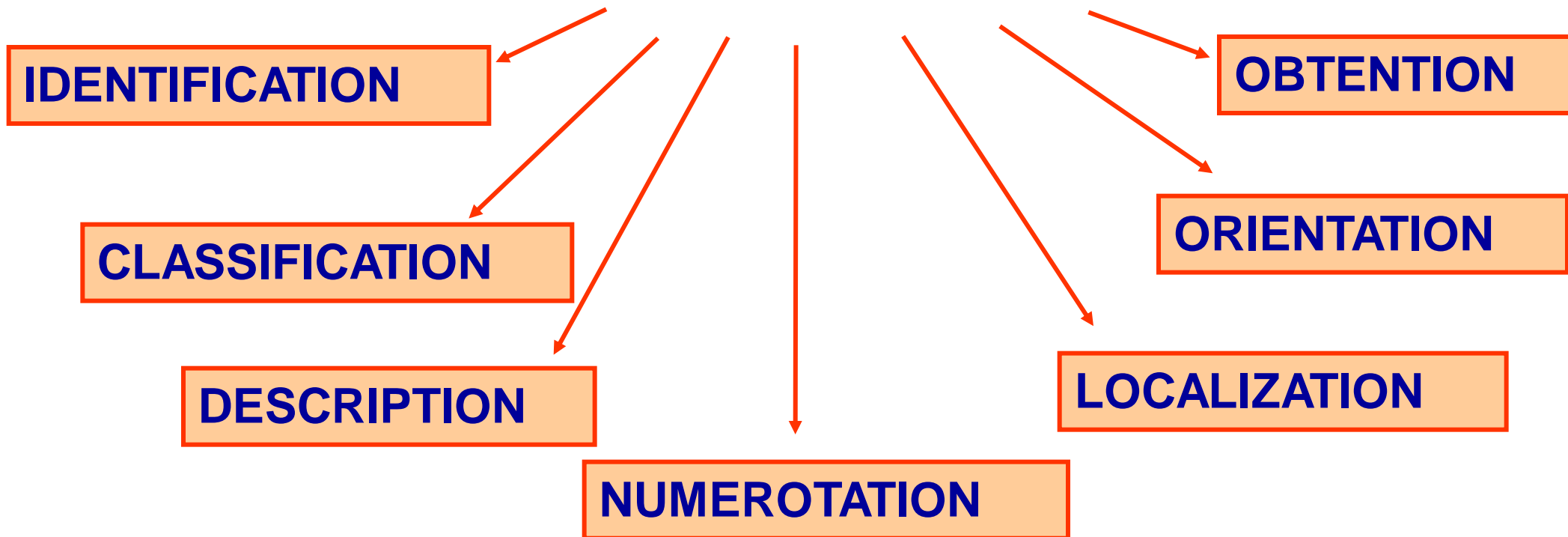
JOBIM 7-9 September 2010, Montpellier France

IMGT[®], the international ImMunoGeneTics information system[®] <http://www.imgt.org>

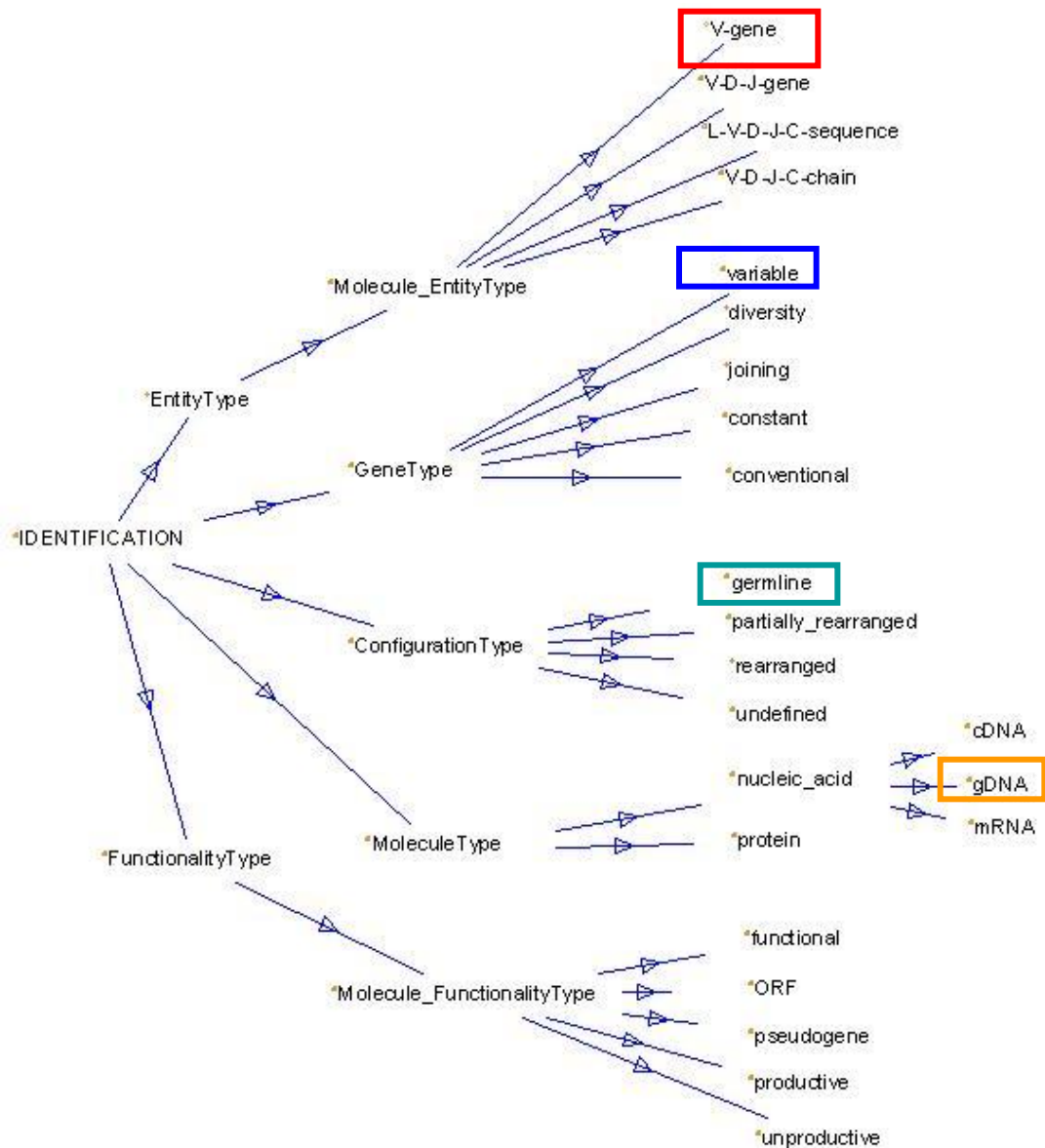


IMGT-ONTOLOGY seven axioms:

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



Concepts of IDENTIFICATION: IMGT® standardized keywords for sequences and structures of Immunoglobulins (IG) and T cell receptors (TR)



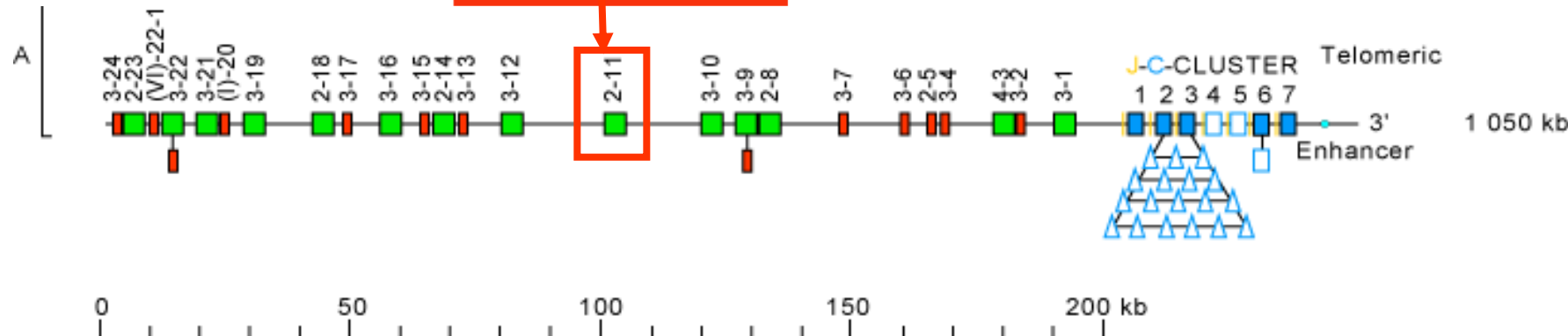
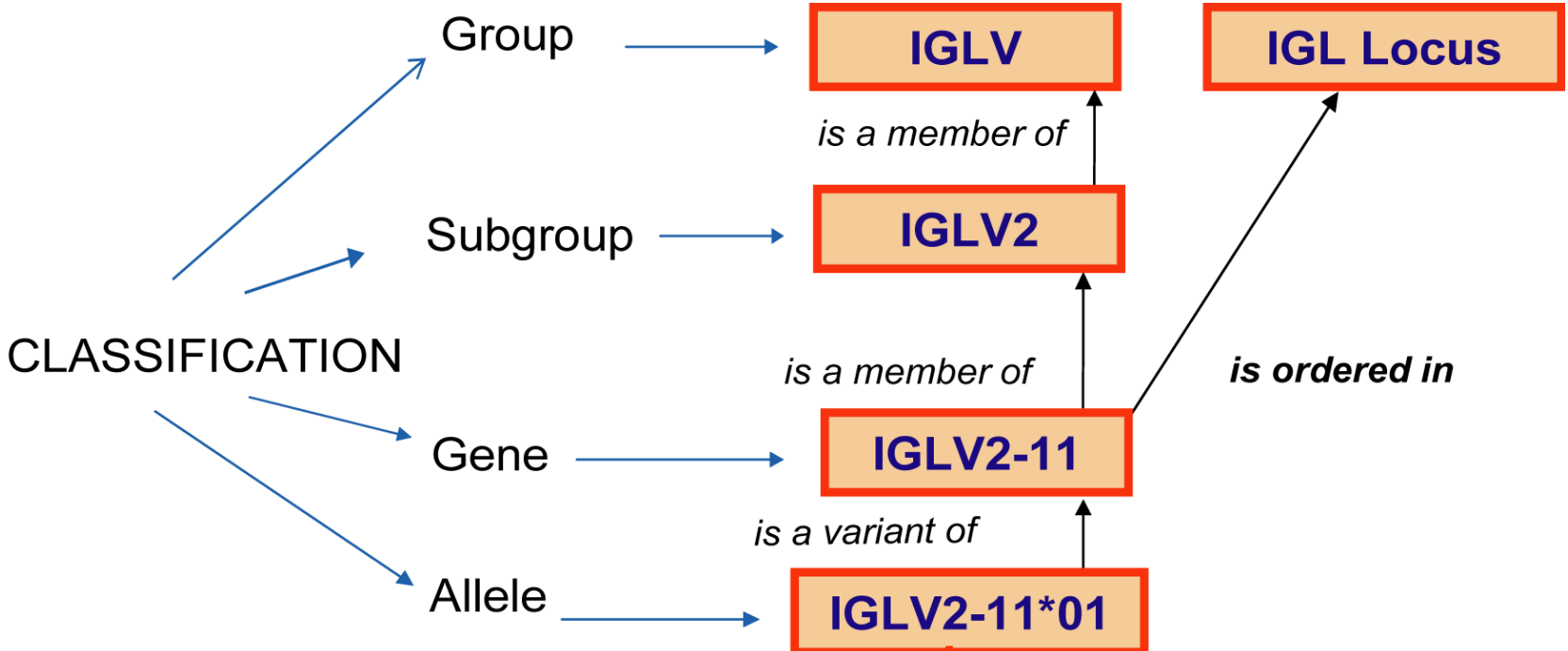
IMGT/LIGM-DB flatfile

```

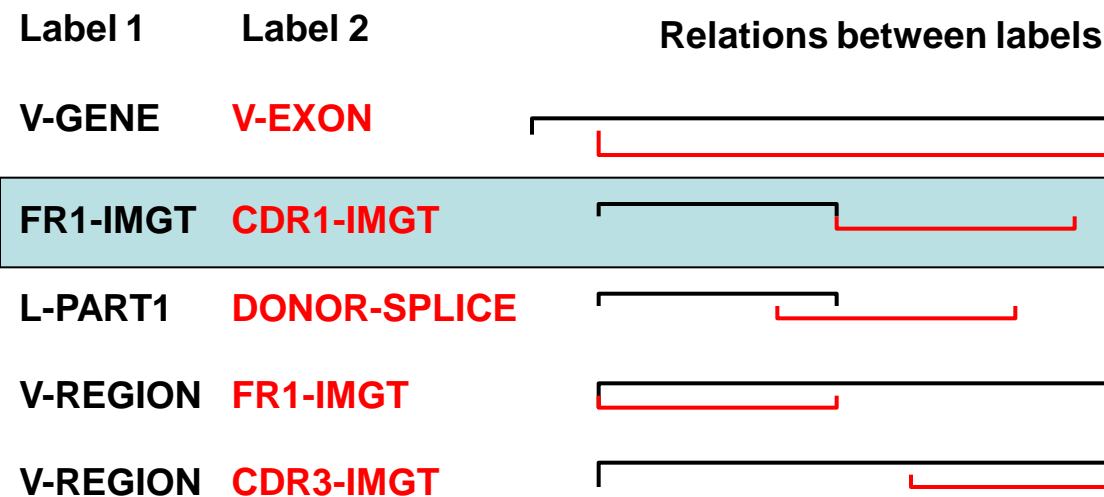
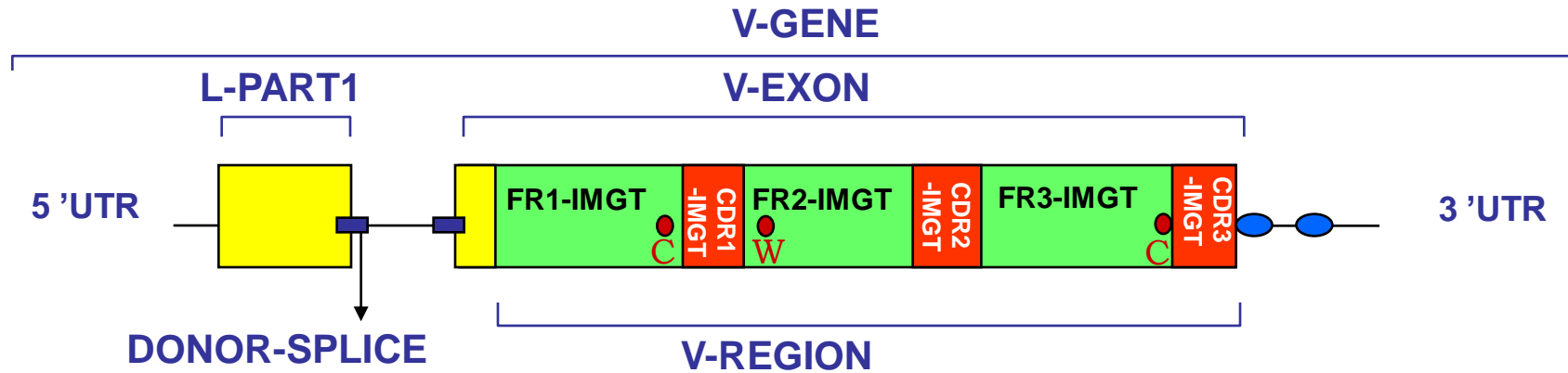
ID   X07448 IMGT/LIGM annotation : by annotators; genomic DNA; HUM; 618 BP.
XX
AC   X07448;
XX
DT   15-MAY-1995 (Rel. 2, arrived in LIGM-DB )
DT   20-OCT-2008 (Rel. 200843-1, Last updated, Version 10)
XX
DE   Human V35 gene for Ig heavy chain ;
DE   genomic DNA; germline configuration; Ig-Heavy; regular; functionality
DE   functional; group IGHV; subgroup HV1.
XX
KW   antigen receptor; Immunoglobulin superfamily (IgSF);
KW   immunoglobulin (IG); IG-Heavy variable; IMGT reference sequence; gDNA;
KW   germline; functional; V-gene.
XX
OS   Homo sapiens (human)
OC   cellular organisms; Eukaryota; Fungi/Metazoa group; Metazoa; Eumetazoa;
OC   Bilateria; Coelomata; Deuterostomia; Chordata; Craniata; Vertebrata;
OC   Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Tetrapoda;
OC   Amniota; Mammalia; Theria; Eutheria; Euarchontoglires; Primates;
OC   Haplorrhini; Simiiformes; Catarrhini; Hominoidea; Hominidae;
OC   Homo/Pan/Gorilla group; Homo.
XX
RN   [1]
RP   1-618
RX   PUBMED; 2841108.
RA   Matsuda F., Lee K.H., Nakai S., Sato T., Kodaira M., Zong S.Q., Ohno H.,
RA   Fukuhara S., Honjo T.;
RT   "Dispersed localization of D segments in the human immunoglobulin
RT   heavy-chain locus";
RL   EMBO J. 7(4):1047-1051(1988) .
XX
  
```

Concepts of CLASSIFICATION: IMGT® gene nomenclature

Human IGL locus (22q11.2)



Concepts of DESCRIPTION: IMG T[®] standardized labels and the topological relationships



IMG T/LIGM-DB flatfile

```

AC X07448;
...
FT V-REGION 269..564
FT /allele="IGHV1-2*01"
FT /gene="IGHV1-2"
FT /CDR_length="[8.8.2]"
FT FR1-IMG T 269..343
FT /AA_IMG T="1 to 26, AA 10 is missing"
FT 1st-CYS 332..334
FT CDR1-IMG T 344..367
FT /AA_IMG T="27 to 34"
FT /translation="GYTFTGY"
FT FR2-IMG T 368..418
FT /AA_IMG T="39 to 55"
FT /translation="MHWVRQAPGQGLEWMGR<<
.....
    
```

Conclusion

- The concepts and rules of IMGT-ONTOLOGY are crucial to ensure :
 - **the accuracy and consistency** of IMGT® data
 - **the coherence** between the different IMGT® components (databases, tools and Web resources)
- IMGT-ONTOLOGY is being **formalized in OWL**, available on:
 - IMGT Downloads site (<http://www.imgt.org/textes/IMGTdownloads.html>)
 - NCBO bioportal Web site (<http://bioportal.bioontology.org/>)
- The approach developed for IMGT-ONTOLOGY can also be **applied at multi-scale levels** (molecule, cell, tissue, organ, organism or population level) and **for other application domains**.

For more details, for the presentation of the other axioms,
and for discussion: poster 11