**IMGT-ONTOLOGY**

Véronique Giudicelli, Laëtitia Regnier, Géraldine Folch, Joumana Jabado-Michaloud, Fatena Bellahcene, Chantal Ginestoux, Elodie Gemrot, Yan Wu, Xavier Brochet, Jérôme Lane, Gérard Lefranc, François Ehrenmann, Patrice Duroux and Marie-Paule Lefranc

Laboratoire d’ImmuNoGénétiq Muléaire (LIGM), Institut de Généétique Humaine (IGH), UPR CNRS 1142, Montpellier (France)

**The IMGT® information system**

The IMGT®, the international ImMunoGeneTics information system (http://imgt.cines.fr) is based on the IMGT-ONTOLOGY concepts. These concepts were generated through the seven axioms of the Formal IMGT-ONTOLOGY or IMGT-Kaleidoscope.

The Formal IMGT-ONTOLOGY or IMGT-Kaleidoscope comprises seven axioms, "IDENTIFICATION", "CLASSIFICATION", "DESCRIPTION", "LOCALIZATION", "NUMEROTATION", "ORIENTATION" and "OBTENTION". These axioms postulate that objects, processes and relations have to be identified, described, classified, numerotated, localized, orientated, and the way they are obtained, determined. The Formal IMGT-ONTOLOGY represents a paradigm for system biology ontologies, which need to identify, to describe, to classify and to numerotate objects, processes and relations at the molecule, cell, tissue, organ or population levels.

**IMGT-Kaleidoscope axioms**

The "Molecule_ElementType" concept is a major concept of identification. It is defined by the "MoleculeType", "GeneType" and "ConfigurationType" concepts of identification and has relations with the "Functionality" and "StructureType" concepts.

**DESCRIPTION**

**CLASSIFICATION**

**NUMEROTATION**

Graphical representation of two instances of the "Molecule_EntityPrototype" concept. Twenty-five motifs and ten relations are necessary and sufficient for a complete description of these instances.

Graphical representation of the formal concepts and relations of the IMGT-ONTOLOGY or IMGT-Kaleidoscope. The IMGT_Unique numbering concept is illustrated by the "IMGT_Collier_de_Perles" concept which allows the graphical representation in two dimensions (2D) of the amino acid sequences of V, C or G type domains and comprises three concept instances.

©2008 C. Ginestoux and M.-P. Lefranc