

Tuesday, July 19, 2016

ASAS/ASN joint symposium: Gut microbiota, diet and health

Chair: Gretchen M. Hill; Teresa A. Davis, Michigan State University;
USDA/ARS Children's Nutrition Research Center, Dept. Pediatrics,
Baylor College of Medicine

8:15 AM Welcoming Remarks.

8:20 AM Modulation of the gut microbiota – An ecological perspective.

*J. Walter**, University of Alberta, Edmonton, AB, Canada

9:05 AM Effects of early antibiotic exposure on host metabolism.

*L. M. Cox**, Harvard Medical School and Brigham and Women's Hospital, Boston, MA;
New York University Langone Medical Center, New York, NY

9:50 AM Break.

10:05 AM Impact of gut microbiota on brain and behavior.

*J. F. Cryan**, University College Cork, Cork, Ireland

10:50 AM The human milk microbiome and oligosaccharides - What's normal and so what?.

*M. K. McGuire^{*1} and M. A. McGuire²*, ¹Washington State University, Pullman, WA,
²University of Idaho, Moscow, ID

11:35 AM Lunch and Poster Competition.

1:05 PM Dietary fiber and starch, digestive physiology, and metabolic health.

*R. T. Zijlstra**, *J. M. Fouhse*, *T. Vasanthan*, and *M. G. Gänzle*, Department of Agricultural,
Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

1:50 PM Methane matters: From blue tinged moos, to boozy roos, and for the health of humans too.

E. C. Hoedt^{1,2}, *P. OCuiv³*, and *M. Morrison^{*4}*, ¹University of Queensland, School of
Chemistry and Molecular Biosciences, St Lucia, Australia, ²The University of
Queensland Diamantina Institute, Woolloongabba, Australia, ³The University of
Queensland Diamantina Institute, Woolloogabba, Australia, ⁴University of Queensland
Diamantina Institute, Brisbane, Australia

2:35 PM Sub-acute ruminal acidosis (SARA): A tale of two microbiomes.

C. A. McCartney¹, *R. C. Cernat²*, *H. H. C. Koh-Tan³*, *H. J. Ferguson³*, *E. M. Strachan⁴*, *W.*

Thomson⁴, T. J. Snelling¹, C. M. Harvey⁴, I. Andonovic⁵, C. Michie⁵, N. N. Jonsson³, G. W. Horgan⁶, and R. J. Wallace⁷, ¹University of Aberdeen, Aberdeen, United Kingdom, ²Chr. Hansen A/S, Hoersholm, Denmark, ³University of Glasgow, Glasgow, United Kingdom, ⁴Harbro Ltd, Turriff, United Kingdom, ⁵Strathclyde University, Glasgow, United Kingdom, ⁶BIOSS, Aberdeen, United Kingdom, ⁷Rowett Institute of Nutrition and Health, Aberdeen, United Kingdom

3:20 PM **Dietary manipulation of canine and feline gut microbiome.**

K. S. Swanson*, *Department of Animal Sciences, University of Illinois, Urbana, IL*

4:05 PM **Concluding Remarks.**

Wednesday, July 20, 2016

PANCOSMA: “Non-nutrition: The future of nutrition?”

9:00 AM **Introductory Remarks.**

9:15 AM **Why the intersection of microbiology and neurobiology matters to animal health: Microbial endocrinology as a means to examine the host-microbiota interface.**

M. Lyte*, *Iowa State University, Ames, IA*

9:45 AM **The gut microbiome as a virtual endocrine organ: Implications for host physiology and behaviour.**

G. Clarke*, *University College Cork, Cork, Ireland*

10:15 AM **Threats to gut health in production animals.**

J. Furness¹, D. M. Bravo², and J. J. Cottrell³, ¹University of Melbourne, Parkville, Australia, ²Pancosma, Geneva, Switzerland, ³Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Parkville, Australia

10:45 AM **The gut microbiome and its role in the development and function of newborn calf gastrointestinal tract.**

N. Malmuthuge¹, G. Liang², P. J. Griebel³, and L. L. Guan⁴, ¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, ²University of Alberta, Edmonton, AB, Canada, ³Vaccine and Infectious Disease Organization, University of Saskatchewan, Saskatoon, SK, Canada, ⁴Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

11:15 AM **From pre- to post-weaning: The adaptations of the gastrointestinal tract of the young calf.**

*M. Steele*¹, *S. J. Meale*², *K. Wood*³, and *G. B. Penner*⁴, ¹*Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada,* ²*INRA, Unité Mixte de Recherches sur les Herbivores, St Genès Champanelle, France,* ³*Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada,* ⁴*Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada*

11:45 AM Break.

1:45 PM Metabolic effects of dietary pungent spices on the gut in animal models.

K. Srinivasan^{*}, *Department of Biochemistry and Nutrition, CSIR - Central Food Technological Research Institute, Mysore, India*

2:15 PM Phytonutrients as non-nutritive feed additives to enhance growth and host immunity in broiler chickens.

H. Lillehoj^{*1} and *S. Oh*², ¹*ARS USDA, Beltsville, MD,* ²*USDA, Beltsville, MD*

2:45 PM Phytonutrients as additives in ruminants: the unexpected target organ.

*J. Oh*¹, *E. H. Wall*², *D. M. Bravo*², and *A. N. Hristov*^{*3}, ¹*The Pennsylvania State University, University Park, PA,* ²*Pancosma, Geneva, Switzerland,* ³*Department of Animal Science, The Pennsylvania State University, University Park, PA*

3:15 PM Non-nutrients in swine health and production.

Y. Liu^{*}, *University of California, Davis, Davis, CA*

3:45 PM Manipulation of gut morphology and gut immunity in swine using novel, naturally sustainable bioactives.

T. Sweeney^{*1} and *J. O'Doherty*², ¹*School of Veterinary Medicine, University College Dublin, Dublin, Ireland,* ²*School of Agriculture and Food Science, University College Dublin, Dublin, Ireland*

4:15 PM Concluding Remarks.

4:30 PM Discussion.

ARPAS Symposium: Understanding inflammation and inflammatory biomarkers to improve animal performance

Chair: Jeffrey M DeFrain, Progressive Dairy Solutions, Inc.

9:30 AM Welcoming Remarks.

9:35 AM **Overview of the inflammatory response and its nutritional costs.**
K. C. Klasing, University of California, Davis, Davis, CA*

10:20 AM **Ruminal microbes, microbial products, and systemic inflammation.**
T. G. Nagaraja, Kansas State University, Manhattan, KS*

11:05 AM **Usefulness (or not) of inflammatory biomarkers- The good, the bad and ugly.**
C. Chase, South Dakota State University, Brookings, SD*

11:50 AM **Nutritional and management considerations in beef cattle experiencing stress-induced inflammation.**
R. F. Cooke, Oregon State University - EOARC Burns, Burns, OR*

Dairy foods division symposium: Increasing utilization of dairy co-products

Chair: Rohit Kapoor, Dairy Management Inc.

9:30 AM **Welcoming Remarks.**

9:35 AM **Consumer demand, innovation and opportunity for co-products.**
B. Graves and R. Kapoor, Dairy Management Inc., Rosemont, IL*

9:50 AM **International market opportunities and regulatory hurdles. USDEC.**

10:15 AM **Permeate - use as a sodium replacer / flavor implications.**
M. Drake, Southeast Dairy Foods Research Center, North Carolina State University, Raleigh, NC*

10:40 AM **Fractionating acid whey into value-added ingredients.**
K. E. Smith, University of Wisconsin - Madison, Madison, WI*

11:05 AM **Break.**

11:10 AM **Demineralization of delactose permeate and acid whey.**
J. K. Amamcharla, Food Science Institute, Animal Sciences and Industry, Kansas State University, Manhattan, KS*

11:35 AM **Advancements in drying lactose and acid whey.**
J. G. Ronckers, Relco, Willmar, MN*

12:00 PM **Lactose derivatives and GOS as prebiotic fibers.**

*T. C. Schoenfuss**, University of Minnesota, Department of Food Science and Nutrition, St. Paul, MN

12:25 PM **Concluding Remarks.**

International animal agriculture symposium: The future of pastoral production systems

Chair: Filippo Miglior, Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph

9:30 AM **Contribution of pastoral systems to global food security and potential for sustainable intensification.**

*A. Mottet*¹, F. Teillard², G. Cinardi¹, and G. Velasco Gil¹*, ¹Food and Agriculture Organization of the United Nations, Rome, Italy, ²*Felix.Teillard@fao.org*, Rome, Italy

10:00 AM **Opportunities for international research and development through the Feed the Future Innovation Lab for Livestock Systems.**

*A. T. Adesogan**, Dept. of Animal Sciences, IFAS, University of Florida, Gainesville, FL

10:30 AM **Community-based breeding programs: A sustainable solution for livestock keepers?.**

*M. Wurzinger*¹, A. Haile², B. Rischkowsky³, C. P. VanTassell⁴, T. S. Sonstegard⁵, O. Mwai⁶, and J. Sölkner⁷*, ¹BOKU-University of Natural Resources and Life Sciences, Vienna, Austria, ²International Centre for Agricultural Research in the Dry areas, Addis Ababa, Ethiopia, ³International Center for Agricultural Research in the Dry Areas, Addis Ababa, Ethiopia, ⁴Animal Genomics and Improvement Laboratory, ARS, USDA, Beltsville, MD, ⁵USDA, ARS, BFGL, Beltsville, MD, ⁶International Livestock Research Institute, Nairobi, Kenya, ⁷University of Natural Resources and Life Sciences, Vienna, Austria

11:00 AM **Innovative dissemination of small ruminant genetic improvement by a non-government institute in India.**

*C. Nimbkar** and *P. Ghalsasi*, Nimbkar Agricultural Research Institute, Phaltan, Dist. Satara, Maharashtra, India

11:30 AM **Pastoral systems in the developing world: Trends, needs, and future scenarios.**

*D. L. Coppock*¹, M. Fernandez-Gimenez², P. Hiernaux³, E. Huber-Sannwald⁴, C. Schloeder⁵, C. Valdivia⁶, J. T. Arredondo⁴, M. Jacobs⁵, C. Turin⁷, and M. Turner⁸*, ¹Utah State University, Logan, UT, ²Colorado State University, Fort Collins, CO, ³Centre National de la Recherche Scientifique, Geosciences Environment Toulouse, Toulouse, France, ⁴Instituto Potosino de Investigacion Cientifica y Tecnologica, San Luis Potosi,

Mexico, ⁵Oikos Services LLC, Fortine, MT, ⁶University of Missouri, Columbia, MO, ⁷International Potato Center, Lima, Peru, ⁸University of Wisconsin, Madison, WI

Big data in animal science symposium: Uses for models, statistics and meta-approaches

9:30 AM **Welcoming Remarks.**

9:40 AM **Modeling in animal science: an introduction to quantitative understanding and prediction.**

*J. Dijkstra**, Animal Nutrition Group, Wageningen University, Wageningen, Netherlands

10:35 AM **Traditional versus structure-based model development strategies.**

L. O. Tedeschi¹, R. R. White², C. F. Nicholson³, B. L. Turner⁴, M. A. Fonseca¹, and M. D. Hanigan², ¹Texas A&M University, College Station, TX, ²Virginia Tech, Blacksburg, VA, ³The Pennsylvania State University, University Park, PA, ⁴Texas A&M University-Kingsville, Kingsville, TX

11:25 AM **Break.**

11:45 AM **Big data analysis techniques.**

*N. St-Pierre**, Ohio State University, Columbus, OH

12:35 PM **Intermission.**

2:00 PM **Evaluation of multilevel mixed effect models.**

*E. Kebreab**, University of California, Davis, Davis, CA

Teaching undergraduate and graduate education symposium: Animal science education in the current environment

Chair: Antonio Faciola, University of Nevada

9:30 AM **Welcoming Remarks.**

9:35 AM **Introduction to learning theories and implications for classroom design.**

*M. Clement**, Berry College, Mount Berry, GA

10:05 AM **Beyond veterinary school: Helping animal science students explore other career opportunities.**

*J. A. Sterle^{*1}, H. D. Tyler¹, and J. Daniel², ¹Iowa State University, Ames, IA, ²Department of Animal Science, Berry College, Mt. Berry, GA*

10:35 AM A different approach in pedagogical model: Flipped classrooms.

*M. G. Maquivar^{*1} and A. Ahmadzadeh², ¹Department of Animal Sciences, Washington State University, Pullman, WA, ²University of Idaho, Moscow, ID*

11:05 AM Teaching evaluations and other alternatives to assess good teaching and learning.

K. G. Odde^{}, Kansas State University, Manhattan, KS*

11:35 AM Discussion.

ADSA Southern Section symposium: Strategies for managing heifers in the southeast

Chair: Mary E Sowerby, University of Florida

2:00 PM Influences of feeding and housing practices on the behavior and performance of dairy calves.

*E. K. Miller-Cushon^{*1} and T. J. DeVries², ¹Department of Animal Sciences, University of Florida, Gainesville, FL, ²Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada*

2:30 PM Developing replacement heifers that get pregnant and maintain pregnancy.

*K. G. Pohler^{*1}, M. H. Pereira², S. Reese³, and J. L. M. Vasconcelos⁴, ¹The University of Tennessee, Knoxville, TN, ²UNESP - FMVZ, Botucatu, Brazil, ³University of Tennessee, Knoxville, TN, ⁴Sao Paulo State University, Botucatu, Brazil*

3:00 PM Benefits of fly control in dairy heifers.

S. C. Nickerson^{}, University of Georgia, Athens, GA*

3:30 PM Economic trade-offs between replacement rates and improved genetics.

A. De Vries^{}, Department of Animal Sciences, University of Florida, Gainesville, FL*

4:00 PM Panel discussion: Where should Southeastern calf/heifer nutrition research go from here?.

Cell biology symposium: Membrane trafficking and signal transduction

Chair: James L Klotz, USDA-ARS, Forage-Animal Production Research Unit

2:00 PM Introduction - What is the relevance of this topic?.

J. L. Klotz, USDA-ARS, Forage-Animal Production Research Unit, Lexington, KY*

2:15 PM SNAREs in exocytosis and membrane trafficking.

S. W. Whiteheart, University of Kentucky, Lexington, KY*

3:00 PM Signaling endosomes and epithelial morphogenesis.

C. D'Souza-Schorey, University of Notre Dame, Notre Dame, IN*

3:45 PM Structural and signaling functions of sphingomyelinases during inflammation.

M. N. Nikolova-Karakashian, University of Kentucky, Lexington, KY*

4:30 PM Practical application of the basic aspects of membrane trafficking and receptor-mediated signaling on issues related to animal agriculture.

S. B. Smith, Texas A&M University, College Station, TX*

BRD symposium: Advances in bovine respiratory disease

Chair: H. L. Neibergs, Department of Animal Sciences, Washington State University

2:00 PM Genetic approaches to selection for resistance to bovine respiratory disease.

J. E. Womack, Texas A&M University, College Station, TX*

2:20 PM Differential gene expression in cattle challenged with single pathogens of the bovine respiratory disease complex.

*L. J. Gershwin^{*1}, A. Vaneennaam¹, J. F. Taylor², J. Kim², R. L. Toaff-Rosenstein³, H. L. Neibergs⁴, and J. E. Womack⁵, ¹University of California, Davis, Davis, CA, ²University of Missouri, Columbia, MO, ³UC Davis, Berkeley, CA, ⁴Department of Animal Sciences, Washington State University, Pullman, WA, ⁵Texas A&M University, College Station, TX*

2:40 PM Genome-wide association study of bovine respiratory disease complex in U.S. feedlot cattle.

*C. M. Seabury^{*1}, H. L. Neibergs², J. F. Taylor³, J. E. Womack⁴, and T. Bovine Respiratory Disease Complex⁴, ¹College of Veterinary Medicine, Texas A&M University, College Station, TX, ²Department of Animal Sciences, Washington State University, Pullman, WA, ³University of Missouri, Columbia, MO, ⁴Texas A&M University, College Station, TX*

3:00 PM Identification of causal variants underlying pathogen susceptibility and translation to genetic improvement.

*J. F. Taylor^{*1}, H. L. Neibergs², C. M. Seabury³, A. Vaneennaam⁴, J. E. Decker¹, J. L. Hoff⁵, P. C. Tizioto⁶, T. Bovine Respiratory Disease Complex⁷, J. E. Womack⁷, and R. D. Schnabel¹, ¹University of Missouri, Columbia, MO, ²Department of Animal Sciences, Washington State University, Pullman, WA, ³College of Veterinary Medicine, Texas A&M University, College Station, TX, ⁴University of California, Davis, Davis, CA, ⁵Division of Animal Sciences, University of Missouri, Columbia, MO, ⁶Embrapa Southeast Livestock, São Carlos, Brazil, ⁷Texas A&M University, College Station, TX*

3:20 PM Break.

3:35 PM Gene set enrichment analysis of bovine respiratory disease complex SNP data in feedlot cattle.

*M. Neupane¹, J. F. Taylor², C. M. Seabury³, J. E. Womack³, T. Bovine Respiratory Disease Complex³, and H. L. Neibergs^{*1}, ¹Department of Animal Sciences, Washington State University, Pullman, WA, ²University of Missouri, Columbia, MO, ³Texas A&M University, College Station, TX*

3:55 PM Calculation of genomic predicted transmitting abilities for bovine respiratory disease complex in Holsteins.

*C. P. VanTassell^{*1}, G. Spangler², D. M. Bickhart³, G. R. Wiggans⁴, J. B. Cole⁵, J. F. Taylor⁶, H. L. Neibergs⁷, C. M. Seabury⁸, A. L. Van Eenennaam⁹, J. E. Womack¹⁰, and T. Bovine Respiratory Disease Complex¹⁰, ¹Animal Genomics and Improvement Laboratory, ARS, USDA, Beltsville, MD, ²USDA, ARS, Beltsville, MD, ³Animal Genomics and Improvement Laboratory, USDA-ARS, Beltsville, MD, ⁴Animal Genomics and Improvement Laboratory, Agricultural Research Service, USDA, Beltsville, MD, ⁵Animal Genomics and Improvement Laboratory, Agricultural Research Service, United States Department of Agriculture, Beltsville, MD, ⁶University of Missouri, Columbia, MO, ⁷Department of Animal Sciences, Washington State University, Pullman, WA, ⁸College of Veterinary Medicine, Texas A&M University, College Station, TX, ⁹University of California, Davis, CA, ¹⁰Texas A&M University, College Station, TX*

4:15 PM The value of genetic selection in reducing economic losses from bovine respiratory disease complex in beef cattle feedlots.

*J. S. Neibergs^{*1} and H. L. Neibergs², ¹Washington State University, Pullman, WA, ²Department of Animal Sciences, Washington State University, Pullman, WA*

4:35 PM How might genomic information get translated into industry outcomes?

A. L. Van Eenennaam^{}, University of California, Davis, CA*

Contemporary and emerging issues symposium: Communicating animal sciences effectively

Chair: Deb Hamernik; Kristen Johnson, University of Nebraska-Lincoln;
Washington State University

2:00 PM Public perceptions of animal-sourced genetically modified food products.

W. K. Hallman, C. L. Cuite, and X. K. Morin, Rutgers University, New Brunswick, NJ*

2:30 PM What is the science of science communication for? And why should animal scientists care?.

D. Kahan, Yale Law College, New Haven, CT*

3:00 PM Panel Discussion.

3:30 PM Cracking the code: Making complex information understandable.

A. Perry, The Center for Food Integrity, Gladstone, MO*

4:00 PM Communicating animal science effectively.

D. R. Williams, National Cattlemen's Beef Association, Centennial, CO*

4:30 PM Panel Discussion.

Forages and pastures symposium: Greenhouse gas emissions in pasture-based dairy and beef cattle systems

Chair: Kathy J. Soder, USDA-Agricultural Research Service

2:00 PM Welcoming Remarks.

2:05 PM Comprehensive national assessment on the sustainability of beef production.

*C. A. Rotz*¹ and K. R. Stackhouse², ¹USDA-ARS Pasture Systems and Watershed Management Research Unit, University Park, PA, ²National Cattlemen's Beef Association, Centennial, CO*

2:40 PM Screening for forages and foraging managements that reduce N excretion and CH₄ emissions while maintaining or increasing animal production.

*P. Gregorini*¹, P. C. Beukes², and A. J. Romera³, ¹DairyNZ Ltd., Hamilton, New Zealand, ²Dairy NZ, Hamilton, New Zealand, ³DairyNZ, Hamilton, New Zealand*

3:15 PM Outcomes and future directions from the National Livestock Methane Program in Australia..

T. M. Davison, Meat and Livestock Australia, Brisbane, Australia*

3:50 PM Greenhouse gas emissions and mitigation in the West African sub-region: challenges and opportunities.

C. Antwi, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana*

4:25 PM Effects of native and tame grassland species reintroduction on carbon sequestration potential on the Canadian Prairies.

A. D. Iwaasa, B. McConkey, and H. Wang, Agriculture and Agri-Food Canada, Swift Current, SK, Canada*

Nonruminant nutrition symposium

Chair: Z. J. Rambo, Zinpro Corporation

2:00 PM [tab][tab] **Microbial colonisation, metabolism and immunity in the young piglet** - *Dr. Mick Bailey, University of Bristol, School of Clinical Veterinary Science, Langford House, Langford, Bristol, UK.*

2:45 PM [tab][tab] **Intraluminal targeting of intestinal interleukin-10. A new strategy for controlling helminthic and protozoan diseases** - *Mark Cook, Animal Sciences Department, University of Wisconsin-Madison, Madison, WI.*

3:30 PM [tab][tab] **Early life adversity and life time gut function** - *Yihang Li, North Carolina State University.*

4:15 PM [tab][tab] **Post-weaning feed and water deprivation has long- and short-term implications on nursery pig growth performance and gastrointestinal dynamics and influences subsequent stress response** - *Nathan Horn, Purdue University.*

Small ruminant symposium: Enhancing small ruminant profitability

Chair: Steven P. Hart, American Institute for Goat Research, Langston University

2:00 PM **Introductory Remarks.**

2:10 PM **Profitability of small ruminant production systems.**

G. W. Williams and D. P. Anderson, Texas A&M University, College Station, TX*

2:55 PM **Contribution of hair sheep to small ruminant profitability.**

J. Morgan, Round Mountain Consulting Service, Fayetteville, AR*

3:25 PM **Contribution of newer goat breeds to small ruminant profitability.**
*R. Browning, Jr.*¹ and M. L. Leite-Browning², ¹Tennessee State University, Nashville, TN, ²Alabama A&M University, Huntsville, AL*

3:55 PM **Contribution of forage production systems to small ruminant profitability.**
R. Ehrhardt, Michigan State university, east lansing, MI*

Thursday, July 20, 2016

ASAS Western Section young scholars

9:30 AM **Effects of organic or inorganic Co, Cu, Mn, and Zn supplementation to late-gestating beef cows on productive and physiological responses of the offspring.**

*R. Marques^{*1}, R. F. Cooke¹, M. C. Rodrigues¹, B. I. Cappellozza¹, R. R. Mills², C. K. Larson³, P. Moriel⁴, and D. W. Bohnert¹, ¹Oregon State University - EOARC Burns, Burns, OR, ²Oregon State University Extension Service, Pendleton, OR, ³Zinpro Corporation, Eden Prairie, MN, ⁴UF/IFAS Range Cattle Research and Education Center, Ona, FL*

9:45 AM **Altered rumen microbial populations in response to high sulfate water in lambs.**

*A. N. Abrams^{*1}, C. J. Clarkson¹, K. J. Austin¹, M. Ellison¹, H. C. Cunningham¹, G. C. Conant², W. R. Lamberson², T. M. Taxis², and K. M. Cammack¹, ¹Department of Animal Science, University of Wyoming, Laramie, WY, ²University of Missouri, Columbia, MO*

10:00 AM **Immunological implications of pregnancy: A focus on inflammatory cytokines.**

S. Z. Prosser, K. E. Quinn, and R. L. Ashley, New Mexico State University, Las Cruces, NM*

AALAC/ASAS Welfare: Meeting today's animal care standards: Are you ready?

Chair: Gretchen M. Hill, Michigan State University

9:30 AM **New Ag Guide—What should we expect?.**

A. B. Webster, Department of Poultry Science, The University of Georgia, Athens, GA*

10:05 AM **How ag research and teaching differs from “rodent” studies in AAALAC international accreditation.**

J. J. McGlone, Texas Tech University, Lubbock, TX*

10:40 AM Getting along with your IACUC and helping them understand agricultural species research.

J. Salak-Johnson, University of Illinois, Urbana, IL*

11:15 AM Applying AAALAC international's peer review program to support agricultural research programs.

J. Bradfield, AAALAC International, Frederick, MD*

11:50 AM AAALAC international agricultural animal research program accreditation at Purdue University: "The good, the bad, and the ugly".

J. S. Radcliffe, Purdue University, West Lafayette, IN*

ADSA production division symposium: Robotic dairying: Adapting farm and business management

Chair: Leo L. Timms, Iowa State University

9:30 AM Changes in dairy farm management strategies with the adoption of robotic milking.

J. Rodenburg, DairyLogix, Woodstock, ON, Canada*

10:00 AM Opportunities and challenges for herd health and reproduction with robotic milking.

S. J. LeBlanc, Department of Population Medicine, Ontario Veterinary College, University of Guelph, Guelph, ON, Canada*

10:30 AM Break.

10:45 AM Nutritional approaches in robotic herds.

A. Bach^{1,2}, M. Vidal², and V. Cabrera³, ¹ICREA, Barcelona, Spain, ²IRTA, Caldes de Montbui, Spain, ³University of Wisconsin-Madison, Madison, WI*

11:15 AM Finances and returns for robotic dairies.

*J. A. Salfer*¹, M. I. Endres², W. Lazarus², and K. Minegishi², ¹University of Minnesota, St. Cloud, MN, ²University of Minnesota, St. Paul, MN*

11:45 AM Panel Discussion.

Animal Behavior and Well-Being Symposium: "Metrics for on-farm animal welfare assessment – current state and future needs"

Chair: Trevor J. DeVries, Department of Animal Biosciences, University of Guelph

9:30 AM **Introductory Remarks.**

9:40 AM **Poultry welfare assessments: Where do we go from here.**
*R. Blatchford**, University of California, Davis, Davis, CA

10:20 AM **Metrics for beef cattle welfare.**
*D. Griffin**, Great Plains Veterinary Educational Center, Clay Center, NE

11:00 AM **Break.**

11:10 AM **Optimizing outcome measures of welfare in dairy cattle assessment.**
*E. Vasseur**, McGill University, Ste-Anne-de-Bellevue, QC, Canada

11:50 AM **The Common Swine Industry Audit: Future steps to assure positive on-farm animal welfare utilizing validated, repeatable and feasible animal-based measures.**
M. Pairis-Garcia¹ and C. J. Rademacher², ¹The Ohio State University, Columbus, OH,
²Swine Medicine Education Center, Department of Vet Diagnostic & Production Animal Medicine, Ames, IA

Bioethics symposium

Chair: James W. Knight, Virginia Polytechnic Inst and State Univ

9:30 AM **How was that chicken raised? Ethics and deliberating conscientiously about animal welfare standards.**
*R. X. Anthony**, University of Alaska Anchorage, Anchorage, AK

10:15 AM **Farm animal welfare: Three essential ingredients from an international context.**
*A. De Paula Vieira**, Positivo University, Curitiba, Brazil

11:00 AM **Break.**

11:15 AM **Breaking down communication barriers to connect with stakeholders.**
*R. Beck**, The Center for Food Integrity, Gladstone, MO

12:00 PM **Panel Discussion.**

Comparative gut physiology symposium

Chair: Andrew P Foote, USDA, ARS, US Meat Animal Research Center

9:30 AM **Introductory Remarks.**

9:45 AM **Diet, gut microbiome, brain and behavior.**

*J. Bienenstock**, *McMaster Brain-Body Institute, Hamilton, ON, Canada*

10:30 AM **Butyrate increases tight junction protein expression and enhances tight junction integrity in porcine IPEC-J2 cells stimulated with LPS.**

*H. Yan*¹ and K. M. Ajuwon², ¹Purdue University, West Lafayette, IN, ²Department of Animal Sciences, Purdue University, West Lafayette, IN*

10:45 AM **Understanding host-microbiota interplay using nutrimetabonomics.**

*S. P. Claus*¹, C. I. Le Roy¹, M. J. Woodward¹, and R. M. La Ragione², ¹The University of Reading, Reading, United Kingdom, ²University of Surrey, Guildford, United Kingdom*

11:30 AM **Effects of dietary fibers on obesity related physiological parameters in C57BL/6 mice.**

*C. Liu, A. K. Singh, M. Stewart, J. H. Uyehara-Lock, and R. Jha**, *University of Hawaii at Manoa, Honolulu, HI*

11:45 AM **The gut microbiome as a regulator of physiology, brain and behaviour: Implications for the treatment of stress-related disorders.**

*G. Clarke*¹, T. F. O'Callaghan^{1,2}, P. Ross¹, and C. Stanton¹, ¹University College Cork, Cork, Ireland, ²Teagasc Food Research Centre, Cork, Ireland*

12:30 PM **Intermission.**

2:00 PM **The microbiota-gut-brain axis: A key regulator of neural function across the lifespan.**

*J. F. Cryan**, *University College Cork, Cork, Ireland*

2:45 PM **Microbial modulation of the neonatal immune system: Lessons from infants and piglets.**

*S. M. Donovan*¹, M. Wang², L. A. Davidson³, I. Ivanov⁴, and R. S. Chapkin⁴, ¹University of Illinois, Urbana, IL, ²University of Illinois, Urbana, IL, ³Texas A&M University, College Station, TX, ⁴Texas A&M University, College Station, TX*

3:15 PM **The growing importance of defining gut "health" in animal nutrition and health.**

*P. Celi*¹, A. J. Cowieson², F. Fru-Nji², A. M. Kluentner², and V. Verlhac³, ¹Faculty of Veterinary and Agricultural Sciences, The University of Melbourne, Parkville, Australia, ²DSM Nutritional Products, Kaiseraugst, Switzerland, ³DSM Nutritional Products, Village-Neuf, France*

3:30 PM The microbiome and animal health.

*G. B. Penner^{*1}, T. A. McAllister², S. Li³, J. C. Plaizier³, E. Khafipour³, and L. L. Guan⁴,
¹University of Saskatchewan, Saskatoon, SK, Canada, ²Lethbridge Research and
Development Centre, AAFC, Lethbridge, AB, Canada, Lethbridge, AB, Canada,
³Department of Animal Science, University of Manitoba, Winnipeg, MB, Canada,
⁴Department of Agricultural, Food and Nutritional Science, University of Alberta,
Edmonton, AB, Canada*

4:15 PM In vitro fermentation characteristics of agricultural products and coproducts and its effect on the large intestinal microbiota of swine.

*U. P. Tiwari^{*1}, S. Mattus¹, K. Neupane², and R. Jha¹, ¹University of Hawaii at Manoa,
Honolulu, HI, ²University of Hawaii, Leeward Community College, Pearl City, HI*

4:30 PM Analysis of the gut microbiome in beef cattle and its association with feed intake, growth, and efficiency.

*P. R. Myer^{*1}, J. E. Wells², T. P. L. Smith², L. A. Kuehn², and H. C. Freetly², ¹The University
of Tennessee Institute of Agriculture, Knoxville, TN, ²USDA, ARS, U.S. Meat Animal
Research Center, Clay Center, NE*

Genomics symposium: Translational genomics to improve fertility of animals

Chair: Mark A. Mirando, USDA National Institute of Food and Agriculture

9:30 AM Translational genomics for improving sow reproductive longevity.

*D. C. Ciobanu^{*1}, S. D. Kachman¹, S. Olson¹, M. L. Spangler¹, M. D. Trenhaile¹, H.
Wijesena¹, P. S. Miller¹, J. J. Riethoven¹, C. A. Lents², J. F. Thorson², R. Massey³, and T. J.
Safranski³, ¹University of Nebraska - Lincoln, Lincoln, NE, ²USDA, ARS, U.S. Meat
Animal Research Center, Clay Center, NE, ³University of Missouri, Columbia, MO*

10:00 AM Detection and selection against early embryonic lethals in US beef breeds.

*J. F. Taylor^{*1}, R. D. Schnabel¹, B. Simpson², J. E. Decker¹, M. Rolf³, B. P. Kinghorn⁴, A. Van
Eenennaam⁵, M. D. MacNeil⁶, D. S. Brown¹, M. F. Smith¹, and D. J. Patterson¹,
¹University of Missouri, Columbia, MO, ²GeneSeek, a Neogen Company, Lincoln, NE,
³Oklahoma State University, Stillwater, OK, ⁴University of New England, Armidale,
Australia, ⁵University of California, Davis, CA, ⁶Delta G, Miles City, MT*

10:30 AM Genomic selection for improved fertility of dairy cows with emphasis on cyclicity and pregnancy.

*G. J. M. Rosa^{*1}, P. J. Pinedo², J. E. P. Santos³, R. C. Bicalho⁴, G. Schuenemann⁵, R. Chebel⁶,
K. N. Galvão³, R. O. Gilbert⁷, S. L. Rodrigue-Zas⁸, C. M. Seabury⁹, J. Fetrow⁶, and W. W.
Thatcher¹⁰, ¹University of Wisconsin, Madison, WI, ²Colorado State University, Fort
Collins, CO, ³University of Florida, Gainesville, FL, ⁴Cornell University, Ithaca, NY, ⁵The*

Ohio State University, Columbus, OH, ⁶University of Minnesota, Saint Paul, MN, ⁷Cornell University College of Veterinary Medicine, Department of Clinical Sciences, Ithaca, NY, ⁸University of Illinois, Urbana-Champaign, IL, ⁹College of Veterinary Medicine, Texas A&M University, College Station, TX, ¹⁰Department of Animal Sciences, University of Florida, Gainesville, FL

11:00 AM Improving fertility of dairy cattle using translational genomics.

*T. E. Spencer*¹, H. L. Neibergs², P. J. Hansen³, J. B. Cole⁴, J. Dalton⁵, D. A. Moore⁶, M. Chahine⁷, and A. De Vries³, ¹Division of Animal Sciences, University of Missouri, Columbia, MO, ²Department of Animal Sciences, Washington State University, Pullman, WA, ³Department of Animal Sciences, University of Florida, Gainesville, FL, ⁴Animal Genomics and Improvement Laboratory, Agricultural Research Service, United States Department of Agriculture, Beltsville, MD, ⁵University of Idaho, Caldwell, ID, ⁶Department of Veterinary Clinical Sciences, Washington State University, Pullman, WA, ⁷Department of Animal and Veterinary Sciences, University of Idaho, Twin Falls, ID*

Horse species symposium: Urban students in animal science and the impact of equine programs

Chair: Fernanda Camargo, University of Kentucky

9:30 AM Making animal sciences relevant to the Urban student: Connecting to the real world.

J. J. Parrish, University of Wisconsin, Madison, WI*

10:00 AM Creating hands on learning opportunities for inexperienced equine students.

K. L. Vernon, Clemson University, Clemson, SC*

10:30 AM Retaining urban students in animal science: The role of equine programs.

J. A. Sterle and H. D. Tyler, Iowa State University, Ames, IA*

11:00 AM Prolonged head elevation causes mucosal IgA fluctuation in horses.

J. M. Bobel, M. R. Di-Lernia, J. R. Abbott, M. T. Long, and L. K. Warren, University of Florida, Gainesville, FL*

11:15 AM Effect of a square toe or perimeter fit horseshoe on quality of movement and gait kinematics of the western pleasure horse.

*P. Q. Underwood¹, L. M. White*¹, K. W. Walter², D. Hogue¹, and L. K. Hirtz², ¹New Mexico State University, Las Cruces, NM, ²Truman State University, Kirksville, MO*

Beef cattle nutrition symposium: A look at the latest beef cattle NRC recommendations

Chair: Nathan M. Long, Clemson University

9:30 AM Overview of the process and changes in the 8th Edition of the Nutrient Requirements of Beef Cattle.

*M. L. Galyean**, Texas Tech University, Lubbock, TX

9:45 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Maintenance and growth.

J. S. Caton^{*1}, *C. R. Krehbiel*², *M. L. Galyean*³, and *L. O. Tedeschi*⁴, ¹Department of Animal Sciences, North Dakota State University, Fargo, ND, ²Oklahoma State University, Stillwater, OK, ³Texas Tech University, Lubbock, TX, ⁴Texas A&M University, College Station, TX

10:15 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Reproduction.

R. P. Lemenager^{*1}, *J. S. Caton*², *M. L. Galyean*³, and *L. O. Tedeschi*⁴, ¹Purdue University, West Lafayette, IN, ²Department of Animal Sciences, North Dakota State University, Fargo, ND, ³Texas Tech University, Lubbock, TX, ⁴Texas A&M University, College Station, TX

10:30 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Protein and metabolic modifiers.

J. H. Eisemann^{*1}, *M. L. Galyean*², *K. A. Beauchemin*³, *C. R. Krehbiel*⁴, and *L. O. Tedeschi*⁵, ¹North Carolina State University, Raleigh, NC, ²Texas Tech University, Lubbock, TX, ³Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ⁴Oklahoma State University, Stillwater, OK, ⁵Texas A&M University, College Station, TX

10:50 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Minerals, vitamins, and water.

T. E. Engle^{*1}, *J. S. Caton*², *M. L. Galyean*³, *L. O. Tedeschi*⁴, *N. A. Cole*⁵, *C. R. Krehbiel*⁶, *G. E. Erickson*⁷, *K. A. Beauchemin*⁸, *R. P. Lemenager*⁹, and *J. H. Eisemann*¹⁰, ¹Colorado State University, Fort Collins, CO, ²Department of Animal Sciences, North Dakota State University, Fargo, ND, ³Texas Tech University, Lubbock, TX, ⁴Texas A&M University, College Station, TX, ⁵USDA Agricultural Research Service, Bushland, TX, ⁶Oklahoma State University, Stillwater, OK, ⁷University of Nebraska, Lincoln, NE, ⁸Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ⁹Purdue University, West Lafayette, IN, ¹⁰North Carolina State University, Raleigh, NC

11:10 AM The 8th revised edition of the Nutrient Requirements of Beef Cattle: Environmental issues.

*N. A. Cole^{*1}, K. A. Beauchemin², G. E. Erickson³, L. O. Tedeschi⁴, and M. L. Galyean⁵,
¹USDA-ARS Conservation and Production Research Laboratory (retired), Bushland, TX,
²Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada,
Lethbridge, AB, Canada, ³University of Nebraska, Lincoln, NE, ⁴Texas A&M University,
College Station, TX, ⁵Texas Tech University, Lubbock, TX*

11:30 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Byproducts and feed composition.

*K. A. Beauchemin^{*1}, G. E. Erickson², H. Tran³, J. S. Caton⁴, N. A. Cole⁵, J. H. Eisemann⁶,
T. E. Engle⁷, M. L. Galyean⁸, C. R. Krehbiel⁹, R. P. Lemenager¹⁰, and L. O. Tedeschi¹¹,
¹Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada,
Lethbridge, AB, Canada, ²University of Nebraska, Lincoln, NE, ³National Animal
Nutrition Program, University of Kentucky, Lexington, KY, ⁴Department of Animal
Sciences, North Dakota State University, Fargo, ND, ⁵USDA-ARS Conservation and
Production Research Laboratory (retired), Bushland, TX, ⁶North Carolina State
University, Raleigh, NC, ⁷Colorado State University, Fort Collins, CO, ⁸Texas Tech
University, Lubbock, TX, ⁹Oklahoma State University, Stillwater, OK, ¹⁰Purdue
University, West Lafayette, IN, ¹¹Texas A&M University, College Station, TX*

11:50 AM The 8th Revised Edition of the Nutrient Requirements of Beef Cattle: Development and evaluation of the mathematical model.

*L. O. Tedeschi^{*1}, M. L. Galyean², K. A. Beauchemin³, J. S. Caton⁴, N. A. Cole⁵, J. H.
Eisemann⁶, T. E. Engle⁷, G. E. Erickson⁸, C. R. Krehbiel⁹, and R. P. Lemenager¹⁰,
¹Texas A&M University, College Station, TX, ²Texas Tech University, Lubbock, TX, ³Lethbridge
Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB,
Canada, ⁴Department of Animal Sciences, North Dakota State University, Fargo, ND,
⁵USDA-ARS Conservation and Production Research Laboratory (retired), Bushland, TX,
⁶North Carolina State University, Raleigh, NC, ⁷Colorado State University, Fort Collins,
CO, ⁸University of Nebraska, Lincoln, NE, ⁹Oklahoma State University, Stillwater, OK,
¹⁰Purdue University, West Lafayette, IN*

12:10 PM Panel Discussion.

Physiology, endocrinology and extension symposium: Enhancing adoption of reproductive management tools for beef and dairy producers

Chair: G. Cliff Lamb, University of Florida, North Florida Research and Education Center

9:30 AM History of the development of the Beef Reproduction Task Force (BRTF) and impacts of the BRTF on beef cattle reproductive management.

*S. Johnson^{*1}, R. F. Cooke², G. R. Dahlke³, R. N. Funston⁴, J. B. Hall⁵, D. J. Kesler⁶, G. C. Lamb⁷, J. Lauderdale⁸, D. J. Patterson⁹, G. A. Perry¹⁰, D. R. Strohbehn³, and A. L. Van Eenennaam¹¹, ¹Kansas State University, Colby, KS, ²Oregon State University - EOARC Burns, Burns, OR, ³Iowa State University, Ames, IA, ⁴University of Nebraska, North Platte, NE, ⁵University of Idaho Nancy M. Cummings Research, Extension Education Center, Carmen, ID, ⁶University of Illinois, Urbana-Champaign, IL, ⁷University of Florida, North Florida Research and Education Center, Marianna, FL, ⁸Lauderdale Enterprises, Inc., Augusta, MI, ⁹University of Missouri, Columbia, MO, ¹⁰Department of Animal Science, South Dakota State University, Brookings, SD, ¹¹University of California, Davis, CA*

10:00 AM History of the development of the Dairy Cattle Reproduction Council (DCRC) and impacts of the DCRC on dairy cattle reproductive management.

M. C. Lucy^{}, University of Missouri, Columbia, MO*

10:30 AM Physiological and management advances enhancing adoption of applied reproductive management procedures in beef cattle.

*D. J. Patterson^{*1}, R. F. Cooke², G. R. Dahlke³, R. N. Funston⁴, J. B. Hall⁵, G. C. Lamb⁶, J. Lauderdale⁷, G. A. Perry⁸, and A. L. Van Eenennaam⁹, ¹University of Missouri, Columbia, MO, ²Oregon State University - EOARC Burns, Burns, OR, ³Iowa State University, Ames, IA, ⁴University of Nebraska, North Platte, NE, ⁵Department of Animal & Veterinary Sciences, University of Idaho, Moscow, ID, ⁶University of Florida, North Florida Research and Education Center, Marianna, FL, ⁷Lauderdale Enterprises, Inc., Augusta, MI, ⁸Department of Animal Science, South Dakota State University, Brookings, SD, ⁹University of California, Davis, CA*

11:00 AM Physiological and management advances enhancing adoption of applied reproductive management procedures in dairy cattle.

J. S. Stevenson^{} and L. G. D. Mendonça, Kansas State University, Manhattan, KS*

11:30 AM Impacts of temperament on reproductive performance of Bos indicus and B. taurus beef females.

R. F. Cooke^{}, Oregon State University - EOARC Burns, Burns, OR*

12:00 PM Estrus: Association with productive parameters and implications to fertility.

*R. L. A. Cerri^{*1}, B. F. Silper¹, T. A. Burnett¹, A. M. L. Madureira², J. L. M. Vasconcelos², and L. Polsky¹, ¹Applied Animal Biology, Faculty of Land and Food Systems, University of British Columbia, Vancouver, BC, Canada, ²Sao Paulo State University, Botucatu, Brazil*

Production, management and the environment symposium: Impacts of livestock production on environmental reactive nitrogen

Chair: April B. Leytem, USDA-ARS

9:30 AM The world's nitrogen cycle and human impacts.

*J. Ham**, Colorado State University, Fort Collins, CO

10:00 AM Reactive N emissions from beef cattle feedlots.

*R. W. Todd**, *H. M. Waldrip*, *D. B. Parker*, and *N. A. Cole*, USDA Agricultural Research Service, Bushland, TX

10:20 AM Reactive nitrogen losses from dairy production systems.

A. B. Leytem^{*1} and *C. A. Rotz*², ¹USDA-ARS, Kimberly, ID, ²USDA-ARS Pasture Systems and Watershed Management Research Unit, University Park, PA

10:40 AM Reactive N emissions from crops and pastures.

*C. Wagner-Riddle** and *K. Congreves*, University of Guelph, Guelph, ON, Canada

11:00 AM Measurement and mitigation of reactive nitrogen species from swine and poultry production facilities.

*W. Powers** and *M. Capelari*, Michigan State University, East Lansing, MI

11:20 AM Modeling atmospheric reactive nitrogen.

J. O. Bash^{*1}, *K. Foley*¹, *J. T. Walker*¹, *M. W. Shepard*², *K. E. Cady-Pereira*³, *S. Napelenok*¹, *D. K. Henze*⁴, and *E. J. Cooter*¹, ¹U.S. EPA, Research Triangle, NC, ²Environmental Canada, Toronto, ON, Canada, ³Atmospheric and environmental Research Inc., Lexington, MA, ⁴University of Colorado, Boulder, CO

Toxic plants symposium

Chair: T. Zane Davis, ARS USDA

9:30 AM Is there a difference between exposures to one or two plant toxins?.

*K. D. Welch**, USDA, ARS, Poisonous Plant Research Laboratory, Logan, UT

9:55 AM Resistance to toxic plants: The right animal at the right time in the right pasture.

B. T. Green^{*1}, *K. D. Welch*¹, *J. W. Keele*², *T. G. McDaneld*², and *J. A. Pfister*³, ¹USDA, ARS, Poisonous Plant Research Laboratory, Logan, UT, ²USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, ³USDA ARS Poisonous Plant Research Laboratory, Logan, UT

10:20 AM Using divergent selection and genomics to uncover genetic variation underlying larkspur tolerance and susceptibility in cattle.

*J. W. Keele*¹, T. G. McDanel¹, L. A. Kuehn¹, W. M. Snelling¹, R. G. Tait, Jr.¹, K. D. Welch², and B. T. Green², ¹USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, ²USDA, ARS, Poisonous Plant Research Laboratory, Logan, UT*

10:45 AM Break.

11:10 AM The relationship between swainsonine-containing plants and endophytic fungi.

D. Cook, D. R. Gardner, and J. A. Pfister, USDA ARS Poisonous Plant Research Laboratory, Logan, UT*

11:35 AM Alleviation and mitigation of fescue toxicosis.

G. E. Aiken, USDA-ARS Forage-Animal Production Research Unit, Lexington, KY*

12:00 PM Effects of high selenium forages on reproduction in sheep.

Z. Davis, ARS USDA, Logan, UT*

Beef species symposium: Improving welfare of beef cattle

Chair: Judson T. Vasconcelos, Merck & Co

2:00 PM Welcoming Remarks.

2:05 PM Assessing and improving welfare in cow calf systems.

C. B. Tucker, University of California, Davis, CA*

2:35 PM Best management practices for weaned calves for improved health and well-being.

C. R. Krehbiel, B. K. Wilson, C. J. Richards, and D. L. Step, Oklahoma State University, Stillwater, OK*

3:05 PM Dairy cow culling – Best practices and industry trends.

J. Walker, Dean Foods, Dallas, TX*

3:35 PM Welfare assessments of low stress handling in finishing feedlot cattle.

K. S. Schwartzkopf-Genswein, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada*

4:05 PM Evolution of animal welfare at packing plants.

L. N. Edwards-Callaway, JBS USA LLC, Greeley, CO*

4:35 PM Panel Discussion.

4:50 PM **Concluding Remarks.**

Development of a hazard analysis for animal food performed for compliance with the federal food safety modernization act (AFIA/IFEEEDER) symposium

Chair: R. S. Sellers, American Feed Industry Association

2:00 PM **Introductory Remarks.**

2:20 PM **Requirements of the Hazard Analysis Section of the Animal Food Rules**—*David Edwards, Center for Veterinary Medicine, U.S. Food and Drug Administration.*

2:50 PM **Review process and categories of hazards for animal food**—*Dr. Jessica Evanson, Center for Animal Health and Food Safety, University of Minnesota.*

3:30 PM **Findings of the review process**—*Dr. Timothy Goldsmith, Center for Animal Health and Food Safety, University of Minnesota.*

4:10 PM **Animal food hazards report and proposed use**—*J. Evanson and T. Goldsmith.*

4:30 PM **Discussion.**

Growth and development symposium: New -OMICS technologies to understanding the biological processes and network pathways associated with cattle growth and health

Chair: Gary J Hausman; Angela Canovas, University of Georgia; University of Guelph

2:00 PM **Introductory Remarks.**

2:15 PM **Objective-oriented genomic relationship matrices.**
A. Reverter*, CSIRO Agriculture, Brisbane, Australia

2:55 PM **Multi-omics data resources and use in genetic improvement of cattle growth and health.**

M. G. Thomas*, S. J. Coleman, S. E. Speidel, and R. M. Enns, Department of Animal Sciences, Colorado State University, Fort Collins, CO

3:35 PM The new bovine reference assembly and its value for genomic research

Dr. Juan F. Medrano. University of California-Davis

4:15 PM Metagenomics and transcriptomics associated with adiposity and feed efficiency in beef cattle

Dr. Leluo Guan. University of Alberta

Horse species symposium: Nutrition and immunology

Chair: Fernanda Camargo, University of Kentucky

2:00 PM Nutritional immunology for the geriatric horse.

A. A. Adams, The Gluck Equine Research Center, University of Kentucky, Lexington, KY*

2:30 PM Nutrition and immunity: General principles.

K. C. Klasing, University of California, Davis, Davis, CA*

3:00 PM Optimizing nutrition to improve immune function in horses.

L. K. Warren, University of Florida, Gainesville, FL*

3:30 PM Effect of selenium and vitamin E supplementation on blood glutathione peroxidase activity and selenium in moderately exercised horses.

E. Velázquez Cantón, A. H. Ramírez Pérez, L. A. Zarco Quintero, R. Rosiles Martínez, and J. C. Ángeles Hernández, FMVZ-UNAM, MEXICO, Mexico*

3:45 PM Age-related changes in select fecal bacteria in foals.

*M. B. Pyles*¹, A. L. Fowler¹, V. Bill¹, B. E. Harlow^{1,2}, A. Crum¹, S. H. Hayes¹, M. D. Flythe^{1,2}, and L. M. Lawrence¹, ¹University of Kentucky, Lexington, KY, ²United States Department of Agriculture, Agricultural Research Service, Forage-Animal Production Research Unit, Lexington, KY*

4:00 PM Changes in equine hindgut fermentation and carbohydrate digestion in response to varying sources of nitrogen.

M. O. Lass, J. S. Drouillard, J. M. Kouba, C. I. Vahl, Y. Wei, and T. L. Douthit, Kansas State University, Manhattan, KS*

4:15 PM Effects of meal size and frequency on the equine cecal microbiota.

*E. B. Venable*¹, S. S. Bland¹, H. Holscher², T. W. Liu², and K. S. Swanson², ¹Southern Illinois University, Carbondale, IL, ²University of Illinois, Urbana, IL*

Livestock water symposium

2:00 PM Understanding blue and green water for feed production in animal agriculture.

*J. G. Warren**, Oklahoma State University, Stillwater, OK

2:45 PM Mineral balances including TMR, drinking water and assay minerals in the milk.

*A. R. Castillo**, UC Cooperative Extension, Merced, CA

3:15 PM Break.

3:30 PM *John Wagner, CSU.*

4:00 PM Simultaneous monitoring of water consumption in eight double pens as a tool for improving welfare and predicting diseases and unwanted behavioral changes in finisher pigs.

*K. N. Dominiak*¹, L. J. Pedersen², and A. R. Kristensen¹, ¹University of Copenhagen, Department of Large Animal Sciences, Frederiksberg, Denmark, ²Aarhus University, Department of Animal Science Behavior and Stress Biology, Aarhus, Denmark*

4:15 PM Growth and health performance of dairy calves drinking reverse osmosis water compared to municipal water.

N. D. Senevirathne, J. L. Anderson, and M. Rovai, Dairy Science Department, South Dakota State University, Brookings, SD*

4:30 PM Effect of protein supplementation on low-quality forage utilization and nitrogen balance by lambs drinking saline water.

*J. I. Arroquy*¹, A. Lopez², and A. Juarez Sequeira³, ¹INTA - CONICET - UNSE, Santiago del Estero, Argentina, ²INTA EEA Santiago del Estero, Santiago del Estero, Argentina, ³CONICET-FAyA UNSE, Santiago del Estero, Argentina*

Meat science and muscle biology symposium: Science of red meat consumption

Chair: Luigi Faucitano, Université Laval

2:00 PM Welcoming Remarks.

2:05 PM Beef's role in a healthy diet.

J. N. Martin, D. R. Woerner, R. Delmore, K. E. Belk, and J. D. Tatum, Colorado State University, Fort Collins, CO*

2:45 PM How certain can we be about the association of meat consumption and cancer?

D. M. Klurfeld, USDA Agricultural Research Service, Beltsville, MD*

3:25 PM The role of red and processed meat in colorectal cancer development: A perspective.

S. De Smet, Ghent University, Melle, Belgium*

4:05 PM Is there a role for meat in a plant-based diet?.

M. A. Binnie, Canadian Pork Council, London, ON, Canada*

4:45 PM Panel Discussion.

Friday, July 22, 2016

ASAS graduate student symposium

Chair: Kyle J. McLean, Department of Animal Sciences, North Dakota State University

10:30 AM Welcoming Remarks.

10:35 AM Marketing 101: Learning how to market yourself for a successful career.

R. M. Yamka, Blue Buffalo Company, Ltd., Wilton, CT*

11:00 AM Personal branding.

M. Calvo-Lorenzo, Elanco Animal Health, Greenfield, IN*

11:25 AM Bridging the gaps.

J. D. Crosswhite, North Dakota State University, Fargo, ND*

11:50 AM Doctoral programs in animal science: Strategies for targeting academic careers.

J. S. Caton, Department of Animal Sciences, North Dakota State University, Fargo, ND*

12:15 PM Panel Discussion.

12:25 PM Concluding Remarks.

Dairy foods division symposium: Advances in sustainability within the dairy processing industry

Chair: Lisbeth Goddik; Ying Wang, Oregon State University; Innovation Center for U.S. Dairy

10:30 AM New packaging and strategies to enhance your sustainability plan.

*E. Comere**, Tetra Pak Inc., Denton, TX

11:00 AM Life cycle environmental assessment of yogurt production and consumption in the USA.

*Y. Wang*¹, G. Thoma², D. Kim², and J. Burek², ¹Innovation Center for U.S. Dairy, Rosemont, IL, ²University of Arkansas, Fayetteville, AR*

11:30 AM Using big data to drive sustainable CIP.

*J. Curran**, Ecolab, St. Paul, MN

12:00 PM Processing sustainability – Ideas to create a comprehensive effort.

*D. Skidmore**, Hilmar Cheese Company, Inc., Hilmar, CA

12:30 PM Welcoming Remarks.

1:00 PM Concluding Remarks.

Food safety symposium

Chair: Todd R. Callaway, USDA-ARS

10:30 AM Have we improved food safety in live cattle?.

*K. Stanford**, *T. Reuter*, and *D. Niu*, Alberta Agriculture and Forestry, Lethbridge, AB, Canada

11:15 AM Characterization of zoonotic bacteria from dairy cattle in the era of genomics.

*J. A. S. Van Kessel**, *S. W. Kim*, *J. S. Karns*, and *B. J. Haley*, USDA-ARS, Beltsville, MD

Breeding and genetics symposium: Resilience of livestock to changing environments

Chair: John B Cole, Animal Genomics and Improvement Laboratory, Agricultural Research Service, United States Department of Agriculture

2:00 PM Production, biological, and genetic responses to heat stress in ruminants and pigs.

*L. H. Baumgard*¹, *J. T. Seibert*¹, *S. K. Kvidera*¹, *A. F. Keating*¹, *J. W. Ross*¹, and *R. P. Rhoads*², ¹*Iowa State University, Ames, IA*, ²*Virginia Tech, Blacksburg, VA*

2:30 PM Breeding for resilience to heat stress effects. A comparison across dairy ruminant species.

*M. J. Carabaño*¹, *M. Ramón*², *C. Díaz*¹, *A. Molina*³, *J. M. Serradilla*³, and *M. D. Pérez-Guzmán*⁴, ¹*INIA, Madrid, Spain*, ²*CERSYRA-IRIAF-CLM, Valdepeñas, Spain*, ³*Universidad de Córdoba, Córdoba, Spain*, ⁴*Centro Regional de Selección y Reproducción Animal (CERSYRA-IRIAF). Junta de Comunidades de Castilla La Mancha., Valdepeñas, Spain*

3:00 PM Climate change and selective breeding in aquaculture.

P. Sae-Lim^{*}, *Nofima, Ås, Norway*

3:30 PM Introgression of genes conveying resistance to heat stress into cattle populations using the “Slick” genetic variant as a model.

S. R. Davis^{*}, *R. J. Spelman*, and *M. J. Littlejohn*, *Livestock Improvement Corporation, Hamilton, New Zealand*

4:00 PM Genetic solutions to infertility caused by heat stress.

*P. J. Hansen*¹, *S. Dikmen*², *J. B. Cole*³, *M. S. Ortega*¹, and *G. E. Dahl*¹, ¹*Department of Animal Sciences, University of Florida, Gainesville, FL*, ²*Uludag University, Faculty of Veterinary Medicine, Department of Animal Science, Bursa, Turkey*, ³*Animal Genomics and Improvement Laboratory, Agricultural Research Service, United States Department of Agriculture, Beltsville, MD*

4:30 PM Resilience and lessons from studies in genetics of heat stress.

I. Misztal^{*}, *University of Georgia, Athens, GA*

Companion animal symposium: Fundamentals of protein nutrition

Chair: *Greg Aldrich, Kansas State University*

2:00 PM Introductory Remarks.

2:10 PM Global protein supply: Present and future considerations and availability.

D. L. Schaefer^{*}, *Cargill, Wichita, KS*

2:40 PM Alternative protein supplies for petfood.

G. Bosch^{*}, *Wageningen University, Wageningen, Netherlands*

3:10 PM Break.

3:25 PM Amino acid requirements and protein digestibility and assessment in dogs with considerations for cats.

*A. K. Shoveller**, University of Guelph, Guelph, ON, Canada

3:55 PM Idiosyncrasies of amino acid metabolism in dogs and cats.

*D. L. Harmon**, University of Kentucky, Lexington, KY

4:25 PM Panel Discussion.

CSAS symposium: Reducing the use of antibiotics in livestock production

Chair: Filippo Miglior; Eveline M Ibeagha-Awemu, Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph; Agriculture and Agri-Food Canada, Dairy and Swine Research and Development Centre

2:00 PM Alternatives to antibiotics in swine and poultry.

*D. Schokker**^{1,2} and *M. A. Smits*^{1,2,3}, ¹Wageningen UR Livestock Research, Wageningen, Netherlands, ²Animal Breeding and Genomics Centre, Wageningen, Netherlands, ³Wageningen UR, Central Veterinary Institute, Lelystad, Netherlands

2:30 PM Management of dairy cows to improve resistance to infectious diseases.

*P. Lacasse**¹, *N. Vanacker*^{2,3}, *S. Lanctôt*^{2,4}, and *S. Ollier*², ¹Agriculture and Agri-Food Canada, Sherbrooke Research and Development Centre, Sherbrooke, QC, Canada, ²Sherbrooke R&D Centre, Sherbrooke, QC, Canada, ³Université de Sherbrooke, Sherbrooke, QC, Canada, ⁴McGill University, Montréal, QC, Canada

3:00 PM Selection for disease resistance in swine.

*G. Plastow**, Livestock Gentec, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

3:30 PM Genomic approaches to characterizing and reducing antimicrobial resistance in beef cattle production systems.

*M. A. Javed*¹, *C. Klima*¹, *A. A. Cameron*¹, *T. W. Alexander*¹, *R. Zaheer*¹, *K. Munns*¹, and *T. A. McAllister**², ¹Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ²Lethbridge Research and Development Centre, AAFC, Lethbridge, AB, Canada, Lethbridge, AB, Canada

4:00 PM Nurturing healthy gut microbiome: route to increased disease resistance in ruminants.

*L. L. Guan**¹ and *N. Malmuthuge*², ¹Department of Agricultural, Food and Nutritional

Science, University of Alberta, Edmonton, AB, Canada, ²1Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

4:30 PM Pre- and probiotics for increased disease resistance in the nonruminant animal.

C. M. Nyachoti, University of Manitoba, Winnipeg, MB, Canada*

Extension education symposium: Growing extension's impacts with changing budgets and personnel

Chair: Julie A. Walker, South Dakota State University

2:00 PM Work-life balance for extension professionals: Maybe it should be redefined as 'work-life effectiveness'.

G. P. Lardy, North Dakota State University, Fargo, ND*

2:30 PM Enhancing your Extension program through a strong research program, and vice versa.

W. Powers, Michigan State University, East Lansing, MI*

3:00 PM Culturing and leveraging allied industry support for academic programs.

M. W. Overton, Elanco Animal Health, Greenfield, IN*

3:30 PM Developing regional and multi-state extension collaborations.

A. J. Young, Utah State University, Logan, UT*

4:00 PM Extension faculty navigating the tenure and promotion process.

N. E. Cockett, Utah State University, Logan, UT*

MILK Symposium: Marketing milk for entrepreneurial and big business value

Chair: Barry J. Bradford, Kansas State University

2:00 PM Get in the driver's seat: Marketing milk and dairy products to today's and tomorrow's consumers.

D. M. Berry, Dairy & Food Communications Inc., Chicago, IL*

2:45 PM Practices and programs to ensure the safety of artisan cheese.

D. J. D'Amico, University of Connecticut, Storrs, CT*

3:30 PM Camel milk from commodity to added value product. The science behind the development of the camel dairy industry.

*P. Nagy**, Emirates Industries for Camel Milk and Products, Dubai, United Arab Emirates

4:15 PM Terroir: science based or marketing gimmick.

*L. Goddik**, Oregon State University, Corvallis, OR

5:00 PM Reception.

Saturday, July 23, 2016

Triennial growth and development symposium

Chair: Gary J Hausman; Angela Canovas, University of Georgia;
University of Guelph

8:00 AM Introductory Remarks.

8:15 AM Muscle gene expression patterns associated with differential intramuscular fat in cattle and markers for skeletal muscle growth rate and major cell types.

*B. P. Dalrymple**, CSIRO Agriculture, Brisbane, Australia

9:00 AM Factors influencing bovine intramuscular adipose tissue development and cellularity.

*E. Albrecht*¹, L. Schering¹, Y. Liu¹, K. Komolka¹, C. Kühn², K. Wimmers³, and S. Maak¹,
¹Muscle Biology and Growth, Leibniz Institute for Farm Animal Biology (FBN),
Dummerstorf, Germany, ²Leibniz Institute for Farm Animal Biology (FBN),
Dummerstorf, Germany, ³Genome Biology, Leibniz Institute for Farm Animal Biology
(FBN), Dummerstorf, Germany*

9:45 AM Growth and growth rate influences bovine intramuscular adipose tissue gene expression in a differential manner.

*C. R. Krehbiel*¹, P. A. Lancaster², G. W. Horn³, J. D. Starkey⁴, E. D. Sharman⁵, and S. L. Roberts⁶,
¹Oklahoma State University, Stillwater, OK, ²Missouri State University,
Springfield, MO, ³Oklahoma Agricultural Experiment Station, Stillwater, OK, ⁴Starkey
Consulting Services, Gainsville, GA, ⁵Johnson Research, LLC, Parma, ID, ⁶Department of
Agricultural Sciences, West Texas A&M University, Canyon, TX*

10:20 AM Intermission.

10:50 AM Molecular mechanisms of bovine intramuscular fat deposition.
*M. Baik**, *H. J. Kang*, *S. J. Park*, and *M. Y. Piao*, *Department of Agricultural Biotechnology, College of Agriculture and Life Sciences, Seoul National University, Seoul, Korea, The Republic of*

11:30 AM Dedifferentiated fat (DFAT) cells: potential involvement in intramuscular adipogenesis.
M. S. Duarte^{*1}, *R. Bueno*¹, *M. V. Dodson*², and *G. J. Hausman*³, ¹*Universidade Federal de Viçosa, Viçosa, Brazil*, ²*Washington State University, Pullman, WA*, ³*University of Georgia, Athens, GA*

12:00 PM Metabolic programming and intramuscular adipogenesis.
*G. Takafumi**, *Kyushu University, Taketa-city, Japan*

12:30 PM Break.

1:30 PM Genetics and breeding for intramuscular fat and oleic acid content in pigs.
J. Estany^{*1}, *R. Ros-Freixedes*², *M. Tor*¹, and *R. N. Pena*¹, ¹*University of Lleida - Agrotenio Center, Lleida, Spain*, ²*Universitat de Lleida, Lleida, Spain*

2:10 PM The genetic landscape of intramuscular fat content and composition in pigs.
*M. Amills**, *Center for Research in Agricultural Genomics, Bellaterra, Spain*

2:50 PM Statistical models and tools for Integration of omics data to uncover the genetic control of pork quality and growth traits.
J. P. Steibel^{*1}, *D. Velez-Irizarry*¹, *S. Casiro*¹, and *C. W. Ernst*², ¹*Department of Animal Science, Michigan State University, East Lansing, MI*, ², *Michigan State University, East Lansing, MI*

3:30 PM Marbling: Management of cattle to maximize the deposition of intramuscular adipose tissue.
S. B. Smith^{*1} and *B. J. Johnson*², ¹*Texas A&M University, College Station, TX*, ²*Texas Tech University, Lubbock, TX*

4:10 PM Linking from the farm to the table.
*M. R. McMorris**, *Beef Improvement Opportunities, Guelph, ON, Canada*

4:55 PM Discussion.

Functional Annotation of Animal Genomes (FAANG) ASAS-ISAG joint symposium

Chair: Chris Tuggle,

8:30 AM Welcoming Remarks.

8:35 AM Introductory Remarks.

8:40 AM Important lessons from complex genomes.

*T. R. Gingeras**, Cold Spring Harbor Laboratory, Functional Genomics, Cold Spring Harbor, NY

9:20 AM Discussion.

9:35 AM Causal inference of molecular networks integrating multi-omics data.

*F. Peñagaricano**, University of Florida, Gainesville, FL

10:00 AM Break.

10:30 AM Genotypes to phenotypes: Lessons from functional variation in the human genome and transcriptome.

*B. E. Stranger**, Section of Genetic Medicine, Department of Medicine, Institute of Genomics and Systems Biology, Center for Data Intensive Sciences, University of Chicago, Chicago, IL

11:15 AM Discussion.

11:30 AM Recurrent chimeric transcripts in human and mouse.

S. Djebali^{1,2,3}, B. Rodríguez Martín^{2,3}, E. Palumbo^{2,3}, D. D. Pervouchine^{2,3}, A. Breschi^{2,3}, C. Davis⁴, A. Dobin⁴, G. Alonso⁵, A. Rastrojo⁵, B. Aguado⁵, T. R. Gingeras⁴, and R. Guigó^{2,3}*,
¹GenPhySE, INRA, Castanet-Tolosan, France, ²Universitat Pompeu Fabra (UPF), Barcelona, Spain, ³Bioinformatics and Genomics Programme, Centre for Genomic Regulation (CRG), Barcelona, Spain, ⁴Cold Spring Harbor Laboratory, Functional Genomics, Cold Spring Harbor, NY, ⁵Centro de Biología Molecular Severo Ochoa (CSIC - UAM), Madrid, Spain

11:55 AM Lunch

12:55 PM Improving genomic selection across breeds and across generations with functional annotation.

*B. Hayes*¹, A. J. Chamberlain², H. Daetwyler³, C. J. Vander Jagt², and M. E. Goddard⁴*,
¹Department of Economic Development, Melbourne, Australia, ²Dairy Futures Cooperative Research Centre, Bundoora, Australia, ³Department of Economic Development, Jobs, Transport and Resources, Bundoora, Australia, ⁴Department of Primary Industries, Melbourne, Australia

1:35 PM Discussion.

1:50 PM Integrating dynamic omics responses for universal personalized medicine.

G. I. Mias, Michigan State University, East Lansing, MI*

2:30 PM Discussion.

2:45 PM Break.

3:15 PM A review of sequencing and assembly methods that enhance computational use.

W. C. Warren, McDonnell Genome Institute, Washington University School of Medicine, St Louis, MO*

3:55 PM Updates on ongoing FAANG activities.

Companion animal symposium: Behavior and the human-animal bond

Chair: Brittany M. Vester Boler, Nestle Purina

10:00 AM Introductory Remarks.

10:10 AM Cognitive Assessment Protocols for Use with Companion Animals.

B. Milgram, CanCog Technologies, Toronto, ON, Canada*

10:40 AM Objective evaluation of behavior and stress- Ragen McGowan .

11:10 AM Break.

11:25 AM The human-animal bond: science-based approaches to improving companion animal welfare and adoption outcomes.

C. C. Cronney, Purdue University, W. Lafayette, IN*

11:55 AM 2015 Corbin Award Winner: Behavior and training of companion and zoo animals.

C. L. Morris, Iowa State University, Ames, IA*

12:25 PM Panel Discussion.

Physiology and endocrinology symposium: Pre- and post-natal impacts on offspring performance

Chair: Kimberly A. Vonnahme, North Dakota State University

9:30 AM Consequences of early nutritional insults on fetal hepatic glucose metabolism and insulin action.

*S. R. Wesolowski**, University of Colorado School of Medicine, Aurora, CO

10:20 AM Alterations in uteroplacental hemodynamics during melatonin supplementation in sheep and cattle.

*C. O. Lemley*¹ and K. A. Vonnahme², ¹Mississippi State University, Mississippi State, MS, ²North Dakota State University, Fargo, ND*

10:50 AM Development of the fetus and fetal reproductive tract in gilts subjected to heat stress from week 4 to 8 of gestation.

C. J. Bernhard, T. J. Safranski, M. C. Lucy, W. R. Lamberson, S. G. Moore, L. M. Mayo, and R. Molina-Coto, University of Missouri, Columbia, MO*

11:05 AM Break.

11:20 AM The effects of under- and over-feeding ewes during gestation on offspring growth and stem cell function.

K. E. Govoni, S. A. Reed, M. L. Hoffman, S. M. Pillai, and S. A. Zinn, Department of Animal Science, University of Connecticut, Storrs, CT*

11:50 AM Postnatal reproductive development and the lactocrine hypothesis.

*F. F. Bartol*¹, C. A. Bagnell², and A. F. George², ¹Auburn University, Auburn, AL, ²Rutgers University, New Brunswick, NJ*

12:40 PM Supplementation of corn-dried distiller's grains plus solubles to gestating beef cows fed low quality forage: neonatal calf performance.

*V. C. Kennedy*¹, J. J. Gaspers¹, B. Mordhorst¹, G. L. Stokka², M. L. Bauer¹, K. C. Swanson¹, and K. A. Vonnahme¹, ¹North Dakota State University, Fargo, ND, ²Department of Animal Sciences, North Dakota State University, Fargo, ND*

12:55 PM The effects of nutritional restriction on endogenous retroviruses and placentation during the first 50 d of gestation in beef heifers.

*K. J. McLean*¹, M. S. Crouse¹, M. R. Crosswhite², N. Negrin Pereira¹, A. K. Ward¹, C. R. Dahlen¹, L. P. Reynolds¹, P. P. Borowicz¹, B. W. Neville³, and J. S. Caton¹, ¹Department of Animal Sciences, North Dakota State University, Fargo, ND, ²North Dakota State University, Fargo, ND, ³North Dakota State University, Streeter, ND*

1:10 PM Concluding Remarks.