

**WHO-IUIS Nomenclature Subcommittee for
Immunoglobulins and T cell receptors report
(58th IUIS Council Meeting, Washington D.C., USA, June 2011)**

1. The WHO-IUIS Nomenclature SubCommittee

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The WHO-IUIS Nomenclature SubCommittee for immunoglobulins and T cell receptors works in close collaboration with the IMGT Nomenclature (IMGT-NC) SubCommittee for the immunoglobulin superfamily (IgSF) and the major histocompatibility superfamily (MhSF), the Human Genome Organisation (HUGO) Nomenclature Committee (HGNC), the Mouse Genomic Nomenclature Committee (MGNC), the Nomenclature Committees of newly sequenced genomes, the national and international Immunology, Immunogenetics and Genetics Societies, the editors and publishers for recommendations to Authors.

2. Report 2011

The WHO-IUIS Nomenclature SubCommittee for immunoglobulins and T cell receptors follows the rules for the nomenclatures, as described in the IMGT Scientific chart, <http://www.imgt.org> [1]. These rules, based on the axioms and concepts of IMGT-ONTOLOGY [2,3], were summarized in the WHO-IUIS Nomenclature Subcommittee Report 2007 [4,5],

The standardization of the IG and TR genes and alleles by the IMGT-NC and the WHO-IUIS Nomenclature SubCommittee for immunoglobulins and T cell receptors represents a major breakthrough in immunogenetics. The WHO-IUIS-IMGT IG and TR gene names are the official reference for the genome projects and, as such, have been entered in ‘Gene’ and ‘MapView’ at the National Center for Biotechnology Information (NCBI), in ‘Ensembl’ at the European Bioinformatics Institute (EBI), and in the Vertebrate Genome Annotation (Vega) Browser at the Wellcome Trust Sanger Institute.

The IG and TR genes and alleles are managed in the IMGT/GENE-DB [6]. In June 2011, IMGT/GENE-DB contains 2769 genes from 15 species (that include 687 from human, 889 from mouse, 561 from rat, etc.) and 3866 alleles (that include 1286 from human, 1338 from mouse, 565 from rat, etc.). IMGT/GENE-DB comprises genes and alleles for the seven loci (IGH, IGK, IGL, TRA, TRB, TRG and TRD). The IG and/or TR genes from 50 other species are currently available in the IMGT Repertoire in “Gene tables” and in “Alignment of alleles”. For genes not yet localized in the loci or for incomplete loci, a provisional nomenclature has been assigned. With the completion of the genomes and the sequence annotation, these genes will be progressively entered in IMGT/GENE-DB.

Antibodies represent a large number of the pharmaceutical substances submitted to the WHO/International Nonproprietary Names (WHO/INN) Programme [7]. The INN definition of antibodies is based on the IMGT-

ONTOLOGY concepts of classification (nomenclature), description (labels) and numerotation (IMGT unique numbering). Thus the INN definition provides the closest V and J genes and alleles corresponding to the amino acid sequences with, for the humanized (-zumab INN suffix) and human (-umab INN suffix) antibodies, the percentage of identity of the V regions. Amino acid changes of the constant region, by comparison with the reference alleles (and expected allotypes), and those of the FR4-IMGT, by comparison with the closest germline J genes and alleles, are indicated based on the IMGT numbering per domain [8]. This information is obtained with the IMGT/DomainGapAlign tool (<http://www.imgt.org>) that aligns the amino sequences with the IMGT domain reference directory [9]. Results from this tool are widely used for antibody engineering and humanization design as they allow to precisely define and to easily compare amino acid sequences of the FR-IMGT and CDR-IMGT, between the nonhuman (mouse, rat...) and the closest human V domains.

Since 2008, amino acid sequences of monoclonal antibodies (mAb, suffix -mab) and of fusion proteins for immune applications (FPIA, suffix -cept) from WHO/INN have been entered in IMGT® [10]. These therapeutic applications emphasize the importance of the IMGT-ONTOLOGY concepts in bridging the gap between antibody sequences, 2D and 3D structures and in nomenclature standardization promoted by the WHO-IUIS SubCommittee for immunoglobulins and T cell receptors.

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