



ISAG . 2019

37th International Society for
Animal Genetics Conference

July 7 - 12, 2019 - Lleida, Spain

Comparative MHC Genetics: Populations and Polymorphisms

Organised by a standing committee: YES

Meeting information

Date: Tuesday, July 9, 2019

Time: 2:30 PM - 6:00 PM, Room 5

Number of participants: 40 to 50 (depending on the topics of the talks)

Chair

Name: Sabine E. Hammer

Affiliation: Institute of Immunology, University of Veterinary Medicine Vienna, Veterinärplatz 1, 1210 Vienna, Austria

Contact email: sabine.hammer@phylo-dat.net

Agenda

2:30 PM Welcoming Remarks for the workshop talks.

2:35 PM Invited Workshop Presentation: IPD-MHC Database: improving analysis tools to promote MHC research (80246). Presenter: John A. Hammond (The Pirbright Institute, Pirbright, Woking, Surrey, UK)

3:15 PM Nomenclature for factors of the Swine Leukocyte Antigen (SLA) system - Update 2019 (78439). Presenter: Sabine E. Hammer (Institute of Immunology, University of Veterinary Medicine Vienna, Vienna, Austria)

3:30 PM Target resequencing for bovine major histocompatibility complex region (79607). Presenter: Shin-nosuke Takeshima (Jumonji university, Niiza, Saitama and Nakamura Laboratory, Baton Zone Program, RIKEN Cluster for Science, Technology and Innovation Hub, Wako, Saitama, Japan)

3:45 PM Bovine leukemia virus proviral load were associated with bovine MHC DRB3 and DQA1 alleles in Japanese Holstein population from 2011 to 2014 (79785). Presenter: Yoko Aida

(Nakamura Laboratory, Baton Zone Program, RIKEN Cluster for Science, Technology and Innovation Hub, Wako, Saitama, and Viral Infectious Diseases Unit, RIKEN, Wako, Saitama, Japan)

4:00 PM Coffee/Tea Break (Foyer/Hall)

4:30 PM Assessing the genetic diversity of MHC-linked and non-MHC linked microsatellite markers in local chickens from four geographical regions (79804). Presenter: Prabuddha Manjula (Division of Animal and Dairy Science, Chungnam National University, Daejeon, Republic of Korea)

4:45 PM Effectiveness of bovine leukemia virus (BLV) infection control strategies using cattle carrying resistant and susceptible bovine MHC DRB3 alleles (79735). Presenter: Liushiqi Borjigin (Nakamura Laboratory, Baton Zone Program, RIKEN Cluster for Science, Technology and Innovation Hub, Wako, Saitama, Japan)

5:00 PM Characterization of bovine MHC DRB3 diversity in worldwide cattle breeds focusing on Myanmar cattle (79656). Presenter: Guillermo Giovambattista (Nakamura Laboratory, RIKEN Baton Zone Program, RIKEN Industrial Co-creation Program, Wako, Saitama, Japan and IGEVET - UNLP-CONICET LA PLATA, Facultad de Ciencias Veterinarias UNLP., La Plata, Buenos Aires, Argentina)

5:15 PM Determination of MHC haplotypes in pure breed Spanish horses using microsatellites (80019). Presenter: Laura Barrachina (Laboratorio de Genética Bioquímica LAGENBIO and Servicio de Cirugía y Medicina Equina, Hospital Veterinario, Universidad de Zaragoza, Zaragoza, Spain)

5:30 PM Workshop Business Meeting.

1. Standing Committee Business

1.1. Election of chair

1.2. Committee Candidates

1.3. Moving from chair to member

1.4. Leaving Committee

2. General discussion about topics of interest

3. Ideas about the future

4. Plans for future conferences

4.1. IVIS Comparative MHC workshop (August 14th, 2019)

5. Any other business

Summary of the meeting

Standing Committee Business

Keith T. Ballingall's (The Moredun Research Institute, Edinburgh, UK) term of service ends 2019 and he stepped back as chair of the Comparative MHC Nomenclature committee. John Hammond (The Pirbright Institute, Pirbright, UK) agreed to take over as and was nominated, seconded and duly elected to serve as chair of the committee until 2023. Sabine Hammer (University of Veterinary Medicine, Vienna, Austria) was nominated, seconded and duly elected as a new member to serve on the Standing Committee. Keith T. Ballingall moved from chair to member and Shirley Ellis and Bertrand Bed'Hom left the committee. Updated committee roster is listed in this report in the below section "Committee members".

Future meetings

Workshop format: To increase the workshop's attraction, it was discussed to fill a 15 min time slot with 3 lightning talks (5 min each) of PhD candidates and/ or 5 poster presentations (3 min each with 1-2 slides). *VIC MHC Workshop:* At the International Veterinary Immunology Symposium (IVIS 2019, 13-16 August, Seattle, WA, USA), the concurrent session for the VIC MHC Workshop was held in the afternoon of the 14th of August and chaired by Keith T. Ballingall.

Pre-conference workshop: For the ISAG 2021 meeting, a one-day (one-afternoon) pre-conference workshop was discussed. Potential topic could be how to deal and handle NGS-derived MHC typing data. The target group primarily should be early career scientists. Most likely, for some of them, travel bursaries could be provided.

Recent updates to the IPD-MHC Database

(Report by Giuseppe Maccari and John Hammond, The Pirbright Institute, Pirbright, UK and Anthony Nolan Research Institute, ANRI, Royal Free Hospital, London, UK)

Tools added or updated

The IPD-MHC Database provides improved tools for the inter- and intra- species comparison of MHC data. The alignment tool allows to group together sequences by resolution, allowing a fast interrogation of large alignments. The submission tool has been revisited to provide an improved support to the user by automating the import of data from biological sequence databases (ENA, GENBANK, DDBJ).

Changes in nomenclature

A number of changes were made in the organism name assignment nomenclature to address a number of historical issues in the MHC nomenclature. The alleles belonging to Ovins taxonomic group are now represented with the four-letter code 'Ovar' to distinguish between the species belonging to that group: *Ovis aries* and *Ovis canadensis*. In the Bovins taxonomic group, *Bos taurus* and *Bos indicus* were previously represented as separated species, each with its own unique four-letter code. In this version of the database *B. taurus* and *B. indicus* share the name BoLA because many of the animals designated *B. indicus* are hybrids. Furthermore, in order to facilitate inter

species comparison, all taxonomic groups within the IPD-MHC Database now adopt guidelines from HLA nomenclature. Allele names have a unique identifier formed by four sets of digits, separated by colons which identifies alleles differing at protein, cDNA and genomic level.

Number of groups added

With the recent addition of the Capra taxonomic group, comprising goat species (CLA), the IPD-MHC database provides an official nomenclature for the majority of farmed species in the UK. Farmed species are an integral component of the food security agenda and improving their genetics has enormous potential to increase sustainable production and reduce economic burdens.

Statistics (no. submissions, no. visits)

Since its recent redesign, the IPD-MHC database is attracting an increasing number of users, measurable in number of submission and access per year. In 2017 and 2018 the database has double the number of access, registered more than 200,000 visits. Furthermore, more than 14,000 sequences were submitted and almost 10,000 alleles were officially named, with an increasing number of genomic sequences submitted to the database, improving the quality and the quantity of data available.

Committee chair (the new chair)

Chair: John A. Hammond
Term of service: 2019 until 2023
Affiliation: The Pirbright Institute, Pirbright, Woking, Surrey, UK
E-mail address: john.hammond@pirbright.ac.uk

Committee members (the new committee)

The committee composition remains essentially the same with rolling appointments for species-specific IPD-MHC curators along with a number of new members.

Species-specific IPD MHC curators	Term of Service	Email address	Species
Keith Ballingall	rolling	keith.ballingall@moredun.ac.uk	Ovine/Past Chair
Mike Stear	rolling	m.stear@vet.gla.ac.uk	Ovine/Bovine
Chris Davies	rolling	chris.davies@usu.edu	Ruminants/Past Chair
Shin-nosuke Takeshima	rolling	takesima@riken.jp	Ruminants

Donald Miller	rolling	dm96@cornell.edu	Equine
Tomas Bergström	rolling	Tomas.Bergstrom@slu.se	Equine
Chak-Sum Ho	rolling	sho@giftofhope.org	Swine
Sabine E. Hammer	rolling	sabine.hammer@phylo-dat.net	Swine/new
Unni Grimholt	rolling	Unni.Grimholt@vetinst.no	Fish
Jim Kaufman	rolling	jfk31@cam.ac.uk	Chicken
Lorna Kennedy	rolling	Lorna.Kennedy@manchester.ac.uk	Canine/Feline
Lutz Walter	rolling	lwalter@gwdg.de	Rat
Ronald Bontrop	rolling	img@bprc.nl	Non-human primates
Steven Marsh	rolling	steven.marsh@ucl.ac.uk	IPD-MHC/HLA

COMPARISON TEST (2018-2019) NO