

## REPORT OF THE IUIS NOMENCLATURE SUBCOMMITTEES (2012-2013)

### **Nomenclature subcommittee on CD molecules**

Chair: Pablo Engel (pengel@ub.edu)  
University of Barcelona (Spain)

Website: [www.HCDM.org](http://www.HCDM.org)

List of committee members

Pablo Engel  
(President HCDM and IUIS Nomenclature Chair)  
Georgina Clark  
(Chair of HLDA10)

Robert Balderas (USA)  
Armand Bensussan (France)  
Georgina Clark (Australia)  
Gilbert Faure (France)  
David Fox (USA)  
Valter Gattei (Italy)  
Bo-Quan Jin (China)  
Frank Mortari (USA)  
Hannes Stockinger (Austria)  
Menno C. van Zelm (The Netherlands)  
Heddy Zola (Australia)

A new member from Japan will be elected during the 15th ICI in Milan 2013.

### **I. Objective**

To establish the nomenclature leukocyte cell-surface molecules and other cell-surface molecules of the immune system

### **II. Recent Accomplishments**

- The HLDA10 Workshop, organized by Dr. Georgina Clark (Sidney, Australia) has started. Submission of monoclonal antibodies dead-line is December 2013.

- A new HCDM/HLDA web [www.hcdm.org](http://www.hcdm.org) has been constructed. The contribution of the IUIS is acknowledged at the web page.

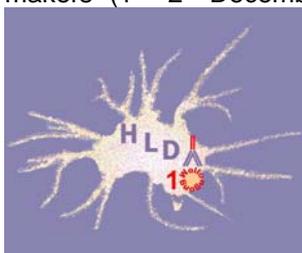
- This web page will contain information not only about submitted antibodies but also about the structure and function of cell-surface molecules, and the application of mAbs for the diagnosis and therapy.

### **III. Ongoing Projects**

- Publish an updated of the CD molecule nomenclature in Frontiers of Immunology.

### **IV. Future Directions**

-HLDA10 Conference to be held in Wollongong (Australia), its focus will be "Dendritic cell makers" (1<sup>st</sup>- 2<sup>nd</sup> December 2014)



- Generate a data base of actual expression profiles by FACS analysis of all CD molecules on normal and tumor cells.

### **Nomenclature subcommittee on allergen**

Chair: Heimo Breiteneder ([heimo.breiteneder@meduniwien.ac.at](mailto:heimo.breiteneder@meduniwien.ac.at))

University of Vienna

Web page: [www.allergen.org](http://www.allergen.org)

List of committee members:

Naveen Arora (India)  
Luisa Karla Arruda (Brazil)  
Martin D. Chapman (USA)  
Fatima Ferreira (Áustria)  
Thomas Holzhauser (Germany)  
Viswanath P. Kurup (USA)  
Jørgen N. Larsen (Denmark)  
Jonas Lidholm (Sweden)  
Kåre Meno (Denmark)  
Andreas Nandy (Germany)  
Anna Pomés (USA)  
Christian Radauer (Austria)  
Monika Raulf-Heimsoth (Germany)  
Wayne R. Thomas (Australia)  
Marianne van Hage (Sweden)  
Ronald van Ree (The Netherlands)  
Stefan Vieths (Germany)

#### **I. Objective**

To establish a system for nomenclature of allergens and is composed of leading experts in allergen characterization, structure, function, molecular biology, and bioinformatics.

#### **III. Ongoing Projects**

Reviewing of new allergen submissions  
Revision of older database entries  
Curation of database  
Sub-committee meetings twice a year  
Correction of older database entries where necessary

#### **IV. Future Directions**

Installation of an online submission form (at present we have a downloadable one)  
Installation of an on-line reviewing system  
Link allergen database to UniProt database  
Link allergen database to Immune Epitope Database (IEDB)  
Publication of changes in older database entries  
Publication of a position paper

### **Nomenclature of Monocytes and Dendritic Cells in Blood Subcommittee**

*Chair:* Loems Ziegler-Heitbrock ([ziegler-heitbrock@helmholtz-muenchen.de](mailto:ziegler-heitbrock@helmholtz-muenchen.de))

Helmholtz Zentrum München (Germany)

List of subcommittee members

Petronela Ancuta (Canada)  
Suzanne Crowe (Australia)  
Marc Dalod (France)  
Veronika Grau (Germany)  
Derek N. Hart (Australia)  
Pieter J.M. Leenen (The Netherlands)  
Yong-Jun Liu (USA)  
Gordon MacPherson (UK)  
Gwendalyn J. Randolph (USA)  
Juergen Scherberich (Germany)  
Juergen Schmitz (Germany)  
Ken Shortman (Australia)  
Silvano Sozzani (Italy)  
Herbert Strobl (Austria)  
Marek Zembala (Poland)  
Jonathan M. Austyn (UK)  
Manfred B. Lutz (Germany)

### **I. Objective**

Establish the nomenclature of monocytes and dendritic cell subsets.

### **II. Recent Accomplishments**

- Use of the new nomenclature

The crucial paper for the new nomenclature is the publication in BLOOD journal in 2010<sup>1</sup>

As of April 30th, 2013 this paper has been referenced more than 130 times. In order to reflect the use of the new nomenclature for monocytes we searched in Google Scholar for publications that use the terms “nonclassical monocyte or classical monocyte” and this revealed 179 publications. For the intermediate monocytes a series of about 20 articles has appeared since its delineation in the original nomenclature document. Hence the new terminology for monocytes has been widely accepted.

As a criterion to track the use of the new nomenclature for DCs we performed a search in Google Scholar for “CD1c+ myeloid DC” and this revealed 33 publications. What was used more commonly was the term CD1c+ DC (156 times). It appears that the DC terminology has not been used as much when it comes to the word “myeloid”. This is fine since this additional term is not necessary as long as CD1c+ is used to unequivocally define this DC subset as compared to the CD141+ DCs (mentioned 63 times).

Hence it appears that the new nomenclature is spreading in the community.

- New activities in 2012 included a review on monocyte subsets in *Frontiers in Inflammation* (Ziegler-Heitbrock, L, Hofer, TPJ: Toward a refined definition of blood monocytes, **Frontiers in Inflammation**, 4: 23, 2013).

### **III. Ongoing Projects**

Updating the new nomenclature

- For monocytes the original nomenclature document has listed proliferating monocytes and 6-sulfo LacNAc+ and FcεpsilonRI+ monocytes as potential future additions. To date no additional manuscripts, which characterise FcεpsilonRI+ monocytes, have appeared.

For the 6-sulfo LacNAc+ monocytes two papers have appeared and both continue to address these cells as dendritic cells (Dobel, Blood, 2013, Micheletti, JLB, 2013) although the reagent used is mentioned as MDC8+ monocyte isolation kit (see Micheltti, JLB, 2013). What would be required for the nomenclature committee in order to make a statement on the nature of the SLAN+ cells as monocytes is a publication defining with additional technology the monocyte

features of these cells. This would extend the previous single report (Siedlar, Immunobiology, 202:11, 2000) on this issue.

- Recently several additional papers on the Tie2 cells have appeared (Schauer, Plosone 7: e4450, 2012; Matsubara, Hepatology, 57:1416, 2013; Goede, Cancer Invest, 30:225, 2012, Patel, EMBO Mol Med, in press). Schauer (Plosone 7: e4450, 2012) noted that intermediate monocytes and not TIE2+ monocytes can be used for diagnostics of colon cancer. Here TIE2 expression was determined within the intermediates and only the cells, which localize to the right of the isotype control, were taken as positives (see below). This is, however, a misconception since also the cells overlapping with the isotype control are positive (see red shaded area). In this context the committee chair has had discussions with the Zawada team and strategies to confirm the identity of the cells defined either as Tie2+ or intermediate monocytes have been discussed.

- Two papers (Meredith, JEM, 2012 and Satpathy, JEM, 2012) have described the Zbtb46 molecule as marker expressed by mouse CD4+ and CD8+ DCs but not by plasmacytoid DCs in blood and spleen. Interestingly this marker was also found with the same pattern in human blood DCs. Here discussions are underway as to whether a consensus on the mouse blood DCs and their preferred markers can be reached. However, the Zbtb46 protein is a transcription factor and therefore not readily accessible by flow cytometry. To this end a working cartoon has been used (see below).

#### **IV. Future Directions**

The next meeting to review the nomenclature is projected for 2014 during the conference of the European Macrophage and Dendritic Cell Society in Vienna or in 2015 the latest.

#### **Nomenclature subcommittee on B cells and plasma cells**

Chair. Ignacio Sanz ([ignacio.sanz@emory.edu](mailto:ignacio.sanz@emory.edu))

Emory University (USA)

List of members of this subcommittee:

Thomas L Rothstein (USA)  
Thomas F. Tedder (USA)  
Max D. Cooper (USA)  
Claudia Mauri (UK)  
Stuart G Tangye (Australia)  
Ralf Küppers (Germany)  
Mark J Shlomchik (USA)  
Frances Lund (USA)  
Jean-Claude Weill (France)  
Thomas Dörner (Germany)  
Andreas Radbruch (Germany)  
Frances Eun-Hyung Lee (USA)

#### **I. Objective**

The main goal of this committee is to establish a nomenclature on B cell and plasma subsets.

#### **II. Ongoing Projects and Future directions**

The B cell nomenclature subcommittee will convene via conference call in the fall of 2013 to:

- 1) establish the general mandate, vision and specific goals of the subcommittee;
- 2) define the scope of work to be performed;
- 3) propose a working classification of human B cell populations;
- 4) define the literature and experimental sources required for the identification of canonical populations representing distinct stages of human B cell differentiation as well as discreet

subsets representing different lineages (B1, marginal zone, follicular and extra-follicular), activated, inhibited and exhausted subsets;  
5) define the burden of proof required for the cross-validation of flow cytometry staining and analysis.

### **Nomenclature subcommittee on The Immunoglobulins (IG), T Cell Receptors (TR) and Major Histocompatibility (MH)**

Chair: Marie-Paule Lefranc ([Marie-Paule.Lefranc@igh.cnrs.fr](mailto:Marie-Paule.Lefranc@igh.cnrs.fr))

Université Montpellier (France)

Web page: [www.imgt.org](http://www.imgt.org)

List of subcommittee members

Donald Capra (USA)  
Max Cooper (USA)  
Tasuku Honjo (Japan)  
Leroy Hood (USA)  
Gérard Lefranc (France)  
Fumihiko Matsuda (Japan)  
Hans Zachau (Germany)  
Cynthia L. Baldwin (USA)  
Eva Bengtén (USA)  
Pierre Boudinot (France)  
Felix Breden (Canada)+  
Salvatrice Ciccarese (Italy)  
Deborah Dunn-Walters (UK)  
Jean-Pol Fricpiat (France)  
Evelyne Jouvin-Marche (France)  
Véronique Laurens (France)  
Serge Muyldermans (Belgium)  
Jamie Scott (Canada) +  
Bettina Wagner (USA)  
Corey T. Watson (USA) +

+ new members. Three new members, Felix Breden and Jamie Scott both from Vancouver (Canada) and Corey T. Watson from New York (USA) joined the Sub-Committee during the year. The other members remained unchanged.

#### **I. Objective**

The goal of this Sub-Committee and IMGT-NC is the standardization of the immunoglobulins (IG), T cell receptors (TR) and major histocompatibility (MH) genes and alleles from any vertebrates from fish to humans.

#### **II. Recent Accomplishments**

1) In June 2013, IMGT/GENE-DB, the IMGT® gene database contained 3,081 IMGT genes and 4,687 alleles from 17 species.

- 694 IG and TR genes and 1,420 alleles for *Homo sapiens*
- 868 IG and TR genes and 1,1318 alleles for *Mus musculus*.

Standardized rules for the description of MH class I (MH1) and MH class II (MH2) from any vertebrate from fish to mammals were established last year and used for creating the nomenclature of MH1 and MH2 genes of *Onchorhynchus mykiss*. Seven MH genes and 237 alleles were entered in IMGT/GENE-DB (4 MH1 genes and 91 alleles and 3 MH2 genes and 146 alleles). This nomenclature proves its usefulness, it is highly standardized and easy to apply and can be used for any species. It considerably simplifies the field as MH1 and MH2 are used systematically in the gene names and replaces 'MHC class I' and 'MHC class II' when

referring to the sequences, genes and tridimensional structures. MH-like genes are not included in the MH nomenclature, instead they are part of the related proteins of the immune system (RPI) in the RPI-MH1Like group.

Genes and alleles (and subgroups for IG and TR) are systematically associated to a species, for example *Homo sapiens* IGHV1 subgroup, *Homo sapiens* IGHV1-2 gene, *Homo sapiens* IGHV1-2\*01 allele, *Oncorhynchus mykiss* MH1-A gene, *Oncorhynchus mykiss* MH2-DB1\*01 allele. When abbreviated names are necessary (e.g., in tables or figures, the 6-letter format (3 first letters from the genus name and 3 first letters from the species name) is used: Homsap (for *Homo sapiens*), Oncmyk (for *Oncorhynchus mykiss*) with the full name indicated in the legend.

2) The IMGT booklet (11 papers, 144 pages) edited by Cold Spring Harbor Protocols (CSHP) has been largely publicized by the Sub-Committee (the content of this booklet was detailed in the 2012 Sub-Committee report). CSHP specifically edited the IMGT booklet for educational purposes and authorized IMGT® to have it freely available on the IMGT® site <http://www.imgt.org> (available in 'IMGT References'). CSHP also authorized that the IMGT booklet be printed and distributed freely. IMGT® databases and tools described in these chapters use the WHO/IUIS/IMGT nomenclature approved by Human Genome Organization (HUGO) Nomenclature Committee (HGNC).

4) IMGT/HighV-QUEST, a web portal created in October/November 2010, is currently the only online tool freely available for academics for the analysis of Next Generation Sequencing (NGS) data for the study of repertoires of immunoglobulins and T cell receptors in normal and pathological situations (150.000 sequences per batch; statistical analysis up to 450.000 sequence results). IMGT/HighV-QUEST promotes the use of the WHO/IUIS/IMGT IG and TR nomenclature for genes and alleles.

### **III. Ongoing Projects and Future directions**

Perspectives for next year: 2014 will mark the 25 years of IMGT®, the international ImMunoGeneTics information system® (<http://www.imgt.org>), creation of which in New Haven in 1989, was at the origin of immunoinformatics.

Celebrations and events will be organized to promote IMGT® standardization, based on the IMGT-ONTOLOGY concepts of identification (standardized keywords), description (standardized labels), classification (gene and allele nomenclature) and numerotation (IMGT unique numbering and IMGT Collier de Perles). These concepts have been crucial in the development of immunoinformatics which are more necessary than ever in immune repertoire NGS studies.

### **KIR Nomenclature Sub-Committee**

*Chair:* Steve Marsh ([marsh@ebi.ac.uk](mailto:marsh@ebi.ac.uk))

Web page: [www.ebi.ac.uk/ipd/kir](http://www.ebi.ac.uk/ipd/kir)

This subcommittee keeps a database that provides a centralised repository for human KIR sequences. Killer-cell Immunoglobulin-like Receptors (KIR) have been shown to be highly polymorphic at the allelic and haplotypic level. KIRs are members of the immunoglobulin superfamily (IgSF) formerly called Killer-cell Inhibitory Receptors. They are composed of two or three Ig-domains, a transmembrane region and cytoplasmic tail which can in turn be short (activatory) or long (inhibitory). The Leukocyte Receptor Complex (LRC) which encodes KIR genes has been shown to be polymorphic, polygenic and complex like the MHC. Last update: 15-April-2011

**No reports were received from the following subcommittees:**

**MALT: Nomenclature of Mucosa-Associated Lymphoid Tissue Sub-Committee**

*Chair:* Per Brandtzaeg ([per.brandtzaeg@medisin.uio.no](mailto:per.brandtzaeg@medisin.uio.no))

Web page: [www.socmucimm.org](http://www.socmucimm.org)

**Interleukin Nomenclature Sub-Committee**

*Chair:* John Schrader ([john@brc.ubc.ca](mailto:john@brc.ubc.ca))