



Genetics of Immune Response and Disease Resistance

Organised by a Standing Committee: YES NO

Meeting information

Date: July 30, 2021
Time: 1300-1615 CDT
Number of participants: peak 75 (42 at end of talks at 16.00)

Co-Chair

Name: Graham Plastow
Affiliation: Dept. of Agricultural, Food & Nutritional Science, University of Alberta
Contact email: plastow@ualberta.ca

Co-Chair

Name: Chris Tuggle
Affiliation: Department of Animal Science, Iowa State University
Contact email: cktuggle@iastate.edu

Agenda

1:00 PM	W247	<p>Invited Workshop Presentation: Genome-wide association study of disease resilience traits from a natural polymicrobial disease challenge model in pigs identifies the importance of the MHC. Jian Cheng¹, Rohan Fernando¹, Hao Cheng², Stephen D. Kachman³, Kyu-Sang Lim¹, John C. S. Harding⁴, Michael K. Dyck⁵, Frederic Fortin⁶, Graham S. Plastow⁵, PigGen Canada⁷, and Jack C. M. Dekkers*¹, ¹<i>Department of Animal Science, Iowa State University, Ames, IA, United States</i>, ²<i>Department of Animal Science, University of California, Davis, CA, United States</i>, ³<i>Department of Statistics, University of Nebraska-Lincoln, Lincoln, NE, United States</i>, ⁴<i>Department of Large Animal Clinical Sciences, University of Saskatchewan, Saskatoon, SK, Canada</i>, ⁵<i>Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada</i>, ⁶<i>Centre de Développement du Porc du Québec Inc., Québec City, Canada</i>, ⁷<i>PigGen Canada Research Consortium, Guelph, Ontario, Canada</i>.</p>
1:30 PM	W248	<p>Exploration of glucocorticoid and inflammatory responses in porcine PBMC to reveal mechanisms underlying the enhanced endotoxin sensitivity of GR^{Ala610Val} pigs. Eduard Murani*, Zhiwei Li, Frieder Hadlich, Nares Trakooljul, Siriluck Ponsuksili, and Klaus Wimmers, <i>Leibniz Institute for Farm Animal Biology (FBN), Dummerstorf, Germany</i>.</p>
1:40 PM	W249	<p>Genome wide association study of thyroid hormone suppression following challenge with porcine reproductive and respiratory syndrome virus. Angelica Van Goor¹, Alex Pasternak², Muhammed Walugembe³, Nadya Chehab¹, Glenn Hamonic⁴, Jack Dekkers³, Joan Harding*⁴, and Joan Lunney¹, ¹<i>USDA ARS BARC Animal Parasitic Diseases Laboratory, Beltsville, MD, USA</i>, ²<i>Department of Animal Science, Purdue Univ., West Lafayette, IN, USA</i>, ³<i>Department of Animal Science, Iowa State University, Ames, IA, USA</i>, ⁴<i>Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, SK, Canada</i>.</p>
1:50 PM	W250	<p>Molecular characterization of the serum amyloid A (SAA) mutation R90S in chicken hepatocellular carcinoma (LMH) cells. C Falker-Gieske*¹, NF Paul¹, JD Gilthorpe², K Gustmann¹, and J Tetens¹, ¹<i>Department of Animal Sciences, Georg-August-University, Göttingen, Germany</i>, ²<i>Department of Integrative Medical Biology, Umeå University, Umeå, Sweden</i>.</p>
2:00 PM	W251	<p>Ovine mastitis: Does early live nutrition influence immunity response in later life? C Hervás-Rivero, R Pelayo, B Gutiérrez-Gil, C Esteban-Blanco, H Marina, JJ Arranz, and A Suárez-Vega*, <i>Departamento de Producción Animal, Facultad de Veterinaria, Universidad de León, León, Castilla y León, Spain</i>.</p>
2:10 PM	W252	<p>The natural cytotoxicity receptor (NCR) genes in the family <i>Felidae</i>. J Bubenikova^{1,2}, J Futas^{1,2}, J Oppelt², M Plasil², R Vodicka³, and P Horin*^{1,2}, ¹<i>Dept. of Animal Genetics, University of Veterinary Sciences, Brno, Czech Republic</i>, ²<i>Ceitec VETUNI, University of Veterinary Sciences, Brno, Czech Republic</i>, ³<i>Zoo Prague, Prague, Czech Republic</i>.</p>
2:20 PM	W253	<p>Systemic transcriptomic response of sheep and cattle to acute and chronic <i>Fasciola hepatica</i> infection. D. A. Niedziela*¹, A. Naranjo-Lucena¹, V. Molina-Hernández², J. A. Browne³, Á. Martínez-Moreno⁴, J. Pérez², D. E. MacHugh^{3,5}, and G. Mulcahy^{1,5}, ¹<i>UCD School of Veterinary Medicine, University College Dublin, Dublin, Ireland</i>, ²<i>Department of Anatomy and Comparative Pathology and Toxicology, Faculty of Veterinary Medicine, University of Córdoba, Córdoba, Spain</i>, ³<i>Animal Genomics Laboratory, UCD School of Agriculture and Food Science, Dublin, Ireland</i>, ⁴<i>Parasitology section, Department of Animal Health, Faculty of Veterinary Medicine, University of Córdoba, Córdoba, Spain</i>, ⁵<i>UCD Conway Institute of Biomolecular and Biomedical Research, Dublin, Ireland</i>.</p>
2:30 PM		Break.
2:40 PM	W254	<p>Bimodal haplotype distribution in bovine anti-bacterial <i>TLRs</i>. Kalifa Samaké*¹ and Karel Novák², ¹<i>Charles University, Prague, Czech Republic</i>, ²<i>Institute of Animal Science, Prague-Uhrineves, Czech Republic</i>.</p>

2:50 PM	W255	<p>Variation in circulatory serum biomarkers in dairy heifers exposed to endotoxin indicate disparity in induced physiological responses.</p> <p>A Sharma*, T Sullivan, K Lamers, and N Karrow, <i>Department of Animal Biosciences, University of Guelph, Guelph, Ontario, Canada.</i></p>
3:00 PM	W256	<p>Transcriptomic analysis of host resistance to tick infestation with <i>Rhipicephalus microplus</i> in leukocytes of Brangus cattle.</p> <p>EF Mantilla Valdivieso*¹, E Ross¹, A Raza¹, B Hayes¹, N Jonsson², P James¹, and A Tabor¹, ¹<i>Queensland Alliance for Agriculture and Food Innovation, Queensland Alliance for Agriculture and Food Innovation, Brisbane, Queensland, Australia,</i> ²<i>Institute of Biodiversity Animal Health and Comparative Medicine, Institute of Biodiversity Animal Health and Comparative Medicine, Glasgow, UK.</i></p>
3:10 PM	S123	<p>Neiker Joint Presentation of abstracts W257, W258, and W259.</p> <p>M Canive, M Alonso-hearn, G Badia-Bringue.</p>
3:30 PM	W257	<p>Identification of loci associated with susceptibility to paratuberculosis in Holstein cattle using combinations of diagnostic tests and imputed whole-genome sequence data.</p> <p>M Canive*¹, G Badia-Bringue¹, O González-Recio^{2,3}, A Fernandez², P Vázquez¹, JM Garrido¹, RA Juste¹, and M Alonso-Hearn¹, ¹<i>Department of Animal Health, NEIKER- Basque Research and Technology Alliance (BRTA), Derio, Bizkaia, Spain,</i> ²<i>Departamento de Mejora Genética Animal, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, CSIC, Madrid, Spain,</i> ³<i>Departamento de Producción Agraria, Escuela Técnica Superior de Ingeniería Agronómica, Alimentaria y de Biosistemas, Universidad Politécnica de Madrid, Madrid, Spain.</i></p>
3:32 PM	W258	<p>The host genetic underlying pathological outcomes to <i>Mycobacterium avium</i> subsp. paratuberculosis infection is governed by distinct genetic variants.</p> <p>M Alonso-Hearn*¹, M Canive¹, G Badia-Bringue¹, O González-Recio^{2,3}, A Fernández^{2,3}, P Vázquez¹, JM Garrido¹, and RA Juste¹, ¹<i>NEIKER- Basque Research and Technology Alliance (BRTA), Derio, Bizkaia, Spain,</i> ²<i>Departamento de Mejora Genética Animal, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, CSIC, Madrid, Spain,</i> ³<i>Departamento de Producción Agraria, Escuela Técnica Superior de Ingeniería Agronómica, Alimentaria y de Biosistemas, Universidad Politécnica de Madrid, Madrid, Spain.</i></p>
3:34 PM	W259	<p>Alternative splicing modulates the immune response in peripheral blood and gut tissues of Holstein cattle naturally infected with <i>Mycobacterium avium</i> subsp. paratuberculosis.</p> <p>G Badia-Bringue*¹, M Canive¹, JL Lavín², R Casais³, C Blanco-Vázquez³, and M Alonso-Hearn¹, ¹<i>Department of Animal Health, NEIKER- Basque Research and Technology Alliance (BRTA), Derio, Bizkaia, Spain,</i> ²<i>Department of Applied Mathematics, NEIKER- Basque Institute for Agricultural Research and Development, Basque Research and Technology Alliance (BRTA), Derio, Bizkaia, Spain,</i> ³<i>SERIDA, Servicio Regional de Investigación y Desarrollo Agroalimentario, Center of Animal Biotechnology, Deva, Asturias, Spain.</i></p>
3:35 PM	W260	<p>Identification of and validation of loci associated with facial eczema tolerance in New Zealand sheep.</p> <p>K M McRae*, S J Rowe, P L Johnson, and S M Clarke, <i>AgResearch Limited, Mosgiel, New Zealand.</i></p>
3:45 PM		Workshop Business Meeting.

Summary of the meeting

One invited presentation (Jack Dekkers, 25 mins) and 13 short presentations of 10 minutes (although 3 from the same lab group were combined for 25 minutes) were selected from the 25 abstracts received (plus the invited presentation).

The workshop covered different examples of the analysis of immune response, disease susceptibility, resilience/resistance from several species: pigs (3), chicken (1), cattle (6), sheep (2), sheep and cattle (1) and Felidae (1).

The workshop illustrated very effectively the complexity of the trait, the opportunity to select for improved animal health, and the value of new tools to help make progress. The importance of planning and sampling for future assays (including transcriptomics, metabolomics, proteomics, and the microbiome which was not covered in the session) as cost reduces and genome annotation improves was underlined including more time points per experiment.

The ISAG team was congratulated for the organization of the conference and the virtual format created.

Even so it was felt that this workshop would be served better by a mix of presentation types including “Lightning presentations” for early career scientists as was done in 2019. Although the number of 10-15 minute talks would be reduced this would be compensated by the 5 min presentations achieving a better balance especially if more abstracts are received.

The retiring members were thanked for their service and replacements sought within the guide of 5-9 members. As an odd number was preferred it was agreed to put forward four new members who were nominated or who volunteered: Marta Alonso-Hearn (NEIKER- Basque Research and Technology Alliance (BRTA), Derio, Bizkaia, Spain), Kathryn McRae (AgResearch Limited, New Zealand), Eduard Murani (Research Institute for Farm Animal Biology (FBN), Dummerstorf, Germany), and Tavsief Ahmad (Faculty of Veterinary Science, SKUAST-K, India). These names were approved by Zoom vote, and the current committee has good diversity in gender, species and geography.

New Committee co-chair

Chair: n/a
Term of service (<i>add years of first and second term of service</i>):
Affiliation:
E-mail address:

New Committee co-chair (optional)

Chair: n/a
Term of service (<i>add years of first and second term of service</i>):
Affiliation:
E-mail address:

Note: One term runs for two bi-annual conferences (i.e. four years)

Current Committee members

Committee members	First term of service (from year to year)	Second term of service (from year to year)	Email address
Graham Plastow (chair)		2019-2023	plastow@ualberta.ca
Chris Tuggle (vice-chair)		2019-2023	cktuggle@iastate.edu
Karel Novak		2019-2023	novak.karel@vuzv.cz
Sabine Hammer	2019-2023		sabine.hammer@phylo-dat.net
Romi Pena i Subirà	2019-2023		romi.pena@udl.cat
Marta Alonso Hearn	2021-2025		malonso@neiker.eus
Kathryn McRae	2021-2025		Kathryn.McRae@agresearch.co.nz
Tavsief Ahmad	2021-2025		tavsief@gmail.com
Eduard Murani	2021-2025		murani@fhn-dummerstorf.de

SIGNATURES



Chair- Graham Plastow



Vice-chair- Chris Tuggle