### SESSION I: MUCOSAL IMMUNOBIOLOGY/INTESTINAL MUCUS/INTESTINAL BARRIER FUNCTION
**Chair:** Mike Kogut, USDA-ARS

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors and Affiliations</th>
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<tbody>
<tr>
<td>8:00 AM</td>
<td>Welcome.</td>
<td>Dr. Mike Kogus, USDA-ARS, Chair, Organizing Committee.</td>
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<tr>
<td>8:15 AM</td>
<td>Role of the microbiome in immune system development in the gastrointestinal tract of newborn calves.</td>
<td>Philip J Griebel*, Nilusha Malmuthuge², Guanxiang Liang², Mi Zhou², and Le Luo Guan², ¹University of Saskatchewan, Saskatoon, SK, Canada, ²University of Alberta, Edmonton, AB, Canada.</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>DIVA Defense: Broad Protection for Salmonella Suppression.</td>
<td>B.L. Bearson*, S.M.D. Bearson, I.S. Lee, and J.D. Kich, ¹USDA, ARS, National Laboratory for Agriculture and the Environment, Ames, IA, USA, ²USDA, ARS, National Animal Disease Center, Ames, IA, USA, ³Hannam University, Department of Biological Sciences and Biotechnology, Daejeon, Republic of Korea, ⁴Embrapa Swine and Poultry, Concordia, SC, Brazil.</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Identification of potential biomarkers for gut barrier function assay in poultry.</td>
<td>Juxing Chen* and Jeffery Escobar, Novus International Inc., St Charles, MO, USA.</td>
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<tr>
<td>10:15 AM</td>
<td>Coffee Break.</td>
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<tr>
<td>10:45 AM</td>
<td>Grape seed proanthocyanidins protect the intestinal mucosa barrier from injury induced by weaning stress in piglets.</td>
<td>Peixin Fan, Ji Wang, Peixia Song, Defa Li, and Xi Ma*, State Key Laboratory of Animal Nutrition, Ministry of Agriculture Feed Industry Centre, China Agricultural University, Beijing, China.</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Development of an enteric inflammation model in broilers and methods to detect leaky gut – an overview.</td>
<td>L.R. Bielke*, V.A. Kuttappan¹, E.A. Vicuña¹, O.B. Faulkner¹, A.D. Wolfenden¹, R. Galarza-Seeber¹, X. Hernandez-Velasco², G. Tellez¹, and B.M. Hargis¹, Department of Poultry Science, University of Arkansas, Fayetteville, AR, USA, ²Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, México.</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Effects of virginiamycin and/or a xylanase on performance and intestinal health of broiler chickens.</td>
<td>Hector M. Cervantes¹, Monique S. Franca², Derek T. Elmore², Gene M. Pesti², and Kenneth W. Bafundo¹, ¹Phibro Animal Health, ²University of Georgia.</td>
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<tr>
<td>12:15 PM</td>
<td>Lunch and Poster Session.</td>
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### SESSION II: BENEFICIAL MICROBES AND GUT HEALTH
**Chair:** Mike Kogut, USDA-ARS

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>3:15 PM</td>
<td>Microbiome modulation in turkeys: friend or foe?</td>
<td>T.J. Johnson*, University of Minnesota, Saint Paul, MN.</td>
</tr>
<tr>
<td>4:15 PM</td>
<td>Effect of Megasphaera elsdenii NCIMB 41125 dosing on rumen development, volatile fatty acid</td>
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</tbody>
</table>
**Tuesday, November 11**

**ORAL SESSIONS**

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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<tr>
<td>8:00 AM</td>
<td>Breaking down barriers: The impact of production stressors on gut immune and epithelial defense in the pig.</td>
<td>Adam Moeser*, North Carolina State University, Raleigh, NC.</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>A late finishing <em>lawsonia intracellularis</em> challenge is moderated by Lincomix® Feed Medication.</td>
<td>D.A. Nelson*, P. Knoernschild₁, R. Fleck², N. Winkelman³, A. Mueller⁴, and D. Amodie¹, Zoetis, Inc., Florham Park, NJ USA, Swine Services Unlimited, Inc., Rice, MN USA.</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Coffee Break.</td>
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<tr>
<td>10:30 AM</td>
<td>Effects of <em>L. fermentum</em> I5007 supplementation on lipogenesis and adipose tissue distribution.</td>
<td>Jingshu Chen*, Linsen Li, Xi Ma, Shiyan Qiao, and Defa Li, State Key Laboratory of Animal Nutrition, Ministry of Agriculture Feed Industry Centre, China Agricultural University, Beijing, China.</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Evaluation of the efficacy of <em>E. faecium</em> CECT4515 and <em>B. licheniformis</em> to improve piglet’s performance.</td>
<td>A Ortiz*, G Cano², P Honrubia¹, and J J Mallo¹, NOREL S.A., Madrid, Test and Trials, S.L., Huesca.</td>
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<tr>
<td>12:00 PM</td>
<td>Lunch.</td>
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<tr>
<td>1:30 PM</td>
<td>Applications of a probiotic and prebiotic alleviate polymicrobial mastitis in dairy cattle.</td>
<td>D Baines*, J Zlosnik², D Speert², M Mulvey³, and L Masson⁴, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, University of British Columbia, Vancouver, BC, Canada, University of British Columbia, Vancouver, BC, Canada, National Microbiology Laboratory, Winnipeg, MB.</td>
</tr>
</tbody>
</table>
Applications of a probiotic and prebiotic alleviate mammary Aspergillosis in dairy cattle.
D Baines*, Agriculture and Agri-Food Canada, Lethbridge, Alberta, Canada.

The role of a selected *Bacillus subtilis* Direct-Fed Microbial in performance, intestinal viscosity, bacterial translocation, and bone mineralization in broiler chickens fed with high-NSP diets.
J.D. Latorre*1, V.A. Kuttappan1, M.H. Kogut1, A. Wollenden1, X. Hernandez-Velasco1, L.R Bielke1, B.M. Hargis1, O.B. Faulkner1, and G. Tellez1, 1University of Arkansas, Department of Poultry Science, Fayetteville, Arkansas, United States, 2USDA-ARS, SPARC, College Station, Texas, United States, 3Universidad Nacional Autonoma de Mexico, Mexico.

Molecular survey of the microbiomes in broilers to understand probiotics-induced reduction of BCO lameness.
T Jiang1, R. K. Mandal1, R. F. Wideman Jr1, T Lohrmann2, and Y. M. Kwon*1, 1Department of Poultry Science, University of Arkansas, Fayetteville, AR, USA, 2Quality Technology International, Inc., Elgin, Illinois, USA.

Development of the Microbiome of Chicks: Early Exposure Influences Future Microbial Diversity, Independent of Colonization.
A Ballou*, R Ali, M Mendoza, H Hassan, and M Koci, North Carolina State University, Raleigh, NC, USA.

Transfer of heifers calves from maternity to calf pen: the impact on the population of enterobacteria.
JF Reis*, SMF Novo, CC Baccili, CR Stricagnolo, BT Silva, and V Gomes, University of São Paulo, São Paulo, Brazil.

*Eimeria maxima* causes changes in mRNA expression of genes associated with amino acid and sugar uptake in the jejunum of infected broilers.
Katarzyna Miska* and Raymond Fetterer, USDA/ARS, Beltsville, MD, USA.

Interrelationships of fungal and bacteria populations within the gastrointestinal tract of poultry.
J. Allen Byrd*, USDA-ARS, Food and Feed Safety Research Unit, College Station, TX USA.

Modification of the chicken caecal microbiome by *Campylobacter jejuni* colonization and by a feed additive.
Alexandre Thibodeau*, Philippe Fraval01, Etienne Yergeau2, Ludovic Lahaye2, Julie Arsenault1, and Ann Letellier1, 1Université de Montréal, Saint-Hyacinthe, Qc, Canada, 2Conseil national de recherche du Canada, Montréal, Qc, Canada, 3Jefo, Saint-Hyacinthe, Qc, Canada.

**Wednesday, November 12**

**ORAL SESSIONS**

**SESSION V: NUTRITION GUT HEALTH**
Chair: Mike Kogut, USDA-ARS

Impact of a multistrain *Bacillus* product on broiler performance and small intestinal microbiota.
Milan Hruby*, Janet C. Remus1, and Andrew J. Madisen2, 1Danisco Animal Nutrition, DuPont Industrial Biosciences, St. Louis, MO, USA, 2Animal & Environmental Application, DuPont Nutrition & Health, Waukesha, WI, USA.
8:30 AM
Utilization of rye as energy source affects bacterial translocation, intestinal viscosity, microbiota composition and bone mineralization in broiler.
Guillermo Tellez*1, Juan D. Latorre1, Vivek Kuttappan1, Amanda Wolfenden1, Michael Kogut2, Xochitl Hernandez-Velasco3, Billy M. Hargis1, Walter Bottje1, and Lisa R. Bielke1,
1Department of Poultry Science, University of Arkansas, Fayetteville, AR, USA, 2USDA-ARS, SPARC, College Station, TX, USA, 3Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, México.

9:00 AM
A.A. Ayoola, P. R. Ferket, R.D. Malheiros*, and J. Grimes, Prestage Dept. Poultry Science, NCSU, Raleigh, NC, USA.

9:30 AM
Phytogenic feed additives as replacement for antibiotic growth promoters in broiler chickens.
G. R. Murugesan*1, B. Syed2, and S. Halldar3, 1BIOMIN America Inc., San Antonio, TX 7813, USA, 2BIOMIN Holding GmbH, 3130 Herzogenburg, Austria, 3Department of Animal Nutrition, West Bengal University of Animal & Fishery Sciences, Kolkata 700037, India.

10:00 AM
Coffee Break.

10:30 AM
Gut health model using different diet formulations in broiler chickens.
V. A. Kuttappan*1, J. D. Latorre1, K. Wedekind2, J. Escobar2, E. A. Vicuña1, R. Galarza1, O. B. Faulkner2, A. D. Wolfenden1, G. L. Tellez2, B. M. Hargis1, M. Vazquez-Anon2, and L. R. Bielke1,
1Department of Poultry Science, University of Arkansas, Fayetteville, Arkansas, USA, 2Novus International, INC., St. Charles, Missouri, USA.

10:45 AM
Protein-Mediated Butyrate Transport in the Rumen Epithelium is Modulated by Feed Restriction in Holstein Steers.
A. H. Laarman*1, R. A. Pederzolli2, G. B. Penner2, and B. W. McBride1, 1University of Guelph, Guelph, ON, Canada, 2University of Saskatchewan, Saskatoon, SK, Canada.

11:15 AM
Effects of SPORULIN® and CIBENZA® CSM on gut health and growth performance of broilers.
Juxing Chen*, Karen J Wedekind, and Julia J Dibner, Novus International Inc., St Charles, MO, USA.

POSTER PRESENTATIONS

The effectiveness of direct- fed microbial and prebiotic on histomorphology of intestine, ultrastructural changes of intestinal mucosa and performance of turkey poults infected with Salmonella and Campylobacter.
S Rahimi*1, J Grimes2, S Kathariou2, and O Fletcher2, 1Tarbiat Modares University, Tehran, Tehran, Iran, 2North Carolina State University, Raleigh, NC, USA.

A review: Alternatives to antibiotic use for growth promotion in poultry.
S. Rahimi*1, M. Naghizadeh1, and A. Rahimi2, 1Tarbiat Modares University, Tehran, Tehran, Iran, 2Islamic Azad University, Tehran, Tehran, Iran.

Selective isolation of gut lactic acid bacteria from commercial beef cattle originating from farms at risk of subacute ruminal acidosis (SARA).
Ramona C. Cernat1, Christine A. McCartney1, Ida Hindrichsen2, Elke Brockmann2, Caline H.H. Koh-Tan3, Erin M. Strachan4, Willie Thomson5, Tim J. Snelling5, Calum D. Harvey3, Nicholas N. Jonsson5, and John R. Wallace1,
1Rowett Institute of Nutrition and Health, University of Aberdeen, Aberdeen AB21 9SB, UK, 2Ch. Hansen A/S, Boge Allé 10-12, Harsholm 2970, Denmark, 3Animal Health and Comparative Medicine, Institute of Biodiversity, University of Glasgow, Glasgow G61 1QH, UK, 4Harbro Ltd., Turriff, Aberdeenshire AB53 4PA, UK.

Dynamics of the microbiome over the rearing period in two lines of broilers.
S Diaz Sánchez1, R Hawkins2, R Okimoto3, A Layton3, A Saxton4, J A Blakeley-Ruiz5, and I Hanning1,5,
1University of Tennessee, Department of Food Science and Technology, Knoxville, TN, US, 2Cobb-Vantress Incorporated, Siloam Springs, AR, US, 3University of Tennessee, Department of Microbiology, 4University of Tennessee, Animal Science, 5University of Tennessee, Department of Genome Sciences and Technology.
Neonatal Lambs Gastrointestinal Tracts Are Initially Colonized by a Unique and Dynamic Vaginal Microbiota But Rapidly Transition Toward The Dams Teat.

Variations of the Microbiome Among Sheep Breeds on Two Different Diets.
T. M. Taxis1*, M. J. Ellison2, K. M. Cammack2, G. C. Conant1, and W. R. Lamberson1, 1University of Missouri, Columbia, Missouri, USA, 2University of Wyoming, Laramie, Wyoming, USA.

A calf-rearing model for exploring the influence of colostrum on the microbiological health of the developing bovine intestinal tract.
E.B. Bichi*, C.J. Yeoman, J. Lowe, N. Maradiaga, E. Pulido Chavez, and B. Aldridge, 1Integrated Food Animal Systems, College of Veterinary Medicine, University of Illinois, Urbana-Champaign, IL, USA, 2Department of Animal and Range Sciences, Montana State University, Bozeman, MT, USA, 3Instituto De Ganaderia De Montana, Leon, Spain.

Genetic and Genome Analyses of Bacteria Cultured from Lame Broilers with Osteomyelitis.
A.A.K. Al-Rubaye*, D.D. Rhoads, and R.F. Wideman, University of Arkansas, Fayetteville, AR, USA.

Proteins Involved in Intracellular pH Regulation in Rumen Epithelial Cells Are Modulated During the Transition Period in Holstein Dairy Cows.
A. H. Laarman1*, A. Kleinberg1, M. A. Steele2, O. AlZahal1, and B. W. McBride1, 1University of Guelph, Guelph, ON, Canada, 2University of Alberta, Edmonton, AB, Canada.

High and Low Loads of Cecal Colonization by Salmonella Enteritidis in Chickens Triggers Distinct Immune Kinome Profiles.
C. L. Swaggerty*, R. J.Arsenault, and M. H. Kogut, USDA/ARS, College Station, TX, USA.

Norepinephrine modulates swine gut immune cells.
E Silva*, D Lay, and S Eicher, USDA-ARS-MWA- Livestock Behavior Research Unit, West Lafayette, IN, USA.

A Role for the Non-Canonical Wnt-Signaling Pathway in the Induction of a State of Immune Tolerance that Allows the Establishment of Persistent Intestinal Colonization of Salmonella enterica serovar Enteritidis in Chickens.
M.H. Kogut*, C.L. Swaggerty, K.J. Genovese, H. He, and R.J. Arsenault, USDA-ARS, SPARC, College Station, TX, US.

Anti-Interleukin-10 antibody is effective at eliminating the adverse effects of a coccidiosis challenge.
Jordan Sand*, Alec Repasy, Jennifer Roberts, and Mark Cook, University of Wisconsin, Madison, Wisconsin, USA.

Comparison of anti-interleukin-10 egg antibody to Maxiban? in coccidia infected broiler chicks.
M Arendt*, J Sand, and M Cook, 1Department of Comparative Biosciences, University of Wisconsin-Madison, Madison, WI, USA, 2Department of Animal Science, University of Wisconsin-Madison, Madison, WI, USA.

Effects of Dietary Fiber on Cecal Short Chain Fatty Acid and Microbial Community of Broiler and Layer Chicks.
M Walugembe, J Hsieh*, N Koszewski, S Lamont, M Rothschild, and M Persia, Iowa State University, Ames, IA 50011, USA.

Effects of Saccharomyces cerevisiae Fermentation Products on Fiber Digesting and Lactate Utilizing Rumen Bacteria at Neutral and Low pH In Vitro.
A Brainard*, V Nsereko, I Yoon, J Butler, and M Scott, Diamond V, Cedar Rapids, IA, USA.

Synergistic effect of Bacillus licheniformis and Flavomycin on broiler performance.
A. B. Kehlet1, H. Kling*, M. Sims2, and D. Harrington1, 1Chr. Hansen A/S, Horsholm, Denmark, 2Virgina Diversified Research, Corp, Harrisonburg, VA, 3Chr. Hansen, Milwaukee, WI, USA.

Effect of quercetin on performance, apparent digestibility of feed nutrients and cecal microbiota in laying hens at 39-47 weeks old.
Y Li*, N Teng, M T Chaudhry, C Y Han, D T Sun, Y You, and L Li, Institution of Animal Nutrition, Harbin, Heilongjiang, P.R. China.