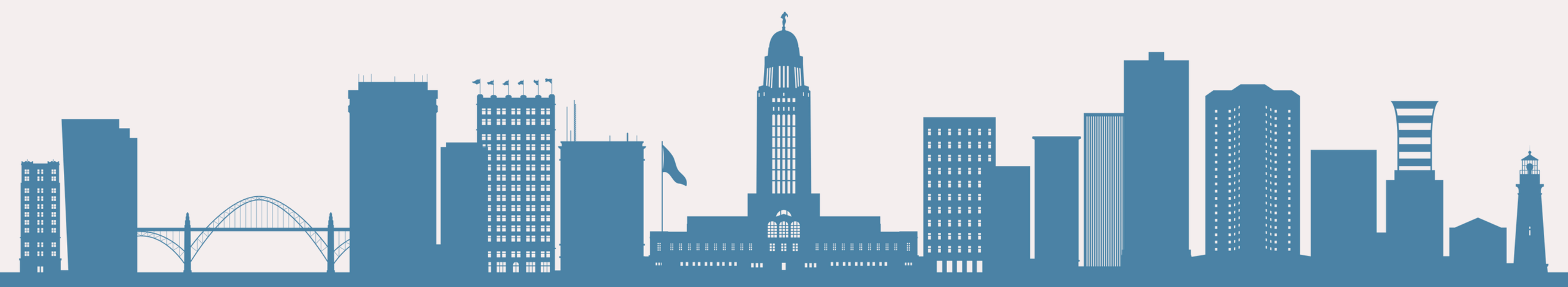
U.S.
PRECISION LIVESTOCK FARMING
CONFERENCE

2025 ANNUAL CONFERENCE

JUNE 2-5, 2025

EMBASSY SUITES
1040 P STREET
LINCOLN, NEBRASKA



PROGRAM AT A GLANCE

U.S.
PRECISION LIVESTOCK FARMING
CONFERENCE

**ALL TIMES LISTED IN CENTRAL STANDARD TIME.*

SUNDAY, JUNE 1

5:00 - 7:00 PM REGISTRATION OPEN

MONDAY, JUNE 2

8:00 AM - 5:00 PM REGISTRATION OPEN AND VENDOR SET UP

8:00 AM NC1211 MEETING - REGENT A

12:00 PM TOURS - EASTERN NEBRASKA RESEARCH, EXTENSION AND EDUCATION CENTER

TUESDAY, JUNE 3

8:00 AM OPENING

8:45 AM BREAK

9:00 AM ORAL SESSIONS - REGENTS A AND CHANCELLOR 2-3
- PRECISION TOOLS FOR MONITORING SWINE BEHAVIOR
- EMERGING TECHNOLOGIES FOR EARLY DISEASE DETECTION IN ANIMAL AGRICULTURE

10:15 AM POSTER SESSIONS - REGENTS D-E-F
- ADVANCES IN MONITORING ANIMAL BEHAVIOR, MOTION, AND WELFARE
- MACHINE LEARNING AND REMOTE SENSING FOR FORAGE AND PLANT COMPOSITION ANALYSIS

11:15 AM ORAL SESSION - REGENTS A AND CHANCELLOR 2-3
- PRECISION TECHNOLOGIES FOR SOW AND PIGLET HEALTH MONITORING
- TRACKING CATTLE BEHAVIOR AND RESOURCE USE WITH PRECISION TECHNOLOGIES

12:30 PM LUNCH
- KEYNOTE - DR. JIM PILLEN, STATE OF NEBRASKA GOVERNOR

1:45 PM ORAL SESSION - REGENTS A AND CHANCELLOR 2-3
- DATA-DRIVEN STRATEGIES FOR BROILER WELFARE AND PERFORMANCE
- COMPUTER VISION FOR CATTLE MONITORING AND IDENTIFICATION

3:00 PM POSTER SESSION - REGENTS D-E-F
- ENGINEERING INNOVATIONS FOR ENVIRONMENTAL CONTROL IN LIVESTOCK FACILITIES
- TECHNOLOGIES FOR DISEASE DETECTIONS AND ENVIRONMENTAL EVALUATION IN LIVESTOCK SYSTEMS

4:00 PM ORAL SESSIONS - REGENTS A AND CHANCELLOR 2-3
- COMPUTER VISION AND DATA INTEGRATION FOR SOW AND PIGLET MANAGEMENT

5:15 PM PROGRAMMING CONCLUDES

7:00 PM GALA DINNER
- SPONSORED BY C-LOCK

9:30 PM GALA CONCLUDES

WEDNESDAY, JUNE 4

8:00 AM — **KEYNOTE PANEL - REGENTS B-C**
- SUSTAINABILITY IN ANIMAL SYSTEMS: INTEGRATING PEOPLE, TECHNOLOGY, AND WELFARE

9:00 AM — **POSTER SESSIONS - REGENTS D-E-F**
- EVALUATING AND OPTIMIZING PRECISION LIVESTOCK FARMING ENVIRONMENTS
- INNOVATIVE TECHNOLOGIES AND ETHICAL STRATEGIES FOR ADVANCING SUSTAINABLE ANIMAL AGRICULTURE

10:00 AM — **ORAL SESSIONS - REGENTS A AND CHANCELLOR 2-3**
- ADVANCES IN SWINE BEHAVIOR MONITORING THROUGH SENSING AND DATA ANALYTICS
- EVALUATION OF FARMER AND PUBLIC PERCEPTION OF PLF TOOLS

11:15 AM — **POSTER SESSIONS - REGENTS D-E-F**
- INTELLIGENT SYSTEMS FOR POULTRY WELFARE AND ENVIRONMENTAL MONITORING
- EMERGING TECHNOLOGIES FOR BEHAVIOR, HEALTH, AND IDENTIFICATION IN CATTLE

12:15 PM — **WORKING LUNCH**

2:00 PM — **ORAL SESSIONS - REGENTS A AND CHANCELLOR 2-3**
- ADVANCES IN POULTRY ACTIVITY MONITORING TECHNOLOGIES
- INNOVATE APPROACHES FOR MONITORING METHANE AND GREENHOUSE GAS EMISSIONS IN CATTLE

3:15 PM — **POSTER SESSIONS - REGENTS D-E-F**
- ENHANCING GRAZING EFFICIENCY AND SUSTAINABILITY THROUGH PRECISION TECHNOLOGIES
- ADVANCES IN COMPUTER VISION AND SENSOR TECHNOLOGIES FOR PRECISION SWINE MANAGEMENT

4:15 PM — **BREAK**

4:30 PM — **KEYNOTE PANEL - REGENTS B-C**
- FROM CONCEPT TO COMPANY:NAVIGATING THE PATH OF AGRICULTURAL INNOVATION

5:30 PM — **PROGRAMMING CONCLUDES**

THURSDAY, JUNE 5

8:00 AM — **KEYNOTE PANEL - REGENTS B-C**
- USERS OF TECHNOLOGIES: REAL-WORLD PERSPECTIVES FROM SWINE, DAIRY, AND POULTRY SYSTEMS

9:00 AM — **POSTER SESSIONS - REGENTS D-E-F**
- NEXT-GENERATION TECHNOLOGIES FOR GRAZING CATTLE MANAGEMENT
- AI, ROBOTICS, AND AUTOMATED MONITORING IN LIVESTOCK AND POULTRY SYSTEMS

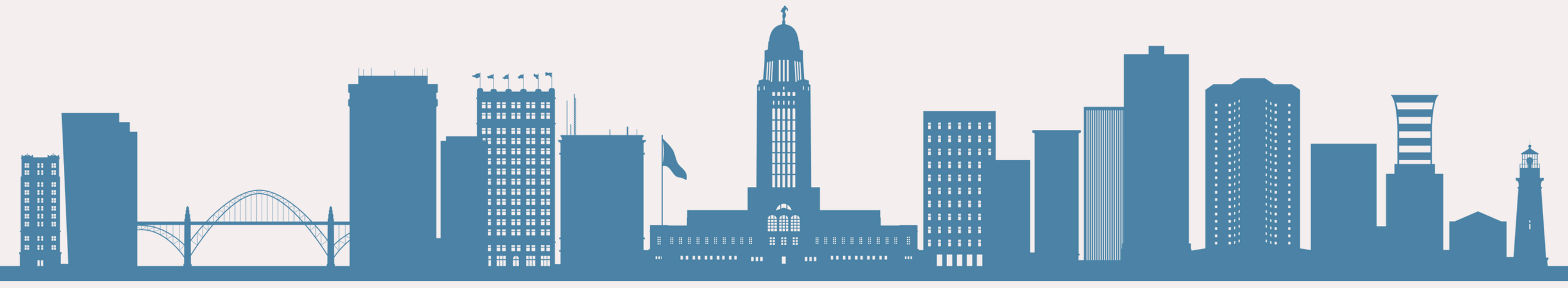
10:00 AM — **ORAL SESSIONS - REGENTS A AND CHANCELLOR 2-3**
- ADVANCES IN AUTOMATED MONITORING OF BROILER HEALTH AND REPRODUCTION
- INTEGRATING IMAGING, SENSING, AND MACHINE LEARNING FOR CATTLE MONITORING

11:15 AM — **CLOSING SESSION - REGENTS B-C**

12:30 PM — **LUNCH: CONNECTING STUDENTS TO INDUSTRY - REGENTS B-C**

1:00 PM — **EDUCATIONALWORKSHOP - REGENTS B-C**
- BUILDING THE FUTURE WORKFORCE IN PRECISION LIVESTOCK FARMING

2:30 PM — **ROUND TABLE CONCLUDES**



KEYNOTE SPEAKERS

JIM PILLEN

GOVERNOR OF THE STATE OF NEBRASKA

Governor Jim Pillen was sworn in as Nebraska's 41st Governor on January 5, 2023.
He enters office with the goal of protecting, training, and keeping our kids in Nebraska, cutting taxes, growing agriculture, and defending our commonsense, conservative values.
Governor Pillen grew up on a farm in Platte County, Nebraska and raised pigs with his father, Dale. He graduated from Lakeview High School.
He earned a Bachelor's Degree in Animal Science from UNL, and married Suzanne Shreve. Governor Pillen then earned a doctor of veterinary medicine from Kansas State. In 1983, he returned to Nebraska and opened a small animal practice and swine consulting practice.
Governor Pillen and his father, Dale, partnered together, raising 60 sows and 1,200 market hogs on a dirt lot on their home farm. In 1993, Jim started Pillen Family Farms. In 2003, he added DNA Genetics. In 2010, his two oldest children, Sarah and Brock, joined the business.
Pillen Family Farms and DNA Genetics are now a multigenerational family-run business, composed of over 1,100 team members. The family business operates by some basic core beliefs—do what is right, do the best you can, and treat others the way you want to be treated.
Jim and wife, Suzanne, have four children, Sarah, Brock, Polly and Izic, and seven grandchildren, William, Halle, Eloise, Henry, Harrison, Ava, and Thomas.

SHERRY VINTON

DIRECTOR, NEBRASKA DEPARTMENT OF AGRICULTURE

Sherry Vinton was appointed as the Director of the Nebraska Department of Agriculture (NDA) in January 2023 by Governor Jim Pillen. As NDA Director, Vinton oversees all programs of the agency including animal disease traceability programs, regulatory programs for plants and animals, food safety and consumer protection programs, and the promotion of Nebraska agriculture and ag products. A lifelong Nebraskan and livestock producer, Vinton brings a wide range of experience, leadership, and knowledge to this position.

Vinton is a fifth-generation rancher on a family ranch south of Whitman in the Sandhills of Nebraska. The Vinton family runs a cow-calf operation where they raise Angus cattle that graze on native pasture, irrigated alfalfa and sub irrigated prairie hay. Vinton attended the University of Nebraska-Lincoln where she studied accounting and currently manages the business end of the family ranch.
Vinton is a leader in Nebraska agriculture who knows the importance of the industry for the future of our state. Her passion for farming, ranching, and nature makes her the perfect advocate for agriculture, someone who will stand up for farmers and ranchers, promote and grow Nebraska agriculture, increase market access for Nebraska ag products and add value to the commodities we produce.
Vinton's experience on various agricultural organizations and advisory committees at the local, state, and federal level serves Nebraska well. She was appointed to the Cattlemen's Beef Board in 2012 and represented Congressional District 3 on the Nebraska Environmental Trust board for 14 years after her appointment in 2007. Vinton also served as treasurer and mentor for the Nebraska Grazing Lands Coalition and is a member of the Agriculture Builders of Nebraska.
Starting in 2019 and just prior to becoming NDA's director, Vinton served as Vice President of Nebraska Farm Bureau. She was also a member of the Board of Directors of Nebraska Farm Bureau for 6 years.
Vinton and her husband, Chris, have three married children (two who work on the ranch, and one who farms in northeast Nebraska) and 10 grandchildren.

TIFFANY HENG-MOSS

INTERIM VICE CHANCELLOR, INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES

Dr. Tiffany Heng-Moss currently serves as the Interim Vice Chancellor for the Institute of Agriculture and Natural Resources (IANR) at the University of Nebraska–Lincoln and Vice President for Agriculture and Natural Resources for the University of Nebraska system. In this role, she leads system-wide efforts focused on agriculture, natural resources, and rural economic prosperity strategic initiatives.

From 2017 to 2025, Dr. Heng-Moss served as Dean of the College of Agricultural Sciences and Natural Resources (CASNR) at the University of Nebraska–Lincoln. As dean, she provided visionary leadership in advancing academic innovation, workforce development, and student success. She led the development and implementation of interdisciplinary academic credentials, a graduate education framework, Nebraska's first education compact, and a comprehensive student success roadmap aligned with UNL's N2025 Strategic Plan. Her efforts have positioned CASNR as a leader in preparing students to address the dynamic challenges facing agriculture and natural resources.

Dr. Heng-Moss joined the UNL faculty in 2001 and has been deeply engaged across the tripartite mission of teaching and learning, research and discovery, and extension and engagement. She has authored or co-authored more than 95 peer-reviewed publications and has served as principal or co-investigator on over $70 million in teaching and outreach grants and $8 million in research funding.

Her contributions have been recognized with numerous honors, including:

- USDA National Award for Excellence in College and University Teaching in the Food and Agricultural Sciences
- Entomological Society of America Distinguished Achievement Award in Teaching
- University of Nebraska Outstanding Teaching and Instructional Creativity Award (OTICA)
- Chancellor's Commission on the Status of Women Award
- Nebraska Science Education Catalyst Award
- Engler Inspiration Award
- Inductee, Nebraska Hall of Agricultural Achievement

Dr. Heng-Moss brings a wealth of experience and a deep commitment to advancing agriculture and natural resources through education, innovation, and strategic collaboration.

DEREK MCLEAN

DEAN OF THE AGRICULTURAL RESEARCH DIVISION, UNIVERSITY OF NEBRASKA - LINCOLN

Derek McLean has served as dean of the University of Nebraska–Lincoln's Agricultural Research Division since January 1, 2023. McLean previously served as a senior science adviser in the Office of AIDS Research at the National Institutes of Health, where he worked to ensure that research funding aligns to the priority areas established by the National Institutes of Health. This effort required expertise in building relationships, establishing groups to develop expertise in building relationships, establishing groups to develop funding plans and policy and working across the more than 20 institutes and centers at NIH.

Prior to NIH, McLean was the senior director of collaborative research for Phibro Animal Health Corporation. He also served for 10 years as a faculty member in the animal sciences department at Washington State University. McLean holds a Bachelor of Science in mathematical sciences and a Master of Science in animal physiology from Clemson University and a doctorate in animal sciences from Oregon State University.

KEYNOTE PANELISTS

SUSTAINABILITY AND RESILIENCE

MARTY MATLOCK

PROFESSOR OF BIOLOGICAL AND AGRICULTURAL ENGINEERING, UNIVERSITY OF ARKANSAS

Dr. Marty Matlock is a Professor in the Biological and Agricultural Engineering Department. He was elected to the Board of Agriculture and Natural Sciences of the National Academy of Science, Engineering and Medicine in 2022 and served as Senior Advisor to Secretary of Agriculture Tom Vilsack at USDA from 2021-2022. Prior to that Dr. Matlock was Executive Director of the University of Arkansas Resiliency Center. He received his Ph.D. in Biosystems Engineering from Oklahoma State University, is a registered professional engineer, a Board-Certified Environmental Engineer, and a Certified Ecosystem Designer. Dr. Matlock is the recipient of the 2018 CAST-Borlaug Agriculture Communications Award, the American Ecological Engineering Society 2022 Odom Award for Ecosystem Design, and more than 30 national and international design awards. Dr. Matlock has been elected Fellow of the American Association for the Advancement of Science, the American Ecological Engineering Society, and the American Society of Civil Engineering. He served as Chairman of the Cherokee Nation Environmental Protection Commission for 16 years and as sustainability science advisor for three environmental conservation organizations and more than a dozen food and agricultural product companies.

JULIA MCQUILLAN

WILLA CATHER PROFESSOR OF SOCIOLOGY, UNIVERSITY OF NEBRASKA - LINCOLN

Dr. Julia McQuillan is Willa Cather Professor of Sociology at the University of Nebraska-Lincoln in the United States. She evaluates fundamental social psychological theories with multiple kinds of research designs and analyses, including interdisciplinary work with art. She designs her research to inform changes to structures and practices to increase equity and wellbeing.

She values bringing Sociology to all situations, including teaching Introduction to Sociology and multidisciplinary research collaboration on topics such as fertility and infertility, gender, health, public understanding of science, and innovations in food systems, bioeconomy, and AI/robotics.

TOMÁS NORTON, PHD

AGRICULTURAL ENGINEER AND ASSOCIATE PROFESSOR OF SUSTAINABLE PRECISION LIVESTOCK FARMING, KU LEUVEN, BELGIUM

Tomás Norton, PhD, is an agricultural engineer and Associate Professor of Sustainable Precision Livestock Farming at KU Leuven, Belgium, where he investigates the role of technologies in sustainable livestock production. He received his doctorate in Biosystems Engineering from University College Dublin and is elected Fellow of the Institute of Agricultural Engineers (FIAgrE), the International Academy of Agricultural and Biosystems Engineers (FiAABE) and the Royal Society of Biology (FRSB). At KU Leuven, he teaches on a range of courses including Sustainable Precision Livestock Farming, Biological Production Systems and Agro-production Systems. His research team studies animal behaviour, health and welfare via remote-monitoring technologies, supported by grants from the European Union (Horizon Europe, InterReg, Innovative Health Initiative, EFSA), the U.S. Department of Agriculture and Flemish agencies (FWO, VLAIO). As of 2025, his group co-ordinates one Erasmus+ project and contributes to four additional Horizon Europe research and innovation projects. He also serves as vice-chair of the COST Action “European Network for Livestock Phenomics” (EU-LI-PHE; 2023–2027).

RUTH WOIWODE

EXTENSION SPECIALIST AND ASSISTANT PROFESSOR OF ANIMAL BEHAVIOR, UNIVERSITY OF NEBRASKA - LINCOLN

Dr. Ruth Woiwode is an Extension Specialist and Assistant Professor of Animal Behavior and Welfare at the University of Nebraska-Lincoln, where her integrated program is dedicated to describing attributes of handler skill, examining the relationship between these skills and both handler safety and animal outcomes, and evaluating how handler expertise, facility design, and training practices influence overall animal welfare.

In addition to her academic work, Dr. Woiwode holds PAACO animal welfare auditor certifications across the dairy, feedlot, swine, poultry, and meat plant sectors. With extensive third-party audit experience, she has trained and calibrated auditors, developed comprehensive audit protocols and training curricula, and provides stockmanship and humane animal handling training for slaughter establishments, livestock auction markets, and producers.

Dr. Woiwode is an active leader in her field, serving on the UNL Beef Innovation Hub Faculty Advisory Committee, the Meat Institute Animal Welfare Committee, and the Board of Directors for the Professional Animal Welfare Auditor Certification Organization (PAACO). She is the Chair for 7th International Symposium on Beef Cattle Welfare that meets in Lincoln, NE June 9-11.

SYSTEM DEVELOPMENT - CONCEPT TO PRODUCT

CHAFIK BARBER

FOUNDER AND CEO, MARBLE TECHNOLOGIES

Chafik Barbar is the founder and CEO of Marble Technologies. Working where humans and technology intersect, Chafik and the Marble team combine the latest advancements in artificial intelligence, computer vision, and robotics to develop and deploy AI-powered automation systems that solve the biggest challenges facing meat processors. Marble commercialized its pack-off solution in record time and now works with some of the largest names in the meat processing industry. Chafik has 20 years of experience in ag tech and is a serial entrepreneur who previously built and sold a business. Chafik earned his undergraduate degree from the University of Nebraska and his MBA from MIT.

DAVID SPELLER

OPTIFARM

From a varied agricultural background in cropping David moved into the poultry sector when he purchased a broiler farm in the UK in 2004 and from scaling that business to producing 15 million birds per annum David has since gone on to establish a global artificial intelligence (Ai) business, Optifarm, focusing on why both poultry and pigs around the world do what they do on farm. David is passionate to understand, can Ai truly allow us to take readily available, simple farm sensor data and understand the root cause of issues and can we then use Ai to give meaningful insights that can support both staff on farms but also the wider sector and its stakeholders.

That’s said David has a broad and open mind regarding the opportunities of data and digital solutions in livestock farming and he has a passion for creating tangible commercial value from digital solutions, not simply developing ideas because we can. What is to be the commercial model for digital solutions in the future? Given multiple companies failures we don’t appear to know yet, or do we?

ANDREW UDEN

CEO, HERDDOGG INC.

Andrew Uden is the CEO of HerdDogg Inc., an AgTech company specializing in innovative livestock data analytics solutions. A fifth-generation cattleman from Nebraska, Uden earned a Bachelor of Science in Animal Science from the University of Nebraska-Lincoln and a Master of Applied Science focused on international agriculture. Before leading HerdDogg, he gained extensive experience in business development, genetics, and global agriculture innovation.
Uden has worked internationally, including in Scotland, Africa, Australia, and Russia, broadening his perspective on global cattle production systems. His leadership at HerdDogg aims to enhance livestock management through advanced technology, addressing labor challenges and improving animal health monitoring.

CONNIE BELLINGTIER

MANAGER, AUTOMATED DAIRY SPECIALISTS

Connie Bellingtier is the General Manager of Automated Dairy Specialists, LLC, based in Clearwater, Nebraska. With nearly two decades of experience in the dairy industry, she brings a unique perspective shaped by her background as both a dairy producer and a leader in agricultural technology.
Connie began her career in dairy farming alongside her husband, operating a small Jersey herd in central Nebraska. In 2002, they expanded their operation by purchasing a farm in Wheeler County, where they modernized their facilities and continued milking until 2014. While still managing their dairy, Connie joined Automated Dairy Specialists in 2006 as a part-time secretary. Her role evolved over the years, encompassing sales, technical support, and management responsibilities. Under her leadership, the company has grown to become a regional leader in dairy automation, serving clients across Nebraska, South Dakota, Iowa, and Kansas.
Connie's dedication to the dairy industry has been recognized with the Nebraska Holstein Industry Award, and under her guidance, Automated Dairy Specialists received the Nebraska State Dairy Association's Friend of the Industry Award. She is passionate about helping producers integrate advanced technologies to improve efficiency and sustainability on their farms

ADOPTION OR NEEDS OF TECHNOLOGY

TOM RATHJE

CHIEF TECHNICAL OFFICER, DNA GENETICS

Dr. Tom Rathje is the Chief Technical Officer for DNA Genetics. He attended Iowa State University, where he received his Bachelor of Science in animal science. He then continued his education at the University of Nebraska-Lincoln, receiving his Master of Science and Ph.D. in genetics and an MBA. Dr. Rathje has been with DNA Genetics since the company started 30 years ago and has championed the development and implementation of various crucial investments to create a strong competitive advantage for the company.
Dr. Rathje has dedicated his career to ensuring a continued and sustainable food supply through genetic innovation in the livestock industry and is honored to have played an integral role in the future of our food supply by pioneering science, technology and insight-driven solutions.

WILLIAM HERRING

VICE PRESIDENT OF RESEARCH AND DEVELOPMENT, COBB

Joining Cobb in 2022, Dr. William Herring is the Vice-President of Research and Development at Cobb, a leading global poultry genetics company owned by Tyson Foods. He leads the global discovery efforts to accelerate genetic progress and introduce it at scale in over 100 countries. Building upon over a century's worth of data and genetic advancement, his daily effort amplifies the availability of the world's fastest growing protein.

He leads a team of scientists, engineers and innovators focused on the need to produce food utilizing traits that maximize the efficient conversion of genetics to useable food while combining the best science and technology available to make it happen.
William has over 30 plus years of experience and leadership in livestock and poultry genetic improvement. He obtained a bachelor's degree in animal science from Auburn University and a master's degree and Ph.D. in genetics from the University of Georgia. In his spare time, William enjoys helping with the genetic improvement program at this family's Angus and Hereford operation.

LUNCH SPEAKER

ASH ELIZA SMITH

ASSOCIATE PROFESSOR OF EMERGING MEDIA ARTS, UNIVERSITY OF NEBRASKA - LINCOLN

Ash Eliza Smith is an artist and designer who uses storytelling, worldbuilding, and speculative design to shape new realities. Smith works across art and science, between fact and fiction, and with human and non-human agents such as animals, plants, and machines to re-imagine the past and future of technology, systems, and rural-urban ecologies. Her work uses liveness, play, and participatory co-design, resulting in interactive stories, films, mixed reality theater, live-action role-plays (LARPs), and future prototypes.
Smith is a visiting fellow at Central Saint Martins, University of the Arts London, and is an Assistant Professor at the Johnny Carson Center for Emerging Media Arts. She received her MFA from the Visual Arts program at UCSD, where she worked as an affiliate of the UCSD Design Lab and associate director of the Culture, Art, and Technology department. Previously, she attended the Performance Studies program at New York University's Tisch School of the Arts and the University of North Carolina at Chapel Hill. Smith has presented work at the Museum of Contemporary Art San Diego (MCASD), the International Symposium on Electronic Art (ISEA), Qualcomm Institute (Gallery QI), and La Jolla Playhouse's Without Walls Festival.

GALA DINNER SPEAKER

CHRIS HELZER

DIRECTOR OF SCIENCE AND STEWARDSHIP, THE NATURE CONSERVANCY IN NEBRASKA

Chris Helzer is Director of Science and Stewardship for The Nature Conservancy in Nebraska, where he conducts research and supervises the Conservancy's preserve stewardship program. He also helps develop, test, and share prairie management and restoration strategies. Chris is also dedicated to raising awareness about the value of prairies through his photography, writing and presentations. He is the author of The Prairie Ecologist blog, and two books: *The Ecology and Management of Prairies in the Central United States and Hidden Prairie: Photographing Life in One Square Meter.* He is also a frequent contributor to *NEBRASKAland* magazine and other publications. Chris and his family live in Aurora, Nebraska.

U.S. PRECISION LIVESTOCK FARMING CONFERENCE

**ALL TIMES LISTED IN CENTRAL STANDARD TIME.*

SUNDAY, JUNE 1

5:00 - 7:00 PM — **REGISTRATION OPEN**
Location: Registration Desk near Conference Rooms

MONDAY, JUNE 2

7:30 AM - 6:00 PM — **REGISTRATION OPEN**
Location: Registration Desk near Conference Rooms

8:00 AM - 12:00 PM — **NC1211 MEETING. PRECISION MANAGEMENT OF ANIMALS FOR IMPROVED CARE, HEALTH, AND WELFARE OF LIVESTOCK AND POULTRY**
Location: Regent A

12:00 PM — **TOURS**
Please meet in the hotel lobby.
Eastern Nebraska Research and Extension Center
- Klosterman Feedlot Innovation Center
- Spidercam
- NFARMS

5:00 PM — **RETURN TO LINCOLN**
Estimated travel time ~40 minutes

TUESDAY, JUNE 3

6:30 - 8:00 AM — **BREAKFAST**
Location: Atrium

8:00 AM — **OPENING SESSION**
Location: Regents B-C

- ***Dr. Tami Brown-Brandl**, 2025 USPLF Chair*
- ***Sherry Vinton**, Director, Nebraska Department of Agriculture*
- ***Dr. Tiffany Heng Moss**, Interim Vice Chancellor, University of Nebraska - Lincoln Institute of Agriculture and Natural Resources*
- ***Dr. Derek McLean**, Dean, University of Nebraska - Lincoln Agricultural Research Division*

8:45 AM — **BREAK**
Location: Regent D-E-F

TUESDAY, JUNE 3, CONTINUED

9:00 - 10:15 AM **CONCURRENT BREAKOUT SESSIONS**

SESSION 1 - REGENT A

PRECISION TOOLS FOR MONITORING SWINE BEHAVIOR AND GROWTH

This session explores emerging technologies for electronically monitoring swine, with a focus on automated tracking of animal activity, identification, and weight estimation.

Moderators:
- Dr. Juan Steibel, Iowa State University
- Ms. Madison Bacon, Texas A&M University

9:00-9:15 AM **A Computer Vision Dataset for Monitoring and Tracking Gilt's Daily Activity**
Anil Bhujel, Michigan State University

9:15 - 9:30 AM **Practical Test of Passive Radio Frequency Identification Ear Tags in Piglet Rearing**
Adriana Förschner, LAZBW Aulendorf

9:30 - 9:45 AM **A Non-Contact, High-Throughput Method for Measuring Pig Body Size and Weight Using 3D Computer Vision**
Weihong Ma, Beijing Academy of Agriculture and Forestry Sciences

9:45 - 10:00 AM **A Deep Learning Approach for Accurate Weight Estimation of Marketable Pigs in Grow-Finish Pens**
Kuljit Bhatti, University of Nebraska-Lincoln

10:00-10:15 AM **Evaluation of Weight Estimation Equation for Growing Pigs using Azure Kinect Depth Camera**
Shiva Paudel, University of Nebraska-Lincoln

SESSION 2 - CHANCELLOR 2-3

EMERGING TECHNOLOGIES FOR EARLY DISEASE DETECTION IN ANIMAL AGRICULTURE

This session highlights emerging technologies for early disease detection in livestock, emphasizing the use of integrated data, sensor systems, and artificial intelligence to improve animal health outcomes.

Moderators:
- Prof. Daniel Berckmans, KU Leuven
- Ms. Emily Joie, University of Nebraska - Lincoln

9:00-9:15 AM **Integrating Data from Swine Farms to Identify Significant Practices for Recovery from Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) Outbreaks**
Elisa De Conti, Iowa State University.

9:15 - 9:30 AM **Beyond the Visual: Harnessing Sound as a Welfare Indicator for Detecting Distress in Weaner Pigs**
Sreenivasa Upadhyaya, SoundTalks N.V.

9:30 - 9:45 AM **Advancing Dairy Health Management through Integrated Precision Livestock Technologies and Machine Learning**
Martin Perez, Cornell University

9:45 - 10:00 AM **Computer Vision for Automated Calf Health Scoring**
Beibei Xu, Cornell University

10:00-10:15 AM **Fine-Tuning LLMs for Enhancing Early Disease Detection in Dairy Cows**
Rafael Ferreira, University of Wisconsin Madison

TUESDAY, JUNE 3, CONTINUED

10:15 - 11:15 AM **POSTER PRESENTATIONS**

SESSION 3 - REGENT D-E-F

ADVANCES IN MONITORING ANIMAL BEHAVIOR, MOTION, AND WELFARE

This session showcases innovative tools and methodologies for monitoring animal behavior, movement, and welfare through advanced sensing and computer vision technologies.

Moderators:
- Dr. Karun Kaniyamattam, Texas A&M University
- Dr. Taika von Konigslow, Cornell University

Poster 1 **A User-Friendly Deep Learning-based Platform for Monitoring Animal Activity Index**
Mahtab Saeidifar, University of Georgia

Poster 2 **AnimalMotionViz: an Interactive Software Tool for Tracking and Visualizing Animal Motion Patterns Using Computer Vision**
Angelo De Castro, University of Florida

Poster 3 **Leveraging Vision Mamba for Cow Pose Estimation.**
Salma Daadouch, University of Veterinary Medicine, Vienna

Poster 4 **Evaluation of Grow-Finish Pig Surface Temperatures Under Different Thermal Conditions**
Isaac Suazo, North Carolina State University

Poster 5 **Measuring Feather Pecking Motivation in Dual-Purpose Chickens**
Josefine Stuff, University of Bonn

Poster 6 **Impact of Density and Sex on Growth and Feeding Behavior of Piglets Post-Weaning Using a Computer Vision Approach**
Mamunur Rahman, University of Illinois Urbana-Champaign

SESSION 4 - REGENT D-E-F

MACHINE LEARNING AND REMOTE SENSING FOR FORAGE AND PLANT COMPOSITION ANALYSIS

This session highlights the application of machine learning and remote sensing technologies to improve forage and plant composition analysis.

Moderators:
- Dr. Heiner Lehr, Birds Eye Robotics
- Dr. Sudhendu Raj Sharma, University of Nebraska-Lincoln

Poster 7 **Preprocessing Methods on Predictions of Dry Matter and Neutral Detergent Fiber Contents in Fresh or Dried and Milled Urochloa spp. Samples Using a Handheld Near Infrared Spectrophotometer**
Tadeu Da Silva, University of Vermont

Poster 8 **Modeling Forage Quantity and Quality Using Machine Learning Models and Remote Sensing Data**
Michael Abalo, South Dakota State University

Poster 9 **Distinguishing Between Well-Mixed and Poorly-Mixed Diets Using Semi-Automatic Image Analysis**
Isabela Santos, Purdue University

Poster 10 **Developing Novel Vegetation Indices with Symbolic Regression for Enhanced Prediction of Above-Ground Biomass and Plant Composition**
Guilherme Menezes, University of Wisconsin-Madison

Poster 11 **Utilizing Conserved Prairies as In Situ Sensors to Predict Above-Ground Biomass and Plant Composition through Satellite Imagery**
Lucas Abreu Sernik, University of Wisconsin-Madison

TUESDAY, JUNE 3, CONTINUED

11:15 AM - 12:15 PM **CONCURRENT BREAKOUT SESSIONS**

SESSION 5 - REGENT A

PRECISION TECHNOLOGIES FOR SOW AND PIGLET HEALTH MONITORING

This session focuses on the application of advanced sensing and imaging technologies to monitor sows during critical pre- and post-partum periods.

Moderators:
- Dr. Amy Reibman, Purdue University
- Mr. Rajesh Neupane, Texas A&M University

11:15 - 11:30 AM	**Developing a Robotic Imaging System for Detecting Estrus of Stall-Housed Sows** *Jianfeng Zhou, University of Missouri*
11:30 - 11:45 AM	**Transformer Based Lameness Detection in Sows** *Sudhendu Raj Sharma, University of Nebraska-Lincoln*
11:45 AM - 12:00 PM	**Evaluate Changes in Respiratory Rate of Lateral Lying Sows Around Onset of Parturition Using Depth Camera** *Ziteng Xu, Texas A&M University*
12:00 - 12:15 PM	**Behavioral Insights Impacting Preweaning Mortality** *Md Towfiqur Rahman, University of Nebraska-Lincoln*
12:15 - 12:30 PM	**Automatic Detection of Nursery Piglets Behaviors and Activities Using Computer Vision Technologies** *Sina Yarmohammadi, Folsom Lake College*

SESSION 6 - CHANCELLOR 2-3

TRACKING CATTLE BEHAVIOR AND RESOURCE USE WITH PRECISION TECHNOLOGIES

This session highlights the use of sensor-based and data-driven tools to better understand and manage cattle behavior and resource use.

Moderators:
- Dr. João Dorea, University of Wisconsin Madison
- Dr. Veronica Pacheco, University of Nebraska - Lincoln

11:15 - 11:30 AM	**Cattle Behavior Classification Using 3-D Accelerometer and GPS Data** *Ali Yalcin, Montana State University*
11:30 - 11:45 AM	**Incorporating Precision Management Technologies to Reduce Enteric Emissions on Rangelands** *Edward Raynor, Colorado State University*
11:45 AM - 12:00 PM	**Characterizing Water Use and Water Efficiency by Integrating Multiple Types of Precision Livestock Technologies** *Madison Bacon, Texas A&M University*
12:00 - 12:15 PM	**Social Interactions of Dairy Cows: a Distance-Based Approach** *Matteo Barbari, University of Florence*
12:15 - 12:30 PM	**Sensor-Based Monitoring of Behavioral Changes of Dairy Cows Around Drying-Off** *Barbara Pichlbauer, University of Veterinary Medicine, Vienna*

12:30 - 1:45 PM **LUNCH & KEYNOTE SPEAKER - REGENTS B-C**

DR. JIM PILLEN, STATE OF NEBRASKA GOVERNOR

TUESDAY, JUNE 3, CONTINUED

1:45 - 3:00 PM **CONCURRENT BREAKOUT SESSIONS**

SESSION 7 - REGENT A

DATA-DRIVEN STRATEGIES FOR BROILER WELFARE AND PERFORMANCE

This session explores precision tools and environmental strategies aimed at improving broiler welfare and performance.

Moderators:
- Dr. John Linhoss, Auburn University
- Mr. Kuljit Bhatti, University of Nebraska-Lincoln

1:45 - 2:00 PM **Water Needs for Commercial Broilers Grown to Nine Weeks**
Carson Edge, Auburn University

2:00-2:15 PM **Listen to What Chickens Say: Sound-Based Metrics Link with Key Performance Indicators in Commercial Broiler Farming**
Sreenivasa Upadhyaya, SoundTalks N.V.

2:15 - 2:30 PM **Multi-Flock Assessment of Light Intensity in Commercial Broiler Houses Providing Natural Light**
Justus Ilemobayo, Auburn University

2:30 - 2:45 PM **Predictive Performance of Light Modeling Software in Commercial Broiler Environments**
Joshua Etherton, Auburn University

2:45 - 3:00 PM **Impact of Stocking Density on Activity Index, Stretching and Preening Behaviors of Broilers**
Shengyu Zhou, University of Tennessee

SESSION 8 - CHANCELLOR 2-3

COMPUTER VISION FOR CATTLE MONITORING AND IDENTIFICATION

This session focuses on computer vision applications for individual identification, health assessment, and behavior monitoring in cattle.

Moderators:
- Dr. Melissa Cantor, The Pennsylvania State University
- Ms. Christina Sebald, Technical University of Munich

1:45 - 2:00 PM **Towards Unsupervised Latent Representations for Cattle Image Segmentation**
Tiago Bresolin, University of Illinois Urbana-Champaign

2:00-2:15 PM **Computer Vision Model as a Tool to Automate Body Condition Score Classification of Dairy Cows**
Diego Xavier, Brazilian Agricultural Research Corporation (EMBRAPA)

2:15 - 2:30 PM **Individual Identification and Feeding Behavior Analysis of Dairy Cows Using Occluded Camera Views in Free Stall Barns**
Luara Freitas, University of Wisconsin-Madison

2:30 - 2:45 PM **Deep Learning and Image Processing for High-Throughput Udder Phenotyping in Dairy Cows**
Maria Elisa Montes, University of Wisconsin-Madison

2:45 - 3:00 PM **Individual Identification of Holstein Cows Using Computer Vision**
Farhiya Abdalla, Columbus State Community College

TUESDAY, JUNE 3, CONTINUED

3:00 - 4:00 PM **POSTER PRESENTATIONS**

SESSION 9 - REGENT D-E-F

ENGINEERING INNOVATIONS FOR ENVIRONMENTAL CONTROL IN LIVESTOCK FACILITIES

This session highlights engineering advancements in ventilation, cooling, and environmental monitoring across multiple livestock species.

Moderators:
- Dr. Tiago Bresolin, University of Illinois Urbana-Champaign
- Ms. Mina Shumaly, Iowa State University

Poster 1 **Uncovering Trends in Agricultural Ventilation Fans Performance Tests: An In-Depth Analysis of BESS Labs Data**
Felipe Picchi, Iowa State University

Poster 2 **Test Method to Evaluate the Thermal Performance of Migration Fences Using Heavy Broilers**
Jeremiah Davis, National Poultry Technology Center

Poster 3 **Development and Evaluation of Air Recirculated Ventilation System for Piglet House to Block Livestock Diseases, Increase Energy Efficiency, and Improve Internal Environment**
In-Bok Lee, Seoul National University

Poster 4 **Evaluating Temperature Settings in Evaporative Cooling Cells for Swine**
Wyatt Kendall, Iowa State University

Poster 5 **Evaluation of Data Transmission Performance of Low-Cost Embedded System for Real-Time Monitoring of the Thermal Environment in Animal Facilities**
Valentina Becciolini, University of Florence

Poster 6 **A Scaled Model for Visualizing Ventilation Strategies and Infrastructure in Modern Dairy Barns**
Md Towfiqur Rahman, University of Nebraska-Lincoln

SESSION 10 - REGENT D-E-F

TECHNOLOGIES FOR DISEASE DETECTION AND ENVIRONMENTAL EVALUATION IN LIVESTOCK SYSTEMS

This session features advancements in the detection of disease and evaluation of environmental impacts on livestock health and behavior.

Moderators:
- Dr. James Koltes, Iowa State University
- Dr. Tadeu Da Silva, University of Vermont

Poster 7 **Utilization of Unmanned Aerial Vehicles and Computer Vision Systems to Monitor Calf Health in Large Commercial Systems**
Gustavo Mazon, University of Wisconsin-Madison

Poster 8 **Evaluating Effects of Heat Stress on the Efficacy of Robotic Milking Systems**
Rajesh Neupane, Texas A&M University

Poster 9 **Effects of Vaccination on Feeding Behaviors in Beef x Dairy Calves Using Automated Milk Feeders**
Breanna Bone, The Pennsylvania State University

Poster 10 **Continuous UAV Monitoring for Predicting Animal Behavior in Grazing Systems**
Guilherme Menezes, University of Wisconsin-Madison

Poster 11 **Activity Recognition in Beef Cattle Calan Gate Using CLIP and YOLO v11**
Uday Santhosh Raju, Texas A&M University

Poster 12 **An Agent-Based Modeling Framework for Bovine Respiratory Disease Management in Integrated Beef Supply Chains**
Adeolu Joseph Adekunle, Texas A&M University

Poster 13 **The Development and Application of On-Animal Sensors in The Extensive Grazing Industries with a Focus on Disease Detection and the Implications for Production, Welfare And Biosecurity**
Mark Trotter, CQUniversity

Poster 14 **A Deep Learning Framework for Anemia Detection in Sheep Using Ocular Conjunctiva Images**
Luara Freitas, University of Wisconsin-Madison

TUESDAY, JUNE 3, CONTINUED

4:00 - 5:15 PM — **CONCURRENT BREAKOUT SESSIONS**

SESSION 11 - REGENT A

COMPUTER VISION AND DATA INTEGRATION FOR SOW AND PIGLET MANAGEMENT

This session focuses on the use of computer vision and integrated data systems to improve sow and piglet management around the farrowing and early lactation periods.

Moderators:
- Prof. Tomas Norton, KU Leuven
- Mr. Aashish Poudel, University of Nebraska-Lincoln

4:00 - 4:15 PM — **Automated Monitoring of Sow Nursing Behaviors in Farrowing Crates Through Computer Vision Techniques**
Mamunur Rahman, University of Illinois Urbana-Champaign

4:15 - 4:30 PM — **Advancing Precision Swine Productivity Management: An Innovative Approach to Nursery Mortality Risk Assessment Through Automated Multi-Level Data Integration**
Thinh Tran Pham Tien, Iowa State University

4:30 - 4:45 PM — **Linking Sow Transitional Postures, Parity, and Piglet Mortality Using a Computer Vision System**
Veronica Pacheco, University of Sao Paulo

4:45 - 5:00 PM — **Towards Automated Prediction of Sow Maternal Behaviors During Farrowing and Early Lactation**
Diego Feitosa Leal, FZEA/USP

5:00 - 5:15 PM — **Prediction of Social Genetic Effects of Maternal Traits in pigs**
Andrea Nunez, Iowa State University

SESSION 12 - CHANCELLOR 2-3

BUILDING RESEARCH INFRASTRUCTURE AND TOOLS FOR PRECISION LIVESTOCK FARMING

This session highlights the development of research platforms, digital tools, and infrastructure to advance precision livestock farming.

Moderators:
- Dr. Daniel Morris, Michigan State University
- Ms. Luana Benicio, University of Illinois Urbana-Champaign

4:00 - 4:15 PM — **The Cornell Agricultural Systems Testbed and Demonstration site (CAST) for the Farm of the Future**
Julio Giordano, Cornell University

4:15 - 4:30 PM — **Smart Agriculture: A Practical Report from a Digital Model Farm**
Adriana Förschner, LAZBW Aulendorf

4:30 - 4:45 PM — **Unique Research Dairy Barn for Emission Measurements: Precision through Spatial Separation and Innovative Research Concept to Investigate Animal Welfare and Environment Interactions in Dairy Cows**
Jessica Paßmann, University of Bonn

4:45 - 5:00 PM — **Application of Data Engineering Techniques to Manage Big Data in Precision Livestock Farming**
Andrew Antaya, South Dakota State University

5:00 - 5:15 PM — **Smart Energy Management in a Dairy Farming Network Through Precision Agriculture**
Heinz Bernhardt, Technical University of Munich

7:00 - 9:30 PM — **GALA DINNER - REGENTS B-C**

SPONSORED BY C-LOCK

WEDNESDAY, JUNE 4

6:30 - 8:00 AM **BREAKFAST - ATRIUM**

8:00 - 9:00 AM **SESSION 13- REGENTS B-C**

KEYNOTE PANEL: SUSTAINABILITY IN ANIMAL SYSTEMS: INTEGRATING PEOPLE, PLANET, TECHNOLOGY, AND WELFARE

Moderators:
- Dr. Courtney Daigle, Texas A&M University
- Dr. Hector Menendez III, South Dakota State University
- Dr. Tami Brown-Brandl, University of Nebraska-Lincoln

Achieving sustainability in animal systems demands a balanced integration of social, environmental, technological, and animal welfare considerations. This panel will explore the interconnected roles of people, animals, and technology in building a sustainable future for animal agriculture.

- **Dr. Julia McQuillan** will examine social sustainability, highlighting the vital relationship between people and livestock. She will discuss how human perceptions, labor practices, and community impacts shape the long-term success of animal systems.
- **Dr. Tomas Norton** will explore technological innovations that promote the health and welfare of animals. His discussion will focus on how precision livestock farming technologies can elevate standards of care while supporting efficient, ethical production.
- **Dr. Marty Matlock** will provide insights on environmental sustainability, urging a comprehensive view of animal agriculture's role within broader ecosystems. He will address how sustainable practices can enhance environmental stewardship while maintaining productivity.
- **Dr. Ruth Woiwode** will bridge animal well-being, caretaker experiences, and technology, showing how these elements intertwine. Her talk will emphasize the importance of aligning welfare monitoring

Together, the panel will highlight how sustainability is not a singular goal, but a dynamic system connecting people, planet, technology, and animal welfare. The panel will also discuss how progress depends on addressing all these pillars in concert.

9:00 - 10:00 AM **POSTER PRESENTATIONS**

SESSION 14 - REGENT D-E-F

EVALUATING AND OPTIMIZING PRECISION LIVESTOCK FARMING ENVIRONMENTS

This session explores advancements in environmental management and data-driven strategies within precision livestock farming (PLF) systems.

Moderators:
- Dr. Yijie Xiong, University of Nebraska-Lincoln
- Mr. Adeolu Joseph Adekunle, Texas A& M University

Poster 1 **Research on Multi-Objective Optimization Control Algorithm for Circulating Dehumidification System in Livestock and Poultry Houses**
Ping Zheng, Northeast Agricultural University

Poster 2 **Investigation of Poultry Manure Removal Efficiency and Volume Estimation on Grooved-Floor Panels**
Siya Chen, Texas A&M University

Poster 3 **Estimation of Ammonia Flux with Rice Hull Partial Application for Broiler House Bedding Management**
Jaeeun Kim, National Institute of Animal Science

Poster 4 **Using Hierarchical Clustering to Identify Thermal Zones in Commercial Broiler Houses During Growout**
Olumide Falana, Auburn University

Poster 5 **Variations of Multiple Environmental Factors and Multi Objective Optimization Control Strategy in Pig House**
Qiuju Xie, Northeast Agricultural University

Poster 6 **Off-Farm Stakeholder Priorities for Data from Precision Livestock Farming in the US Swine Industry**
Babatope Akinyemi, Michigan State University

WEDNESDAY, JUNE 4, CONTINUED

9:00 - 10:00 AM **POSTER PRESENTATIONS, CONTINUED**

SESSION 15 - REGENT D-E-F

INNOVATIVE TECHNOLOGIES AND ETHICAL STRATEGIES FOR ADVANCING SUSTAINABLE ANIMAL AGRICULTURE

This session features emerging tools and approaches aimed at enhancing sustainability in animal agriculture through technology, data, and responsible innovation.

Moderators:
- Dr. Edward Raynor, Colorado State University
- Mr. Pedro Henrique Jota Fernandes, University of Nebraska-Lincoln

Poster 7 **Open Access Datasets for Implementing Computer Vision in PLF**
Juan Steibel, Iowa State University

Poster 8 **Automated Detection and Tracking of Nursery Piglet's Feeding and Drinking Behaviors Using YOLOv8 and ByteTrack**
Mamunur Rahman, University of Illinois Urbana-Champaign

Poster 9 **From Ancient Marks to Modern Technology: The Evolution of Pig Identification**
Shiva Paudel, University of Nebraska-Lincoln

Poster 10 **Predicting Soil Health Through UAV-Based Vegetation Indices for Sustainable Pasture Management**
Guilherme Menezes, University of Wisconsin-Madison

Poster 11 **Responsible Innovation: Can Intensification of Livestock Be Sustainable?**
Tami Brown-Brandl, University of Nebraska-Lincoln

Poster 12 **Practical Depth Data Exploration: A User-Friendly Application for Scientific and Agricultural Applications**
Veronica Pacheco, University of Sao Paulo

10:00 - 11:15 AM **CONCURRENT BREAKOUT SESSIONS**

SESSION 16 - REGENT A

ADVANCES IN SWINE BEHAVIOR MONITORING THROUGH SENSING AND DATA ANALYTICS

This session highlights cutting-edge methods for monitoring and interpreting swine behavior to support animal welfare and management decisions.

Moderators:
- Dr. Brett Ramirez, Iowa State University
- Ms. Mary Kasakamu, University of Nebraska-Lincoln

10:00 - 10:15 AM **Behavior Prediction for Young Pigs Using Centroid Coordinates**
Tawni Williams-Stroud, University of Illinois Urbana-Champaign

10:15 - 10:30 AM **Categorizing Activity of Finishing Pigs Using Computer Vision with Single Images**
Mekali Felton, University of Illinois Urbana-Champaign

10:30 - 10:45 AM **Individual Water Intake of Growing Pigs and Association with Pen Microclimate**
Aline Conceição, FZEA/USP

10:45 - 11:00 AM **Deep Learning-Based Computer Vision for Early Detection of Fall-Behind Weaned Pigs**
Bimala Acharya, Iowa State University

11:00 - 11:15 AM **Inferring Social Structure with Automatic Feeding Records in Group-Housed Pigs**
Xiaohan Jiang, Iowa State University

WEDNESDAY, JUNE 4, CONTINUED

SESSION 17 - CHANCELLOR 2-3

EVALUATION OF FARMER AND PUBLIC PERCEPTION OF PLF TOOLS

This session explores the social, cultural, and practical dimensions of adopting precision livestock farming (PLF) technologies from both farmer and public viewpoints.

Moderators:
- Prof. Heinz Bernhardt, Technical University of Munich
- Dr. Luara Freitas, University of Wisconsin-Madison

10:00 - 10:15 AM **Insights from a Longitudinal Survey: Social Networks and Industry Shaping US Public Attitudes Toward Precision Livestock Farming**
Babatope Akinyemi, Michigan State University

10:15 - 10:30 AM **Farmer Adoption of Precision Livestock Farming: Current and Future**
Tong Wang, South Dakota State University

10:30 - 10:45 AM **Dairy Farmer Perception and Adoption of Precision Livestock Monitoring Technologies in the United States**
Gustavo Mazon, University of Wisconsin-Madison

10:45 - 11:00 AM **A Comparative Analysis of Smart Livestock Technologies Among Farmers in the EU and USA: Adoption Drivers, Challenges, and Opportunities**
Christina Sebald, Technical University of Munich

11:00 - 11:15 AM **Finding the Win-Win Between Precision Livestock Farming and Phenomics through the European Network on Livestock Phenomics (EU-LI-PHE)**
Tomas Norton, KU Leuven

11:15 AM - 12:15 PM POSTER PRESENTATIONS

SESSION 18 - REGENT D-E-F

INTELLIGENT SYSTEMS FOR POULTRY WELFARE AND ENVIRONMENTAL MONITORING

This session highlights innovative technologies for enhancing poultry welfare and monitoring through automated detection systems, machine vision, and environmental modeling.

Moderators:
- Dr. Rafael Ferreira, University of Wisconsin-Madison
- Dr. Babatope Akinyemi, Michigan State University

Poster 1 **Automating Thermal Stress Detection in Chicks Using Convolutional Recurrent Neural Networks for Enhanced Poultry Welfare**
Özge Günaydın, KU Leuven

Poster 2 **Monitoring Perching Behavior of Cage-Free Hens with Deep Learning**
Bidur Paneru, University of Georgia

Poster 3 **Development of a Precision Respiratory Chamber for Real-Time Poultry Productivity and Bioenergetics Monitoring**
Tanner Thornton, University of Tennessee

Poster 4 **Semi-Automatic Annotation System Based on Segment Anything Model for Large Scale Poultry Data Annotations**
Aashish Poudel, University of Nebraska-Lincoln

Poster 5 **Quantifying Spatiotemporal Variability of Environmental Parameters in Poultry Incubators using Computational Fluid Dynamics**
Jessica Drewry, Mississippi State University

Poster 6 **Automated Detection and Classification of Laying Hens' Vocalizations using Transfer Learning**
Antonis Gkolfidis, KU Leuven

WEDNESDAY, JUNE 4, CONTINUED

11:15 AM - 12:15 PM **POSTER PRESENTATIONS, CONTINUED**

SESSION 19 - REGENT D-E-F

EMERGING TECHNOLOGIES FOR BEHAVIOR, HEALTH, AND IDENTIFICATION IN CATTLE

This session highlights recent advancements in computer vision, machine learning, and sensor integration for improving cattle monitoring and management.

Moderators:
- Dr. Santosh Pandey, Iowa State University
- Mr. Md Towfiqur Rahman, University of Nebraska-Lincoln

Poster 7 **Automatic Retrieval of Specific Cows from Unlabeled Videos**
Jiawen Lyu, Purdue University

Poster 8 **Monitoring Play Behavior in Dairy Calves Using Computer Vision and Accelerometers**
Haiyu Yang, Cornell University

Poster 9 **Evaluation of YOLO-Pose for Cattle Pose Estimation from Videos**
Kui Zhao, TU Wien

Poster 10 **Optimizing Unmanned Aerial Vehicles Flight Missions for Continuous Dairy Calf Monitoring**
Gustavo Mazon, University of Wisconsin Madison

Poster 11 **Development of a Novel Cattle Identification Method using Multi-Feature Label Fusion and Domain Adaptation**
Md Shadman Shakib, University of Nebraska-Lincoln

Poster 12 **Reducing Annotation Dependency in Automated Rumen-Fill Scoring through Pairwise Comparisons and Curvature Analysis**
Adrien Kroese, Swedish University of Agricultural Sciences

Poster 13 **AI Driven Quantification of Heat Stress in Dairy Cattle**
Rajesh Neupane, Texas A&M University

12:15 - 2:00 PM **ANIMAL AGRICULTURE 2050: A CO-VISIONING LUNCH - REGENTS B-C**

What will animal agriculture look like 25 years from now? In this interactive working lunch, Dr. Julia McQuillan (UNL, Sociologist), Ash Smith, and Sam Bendix (UNL, Emerging Media Artists) will guide participants through a creative and collaborative futuring experience.

Drawing from sociology and media arts, the session will challenge participants to move beyond traditional forecasting and instead envision bold, diverse futures for animal agriculture. Using storytelling, imaginative prompts, and participatory activities, attendees will explore how shifts in social values, technological innovations, environmental pressures, and economic systems may reshape livestock production.

Participants will engage in hands-on exercises designed to spark curiosity and uncover possibilities. Participants will reimagine roles for farmers and animals to create new food systems and ethical frameworks. This session is not about prediction, but about expanding the collective imagination of what could be possible.

Join us to think differently, connect across disciplines, and co-create visions that can inform today’s strategies and inspire tomorrow’s solutions.

WEDNESDAY, JUNE 4, CONTINUED

2:00 - 3:15 PM **CONCURRENT BREAKOUT SESSIONS**

SESSION 20 - REGENT A

ADVANCES IN POULTRY ACTIVITY MONITORING TECHNOLOGIES

This session presents recent innovations in monitoring poultry behavior and welfare using sensor technologies and artificial intelligence.

Moderators:
- Dr. Yang Zhao, University of Tennessee
- Dr. Diego Xavier, Brazilian Agricultural Research Corporation (EMBRAPA)

2:00 - 2:15 PM **A Systematic Literature Review of Wearable Sensor Technologies Used in Poultry Research**
Manita Kafle, University of Tennessee

2:15 - 2:30 PM **Linking Laying Performance and Individual Animal Welfare Using RFID in Poultry nests**
Sonja Hillemacher, University of Applied Sciences Osnabrueck

2:30 - 2:45 PM **Monitoring Poultry Dustbathing with Deep Learning Technologies**
Bidur Paneru, University of Georgia

2:45 - 3:00 PM **Predicting Broiler Gait Scores Based on Early Kinematic Features Using Fast-SAM and Machine Learning Models**
Hosna Mohammadilalabadi, University of Georgia

3:00 - 3:15 PM **Automated Gait Scoring of Individual Broilers in Group Settings**
Oluwadamilola Moyin Oso, University of Georgia

SESSION 21 - CHANCELLOR 2-3

INNOVATIVE APPROACHES FOR MONITORING METHANE AND GREENHOUSE GAS EMISSIONS IN CATTLE

This session explores advanced technologies for monitoring methane and ammonia emissions in cattle, focusing on environmental sustainability and precision livestock management.

Moderators:
- Dr. Jessica Drewry, Mississippi State University
- Mr. Egleu D. M. Mendes, Texas A&M University

2:00 - 2:15 PM **Long-Term Investigation of Ammonia Emissions from Slatted Floors in Dairy Barns with Rubber Inserts and Emission Protection Flaps**
Diana Nett, University of Bonn

2:15 - 2:30 PM **Audio-Based Classification of Cattle Eructation Events for Methane Emission Monitoring Using Machine Learning**
Xiaohui Wu, Virginia Tech

2:30 - 2:45 PM **Continuous UAV Monitoring for Predicting Methane Emissions in Grazing Systems**
Guilherme Menezes, University of Wisconsin-Madison

2:45 - 3:00 PM **Monitoring Greenhouse Gas Emissions in Cattle using Low-Cost Gas Sensors**
Raphael Mantovani, University of Wisconsin-Madison

3:00 - 3:15 PM **Assessment of Cow Behavioral Traits as Indicators of Methane and Feed Intake Measurements in Lactating Holstein Dairy Cows**
Jenna Hibma, Iowa State University

WEDNESDAY, JUNE 4, CONTINUED

3:15 - 4:15 PM

POSTER PRESENTATIONS

SESSION 22 - REGENT D-E-F

ENHANCING GRAZING EFFICIENCY AND SUSTAINABILITY THROUGH PRECISION TECHNOLOGIES

This session focuses on the application of precision livestock farming (PLF) tools to enhance cattle management, sustainability, and performance monitoring.

Moderators:
- Dr. Rick Stowell, University of Nebraska-Lincoln
- Dr. Gustavo Mazon, University of Wisconsin-Madison

Poster 1 **Satellite Remote Sensing for Forage Mass Estimations in Cereal Rye for Nebraska Grazing Systems**
Pedro Fernandes, University of Nebraska-Lincoln

Poster 2 **Precision Technologies for Greenhouse Gas Emission Monitoring in Grazing Dairy Cattle**
Bradley Heins, University of Minnesota

Poster 3 **Leveraging Milk Spectral Data for Predicting Feed Intake in Lactating Holstein Dairy Cattle**
Leonora James, Iowa State University

Poster 4 **Virtual Grazing of Raramuri Criollo and Angus-Hereford Cattle on Arid Rangelands**
Andres Perea, New Mexico State University

Poster 5 **The Precision Range Heifer: Individual Heifer Supplementation to Target Precision Growth Curves in Developing Beef Heifers Grazing Dormant Forage**
Kali-Jo Bentz, South Dakota State University

SESSION 23 - REGENT D-E-F

ADVANCES IN COMPUTER VISION AND SENSOR TECHNOLOGIES FOR PRECISION SWINE MANAGEMENT

This session showcases innovative applications of computer vision and sensor-based technologies to enhance swine production and welfare.

Moderators:
- Dr. Suzanne M. Leonard, North Carolina State University
- Mr. Md Towfiqur Rahman, University of Nebraska-Lincoln

Poster 6 **Methodology for Evaluating Mammary Gland Volume from Images**
Mary Kasakamu, University of Nebraska-Lincoln

Poster 7 **Deep Learning for Individual Pig Identification: Evaluating Depth Image-Based Classification Using ResNet50, Xception, VGG16, and DenseNet121**
Shiva Paudel, University of Nebraska-Lincoln

Poster 8 **Automated Gait Analysis of Growing Pigs through Biomarker Measurements using Computer Vision**
Mina Shumaly, Iowa State University

Poster 9 **Feeding Behavior Detection for Group-Housing Pigs with the Deep Learning Approaches**
Dong-Hwa Jang, National Institute of Animal Science

Poster 10 **Understanding Activity Changes in Gilts During Estrus Using Nutrack**
Emily Joie, University of Nebraska-Lincoln

WEDNESDAY, JUNE 4, CONTINUED

4:15 - 4:30 PM **BREAK**

4:30 - 5:30 PM **SESSION 24 - REGENT B-C**

KEYNOTE PANEL: FROM CONCEPT TO COMPANY: NAVIGATING THE PATH OF AGRICULTURAL INNOVATION

Moderators:
- Dr. Courtney Daigle, Texas A&M University
- Dr. Hector Menendez III, South Dakota State University
- Dr. Tami Brown-Brandl, University of Nebraska-Lincoln

Turning bold ideas into impactful technologies requires vision, resilience, and strategic execution. This keynote panel brings together innovators who have successfully navigated the journey from concept development to commercial success in the agricultural technology space.

- **Mr. Andrew Uden** of HerdDogg will share how innovative livestock monitoring solutions were designed, refined, and scaled for real-world application. He will reflect on building a data-driven company that supports animal health and traceability.
- **Mr. Chafik Barber** of Marble Technologies will discuss the intersection of software, robotics, and automation in transforming food supply chains. His insights will highlight how breakthrough ideas evolve through iteration, funding, and customer alignment.
- **Mr. David Speller** of OptiFarm will offer a global perspective on deploying precision technologies across poultry operations. He will discuss the challenges of scaling innovation while maintaining user-centric design and measurable performance gains.

Together, the panelists will provide real-world insights into product development, investment, scaling strategies, and lessons learned from bringing agricultural technologies to market. Their stories will inspire the next generation of agtech entrepreneurs.

THURSDAY, JUNE 5

8:00 - 9:00 AM **SESSION 25 - REGENT B-C**

KEYNOTE PANEL: USERS OF TECHNOLOGIES: REAL-WORLD PERSPECTIVES FROM SWINE, DAIRY, AND POULTRY SYSTEMS

Moderators:
- Dr. Courtney Daigle, Texas A&M University
- Dr. Hector Menendez III, South Dakota State University
- Dr. Tami Brown-Brandl, University of Nebraska-Lincoln

As precision livestock technologies evolve, their true value is realized through on-farm application. This keynote panel brings together leaders from across animal agriculture who are actively implementing and evaluating these tools in commercial settings.

- **Dr. Tom Rathje** of DNA Genetics will represent the swine sector, sharing how genetic programs and on-farm technologies are integrated to support sow productivity, piglet performance, and long-term herd improvement. He will address the role of technology in managing genetic data and enhancing decision-making.
- **Ms. Connie Bellingtier** of Automated Dairy Solutions will offer insights from the dairy industry, highlighting how automated milking, monitoring, and environmental systems have changed daily operations. She will discuss practical considerations for adoption and the impact on labor, efficiency, and cow comfort.
- **Dr. William Herring** of Cobb-Vantress will speak from the poultry perspective, focusing on how data-driven technologies are shaping broiler breeder management. His experience will illuminate how to align innovation with large-scale production goals while maintaining animal welfare and system flexibility.

Together, the panelists will explore what drives successful adoption of precision technologies in swine, dairy, and poultry operations. Their shared experiences will provide attendees with grounded perspectives on overcoming barriers, achieving ROI, and identifying future needs in applied livestock technology.

THURSDAY, JUNE 5

9:00 - 10:00 AM **POSTER PRESENTATIONS**

SESSION 26 - REGENT D-E-F

NEXT-GENERATION TECHNOLOGIES FOR GRAZING CATTLE MANAGEMENT

This session explores emerging technologies designed to enhance the monitoring and management of grazing cattle.

Moderators:
- Dr. Lingjuan Li, North Carolina State University
- Dr. Beibei Xu, Cornell University

Poster 1 **An Overview of Virtual Fencing Studies in Nebraska.**
Yijie Xiong, University of Nebraska-Lincoln

Poster 2 **Assessing Behaviors and Patterns of Cattle Grazing Sudangrass using Accelerometer**
Biquan Zhao, University of Nebraska-Lincoln

Poster 3 **Virtual Fencing: Too Good to be True?**
Logan Vandermark, South Dakota State University

Poster 4 **Pasture Monitoring for Beef Cattle (Bos Taurus): Solar GPS Ear Tag and Collar Comparison**
Egleu D. M. Mendes, Texas A&M University

Poster 5 **Estimating Cattle Body Weight in Grazing Livestock Using UAV-Based Monitoring Systems**
Guilherme Menezes, University of Wisconsin-Madison

Poster 6 **Automated Cattle Market Readiness Assessment Using Depth Imaging**
Billy Ram, North Dakota State University

SESSION 27 - REGENT D-E-F

AI, ROBOTICS, AND AUTOMATED MONITORING IN LIVESTOCK AND POULTRY SYSTEMS

This session highlights innovative applications of artificial intelligence, robotics, and automated monitoring to support reproductive assessment, behavior tracking, and welfare management in livestock and poultry systems.

Moderators:
- Dr. Jeremiah Davis, National Poultry Technology Center
- Mr. Felipe Picchi, Iowa State University

Poster 7 **Characterize the Predictability of High-Quality Semen Boars from B-Ultrasound Imaging**
Shihong Yang, Virginia Tech

Poster 8 **Utilizing Image-Based Artificial Intelligence for Grading Bovine Cumulus-Oocyte Complexes**
Grace Koppelman, The Ohio State University

Poster 9 **Visual-Assisted Autonomous Path Planning and Navigation for a Legged Robot Roaming in Cage-free hen houses**
Aravind Mandiga, University of Georgia

Poster 10 **Automated Video Recognition System for Monitoring Broiler Breeders' Mating Behavior in Commercial Farm**
Amin Nasiri, University of Tennessee

Poster 11 **Caretaker Plus: A Novel Platform for Remote Experimentation in Poultry Barns**
Heiner Lehr, Birds Eye Robotics

Poster 12 **In Ovo Sexing Technologies – How PLF can Help with an Important Animal Welfare Topic**
Josefine Stuff, Osnabrueck University of Applied Sciences, Osnabrueck

Poster 13 **Monitoring Poultry Locomotion and Group Activity Index with Machine Vision**
Xiao Yang, University of Georgia

THURSDAY, JUNE 5, CONTINUED

10:00 - 11:15 AM **CONCURRENT BREAKOUT SESSIONS**

SESSION 28 - REGENT A

ADVANCES IN AUTOMATED MONITORING OF BROILER HEALTH AND REPRODUCTION

This session focuses on the development and validation of automated technologies for monitoring broiler health, welfare, and reproductive behaviors.

Moderators:
- Dr. Ziteng Xu, Texas A&M University
- Mr. Mamunur Rahman, University of Illinois Urbana-Champaign

10:00 - 10:15 AM **Automatic Live Weight Prediction of Broiler Chickens Using a Deep Learning Framework**
Vnekat Umesh, University of Georgia

10:15 -10:30 AM **Validation of a Photoelectric Sensor System to Detect Oviposition Timing in Individually Caged Broiler Breeder Hens**
Lauren Sroda, National Poultry Technology Center

10:30 - 10:45 AM **Developing Deep Learning Models for Automated Mating-Related Behavior Detection in Broiler Breeders in Lab Setting**
Mustafa Jaihuni, University of Tennessee

10:45 - 11:00 AM **A Novel 3D Deep Learning Approach for Auditing Gait Scores of Individual Broiler Chickens**
Ehsan Asali, University of Georgia

11:00 - 11:15 AM **An Early Warning Technology to Avoid the use of Antibiotic in Broiler Production**
Federica Borgonovo, Università degli Studi di Milano

SESSION 29 - CHANCELLOR 2-3

INTEGRATING IMAGING, SENSING, AND MACHINE LEARNING FOR CATTLE MONITORING

This session highlights the integration of computer vision, wearable sensors, and machine learning to enhance health and productivity monitoring in cattle.

Moderators:
- Dr. Dale Polson, Boehringer Ingelheim
- Dr. Diego Leal, University of Nebraska-Lincoln

10:00 - 10:15 AM **Use Computer Vision to Detect Different Digital Dermatitis Conditions**
Rajesh Neupane, Texas A&M University

10:15 - 10:30 AM **Pneumonia Detection in Calves using Physiological Data from Wearable Sensors**
Daniel Berckmans, KU Leuven

10:30 - 10:45 AM **Pose Classification for Detection of Calving Related Behavior in Dairy Cows**
Mathias Gosch, University of Veterinary Medicine Vienna

10:45 - 11:00 AM **Individualized Growth Prediction in Dairy Heifers using Depth Imaging and Machine Learning**
Ariana Negreiro, University of Wisconsin-Madison

11:00 - 11:15 AM **Predicting Angus Steer Carcass Quality Through Depth Image**
Luana Benicio, University of Illinois Urbana-Champaign

THURSDAY, JUNE 5, CONTINUED

11:15 AM - 12:00 PM **CLOSING SESSION - REGENT B-C**

Moderators:
- Dr. Tami Brown-Brandl, University of Nebraska-Lincoln.
- Prof. Daniel Berckmans, KU Leuven

The USPLF 2025 Closing Session will bring the conference to a meaningful conclusion by highlighting key takeaways from the week's discussions, research presentations, and collaborative efforts. This session will also recognize outstanding student contributions with the announcement of the Student Presentation Award winners. In addition, awards will be presented for the Best Overall Research in the following species categories: Layer, Broiler, Swine, Dairy, and Beef/Sheep. The session will conclude with the formal announcement of the host university selected to organize the 4th U.S. Precision Livestock Farming Conference (USPLF 2027).

12:00 - 12:30 PM **BREAK**

12:30 - 1:00 PM **LUNCH: CONNECTING STUDENTS TO INDUSTRY- REGENT B-C**

1:00 - 2:30 PM **EDUCATIONAL WORKSHOP - REGENT B-C**

EDUCATION ROUND TABLE: BUILDING THE FUTURE WORKFORCE IN PRECISION LIVESTOCK FARMING

As Precision Livestock Farming (PLF) reshapes the landscape of animal agriculture, the demand for a new kind of workforce is growing rapidly. This round table will bring together educators, industry leaders, and researchers to collaboratively explore how to prepare students for emerging careers in PLF.
Led by Prof. Tomas Norton (KU Leuven), Dr. Tami Brown-Brandl (University of Nebraska-Lincoln), Dr. Hector Menendez III (South Dakota State University), Dr. Heiner Lehr (Birds Eye Robotics), Dr. Julia McQuillan (University of Nebraska-Lincoln), and Dr. Joao Dorea (University of Wisconsin-Madison), the session will begin with brief insights from academia, industry, and social science perspectives:

- **Dr. Tomas Norton and Dr. Tami Brown-Brandl** will provide a global overview of PLF education efforts, including highlights from the CIGR Working Group.

- **Dr. Hector Menendez** will share key takeaways from a recent Harvard-style review of PLF workforce development.

- **Dr. Heiner Lehr** will offer an industry viewpoint on the skills and knowledge gaps employers are encountering.

- **Dr. Julia McQuillan** will introduce the co-creation phase of the session, emphasizing equity and innovation in curriculum design.

Following these insights, participants will break into collaborative groups to explore new project ideas and educational strategies. This interactive session aims to foster partnerships and lay the groundwork for shared resources and initiatives that can benefit PLF education across institutions and industries.

U.S.
PRECISION LIVESTOCK FARMING
CONFERENCE

THANK YOU TO OUR SPONSORS FOR YOUR SUPPORT!

GOLD

C-LOCK INC.™

SILVER

PIC®

BioCV
WELFARE AND TRUST FOR YOUR LIVESTOCK.

HY-LINE NORTH AMERICA
Hy-Line
LOHMANN BREEDERS

BRONZE

zoetis

BovinePlus
by Reap Interactive
Increasing Profitability,Efficiency and Sustainability in Livestock Management
JOIN US
www.reapinteractive.com
info@reapinteractive.com
Boyle, Co Roscommon, IR

birds eye