



## **SYMPOSIA LIST BY DAY**

### **SUNDAY, JULY 21, 2024 – ALL DAY**

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#### **ASAS-NANP Symposium: Mathematical modeling and data predictive analytics in animal nutrition – *Sponsored by National Animal Nutrition Program***

The long-term goal is to raise awareness of the needs and methods for quantitative bio-mathematical modeling in the study and application of agricultural sciences, including animal nutrition and animal food production, in the animal sciences communities. The symposium will focus on basic and advanced systems research in agriculture, including modeling approaches to animal nutrition, integration of research across disciplines, and data-driven and data science approaches to agricultural research and application. The symposium will be aimed primarily at younger scientists and pre-doctoral students interested in complex biological problems and data-driven applications relevant to animal nutrition and the food production system.

- Dr. Isabella Condotta, University of Illinois at Urbana-Champaign – TBD
- Dr. Hossein Moradi, South Dakota State University – Combining Dynamic Models with Deep Learning Through Time Series Analysis
- Dr. Hector Menendez South Dakota State University – Applying System Dynamics to Develop “Flight Simulators” for Sustainable Animal Production
- Dr. Florence Garcia-Launay, National Institute for Agriculture, Food, and Environment – Environmental evaluation of feeding strategies with agent-based modeling and life cycle assessment: from theory to practice
- Dr. Dan Tulpan, University of Guelph – Introduction to developing Python computational pipelines for predictive machine learning modelling of livestock data

#### **Biennial Reproduction Symposium – *Sponsored by USDA***

This symposium was supported by Agriculture and Food Research Initiative Competitive Grant no. 2022-67015-37968 from the USDA National Institute of Food and Agriculture.

- Dr. Ky G. Pohler, USDA – Current state of pregnancy loss in livestock
- Dr. Sarah Moorey, University of Tennessee – Follicle and oocyte contributions to embryonic mortality and pregnancy loss
- Dr. Vitor Mercadante, Virginia Tech University – Nutritional aspects of embryonic mortality and pregnancy loss
- Dr. Jay S. Johnson, USDA-ARS, Livestock Behavior Research Unit, West Lafayette – Environmental or Nutritional losses of pregnancy in livestock
- Dr. Reinaldo F. Cooke, Texas A&M University – Awardee Talk: Pregnancy losses in Bos indicus-influenced cowherds
- Dr. Pedro Fontes, University of Georgia – Contributions of sire diet to pregnancy establishment in cattle
- Dr. Andrea Sketch Lear, University of Tennessee – Infectious diseases and fertility
- Gary L. Williams, Texas A&M AgriLife Research/Texas A&M University – Awardee Talk: Goals, methods, and philosophy of graduate mentoring in reproductive physiology



**Companion Animal Health Symposium: Biotics2024 - Impact on companion animal health & well-being – Sponsored by Phileo**

- Dr. Rodolphe Rabot, Phileo by Lesaffre – Introduction: Precise fermentation - Overview of Lesaffre Capabilities
- Dr. Jan Suchodolski, Texas A&M University – Microbiota and Companion Animal Health
- Dr. Kelly S. Swanson, University of Illinois at Urbana-Champaign – Biotics: Are there differences?
- Dr. Ananda Portella Félix, Federal University of Parana – Beyond bacteria: Impact of live yeast as a probiotic on the intestinal health of dogs
- Dr. Elizabeth Bobeck, Iowa State University – The influence and interaction of nutrition with the immune system in companion animal models
- Julie Schulthess, Phileo by Lesaffre – Beneficial role of 1.3, .1.6 yeast beta glucan in Pet health
- Dr. Manuela Oliveira, University of Lisbon – Benefits of Pro- and Post-Biotics on Oral Care in Companion Animals

**MONDAY, JULY 22, 2024 – ALL DAY**

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**ASAS-WSASAS Beef Species Symposium: New perspectives on trace mineral nutrition to beef cattle – Sponsored by Selko Feed Additives**

- Dr. Jerry Spears, North Carolina State – Overview of trace minerals and considerations in defining their requirements
- Dr. John Arthington, University of Florida – Strategies to Optimize the Trace Mineral Status of Weaned Beef Calves
- Dr. Terry Engle, Colorado State University – Trace mineral nutrition to grain-fed feedlot cattle
- Dr. Rodrigo Marques, Virginia Tech – Physiological and health implications of trace mineral nutrition
- Dr. Pedro Fontes, University of Georgia – Trace minerals to improve bull fertility
- Dr. Javier Martin Teresa, Selko Feed Additives – Integrating homeostasis in practical mineral supplementation recommendations



### **Nonruminant Nutrition/Swine Species Symposium: Nutrition beyond growth (sustainability, health)**

- Dr. Frank Mittleohner, University of California, Davis – Sustainable Livestock, Sustainable Future: Why we need a toolkit of solutions to improve sustainability in Animal Agriculture
- Dr. Gerald C. Shurson, University of Minnesota – Approaches for improving nitrogen utilization efficiency and environmental sustainability of pork production systems
- Jay Moore, New Fashion Pork – Doing more with less, sustainable pork and crop production
- Dr. Brenda Higgins, Auburn University – TBD
- Dr. Yanhong Liu, University of California, Davis – feeding the weaned pig gut and beyond with non-nutritional additives
- Dr. Daniel Columbus, Prairie Swine Centre, Inc. – Dietary amino acid and protein content and effects on pig health and growth
- Dr. Ruurd Zijlstra, University of Alberta – Dietary functional fiber properties for improved health and disease outcomes in pigs
- Dr. Xingen Lei, Cornell University – Cross talk between micronutrient and macronutrient metabolism: implication on health and disease

### **MONDAY, JULY 22, 2024 – MORNING**

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#### **Animal Health Symposium: Microbiome influences in inflammation and immunity**

- Ben Willing, University of Alberta – Early microbial interactions shape subsequent disease resilience in pigs
- Dr. Jiuzhou Song, University of Maryland – Microbiome, Metabolomics, Epigenetics and Beef quality in Grass-fed Angus Cattle
- Robert Li, USDA-ARS – The gut microbiota modifies host-parasite interactions
- Lautaro Rostoll Cangiano, University of Wisconsin-Madison – Exploring the impact of the intestinal microbiota in health and disease
- Dr. Arun K. Bhunia, Purdue University – Remodeling intestinal barrier damage and gut microbiome by immunomodulatory actions of bioengineered probiotics



**ASAS-CSAS-WSASAS  
Annual Meeting**  
Alberta, Canada  
July 21-25, 2024

### **Horse Species Symposium: Recent advances in the equine microbiome**

The symposium will cover topics related to the equine gut microbiome, the role of the microbiome in disease, the role of metagenomics in the microbiome, dietary effects on the microbiome, and how various factors impact the gut microbiome regionally in horses.

- Dr. Robert Jacobs, Equine Innovation Manager, Purina Mills – Utilization of 16s sequencing data and physiological measurements to produce a comparative analysis of the equine microbiome
- Dr. Carolyn E. Arnold, Texas Tech University – The effects of antimicrobials and antimicrobial associated diarrhea on the fecal microbiome of the horse
- Dr. Stephen Coleman, Colorado State University – The "horse-side" of host-microbe interactions and gastrointestinal homeostasis in the equine hindgut
- Dr. Erin Perry, Southern Illinois University – The equine dermal microbiome: State of the science

## **MONDAY, JULY 22, 2024 – AFTERNOON**

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### **Animal Behavior and Well-Being Symposium: Heat stress and its impact on animal production and welfare – Sponsored by Temple Grandin Appreciation Club**

- Dr. Jimena Laporta, University of Wisconsin-Madison – Programming effects of early-life exposure to heat stress in cattle
- Dr. Philippe Moriel, University of Florida – Short- and long-term effects of heat stress in cow-calf pairs adapted to tropical and subtropical regions
- Dr. Jay S. Johnson, USDA-ARS, Livestock Behavior Research Unit, West Lafayette – Genomic selection and heat stress resilience in pigs: Advancements, applications, and challenges
- Dr. John Ritten, Ag Next Program, Colorado State University – Assessing economic implications of thermal stress of *Bos Indicus* and *Bos Taurus* species during finishing in northern Colorado

### **Meat Science and Muscle Biology Symposium: Genetic and epigenetic impacts on intramuscular adipocyte development**

- Marcio Duarte, University of Guelph – Focusing on the impacts of early nutrition on intramuscular adipocyte development of calves
- Min Du, Washington State University – Possible mechanisms underlying enhanced intramuscular adipogenesis in Wagyu cattle
- Jingdong Yin, China Agricultural University – Epigenetic Regulation of Intramuscular Adipocyte Development in Pigs
- Stephen B. Smith, Texas A&M University – Metabolic regulation of intramuscular adipose tissue development



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### **Ruminant Nutrition/Forages and Pastures Symposium: Microbial efficiency in high forage diets**

The most recent beef cattle requirements were released through NASEM about 5 years ago and there was a significant revision to the models representing microbial efficiency for high forage diets. This symposium gives some historical perspective as well as application in other ruminants, specifically dairy cattle, considering the high forage diets fed in to them, as well as evaluate current research with regard to microbial efficiency and protein supplementation.

- Dr. Luis Tedeschi, Texas A & M University – Charting the evolution of rumen microbial models from past to present
- Dr. Tim McAllister, Agriculture and Agri-Food Canada – Programming the rumen microbiome to optimize microbial efficiency in high forage diets
- Dr. Nicolas DiLorenzo, University of Florida – Rumen microbial crude protein synthesis in high forage diets
- Dr. Joseph McFadden, Cornell University – Forages and enteric methane production in dairy cattle: Path toward mitigation

### **TUESDAY, JULY 23, 2024 – ALL DAY**

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#### **Ruminant Nutrition Symposium: Microbial solutions in beef and dairy nutrition – *Sponsored by Novonesis (formerly Chr Hansen)***

- Dr. Philippe Moriel, University of Florida – Overview of probiotic supplementation and opportunities to improve cow-calf production
- Dr. Terry Engle, Colorado State University – Use of probiotics in feedlot diets
- Dr. Luiz Felipe Ferraretto, University of Wisconsin-Madison – Modulating silage fermentation with microbial inoculants
- Dr. Alex Bach, Institució Catalana de Recerca i Estudis Avançats-Spain – Probiotics (direct fed microbials) and feed efficiency in dairy cows
- Dr. Joao Vendramini, University of Florida – Microbial inoculant effects on limpgrass silage
- Dr. Luiz G. Nussio, ESALQ Universidade de Sao Paulo-Brazil – Probiotics in silage production



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## **TUESDAY, JULY 23, 2024 – MORNING**

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### **Companion Animal Symposium I: The future is functional: Functional ingredients, nutraceuticals, and supplements for companion animals**

Diet and nutrition can profoundly affect the health, wellbeing, and longevity of our companion animals. As such, there is considerable appeal for incorporating functional ingredients, nutraceuticals, and/or supplements that may infer added benefits to animal health and vitality. However, while these components have the potential to play important physiological and metabolic roles, in order for that potential to be realized, it is imperative that we do what is necessary from a research and knowledge translation perspective so as to understand and characterize their purpose, performance, safety, and tolerance. As such, the objectives of this symposium are to provide an overview of functional ingredients, nutraceuticals, and supplements that may be considered more conventional while also exploring what the future may hold with regard to novel or emerging functional components intended for companion animals.

- Dr. Isabella Corsato Alvarenga, Colorado State University – The therapeutic potential of cannabinoids for companion animals
- Dr. Kelly S. Swanson, University of Illinois at Urbana-Champaign – The past, present, and future of biotics in companion animal nutrition
- Dr. Anna-Kate Shoveller, University of Guelph – The role of functional amino acids in optimizing nutrition and health
- Dr. Melissa Singletary, Auburn University – Affecting the senses: Impacts of pharmaceuticals and nutraceuticals on olfactory acuity



### **Contemporary and Emerging Issues Symposium: The sustainability gap from classroom to boardroom: Addressing the true costs, industrial pressures, and real-world applications of sustainability in the livestock industries**

Action on improving sustainability of livestock production systems requires a whole system approach, involving all segments of the production, processing and distribution chain. Agricultural scientists around the world seek technical solutions to improve sustainability of production in various dimensions: environmental, economic, and social; However, implementation of these technologies depends upon a complex decision-making process by each actor in the system. Their actions depend on public policy, finance, trade agreements, and corporate board decisions, as well as the economic implications of each action. The drivers in the decision-making process are not only market-driven but increasingly regulatory limitations, with ever-more stringent reporting requirements. This symposium aims to present the current environment of rewards and penalties that drive these decisions at all levels, from primary producers all the way through processors and distribution chains. This information will not only aid scientists in the development and implementation of sustainability research but provide the teaching community the needed knowledge to instruct and advise on industry sustainability.

- Dr. Sarah Klopatek, JBS Foods – The Who, What, and Why of Scope 3: The Corporate Animal Agriculture Sustainability Journey
- Dr. Kristen Johnson, Washington State University – The harsh reality of methane-reducing feed additives and the carbon markets
- David Dayhoff, dsm-firmenich Animal Nutrition & Health – The ultimate disclosure, Scope 3 reporting, what it means for sustainability investment, and what are the gaps?
- Matt Dight, Pilgrim's UK – The European sustainability journey

### **Growth and Development Symposium: Impacts of micronutrient supplementation on skeletal muscle growth and development**

This symposium will focus on what researchers have been working on looking at different micronutrients over the past few years and showcase that work.

- Dr. Ana Clara Baiao Menezes, South Dakota State University – Vitamin and mineral supplementation to gestating beef heifers: Fetal physiology and metabolic programming
- Dr. Kara Thornton, Utah State University – Understanding how zinc and manganese impact growth of bovine satellite cells
- Dr. Jessica Starkey, Auburn University – Impact of maternal and postnatal 25-hydroxycholecalciferol supplementation on porcine and avian satellite cell mitotic activity and skeletal muscle growth characteristics
- Dr. Caleb Reichhardt, University of Hawaii – Examining the role of vitamin E in ruminant livestock growth and production



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## **TUESDAY, JULY 23, 2024 – AFTERNOON**

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### **Animal Breeding and Genetics Symposium: Genome-enabled optimization of deep phenotyping**

Deep phenotyping, defined as a comprehensive and detailed approach to characterizing traits of animals, including those based on the study of its -omes beyond its own genome, has the potential to make a major impact on animal breeding and genetic research. While past studies have largely focused on ways to integrate deep phenotyping to gain new knowledge but also to support genetic evaluation, deep phenotyping currently requires massive investment, limiting its effective and widespread use under field, but also in experimental conditions. This problem extends to complex phenotype taking as feed intake, methane emissions or in general use of expensive sensors. Even with all the possible investment, many phenotyping efforts are limited by the poor choice of animals. Because genotyping is in many cases much cheaper than phenotyping and can be performed at early stages, genomics can help organize animal sampling in an efficient manner. Therefore, the main theme of this workshop is to discuss how genomics can help optimize deep phenotyping, or, in other words, "genome-enabled selective phenotyping for deep phenotyping."

- Nicolas Gengler, University of Liège – Synergistic optimization: utilizing genomic insights to enhance strategies for joint selective (deep) phenotyping and recursive creation of genomic reference populations
- Juan Steibel, Iowa State University – TBD
- Dr. Ching-Yi Chen, PIC – Leveraging digital phenotyping from research to implementation: insights from a pig breeding company
- Dr. Donagh Berry, TEAGASC – Many farmers want a prediction of future performance, not necessarily breeding potential

## **WEDNESDAY, JULY 24, 2024 – MORNING**

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### **ASAS Public Policy Committee Symposium: Government science and research strategy as applied to animal agriculture**

It is imperative for members of ASAS and CSAS to understand the current scientific strategies for both the United States and Canada with particular understanding of the role of research in animal agriculture. Understanding the strategies will allow members to be more competitive for grant dollars and ensure that membership continues to have a voice in research based animal agriculture decisions.

- Dr. Jeffrey Silverstein, Deputy Administrator Office of National Programs Animal Production and Protection – TBD





### **Beef Species Symposium I: Improvement of beef quality: Genetic improvements and management practices**

This symposia will focus on management practices that directly impact the feedlot and packing industries. The four main topics include: 1) Genetics - How long does it take for genetics to improve carcass characteristics; 2) Feeding Cattle – Optimal Days on Feed - Rates of change of economically important performance and carcass characteristics; 3) Packer Perspective – Balancing Limited Supply with Carcass Size and Impact of Beef x Dairy to the Packer; and 4) Changing the Conversation – Evaluating Feedyard Closeouts and the Beef System on a Carcass Basis.

- Dr. Bailey Engle, US MARC, Clay Center, NE – Genetics–How long does it take for genetics to improve carcass characteristics
- Dr. Michael Galyean, Texas Tech University – Feeding Cattle–Optimal Days on Feed– Rates of change of economically important performance and carcass characteristics
- Dr. Ty Lawrence, West Texas A&M University – Packer Perspective–Balancing Limited Supply with Carcass Size and Impact of Beef x Dairy to the Packer
- Dr. Jessica Sperber, University of Nebraska-Lincoln – Changing the Conversation– Evaluating Feedyard Closeouts and the Beef System on a Carcass Basis

### **CSAS Symposium I: Celebrating 99 Years of Canadian Animal Science – *Sponsored by the Canadian Society of Animal Science***

In honour of the 99th anniversary of the Canadian Society of Animal Science in 2024, “Celebrating 99 Years of Animal Science” will bring together early-career and senior scientists to reflect on key advances and present current research in Canadian animal science. Panelists will be among the contributors to a corresponding special collection of articles to be published by the Canadian Journal of Animal Science. Representing a diversity of topics in the field, the discussion will highlight quality research from animal scientists in Canada and will touch on their implications for broader issues such as food policy, land use and sustainability, and climate change. The symposium will focus on topics where Canadian scientists have made some of the most significant contributions to Animal Science in Canada and beyond.

- Stephanie Terry, Agriculture and Agri-Food Canada – A 99 Year Journey on the Use of By-Product Feeds in Canadian Livestock Production
- Tim McAllister, Agriculture and Agri-Food Canada, Reflections on the most cited paper in the ninety-nine-year history of Canadian Society of Animal Science
- Tim McAllister, Agriculture and Agri-Food Canada – Ninety-nine years of accomplishment by Canadian Animal Scientists
- Karen Schwartzkopf-Genswein, Agriculture and Agri-Food Canada – A 99 Year Journey on the Evolution of Health and Welfare in Canadian livestock
- Emma McGeough, University of Manitoba – A 99 year journey on the development of Canadian forages for livestock production
- Kim Stanford, University of Lethbridge – A 99-year journey on the evolution of food safety in Canadian livestock production
- Leluo Guan, The University of British Columbia – Microbial Interventions to Improve Gut Health in Neonatal Ruminants



### **Comparative Gut Physiology Symposium: Experimental models for studying nutrient absorption and intestinal function**

- David Harmon, University of Kentucky – Application of the Fick Principle for the study of visceral nutrient absorption and metabolism
- Dr. Anne Laarman, University of Alberta – Nutrient transport across gastrointestinal tissues using Ussing chambers
- Dr. Ming Fan, University of Guelph – Advances in using membrane vesicles for studying intestinal functions
- Dr. Milena Saqui-Salces, University of Minnesota – Use of organoids as in vitro model to study intestinal function

### **Forages and Pastures Symposium: Precision technology in forage & pasture systems**

New precision technologies are quickly changing the landscape of various aspects of livestock production, including forage-based systems. There are becoming multiple different technologies which can be employed to aid in animal management, precision nutrition, and expediting nutrient analyses.

- Dr. Hector Menedez, South Dakota State University – Applying precision rangeland grazing management systems in Western South Dakota
- Dr. Marcos Cordeiro, University of Manitoba – Leveraging Remote Sensing Products to Estimate Forage Productivity in the Canadian Prairies
- Dr. Jim Sprinkle, University of Idaho – Unlocking the Mysteries of Cow and Calf Grazing Behavior on Rugged Rangeland Pastures Using GPS and Accelerometer Sensor Technology
- Dr. Doug Tolleson, Texas A & M University – Applying Physics and Math to Describe Chemistry and Biology at the Plant/Animal Interface
- Dr. Sarah Place, Colorado State University – What we have Learned and are Still Learning about Enteric Methane Emission Measurements in Extensive Grazing Environments



## WEDNESDAY, JULY 24, 2024 – AFTERNOON

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### **Beef Species Symposium II: Increasing the resilience of beef cattle feeder supply**

This symposium will address multiple factors impacting the supply of beef calves to the feedlot industry. Topics include: (Economics) what do calf, fed cattle, and beef prices and supply look like in 5 to 10 years; (cow/calf systems) Impacts of drought on cow herd efficiency; (Feeder cattle Management) Challenges and opportunities with light weight feeder cattle on health, performance and carcass quality; and (Beef on Dairy Crossbred Cattle) what management practices at the calf ranch and feedyard - what have we learned in the past decade and where do we go moving forward?

- Dr. Paul A. Beck, Oklahoma State University – Impacts of Drought on Long-Term Cow-Calf Productivity and Potential Management Strategies for Producers to Overcome these Challenges
- Dr. Sandi Parr, G.K. Jim Group – It's 2024. Do You Know Where Your Feeders Are?
- Dr. Karen S. Schwartzkopf-Genswein, Agriculture and Agri Food Canada – Transition from the ranch to the feedyard: Challenges and management strategies to improve calf health welfare and performance
- Dr. Glynn Tonsor, Kansas State University – Beef-Cattle Outlook & Economic Thoughts on Resilience

### **Companion Animal Symposium II: New technologies and techniques in companion animal research**

The need for companion animal research continues to grow year after year as we identify new areas for exploration and deeper understanding. At the same time, companion animal researchers are faced with greater restrictions and more public scrutiny. New techniques and technologies must be employed to uncover new discoveries within these guardrails without lessening research quality. As such, the objective of this symposium is to highlight updates to previously discussed techniques and define uses for newer techniques within the companion animal research field.

- Dr. Scott McGrane, Waltham Petcare Science Institute – Combining in silico, in vitro, and in vivo approaches for studying taste perception and preferences of domestic cats and dogs
- Dr. Matthew Nosworthy, Agriculture and Agri-Food Canada – Characterizing protein quality with in vitro methodologies
- Dr. Christopher Zdyski, 3D Health Solutions Inc. – Development of non-model Organoids in Animal Research: A Paradigm Shift in In Vitro Models
- Dr. Carolyn M. Slupsky, University of California, Davis – Using 'omics to optimize nutrition and health outcomes



**CSAS Symposium IIA: Animal genomics and future perspectives – Sponsored by the Canadian Society of Animal Science**

- Younes Miar, Dalhousie University – American Mink Genome Sequencing Project
- Changxi Li, Agriculture and Agri-Food Canada/University of Alberta – Development, deployment, and calibration of genomic selection tools to improve performance traits for Canadian beef cattle
- Emily Leishman, University of Guelph – Leveraging genomics to advance the breeding of Canadian livestock

**CSAS Symposium IIB: Raising Bison: Future perspectives – Sponsored by the Canadian Society of Animal Science**

Bison is a native species to the North American plains adapted to local weather conditions and naturally available feeds. Bison are better suited than cattle at utilizing low quality feeds, which leads to economic advantages in cost of production. There is a growing interest in the perspective of raising bison in a way that promotes and builds on these advantages that will help keep them a distinct, unique product in the marketplace. A look into the bison production perspectives will be discussed at the present Symposium through well knowledge speakers in the field.

**Teaching/Undergraduate & Graduate Education Symposium: Connecting experiential learning with employment opportunities—what industry wants us to know**

Animal Science programs have devoted a great deal of attention to revising curricula to serve the students of today. An important part of that curricula, and arguably the most direct path to employment may be experiential learning. While many courses have changed and teaching methodologies have adapted, the format and expectations for experiential learning may not have changed as much, which raises the question—how do we keep experiential learning aligned with employer’s expectations? Hearing from industry leaders about the knowledge, skills, and values that they are looking for in our undergraduate and graduate students will help instructional faculty to evaluate existing experiential learning and determine if revision and/or creation of new opportunities may better serve our students. Similarly, hearing from faculty who have created and/or are operating successful experiential learning programs will provide possible templates by which we can expand/improve our existing programs to better serve our students.

- Dr. Amy Abrams, Berry College – From classroom to careers: Using coursework to expand student career perspectives and preparedness in animal science
- Dr. Charlie Elrod, President and CEO of Natural Biologics – Preparing yourself, or your students, for a career in the animal science industries
- Dr. Haley Larson, Kansas State University – Designing academic talent pipelines to meet employment needs of the animal science industry



## THURSDAY, JULY 25, 2024 – MORNING

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### **Cell Biology Symposium: Impacts of DNA methylation on fetal development in livestock –**

*Sponsored by ASAS-ADSA Northeast Section*

- Dr. Marc-André Sirard, Laval University, Québec – Bovine embryo epigenetic analysis according to periconceptional conditions and new information on post natal phenotypes
- Dr. Susanta Behura, University of Missouri – Regulation of brain-placental axis in mouse versus pig
- Dr. Catherine Ernst, Michigan State University – DNA methylation patterns and transcriptional regulation during pig fetal skeletal muscle development
- Dr. Nicole Tillquist, University of Connecticut – Fetal Programming in Sheep: Epigenetic modifications in offspring from poorly nourished dams

### **Physiology And Endocrinology Symposium: Artificial intelligence and machine learning to improve livestock farming**

This symposium is based on the ever-expanding use of “data science” in the fields of reproduction, behavior, and nutritional management to predict physiological outcomes that are important in determining productive efficiency. Although the number of papers on this topic is not large, this symposium will highlight emerging work in this area.

- Dr. Joao Dorea, University of Wisconsin-Madison – Artificial Intelligence and Machine Learning to Improve Livestock Farming
- Dr. Dan Tulpan, University of Guelph – Advanced computing and information technology to address challenges in livestock production
- Dr. Matthew Wilson, West Virginia University – A New Approach To Measuring Dry Matter Intake, from Drylot to Pasture: Activities of the Alliance for Regenerative Livestock
- Dr. Matt Spangler, University of Nebraska-Lincoln – Machine learning and AI to improve genetic prediction in beef cattle: Potential uses and misuses
- Dr. Upinder Kaur, Purdue University – Cyber-physical systems with robots and AI for precision dairy farming