



**ASAS Midwest Section / ADSA Midwest Branch
2020 Joint Meeting
March 2-4, 2020 • Omaha, Nebraska**



RAW UNFORMATTED SCIENTIFIC PROGRAM

(2/10/2020)

Monday, March 2, 2020

Ruminant Nutrition I: Forages and Feed Management

Chair: Joel Caton, North Dakota State University

8:30 AM - 10:15 AM

211/212

8:30 a.m. 1 Alternative heifer development systems utilizing corn residue and cover crops

Hannah Speer¹, Hannah Riley¹, Robert Cushman², Harvey Freetly³, Mary Drewnoski¹

¹University of Nebraska-Lincoln, ²USDA, ARS, U.S. Meat Animal Research Center, ³U.S. Meat Animal Research Center

8:45 a.m. 2 Evaluation of Masters Choice Corn Silage on Growing Steer Performance

Jiehua Xiong¹, Bradley M. Boyd², Levi J. McPhillips³, Kyle Vosburgh⁴, Galen E. Erickson²

¹University of Nebraska-Lincoln, ²University of Nebraska - Lincoln, ³University of Nebraska, ⁴Masters Choice

9:00 a.m. 3 Influence of backgrounding systems on cattle growth and performance

Bobwealth O. Omontese¹, Jason Langlie¹, Joe Armstrong¹, Eric Mousel², Dan Braaten², Andres Gomez¹, Alfredo DiCostanzo¹, Megan J. Webb¹

¹University of Minnesota, ²NCROC, University of Minnesota

9:15 a.m. 4 Effect of Inclusion Rate of Silage With or Without the Presence of Alpha-Amylase on Feedlot Performance, Carcass Characteristics, and Efficiency Measures

Warren C. Rusche¹, Julie Walker², Zachary K. Smith²

¹SDSU Extension, ²South Dakota State University

9:30 a.m. 5 Evaluating Finishing Performance of Cattle Fed HMC:SFC Blends with Modified Distillers Grains

Braden Troyer¹, Zac Carlson¹, Levi J. McPhillips¹, Andrea K. Watson², James C. MacDonald², Galen E. Erickson²

¹University of Nebraska, ²University of Nebraska - Lincoln

9:45 a.m. 6 **Feed intake variability and performance implications of adjusting for dry matter content of cattle feedlot feed ingredients exposed to the elements**

Allison VanDerWal¹, Alfredo DiCostanzo¹

¹University of Minnesota

10:00 a.m. 7 **Effects of Syngenta Enogen Feed Corn (SYT-EFC) and corn processing methods fed with byproducts on finishing cattle performance and carcass characteristics**

Stacia M. Hopfauf¹, Hannah C. Wilson², James C. MacDonald³, Galen E. Erickson³

¹University of Nebraska-Lincoln, ²University of Nebraska Lincoln, ³University of Nebraska - Lincoln

Gary Allee Symposium

Chair: Russell Fent, Ralco Nutrition, Inc

9:00 AM - 12:00 PM

Grand Ballroom South

9:00 a.m. **Gary Allee Symposium Introduction**

9:10 a.m. 8 **How to drive efficiencies in pork production: What are the gaps in knowledge and obstacles?**

Steve J. Kitt¹

¹First Choice Livestock LLC

9:45 a.m. 9 **Research Topic Prioritization in a Commercial Production System**

Ashley DeDecker¹

¹Smithfield Hog Production

10:10 a.m. **Gary Allee Symposium Break**

10:30 a.m. 10 **A personal perspective - ASF**

Gary Stoner¹

¹CP Group

11:05 a.m. 11 **Understanding today's sow and challenging ourselves for the future**

Laura L. Greiner¹

¹Iowa State University

11:40 a.m. **Gary Allee Symposium Panel Discussion**

Digestive Physiology of Pigs Lecture and Lunch

12:00 PM - 1:00 PM

Grand Ballroom North

12:00 p.m. 12 **Nutrient digestion kinetics in pigs: a look inside the gastrointestinal tract**

Sonja de Vries ¹

¹Wageningen University

David Baker Symposium

Chair: Hans Stein, University of Illinois at Urbana-Champaign

1:00 PM - 5:00 PM

Grand Ballroom South

1:00 p.m. **David Baker Symposium Introduction**

1:05 p.m. 13 **Opportunities for using low-protein diets for weanling pigs to improve intestinal health**

Martin Nyachoti ¹, Jinyoung Lee ¹

¹University of Manitoba

1:40 p.m. 15 **Young Scholar Presentation: Impact of a Near Ideal Amino Acid Profile on the Efficiency of Nitrogen and Energy Utilization in Lactating Sows**

Sai Zhang ¹, Nathalie Trottier ²

¹University of Maryland, ²Department of Animal Science, Michigan State University

2:10 p.m. 14 **Challenges and opportunities for formulating low-protein diets for maintaining growth and N-retention of weanling and growing-finishing pigs**

John K. Htoo ¹

¹Evonik Nutrition & Care GmbH

2:45 p.m. **David Baker Symposium Break**

3:10 p.m. 205 **An Adjusted SID-Thr:Lys Ratio Offsets Growth Performance Depressions in Finishing Pigs Fed Moderately High Distillers Dried Grains with Solubles (DDGS)**

Sharon A. Norton ¹, Pengcheng Xue ¹, Brian Ramer ², Jim Erickson ²

¹Provimi, Cargill Animal Nutrition and Health, ²TDM Midwest, Inc

3:25 p.m. 16 **Sulfur amino acid utilization during immune system stimulation in growing pigs**

Anoosh Rakhshandeh ¹

¹Texas Tech University

4:00 p.m. 206 **Meta-analysis of the response of piglets to dietary valine: impact of other branched chain amino acids**

Maroua Zouaoui ¹, Aude Simongiovanni ², Marie-Pierre Létourneau-Montminy ³

¹Université Laval, ²Ajinomoto Animal Nutrition Europe, ³Laval University

4:15 p.m. 17 **Challenges and implications of feeding diets with excess concentrations of leucine to growing-finishing pigs.**

Mike D. Tokach ¹, Henrique S. Cemin ², Hayden R. Kerkaert ³, Jason C. Woodworth ¹, Steve S. Dritz ⁴, Joel M. DeRouchey ³, Robert D. Goodband ³

¹Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506,

²Hubbard Feeds, ³Kansas State University, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

Graduate Student Oral Competition: MS I

1:45 PM - 3:30 PM

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1:45 p.m. 18 **Impact of in-feed vs. in-water antibiotic administrations on the fecal prevalence and antimicrobial susceptibilities of Campylobacter and Salmonella in piglets**

Victor L. Ishengoma ¹, Raghavendra G. Amachawadi ², Kellen A. Habib ², Xiaorong Shi ³, Taghreed Mahmood ⁴, Wade M. Hutchens ⁵, Mike D. Tokach ⁶, Steve S. Dritz ³, Jason C. Woodworth ⁶, Robert D. Goodband ⁵, Joel M. DeRouchey ⁵, Michael D. Apley ⁵, T.G. Nagaraja ³

¹Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 6650,

²Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 66506.,

³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine,

Manhattan, KS 66506, ⁴Department of Clinical Sciences, College of Veterinary Medicine,

Manhattan, KS 66506, ⁵Kansas State University, ⁶Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506

2:00 p.m. 19 **Assessment of Nitrogen Intake, Excretion and Deposition in lipopolysaccharide-Challenged Pigs**

Joyce Barcellos ¹, Warley J. Alves ¹, Carolaine R. Ferreira ¹, Filipe Monteiro ¹, Gabriel Viana ², Paulo H. Reis Furtado Campos ³, Fabyano Silva ¹, Melissa I. Hannas ¹

¹Universidade Federal de Viçosa, ²Natural Resources Institute Finland, ³Federal University of Viçosa

2:15 p.m. 20 **Assessment of lysine requirement in lipopolysaccharide-challenged pigs**
Joyce Barcellos¹, Warley J. Alves¹, Pedro R. Arnaut¹, Lucimauro Fonseca¹, Paulo H. Reis Furtado Campos², Gabriel Viana³, Fabyano Silva¹, Melissa I. Hannas¹

¹Universidade Federal de Viçosa, ²Federal University of Viçosa, ³Natural Resources Institute Finland

2:30 p.m. 21 **Effects of supplementing late gestation sow diets with zinc on pre-weaning mortality of pigs under commercial rearing conditions**

Julia P. Holen¹, Pedro E. Urriola¹, Mark Schwartz², Jae-Cheol Jang¹, Gerald C. Shurson¹, Lee Johnston¹

¹University of Minnesota, ²Schwartz Farms Inc.

2:45 p.m. 256 **The effect of closely meeting estimated daily lysine and energy requirements of pregnant first parity sows on offspring growth and carcass quality**

Lauren Hansen¹, Victoria Stewart¹, Ira Mandell¹, Lee-Anne Huber¹

¹University of Guelph

3:00 p.m. 23 **Protein Source Selection During Choice-Feeding in Nursery Pigs**

Jackie Harr¹, Marcia Shannon², Jeffre Firman³

¹University of Missouri - Columbia, ²MU, ³University of Missouri-Columbia

3:15 p.m. 24 **Determining the phosphorus release of Smizyme TS G5 2,500 phytase in nursery pigs**

Madie R. Wensley¹, Jason C. Woodworth², Joel M. DeRouchey³, Mike D. Tokach², Robert D. Goodband³, Steve S. Dritz⁴, Hilda I. Calderon Cartagena³, Jill M. Faser⁵, Baolin L. Guo⁶

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Kansas State University, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁵Origination Inc.,

⁶Beijing Smile Feed

Physiology I: Reproductive Physiology

Chair: Alison Ward, North Dakota State University

1:45 PM - 3:45 PM

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1:45 p.m. 26 **Factors effecting collection characteristics in beef bulls at an artificial insemination facility**

Ashley Hartman¹, Madison L. Butler², Esther D. McCabe², Nicole Goodenow³, Sharon Tucker⁴, Jennifer M. Bormann², David M. Grieger²

¹Dept. Animal Sciences & Industry, Kansas State University, ²Kansas State University, ³Kansas Artificial Breeding Service Unit, Manhattan, KS, ⁴Kansas Artificial Breeding Service Unit

2:00 p.m. 27 **Shotgun proteomics reveal seminal plasma proteomes are reflective of boar reproductive performance.**

Kayla M. Mills ¹, Uma Aryal ², Tiago Sobreira ², Amanda Minton ³, Theresa Casey ⁴, Kara R. Stewart ¹

¹Purdue University, ²Proteomics and Metabolomics Core, Purdue University, ³The Maschhoff's, Inc., ⁴Purdue University

2:15 p.m. 28 **Steroid hormones are differentially abundant in sows with elevated risk for pelvic organ prolapse during late gestation**

Zoe Kiefer ¹, Amanda Chipman ¹, Jamie M. Studer ¹, Rafael Dal Forno Gianluppi ¹, Aileen F. Keating ¹, Nicholas Gabler ¹, Jason W. Ross ¹

¹Iowa State University

2:30 p.m. 29 **Influence of dietary manganese source on the corpus luteum proteome in pigs**

Jamie M. Studer ¹, Zoe Kiefer ¹, Aileen F. Keating ¹, Lance H. Baumgard ¹, Kristin M. Olsen ¹, Zachary Rambo ², Mark E. Wilson ², Christof Rapp ³, Jason W. Ross ¹

¹Iowa State University, ²Zinpro Corporation, ³Zinpro

2:45 p.m. 30 **Uterine flushing as a non-invasive method to access inflammatory cytokines in sows reproductive tract after parturition**

Ricardo M. Garcia ¹, Kara R. Stewart ¹, John S. Radcliffe ¹, Allan P. Schinckel ¹, Brian T. Richert ¹

¹Purdue University

3:00 p.m. 31 **Effect of polyunsaturated fatty acid and methionine supplementation during late gestation on offspring growth, glucose tolerance test, and carcass characteristic in sheep.**

Milca Rosa-Velazquez ¹, Juan M. Pinos-Rodriguez ², Alejandro E. Relling ¹

¹The Ohio State University, ²Universidad de Veracruz

3:15 p.m. 32 **What determines placental size in beef cattle? The consideration of maternal and fetal factors**

Colby A. Redifer ¹, Natalie B. Duncan ¹, Allison M. Meyer ¹

¹Division of Animal Sciences, University of Missouri

3:30 p.m. 33 **Influence of age of dam on daughter reproductive performance and follicle numbers in beef heifers**

Robert Cushman¹, Renata Spuri-Gomes², Sarah Tenley², Shelby Rosasco³, Jerica Rich⁴, Emmalee Northrop⁴, Jeremy Miles¹, Amanda Lindhom-Perry¹, Brittney Keel¹, George Perry⁴, Adam Summers³, Andrea Cupp²

¹USDA, ARS, U.S. Meat Animal Research Center, ²University of Nebraska, ³New Mexico State University, ⁴South Dakota State University

Graduate Student Oral Competition: MS II

1:45 PM - 4:00 PM

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1:45 p.m. 34 Effects of rumen-protected Capsicum oleoresin on growth performance and immune response in growing beef cattle

Mariana Fontana Westphalen¹, Joonpyo Oh¹, Alexander N. Hristov¹, Tara Felix²

¹Pennsylvania State University, ²Penn State University

2:00 p.m. 35 Effect of feeding 60% dried corn distillers grains plus solubles or the equivalent sulfur on performance, hormone concentrations, and glutathione peroxidase activity in yearling Angus bulls

Cierrah J. Kassetas¹, Joel S. Caton¹, James D. Kirsch¹, Sheri T. Dorsam¹, Kacie L. McCarthy², Matthew Crouse¹, Bryan Neville¹, Kevin K. Sedivec¹, Carl R. Dahlen³

¹North Dakota State University, ²University of Nebraska - Lincoln, ³North Dakota State University, Department of Animal Sciences

2:15 p.m. 36 Evaluation and mitigation of the effects of in utero heat stress on pig performance following weaning and transport

Jacob M. Maskal¹, Alan W. Duttlinger¹, Kouassi R. Kpodo¹, Betty R. McConn², Christopher Byrd³, Brian T. Richert¹, Donald C. Lay⁴, Jeremy Marchant-Forde⁴, Matthew Lucy⁵, Tim Safranski⁵, Jay S. Johnson⁴

¹Purdue University, ²Oak Ridge Institute for Science and Education, ³North Dakota State University, ⁴USDA-ARS Livestock Behavior Research Unit, ⁵University of Missouri

2:30 p.m. 37 Sibs: an R toolkit for computation of relatedness measures using large pedigrees

B. Victor Oribamise¹, Lauren L. Hulsman Hanna¹

¹North Dakota State University, Department of Animal Sciences

2:45 p.m. 38 Effects of combining nose flap weaning with short-term creep feeding of beef calves on cow and calf performance

Kendi Tjardes¹, Katy Lippolis¹

¹Iowa State University

3:00 p.m. 39 **Effects of increasing iron dextran dosage at birth on the hematological profile and growth performance of piglets during the lactation period**

Tyler B. Chevalier¹, Harold J. Monegue¹, Merlin D. Lindemann¹

¹University of Kentucky

3:15 p.m. 40 **Resilience of the ocular microbiome in beef calves.**

Alison Bartenslager¹, Nirosh Aluthge², John Loy¹, Matthew Spangler¹, Samodha Fernando¹

¹University of Nebraska-Lincoln, ²UNL

3:30 p.m. 41 **Characterizing the amount and variability of intramuscular fat deposition throughout the loin using barrows and gilts from two genotypes**

Jack D. Redifer¹, Jon Beever¹, Chad Stahl², Dustin Boler¹, Anna Dilger¹

¹University of Illinois, ²Choice Genetics

3:45 p.m. 42 **Quantifying mammary growth and proliferative effects of estradiol in Holstein heifer calves**

Nicole R. Hardy¹, Kellie Enger¹, Benjamin Enger¹

¹The Ohio State University

Undergraduate Student Oral Competition

1:45 PM - 4:30 PM

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2:00 p.m. 54 **Substrate and inoculum composition affect in vitro model of ruminal acidosis**

Natalie Shaw¹, Sara Tondini¹, Daniel W. Shike¹, Joshua C. McCann¹

¹University of Illinois

2:15 p.m. 55 **Rumen undegradable protein content of native range and sub irrigated meadow forages.**

Kaylee E. Wheeler¹, Terry J. Klopfenstein¹, James C. MacDonald², Andrea K. Watson², Hannah C. Wilson³

¹University of Nebraska-Lincoln, ²University of Nebraska - Lincoln, ³University of Nebraska Lincoln

2:30 p.m. 56 **Impact of Electronically-Controlled Cooling Pads on Physiological Signs of Heat Stress in Early Lactation Sows**

Flannery J. Whitmore¹, Allan P. Schinckel¹, Robert Stwalley¹, Tyler Field¹, Morgan Burgett¹, Ricardo M. Garcia¹, Jay S. Johnson²

¹Purdue University, ²USDA-ARS Livestock Behavior Research Unit

2:45 p.m. 57 **Effects of rest period prior to processing on growth and performance during the receiving period in feedlot heifers.**

Zachary Buessing¹, A J. Tarpoff¹, Miles Theurer², Tom Jones³, Cassandra K. Jones¹

¹Kansas State University, ²Veterinary Research & Consulting Services, ³Hy-Plains Feedyard

3:00 p.m. 58 **The relationship between the first harmonic intensity levels among boer goat siblings from birth to weaning**

Thomas A. Burke¹, Rachael C. Quandt¹, Samantha S. Bartley¹, Brandon Forshey¹

¹University of Findlay

3:15 p.m. 59 **The effects of audio exposure to goat kids' relative intensity ratios of harmonics from birth to weaning**

Samantha S. Bartley¹, Thomas A. Burke¹, Rachael C. Quandt¹, Brandon Forshey¹

¹University of Findlay

3:30 p.m. 60 **Use of environmental monitoring to inform biosecurity compliance in a swine health challenge**

Olivia Harrison¹, Savannah Stewart¹, Carine Vier¹, Jordan T. Gebhardt¹, Cassandra K. Jones¹, Jason C. Woodworth², Chad B. Paulk¹, Steve S. Dritz³

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

3:45 p.m. 61 **Impact of broken kernels and foreign matter content of corn on nutrient and energy composition and mycotoxin levels**

Chloe S. Hagen¹, Paul Cline², Blair Tostenson³

¹Iowa State University, ²Christensen Farms, ³University of Minnesota - Department of Animal Science

4:00 p.m. 62 **Altering sexual behavior of rats through neonatal treatment with an aromatase inhibitor, estrogen receptor antagonist and testosterone.**

Sara K. Gholson¹, Amanda Schmelzle¹, Jonathon Green¹, Micheal Smith¹, Rodney Geisert¹

¹University of Missouri

4:15 p.m. 63 **Ileal digestibility of amino acids in a new source of high-protein distillers dried grains with solubles fed to growing pigs**

Jessica P. Acosta Medellin¹, Su A Lee², Hans H. Stein²

¹National University of Colombia, ²University of Illinois at Urbana-Champaign

**Beef/Small Ruminant Translational Symposium:
Considerations for Indoor Cattle Feeding Facilities**

Chair: Joshua McCann, University of Illinois

1:45 PM - 4:45 PM

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1:45 p.m. **Beef/Small Ruminant Translational Symposium Introduction**

1:50 p.m. 64 **Klopfenstein Lecture: 50 years of feedlot nutrition research: History and a look to the future**

Larry Berger ¹

2:20 p.m. 65 **Health, management, and future directions for indoor cattle feeding facilities**

Adam L. Shreck ¹

¹Feedlot Health Management Services

2:50 p.m. **Beef/Small Ruminant Translational Symposium Break**

3:00 p.m. 66 **Overview of Different Cattle Finishing Facilities: Economic Summary and Future Innovations**

Tom Peters ¹

¹Corn Belt Livestock Services

3:30 p.m. 67 **Lameness in indoor cattle feeding facilities**

Van Mitchell ¹

¹Metzger Veterinary Services

4:00 p.m. 68 **Nutritional and management solutions for indoor cattle feeding facilities**

Erik Loe ¹

¹Midwest PMS

4:30 p.m. **Beef/Small Ruminant Translational Symposium Panel**

Teaching and Extension Education

Chair: Peter Lammers, University of Wisconsin–Platteville

3:30 PM - 4:15 PM

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3:30 p.m. 69 **Connecting with the next generation of shepherds – an online sheep-based webpage serves as an additional tool in Extension education**

Braden J. Campbell ¹, Jefferson S. McCutcheon ², Francis L. Fluharty ³, Anthony J. Parker ¹

¹The Ohio State University, ²The Ohio State University Extension, ³University of Georgia

3:45 p.m. 70 **Identifying factors that play a significant role in the animal science transfer student experience**

Jennifer Bundy¹, Cori Siberski¹

¹Iowa State University

4:00 p.m. 71 **Imitating the dynamic bovine cervix with 3D printing technology to teach artificial insemination in cattle**

Esther D. McCabe¹, Lane P. Sorell², Meng Zhang¹, Ashley Hartman³, Karol E. Fike¹, Kenneth G. Odde¹, David M. Grieger¹

¹Kansas State University, ²Ontario Systems, ³Dept. Animal Sciences & Industry, Kansas State University

Tuesday, March 3, 2020

Nonruminant Nutrition II: Grow-Finish Nutrition

Chair: Henrique Cemin, Hubbard Feeds; Andrea Hanson, Carthage

8:00 AM - 10:30 AM

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8:00 a.m. 72 **Young Scholar Presentation: Use of medium chain fatty acids as mitigation or prevention strategies against pathogens in swine feed**

Annie B. Lerner¹, Roger A. Cochrane², Jordan T. Gebhardt¹, Steve S. Dritz³, Cassandra K. Jones¹, Mike D. Tokach⁴, Robert D. Goodband¹, Joel M. DeRouchey¹, Phillip C. Gauger⁵, Jianqiang Zhang⁵, Drew Magstadt⁵, Jianfa Bai³, Elizabeth Porter¹, Joe Anderson¹, Benjamin Bass⁶, Theodore Karnezos⁷, Brenda de Rodas⁸, Jason C. Woodworth⁴

¹Kansas State University, ²Pipestone Grow Finish, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁵Iowa State University, ⁶PMI, ⁷Land O'Lakes, ⁸Purina Animal Nutrition

8:30 a.m. 73 **Effects of dietary neutral detergent fiber and standardized ileal digestible lysine levels on growth performance and carcass characteristics of growing-finishing pigs**

Uislei Orlando¹, Ning Lu¹, Carine Vier², Wayne Cast¹, Xun Zhou³, Malachy Young³

¹Genus PIC, ²Kansas State University, ³Gowans Feed Consulting

8:45 a.m. 74 **Isotonic electrolyte solution improves pig wean to finish performance**

Jessica Jasper¹, Omarh Mendoza², Katie Brown³, Caleb M. Shull³, Nicholas Gabler¹

¹Iowa State University, ²The Maschhoffs, ³The Maschhoffs, LLC

9:00 a.m. 75 **Effects of dietary energy and lysine concentration on feed intake and productive performance of lean growing pigs**

Pau Aymerich¹, Carme Soldevila¹, Jordi Bonet¹, Josep Gasa², Jaume Coma¹, David Solà-Oriol²

¹Vall Companys Group, ²Universitat Autònoma de Barcelona

9:15 a.m. 76 **Compensatory growth following lysine restriction in grow-finish pigs: literature review and analysis**

Mariana Boscato Menegat¹, Steve S. Dritz², Mike D. Tokach³, Jason C. Woodworth³, Joel M. DeRouchey⁴, Robert D. Goodband⁴

¹Holden Farms, ²Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴Kansas State University

9:30 a.m. 77 **The effect of naturally occurring levels of multiple mycotoxins on growth performance and carcass parameters of grow-finish pigs.**

Leigh Ruckman¹, Stacie Gould¹, John Patience¹

¹Iowa State University

9:45 a.m. 198 **Effects of different dietary standardized ileal digestible lysine specifications on growth performance of grow-finish pigs**

Ning Lu¹, Carine Vier², Wayne Cast¹, Uislei Orlando¹, Dan Hamilton¹, Denise Van De Stroet¹, Isaiah Spath¹, Dan B. Hanson³, Roy Edler⁴, Emily Scholtz⁴

¹Genus PIC, ²Kansas State University, ³Pipestone Veterinary Services, ⁴Pipestone System

10:00 a.m. 78 **Evaluation of the growth performance of finishing pigs (Genesus genetics) to titrated levels of dietary lysine**

Russell W. Fent¹, Jim D. Hedges¹, Kelly M. Peper¹, Dennis O. Liptrap¹

¹Ralco Nutrition, Inc

10:15 a.m. 79 **Effects of dietary net energy and neutral detergent fiber levels on growth performance and carcass characteristics of growing finishing pigs**

Ning Lu¹, Carine Vier², Wayne Cast¹, Uislei Orlando¹, Márcio Gonçalves³, Xun Zhou⁴, Malachy Young⁴

¹Genus PIC, ²Kansas State University, ³Swine It, ⁴Gowans Feed Consulting

Animal Behavior, Health and Well-Being I: Early Life Stress

Chair: Nichole Anderson, University of Missouri-Columbia

8:30 AM - 10:00 AM

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8:30 a.m. 81 Effects of NeutraPath™ on growth performance, diarrhea and fecal α -hemolytic coliforms of weaned pigs challenged with an enterotoxigenic Escherichia coli

LeAnn Johnston¹, Peng Ji², Hongyu Xue¹

¹Amlan International, ²University of California, Davis

8:45 a.m. 82 Struggle behavior and vocalizations of male piglets during castration

Maria E. Lou¹, Yuzhi Li¹, Beth Ventura¹

¹University of Minnesota

9:00 a.m. 83 Evaluation of transmammary-delivered firocoxib and an ethyl chloride spray to mitigate pain associated with processing procedures in piglets

Abbie V. Viscardi¹, Elizabeth Shirtcliff², Emily Eppler¹, Savannah Miller¹, Johann Coetzee³

¹Kansas State University, ²Iowa State University, ³Kansas State University College of Veterinary Medicine

9:15 a.m. 84 Effect of rearing cross-fostered piglets in litters of either uniform or mixed birth weights on pre-weaning performance.

Katherine Vande Pol¹, Ovidio Bautista¹, Heath Harper¹, Michael Ellis¹, Caleb M. Shull², Katie Brown²

¹University of Illinois, ²The Maschhoffs, LLC

9:30 a.m. 85 The effect of drying and warming piglets at birth on pre-weaning mortality.

Katherine Vande Pol¹, Andres F. Tolosa Russi², Michael Ellis¹, Caleb M. Shull³, Katie Brown³, Stephan da Silva⁴

¹University of Illinois, ²University of Illinois Urbana-Champaign, ³The Maschhoffs, LLC,

⁴Universidade Federal

9:45 a.m. 86 Factors affecting beef calf vigor at birth: Dam peripartum body condition score, calving season, and calf size

Lindsey G. Wichman¹, Colby A. Redifer¹, Natalie B. Duncan¹, Craig A. Payne², Allison M. Meyer¹

¹Division of Animal Sciences, University of Missouri, ²College of Veterinary Medicine, University of Missouri

**Nonruminant Nutrition Symposium:
Nutrition and Feeding of the Modern Hyperprolific Sow**

Chair: Omarh Mendoza, The Maschhoffs

8:30 AM - 10:45 AM

Grand Ballroom North

8:30 a.m. **Nonruminant Nutrition Symposium Introduction**

8:35 a.m. 87 **Energy and lysine utilization and requirements of lactating sows**
Peter K. Theil¹

9:05 a.m. 88 **Benefits of increasing amino acid intake in late gestation in prolific sows**
Ron Ball¹, Crystal L. Levesque², D. J. Cadogan¹
¹, ²South Dakota State University

9:35 a.m. **Nonruminant Nutrition Symposium Break**

9:45 a.m. 89 **Controlling intrinsic pathways to optimize efficiencies of mineral and vitamin use by sows**

Thomas D. Crenshaw¹, Mariola Grez Capdeville¹, Laura A. Amundson¹
¹University of Wisconsin-Madison

10:15 a.m. 89 **Nutrition and Feeding of the Modern Hyperprolific Sow**

Laura L. Greiner¹
¹Iowa State University

Genetics, Genomics and Bioinformatics

8:30 AM - 11:00 AM

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8:30 a.m. 91 **Electronic probes for assessment of changes in gastrointestinal microbiome in nursery pigs**

Scott D. Carter¹, Kitty Cardwell², Andres Espindola Camacho², Ishtar Silva Lara¹
¹Oklahoma State University, ²National Institute of Microbial Forensics and Food and Agricultural Biosecurity (NIMFFAB)

8:45 a.m. 92 **Phenotypic and genomic relationships between vulva score and reproductive performance in first-parity sows**

Flor-Anita Corredor¹, Letícia P. Sanglard¹, Jason W. Ross¹, Aileen F. Keating¹, Nick Serão¹
¹Iowa State University

9:00 a.m. 93 **Genomic basis of antibody response to porcine reproductive and respiratory syndrome virus vaccination**

Letícia P. Sanglard¹, Rohan L. Fernando¹, Kent Gray², Daniel C.L. Linhares¹, Jack Dekkers¹, Megan C. Niederwerder³, Nick Serão¹

¹Iowa State University, ²Smithfield Premium Genetics, ³Kansas State University

9:15 a.m. 94 **Genetic basis of blood traits in beef cattle and their relationship to production traits at weaning**

Josue Chinchilla-Vargas¹, Luke Kramer¹, Toby D Lester², Elizabeth A Backes³, Karen Anschutz², Jared E. Decker⁴, Kenneth J. Stalder¹, Max F. Rothschild¹, James E. Koltes¹

¹Iowa State University, ²University of Arkansas, ³Purina, ⁴University of Missouri

9:30 a.m. 95 **Evaluation of variation attributable to lab and technician for measurements of beef carcass traits made using ultrasound**

Bradie M. Schmidt¹, Michael MacNeil², Michael Gonda¹

¹South Dakota State University, ²Delta Genetics

9:45 a.m. **Genetics, Genomics and Bioinformatics Break**

10:00 a.m. 96 **Estimation of the genetic parameters of beef bull semen attributes**

Madison L. Butler¹, Jennifer M. Bormann¹, Robert L. Weaber¹, David M. Grieger¹, Megan M. Rolf¹

¹Kansas State University

10:15 a.m. 97 **An insight into the piglet's microbial colonization evolution: From birth towards weaning.**

Mireia Saladrigas García¹, Mario Durán², Jaume Coma², José Francisco Pérez¹, Susana María Martín-Orúe¹

¹Animal Nutrition and Welfare Service. Universitat Autònoma de Barcelona (UAB), ²Vall Companys Group

10:30 a.m. 98 **Using differential evolution to improve predictive accuracy of deep learning models applied to pig production data**

Junjie Han¹, Cedric Gondro¹, Juan Steibel¹

¹Michigan State University

10:45 a.m. 99 **Breed authentication of five lines comparing Structure, Admixture, and an allele frequency method**

Austin M. Putz¹, Patrick Charagu¹, Abe Huisman¹

¹Hendrix Genetics Swine

Ruminant Nutrition II: Growth Promotants

Chair: James MacDonald, University of Nebraska - Lincoln

8:30 AM - 11:00 AM

211/212

8:30 a.m. 100 Young Scholar Presentation: Energy and Mineral Supplementation Strategies for Beef Cattle Grazing the Northern Great Plains

Kacie L. McCarthy¹, Sarah Underdahl², Michael Undi², Stephanie Becker³, Kevin K. Sedivec², J. Christopher Forcherio⁴, Ronald Scott⁴, Joel S. Caton², Carl R. Dahlen⁵

¹University of Nebraska - Lincoln, ²North Dakota State University, ³CGREC, NDSU, ⁴Land O' Lakes, ⁵North Dakota State University, Department of Animal Sciences

9:00 a.m. 101 Effects of traditional growth-promoting re-implant or long-acting implant programs on growth performance and carcass characteristics of heifers fed for 221 days

Marshall Streeter¹, John Hutcheson¹, Wade Nichols¹, Brandon Nuttelman¹, Grant Crawford¹, Lee-Anne Walter¹, Shane Davis²

¹Merck Animal Health, ²Bos Technica Research Services

9:15 a.m. 102 Pooled analysis of six large-pen feedlot studies: Non-coated initial and a non-coated terminal implant compared with a single initial and delayed release implant at arrival in feedlot heifers

Zachary K. Smith¹, Grant Crawford², Wade Nichols², Brandon Nuttelman², Marshall Streeter², John Hutcheson², David Amrine³, David Renter⁴

¹South Dakota State University, ²Merck Animal Health, ³Beef Cattle Institute Kansas State University, ⁴The Dr. Robert MacDonald Professor of Veterinary Medicine Kansas State University

9:30 a.m. 103 Effect of a single Revalor-XH or Revalor-200/Revalor-200 re-implant program and zinc supplementation on performance, carcass characteristics, and liver mineral of feedlot heifers

Elizabeth M. Messersmith¹, Emma Niedermayer¹, Grant Crawford², Stephanie L. Hansen¹

¹Iowa State University, ²Merck Animal Health

9:45 a.m. 104 Effects of nutritional management and implant strategies on growth and carcass performance of steers selected for superior marbling

Erika L. Lundy¹, Aubree M. Beenken¹, Patrick B. Wall¹, Daniel D. Loy¹

¹Iowa State University

10:00 a.m. 105 **A comparison of long-acting growth-promoting implants and re-implant programs in finishing heifers fed for 184 days**

Grant Crawford¹, Wade Nichols¹, John Hutcheson¹, Marshall Streeter¹, Brandon Nuttelman¹, Lee-Anne Walter¹, Josh Szasz², Tony Bryant²

¹Merck Animal Health, ²Five Rivers Cattle Feeding

10:15 a.m. 106 **Effects of Revalor-XH and combination Revalor-IH/Revalor-200 on Yearling Heifer Growth Performance and Carcass Characteristics**

Zachary Carlson¹, Galen E. Erickson², Bill Dicke³, Marshall Streeter⁴

¹University of Nebraska-Lincoln, ²University of Nebraska - Lincoln, ³Dicke Consulting, ⁴Merck Animal Health

10:30 a.m. 107 **Effects of increasing doses of trenbolone acetate and estradiol on finishing phase growth performance and carcass trait responses in beef steers**

Dathan Smerchek¹, Zachary K. Smith²

¹SDSU Animal Science, ²South Dakota State University

10:45 a.m. 108 **Effect of Revalor-XH, Revalor-200, and combination Revalor-IH/Revalor-200 on Yearling Heifer Growth Performance and Carcass Characteristics**

Zachary Carlson¹, Caitlin Coulson², Galen E. Erickson², D.J. Jordon³, Rob Cooper³, Tony Scott³, Sheri Bundy³, Brandon Nuttelman⁴

¹University of Nebraska-Lincoln, ²University of Nebraska - Lincoln, ³Cattlemen's Nutrition Services LLC, ⁴Merck Animal Health

David Schingoethe Symposium

Chair: Daryl Kleinschmit

8:30 AM - 11:30 AM

210

8:30 a.m. **David Schingoethe Symposium Introduction**

8:35 a.m. 109 **Stretching forages with limited quality and quantity by using non-forage fiber sources (NFFS) available in the Midwestern United States**

Paul J. Kononoff¹, Cassidy Buse¹

¹University of Nebraska-Lincoln

9:20 a.m. 110 **Managing Feed Efficiency to Improve Dairy Farm Margin**

Micheal J. Brouk¹

¹Kansas State University

10:05 a.m. **David Schingoethe Symposium Break**

10:15 a.m. 111 **Pathogenic Bacterial Levels in US Silages**

Tom Rehberger¹, Jesse Thompson²

¹Arm & Hammer, ²Church and Dwight

11:00 a.m. 112 **Young Scholar Presentation: Protein and Amino Acid Nutrition in Fresh Cows**

Alex W. Tebbe¹, Bill Weiss¹

¹The Ohio State University

**Growth, Dev, Muscle Biology and Meat Science Symposium:
A Market Assessment of the Pork Industry**

Chair: Benjamin Bohrer, University of Guelph

8:30 AM - 11:30 AM

216

8:30 a.m. **Growth, Dev, Muscle Biology and Meat Science Symposium Introduction**

8:35 a.m. 113 **Current status of marking hogs in North America and future potential for refinement**

Allan P. Schinckel¹, Paul Preckel², Kenneth Foster², Nathanel Thompson², Francisco Cabezon³

¹Purdue University, ²Department of Agricultural Economics/Purdue University, ³Agricola Super Ltda

9:15 a.m. 114 **Domestic and International Pork Demand and their Implication on Pork Production Practices**

Elliott J. Dennis¹

¹Agricultural Economics

9:55 a.m. **Growth, Dev, Muscle Biology and Meat Science Symposium Break**

10:10 a.m. 115 **Handicapping the economic prospects for pork production and marketing**

Lee Schulz¹

10:50 a.m. 116 **Impact of Pig Health/Disease (African Swine Fever) on Global Pork Trade**

Egan Brockhoff¹

¹Canadian Pork Council

Precision Livestock Farming Symposium I: Nonruminant

Chair: Juan Steibel, Michigan State University

8:30 AM - 11:30 AM

Grand Ballroom South

8:30 a.m. **Precision Livestock Farming Symposium I Introduction**

8:35 a.m. 122 **Growth and Development**

John Patience¹

¹Iowa State University

9:15 a.m. 123 **Precision Animal Management – The Future of Animal Ag?**

Tami M. Brown-Brandl¹

¹University of Nebraska-Lincoln

9:50 a.m. **Precision Livestock Farming Symposium I Break**

10:00 a.m. 124 **High-throughput, digital platforms and potential impact on genetic improvement in pork production**

William O. Herring¹, Justin W. Holl¹, Rob Fitzgerald¹

¹Pig Improvement Company

10:45 a.m. 125 **Slaughter logistics and chilling**

Brandon Fields¹

¹Pig Improvement Company, Inc.

Harlan Ritchie Symposium

Chair: Robert Weaber, Kansas State University

8:30 AM - 11:30 AM

213

8:30 a.m. **Harlan Ritchie Symposium Introduction**

8:45 a.m. 117 **Consumer perceptions of beef and beef production**

Rick Husted¹

¹National Cattlemen's Beef Association

9:15 a.m. 118 **Where we are at and evolving in management systems that are consumer focused?**

J. Brad Morgan¹

¹Colorado State University

9:45 a.m. 119 **Carcass composition and leanness-industry trends and needs**

David McKenna¹

¹Tyson Fresh Meats, Inc.

10:15 a.m. **Harlan Ritchie Symposium Break**

10:30 a.m. 121 **The impact of changing consumer preferences on production and management practices at cow-calf level**

Robbi H. Pritchard¹

¹Annawan Cattle, LLC

11:00 a.m. 120 **The future of genome editing in food animal species**

Alison L. Van Eenennaam¹

¹University of California, Davis

11:30 a.m. **Harlan Ritchie Symposium Panel Discussion**

Nonruminant Nutrition I: Enzymes

Chair: Diego Navarro, United Animal Health; Kory Moran, Delacon Biotechnik

8:30 AM - 11:45 AM

201

8:30 a.m. 126 **Porcine in vitro digestion and fermentation characteristics of heat and multi-enzyme pretreated whole stillage**

Kevin S. Jerez Bogota¹, Tofuko A. Woyengo²

¹SOUTH DAKOTA STATE UNIV, ANIMAL & RANGE SCIENCES, ²South Dakota State University

8:45 a.m. 127 **Porcine in vitro digestibility of whole stillage predigested with multi-enzyme during different time periods**

Kevin S. Jerez Bogota¹, Tofuko A. Woyengo²

¹SOUTH DAKOTA STATE UNIV, ANIMAL & RANGE SCIENCES, ²South Dakota State University

9:00 a.m. 128 **Determining the effects of high phytase levels and feeding duration on growth performance and carcass characteristics of growing-finishing pigs**

Carine Vier¹, Steve S. Dritz², Mike D. Tokach³, Jon Bergstrom⁴, Jason C. Woodworth³, Robert D. Goodband¹, Joel M. DeRouchey¹

¹Kansas State University, ²Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴DSM Nutritional Products

9:15 a.m. 129 **Effect of phytase on growth performance and carcass classification in growing-finishing pigs**

Caio A. Silva¹, Cleandro P. Dias², Marco A. Callegari², Kelly L. Souza², Adso Passos³, Claudia C. Silva³

¹UEL, ²AKEI, ³DSM

9:30 a.m. 130 **Assessing current phytase release values for calcium, phosphorus, amino acids and energy in diets for growing pigs**

Madie R. Wensley¹, Jason C. Woodworth², Joel M. DeRouchey³, Mike D. Tokach², Robert D. Goodband³, Steve S. Dritz⁴

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Kansas State University, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

9:45 a.m. 131 **Functionality of a next generation biosynthetic bacterial 6-phytase in enhancing phosphorus availability to weaned piglets fed a corn-soybean meal-based diet without added inorganic phosphate**

Yueming Dersjant-Li¹, Boris Villca², Vincent Sewalt¹, Leon Marchal¹, Deepak Velayudhan¹, Janet C. Remus¹, Rosil Lizardo³

¹DuPont Nutrition and Biosciences, ²IRTA – Animal Nutrition, Spain, ³Institut de Recerca I Tecnologia Agroalimentàries

10:00 a.m. **Nonruminant Nutrition I Break**

10:15 a.m. 132 **A longer adaptation time increased xylanases efficacy in improving dry matter and fiber digestibility in the small intestine of growing pigs fed insoluble fiber**

Amy Petry¹, Stacie Gould¹, Nichole Huntley², Mike R. Bedford³, John Patience¹

¹Iowa State University, ²Mazuri, ³AB Vista

10:30 a.m. 133 **Supplementing xylanase increased the digestibility of non-starch polysaccharides, particularly arabinoxylan, in diets high in insoluble corn fiber fed to swine with a 36-d dietary adaptation period**

Amy Petry¹, Nichole Huntley², Mike R. Bedford³, R.T. Zijlstra⁴, John Patience¹

¹Iowa State University, ²Mazuri, ³AB Vista, ⁴University of Alberta

10:45 a.m. 134 **Inclusion of high levels of phytase improves feed efficiency and reduces the carbon footprint of diets fed to growing pigs**

Laura A. Merriman¹, Peter Wilcock¹, Gustavo Cordero¹

¹AB Vista

11:00 a.m. 135 **Xylanase supplementation enhances growth performance post PRRS outbreak and increases carcass yield**

Laura A. Merriman¹, Peter Wilcock¹, Gustavo Cordero¹

¹AB Vista

11:15 a.m. 136 **Xylanase supplementation improves growth performance and carcass characteristics in growing and finishing pigs**

Laura A. Merriman¹, Gustavo Cordero¹, Peter Wilcock¹, Robyn Thompson², Brandon Knopf²

¹AB Vista, ²Carthage Innovative Swine Solutions

11:30 a.m. 137 **Inclusion of xylanase and phytase to nutrient deficient diets restore growth performance, and bone characteristics improving sustainability**

Gustavo Cordero¹, Peter Wilcock¹, Gilson Gomes¹, Boris Villca², Rosil Lizardo³

¹AB Vista, ²IRTA – Animal Nutrition, Spain, ³Institut de Recerca I Tecnologia Agroalimentàries

Ruminant Nutrition Symposium:

Update on Macro and trace Mineral Requirements for Beef and Dairy

Chair: Maggie Youngers

8:30 AM - 12:00 PM

214

8:30 a.m. **Ruminant Nutrition Symposium Introduction**

8:35 a.m. 138 **Analytical Methods for Organometallic Chelation Testing**

EDWARD WALKER¹

¹WEBER STATE UNIVERSITY

9:10 a.m. 141 **Mineral Requirements of Dairy Cattle: Emphasis on organic minerals**

Bill Weiss¹

¹The Ohio State University

9:45 a.m. 140 **Young Scholar Presentation: Immune activation and its effects on energetics and calcium homeostasis.**

Erin A. Horst¹, Lance H. Baumgard²

¹Iowa State University, ²Iowa State University

10:20 a.m. **Ruminant Nutrition Symposium Break**

10:35 a.m. 139 **Ruminal microbiota mineral requirements to optimize performance on different diets**

Jerry W. Spears ¹

¹North Carolina State University

11:10 a.m. 142 **Mineral requirements of fed cattle**

Stephanie L. Hansen ¹

¹Iowa State University

11:45 a.m. **Ruminant Nutrition Symposium Round Table Discussion**

Physiology Symposium: Nutritional Advances in Fetal and Neonatal Development

Chair: Joel Caton, North Dakota State University

8:45 AM - 11:45 AM

205/206

8:45 a.m. 148 **Nutritional advances in fetal and neonatal development: Introduction to current knowledge**

Joel S. Caton ¹

¹North Dakota State University

9:00 a.m. 144 **Nutritional advances in fetal and neonatal development: stage of gestation and placental nutrient supply**

Caleb O. Lemley ¹

¹Mississippi State University

9:30 a.m. 143 **Nutritional advances in fetal and neonatal development: amino acid supplementation**

Kendall C. Swanson ¹, Jessica N. Reiners ²

¹North Dakota State University, Department of Animal Sciences, ²North Dakota State University

10:00 a.m. **Physiology Symposium Break**

10:15 a.m. 145 **Nutritional Advances in Fetal and Neonatal Development: Methyl Donors**

Fernanda Batistel ¹

¹Utah State University

10:45 a.m. 146 **Nutritional Advances in Fetal and neonatal development: effect of fatty acid supplementation**

Alejandro E. Relling ¹

¹The Ohio State University

11:15 a.m. 147 **Nutritional advances in fetal and neonatal development: Mineral nutrition**

Allison M. Meyer ¹

¹Division of Animal Sciences, University of Missouri

Swine Translational

Chair: Megan Bible, Furst-McNess Company

10:45 AM - 12:30 PM

202

10:45 a.m. 149 **Maxwell Lectureship**

Jiangchao Zhao ¹

¹University of Arkansas

11:15 a.m. 150 **Effects of specialty lipids as alternatives to conventional antimicrobial feed additives on nursery pig growth performance**

Payton Dahmer ¹, Annie B. Lerner ¹, Grace Luebcke ¹, Cassandra K. Jones ¹

¹Kansas State University

11:30 a.m. 151 **Effect of enhanced organic acid supplementation in late gestation and lactation of sows on body weight change, litter performance and wean to estrus interval.**

Drew W. Lugar ¹, Shelby Ramirez ², Justin Rickard ¹, Jennifer Earing ¹, Antonia Tacconi ², G. Raj Murugesan ²

¹Illinois State University, ²BIOMIN America Inc.

11:45 a.m. 152 **Effects of a solar-powered cooling system on performance of heat-stressed lactating sows**

Lee Johnston ¹, Mike Reese ¹, Eric Buchanan ¹, Yuzhi Li ¹, Adrienne Hilbrands ¹, Brigit Lozinski ¹, Joel Tallaksen ¹, Kevin Janni ¹, Brian Hetchler ¹, Erin Cortus ¹

¹University of Minnesota

12:00 p.m. 153 **Effect of dietary live yeast supplementation on growth performance, diarrhea severity, antioxidant status and immunological parameters of weaned piglets.**

Tengfei He ¹, Qinghui Shang ², Shenfei Long ², Tadele K. Gebreyohannes ³, Xiangshu Piao ⁴

¹China Agricultural University, ²China Agricultural University, ³Phileo.lesaffre.com, ⁴Cina Agricultural University

12:15 p.m. 154 **A genetic marker for PRRS resistance has no adverse effect on economically important traits in pigs**

Chunyan Zhang ¹, Dinesh Thekkoot ¹, Bob Kemp ¹, Jack Dekkers ², Graham Plastow ³

¹Genesis Inc., ²Iowa State University, ³University of Alberta

Bentley Lecture and Lunch

Chair: Steven Moeller, The Ohio State University

12:00 PM - 1:30 PM

Grand Ballroom North

12:05 p.m. 155 **Bentley Lecture: Dr. Daniel Berckmans**

Daniel A. Berckmans ¹

¹Catholic IUniversity of Leuven

Nonruminant Nutrition III: Ingredients

Chair: Annie Lerner, Schwartz Farms; Darlene Bloxham, Cactus Feeders

1:00 PM - 5:00 PM

203

1:00 p.m. 156 **Influence of viscosity and fiber on nutrient digestibility and intestinal physiology in growing pigs**

Yuan-Tai Hung ¹, Jinlong Zhu ², Gerald C. Shurson ¹, Milena Saqui-Salces ¹, Pedro E. Urriola ¹

¹University of Minnesota, ²Department of Animal Science, University of Minnesota

1:15 p.m. 157 **The effect of different inclusion levels of corn starch and fine ground corn with different conditioning temperatures or die thickness on pellet quality**

Caitlin E. Evans ¹, Cassandra K. Jones ¹, Chad B. Paulk ¹, Charles R. Stark ¹

¹Kansas State University

1:30 p.m. 158 **Effect of fumonisin-contaminated corn on growth performance of 9- to 28-kg nursery pigs**

Zhong-Xing Rao ¹, Mike D. Tokach ², Steve S. Dritz ³, Jason C. Woodworth ², Joel M.

DeRouchey ¹, Robert D. Goodband ¹, Hilda I. Calderon Cartagena ¹

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

1:45 p.m. 159 **Effects of mycotoxin challenge on growth and health of weanling pigs with different weaning weights**

Debora Muratori Holanda ¹, Sung Woo Kim ¹

¹North Carolina State University

2:00 p.m. 160 **Effects of dietary amino acid concentration on digestibility of amino acids in soybean meal and soy protein concentrate fed to growing pigs**

Su A Lee ¹, Hans H. Stein ¹

¹University of Illinois at Urbana-Champaign

2:15 p.m. 161 **Dietary oxidized protein result in growth and histology differences in pigs.**

Carl A. Frame ¹, Elisabeth Huff-Loneragan ¹, Brian J. Kerr ², Mariana C. Rossoni Serao ¹

¹Iowa State University - Department of Animal Science, ²USDA-ARS National Laboratory for Agriculture and the Environment

2:30 p.m. 162 **Digestibility of energy and nutrients and concentration of metabolizable energy in soybean expellers and soybean meal fed to growing pigs**

Diego A. Rodriguez ¹, Su A Lee ¹, Hans H. Stein ¹

¹University of Illinois at Urbana-Champaign

2:45 p.m. 163 **AviPlus®S improves wean to finish performance in pigs**

Benedetta Tugnoli ¹, Andrea Piva ¹, Ester Grilli ², Kaylee Keppy ³

¹Vetagro S.p.A., ²Vetagro Inc., ³

3:00 p.m. **Nonruminant Nutrition III Break**

3:15 p.m. 164 **Evaluation of the energy value of soybean meal relative to corn based on growth performance of 11- to 22-kg pigs**

Henrique S. Cemin ¹, Mike D. Tokach ², Steve S. Dritz ³, Jason C. Woodworth ², Joel M.

DeRouchey ⁴, Robert D. Goodband ⁴

¹Hubbard Feeds, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Kansas State University

3:30 p.m. 165 **Digestibility of energy and dietary fiber by growing pigs and concentrations of digestible and metabolizable energy in corn- or sorghum based diets without or with microbial enzymes**

Maryane Oliveira ¹, Charmaine Espinosa ¹, Ferdinando Almeida ², Hans H. Stein ¹

¹University of Illinois at Urbana-Champaign, ²Archer Daniels Midland

3:45 p.m. 166 **Enhanced torula yeast has increased nutritional value compared to fish meal when fed to weanling pigs**

Paola Lancheros ¹, Vanessa Lagos ¹, Hans H. Stein ²

¹University of Illinois, ²University of Illinois at Urbana-Champaign

4:00 p.m. 167 **Analysis of variation in net energy prediction of feed ingredients fed to swine**

Noud Aldenhoven¹, Nestor A. Gutierrez¹, Neil W. Jaworski¹, Harmen van Laar¹

¹Trouw Nutrition

4:15 p.m. 168 **Nursery diets formulated with deoxynivalenol-contaminated corn reduced growth performance but did not modulate the cutaneous hypersensitivity response to ovalbumin or candida albicans**

Elise Lafleur Lariviere¹, Cuilan Zhu¹, Sabrina Zettell², Rob Patterson², Lee-Anne Huber¹

¹University of Guelph, ²Canadian Bio-Systems Inc.

4:30 p.m. 169 **Standardized ileal digestible amino acids and net energy contents in full fat and defatted black soldier fly larvae meals (*Hermetia illucens*) fed to growing pigs**

Micheline M. Crosbie¹, Cuilan Zhu¹, Anna Kate Shoveller¹, Lee-Anne Huber¹

¹University of Guelph

4:45 p.m. 170 **Energy values and digestibility of amino acids in dried yeast and soybean meal fed to pigs**

Chan Sol Park¹, AYODEJI S. ADERIBIGBE¹, Gary Hayen², Olayiwola Adeola¹

¹Department of Animal Sciences, Purdue University, ²Amyris Inc.

Nonruminant Nutrition V: Feed Additives

Chair: Chad Pilcher, Provimi; Jordan Gebhardt, Kansas State University

1:00 PM - 5:15 PM

202

1:00 p.m. 171 **Young Scholar Presentation: Dietary supplementation of *Bacillus subtilis* influenced intestinal health and metabolomic profiles of weaned pigs experimentally infected with a pathogenic *E. coli***

Kwangwook Kim¹, Yijie He¹, Xia Xiong¹, Amy Ehrlich¹, Xunde Li¹, Helen Raybould¹,

Edward Robert Atwill¹, Elizabeth Maga¹, Jens Jørgensen², Yanhong Liu¹

¹University of California, Davis, ²Chr. Hansen A/S, Hoersholm, Denmark

1:30 p.m. 172 **Increasing inclusion of fermentable fiber decreases nutrient digestibility in grower pigs**

Charlotte Heyer¹, L. F. Wang¹, R. T. Zijlstra¹

¹Department of Agricultural, Food and Nutritional Science, University of Alberta

1:45 p.m. 173 **Lysed *Corynebacterium glutamicum* cell mass from lysine production as a novel feed additive to enhance gut health and growth of newly-weaned pigs**

Yi-Chi Cheng¹, Marcos E. Duarte¹, Sung Woo Kim¹

¹North Carolina State University

2:00 p.m. 174 **The effect of a microbial Muramidase on peptidoglycan content in the gut of swine using in-vitro and in-vivo measures**

Ursula M. McCormack¹, Mikkel Klausen², Lisa A. Laprade¹, Sonja Christian², Carsten Østergaard Frederiksen², Maria C. Walsh¹, Tsungcheng Tsai³, Charles V. Maxwell⁴, Casey L. Bradley⁵

¹DSM Nutritional Products, ²Novozymes A/S, ³University of Arkansas, ⁴University of Arkansas-Fayetteville, ⁵DSM Nutritional Products LLC

2:15 p.m. 175 **Effects of dietary supplementation with xylanase and probiotics on growth performance and gut health of newly weaned pigs challenged with enterotoxigenic E. coli on d 7 post weaned**

Marcos E. Duarte¹, James Tyus², Sung Woo Kim¹

¹North Carolina State University, ²BioResource International, Inc.

2:30 p.m. 176 **Evaluation of a novel threonine source for nursery pig diets**

Dalton Humphrey¹, Spenser Becker¹, Jason Lee², Keith Haydon², Laura L. Greiner¹

¹Iowa State University, ²CJ America - Bio

2:45 p.m. 177 **Effect of supplementing a fatty acid-based product, Monomix, or pharmacological levels of zinc oxide on growth performance of nursery pigs**

Kelsey L. Batson¹, Lori Thomas¹, Jason C. Woodworth², Mike D. Tokach², Robert D. Goodband¹, Steve S. Dritz³, Joel M. DeRouchey¹, Jim Bryte⁴

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Quality Technology International, Inc.

3:00 p.m. **Nonruminant Nutrition V Break**

3:15 p.m. 178 **Efficacy of commercial products on growth performance of nursery pigs fed diets with fumonisin-contaminated corn**

Zhong-Xing Rao¹, Mike D. Tokach², Steve S. Dritz³, Jason C. Woodworth², Joel M. DeRouchey¹, Robert D. Goodband¹, Hilda I. Calderon Cartagena¹

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

3:30 p.m. 179 **Efficacy and safety of amino acids with biomass for growth and health of newly-weaned pigs**

Yi-Chi Cheng¹, Marcos E. Duarte¹, Sung Woo Kim¹

¹North Carolina State University

3:45 p.m. 180 **Effects of copper hydroxychloride and distillers dried grains with solubles on intestinal microbial protein concentration and digestibility of energy, crude protein, and fat by growing pigs**

Charmaine Espinosa¹, Robert Scott Fry², Matthew Kocher², Hans H. Stein¹

¹University of Illinois at Urbana-Champaign, ²Micronutrients USA LLC

4:00 p.m. 181 **Effects of *Aspergillus oryzae* prebiotic on energy and nutrient digestibility of growing pigs**

Jinlong Zhu¹, Gerald C. Shurson², Lynsey Whitacre³, Ignacio R. Ipharraguerre⁴, Pedro E. Urriola²

¹Department of Animal Science, University of Minnesota, ²University of Minnesota, ³BioZyme Inc., ⁴University of Kiel

4:15 p.m. 182 **The effects of pure benzoic acid, an acid blend product, or their combination in nursery pig diets on post-weaning growth performance.**

Jon Bergstrom¹, J. Landero², Malachy Young², J.D. Hahn¹

¹DSM Nutritional Products, ²Gowans Feed Consulting

4:30 p.m. 183 **Isoquinoline alkaloids increase apparent ileal digestibility of amino acids and crude protein and apparent total tract digestibility of crude protein by finishing pigs fed corn-soybean meal diets**

Carly M. Rundle¹, Hans H. Stein¹

¹University of Illinois at Urbana-Champaign

4:45 p.m. 184 **Effects of phytogenic feed additives and Ractopamine HCl on growth performance and carcass characteristics in grow-finish pigs**

Lan Zheng¹, Shelby Ramirez¹, G. Raj Murugesan¹, Erika Hendel¹, Antonia Tacconi¹

¹BIOMIN America Inc.

5:00 p.m. 185 **Effect of dacitic tuff breccia in nursery diets on pig growth performance and nutrient digestibility**

Ricardo M. Garcia¹, Jon Ferrel², Karissa N. Rulon¹, Morgan T. Thayer¹, Julie F. Mahoney¹, Alan W. Duttlinger¹, Flannery J. Whitmore¹, Clayton S. Chastain¹, John S. Radcliffe¹, Brian T. Richert¹

¹Purdue University, ²Azomite

Equine Translational Symposium: Sustaining Prosperous Academic Equine Programs

Chair: James Lattimer, Kansas State University

1:30 PM - 4:15 PM

214

1:30 p.m. **Equine Translational Symposium Introduction**

1:35 p.m. 191 **Equine Extension Program Delivery Methods**

Colleen Brady ¹

2:05 p.m. 192 **Sustaining Prosperous Academic Equine Programs**

Leslie Janecka ¹

¹Kentucky Equine Management Internship

2:35 p.m. 245 **Equine research programs: Where are they going?**

Brian D. Nielsen ¹

¹Michigan State University

3:05 p.m. **Equine Translational Symposium Break**

3:15 p.m. 193 **Equine teaching programs – where do they fit?**

Kathy Anderson ¹

¹University of Nebraska - Lincoln

3:45 p.m. 190 **Developing graduates with competitive and comparative backgrounds**

James M. Lattimer ¹

¹Kansas State University

Nonruminant Nutrition IV: Amino Acids

Chair: Trey Kellner, AMVC Nutritional Services; Dean Koehler, CSA Animal Nutrition

1:30 PM - 4:30 PM

201

1:30 p.m. 199 **Supplemental arginine affects intestinal gene expression and serum concentration of amino acids of heat stress pigs**

Adriana Morales ¹, Fernanda González ², Lucero Camacho ¹, Salvador Espinoza ¹, Caroline González-Vega ³, John K. Htoo ³, Miguel Cervantes ¹, Hugo Bernal ²

¹Universidad Autónoma de Baja California, ²Universidad Autónoma de Nuevo León, ³Evonik Nutrition & Care GmbH

1:45 p.m. 200 **Reduced growth performance of pigs fed methionine deficient diet may be associated with their reduced muscle cell differentiation**

Shengfa F. Liao¹, Zhongyue Yang¹, M. Shamimul Hasan¹, Rebecca Humphrey¹, Jean Feugang², Derris Burnett¹, John K. Htoo³

¹Mississippi State University, ²Mississippi State University, ³Evonik Nutrition & Care GmbH

2:00 p.m. 80 **Effects of dietary standardized ileal digestible lysine level in the nursery period and number of dietary phases in the grow-finish period on wean-to-finish growth performance of pigs.**

Andres F. Tolosa Russi¹, Michael Ellis², Omarh Mendoza³, Caleb M. Shull⁴, Clint Schwab⁵

¹University of Illinois Urbana-Champaign, ²University of Illinois, ³The Maschhoffs, ⁴The Maschhoffs, LLC, ⁵The Maschhoffs LLC

2:15 p.m. 201 **Increased ratio of SID Lysine to metabolizable energy improves pig performance during a viral challenge**

Jessica Jasper¹, Omarh Mendoza², Caleb M. Shull³, Wes Schweer¹, Kent Schwartz¹, Nicholas Gabler¹

¹Iowa State University, ²The Maschhoffs, ³The Maschhoffs, LLC

2:30 p.m. 202 **Determining the effects of increasing dietary standardized ileal digestible lysine levels on growth performance and carcass characteristics of growing-finishing pigs from 29- to 129-kg**

Steve J. Kitt¹, Wayne Cast², Mark Hover³, Carine Vier⁴, Chris Sievers⁵, Ning Lu², Alyssa Betlach⁵, Dan Hamilton², Ross Kiehne⁵, Uislei Orlando²

¹First Choice Livestock LLC, ²Genus PIC, ³Reicks View Farms, ⁴Kansas State University, ⁵Swine Vet Center

2:45 p.m. 203 **Efficiency of SID lysine utilization and maximum SID lysine retention for gilts in early, mid and late gestation**

Christian D. Ramirez-Camba¹, Ron Navales², James L. Dunn³, John K. Htoo⁴, Caroline Gonzalez-Vega⁵, Kevin Touchette⁶, Robert Thaler¹, Ryan S. Samuel¹, Crystal L. Levesque¹

¹South Dakota State University, ²PIC, ³ADM Animal Nutrition, ⁴Evonik Nutrition & Care GmbH, ⁵Evonik, ⁶Ralco

3:00 p.m. 204 **Piglets exhibited similar performance when fed OH-methionine or DL-Methionine during the post-weaning period**

M. I. Gracia Lorenzo¹, Yves Mercier², O. Casabuena Rincon¹, Jaime Sanchez Laguna¹, Dolores I. Batanon-Alavo³

¹IMASDE Agroalimentaria, ²Adisseo France SAS, ³Adisseo USA Inc.

3:15 p.m. **Nonruminant Nutrition IV Break**

3:30 p.m. 207 Improving Performance of Finishing Pigs with Added Val, Ile, and Trp: Validating a Meta-analysis Model

Hayden R. Kerkaert¹, Henrique S. Cemin², Mike D. Tokach³, Jason C. Woodworth³, Joel M. DeRouchey¹, Robert D. Goodband¹, Steve S. Dritz⁴, Keith Haydon⁵, Chad W. Hastad⁶, Zach Post⁶

¹Kansas State University, ²Hubbard Feeds, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁵CJ America - Bio, ⁶New Fashion Pork

3:45 p.m. 208 Do prediction equations with high R-squared in low sample size studies have high predictive ability?

Nick Serão¹, Amy Petry¹

¹Iowa State University

4:00 p.m. 209 Effects of high standardized ileal digestible tryptophan:lysine ratios with ractopamine HCL on growth and carcass performance of pigs from 110 to 135 kg

Hayden E. Williams¹, Mike D. Tokach², Steve S. Dritz³, Joel M. DeRouchey¹, Jason C. Woodworth², Robert D. Goodband¹, Jose A. Soto⁴

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Ajinomoto Animal Nutrition North America Inc.

4:15 p.m. 210 Effects of D-methionine compared with L-methionine on N retention, gut morphology and antioxidant status of weaned pigs

John K. Htoo¹, John Mathai², Laia Blavi³, Yanhong Liu⁴, Caroline González-Vega¹, Hans H. Stein²

¹Evonik Nutrition & Care GmbH, ²University of Illinois at Urbana-Champaign, ³University of Illinois at Urbana-Champaign, ⁴University of California, Davis

**Dairy Translational Symposium:
Dairy Management Affecting Milk Quality and Subsequent Products**

Chair: Maristela Rovai, South Dakota State University

1:30 PM - 4:45 PM

210

1:30 p.m. Dairy Translational Symposium Introduction

1:35 p.m. 187 **Protocols, standard operating procedures, and employee training to improve milk safety and quality.**

Mireille Chahine ¹, Maristela Rovai ²

¹University of Idaho, ²South Dakota State University

2:10 p.m. 188 **Teaching animal handling through classrooms and hands-on experiences**

Heidi K. Carroll ¹, Maristela Rovai ², Tracey Erickson ¹

¹South Dakota State University Extension, ²South Dakota State University

2:45 p.m. 244 **Algae taste preference of *Chlorella* sp. from dairy wastewater by weaned dairy calves**

Bradley J. Heins ¹, Siane C. Luzzi ¹, Robert D. Gardner ¹

¹University of Minnesota

3:00 p.m. **Dairy Translational Symposium Break**

3:15 p.m. 186 **Young Scholar Presentation: Immunometabolism during periods of negative nutrient balance or heat stress is altered by dietary methyl donor supply in dairy cows**

Danielle Coleman ¹, Mario Vailati Riboni ¹, R. Pate ¹, M. Miura ², N. D. Luchini ³, Erminio Trevisi ⁴, X Y. Pan ¹, Juan Loo ⁵, Phil Cardoso ⁶

¹University of Illinois Urbana-Champaign, ²Ajinomoto Co. Inc., ³Adisseo, ⁴Universita Cattolica del Sacro Cuore, ⁵University of Illinois Urbana Champaign, ⁶University of Illinois Department of Animal Sciences

3:45 p.m. 189 **Interventions for Reduction of Sporeforming Bacteria at Farm Level**

Andreia Bianchini Huebner ¹

4:20 p.m. **Dairy Translational Symposium Panel Discussion**

Animal Behavior, Health and Well-Being Symposium: Feeding Mgmt and Nutritional Strategies for Improving Animal Welfare

Chair: Jay Johnson, USDA-ARS Livestock Behavior Research Unit

1:30 PM - 5:00 PM

205/206

1:30 p.m. 194 **Microbial Endocrinology: How evolved intersections of microbiology and neurobiology matter to animal health and nutrition**

Mark Lyte ¹

¹Iowa State University

2:15 p.m. 195 **Nutritional Influences on Brain and Cognitive Development**

Ryan N. Dilger ¹

¹University of Illinois

3:00 p.m. **Animal Behavior, Health and Well-Being Symposium Break**

3:25 p.m. 196 **Feeding and nutritional strategies to improve welfare of group-housed gestating sows**

Yuzhi Li ¹

¹University of Minnesota

4:10 p.m. 197 **Feed efficiency and good animal welfare: Are the two compatible?**

Jessica D. Colpoys ¹

¹Truman State University

Animal Behavior, Health and Well-Being II: Livestock Health

Chair: Christopher Byrd, North Dakota State University

1:45 PM - 3:15 PM

204

1:45 p.m. 211 **Biosecurity practices associated with antimicrobial usage in farrow-to-finish pig farms**

Julia A. Calderon Diaz ¹, Lorcan O'Neill ², Maria Rodrigues da Costa ², Edgar Garcia Manzanilla ²

¹Pig Development Department, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland, ²Pig Development Department, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland; School of Veterinary Medicine, University College Dublin, Dublin, Ireland

2:00 p.m. 212 **Biosecurity practices associated with negative farm status for *Mycoplasma hyopneumoniae*, porcine reproductive and respiratory syndrome virus, and swine influenza virus in farrow-to-finish pig farms**

Julia A. Calderon Diaz ¹, Maria Rodrigues da Costa ², Edgar Garcia Manzanilla ²

¹Pig Development Department, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland, ²Pig Development Department, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland; School of Veterinary Medicine, University College Dublin, Dublin, Ireland

2:15 p.m. 213 **Distribution of subjectively evaluated conformation traits in commercial growing replacement gilts**

Grace A. Moeller ¹, Courtney L. Abell ², Tom P. Somrack ³, William O. Herring ³, Justin W. Holl ³, Kenneth J. Stalder ¹

¹Iowa State University, ²Iowa Select Farms, ³Pig Improvement Company

2:30 p.m. 214 **The effects of an 18 hour transit or complete feed and water restriction on feed bunk displacements and feed preferences in growing feedlot steers**

Katie J. Heiderscheit¹, Erin Deters¹, Alyssa Freestone¹, Joshua Peschel¹, Stephanie L. Hansen¹

¹Iowa State University

2:45 p.m. 215 **Assessment of the Diagnostic Sensitivity and Specificity of Pain Biomarkers in Cattle Using Receiver Operating Characteristic Curves**

Miriam S. Martin¹, Michael Kleinhenz¹, Karen Schwartzkopf-Genswein², Johann Coetzee¹

¹Kansas State University College of Veterinary Medicine, ²Agriculture and Agri-Food Canada, Lethbridge Research Centre

3:00 p.m. 216 **Thermoregulatory and physiological responses of sows at different reproductive stages exposed to increasing ambient temperature**

Betty R. McConn¹, Alan W. Duttlinger², Kouassi R. Kpodo², Jacob M. Maskal², Brianna N. Gaskill², Allan P. Schinckel², Angela R. Green-Miller³, Donald C. Lay⁴, Jay S. Johnson⁴

¹Oak Ridge Institute for Science and Education, ²Purdue University, ³University of Illinois at Urbana-Champaign, ⁴USDA-ARS Livestock Behavior Research Unit

Growth, Development, Muscle Biology and Meat Science

Chair: Benjamin Bohrer, University of Guelph

1:45 PM - 3:30 PM

216

1:45 p.m. 217 **Young Scholar Presentation: The use of diverse cattle breeds to understand marbling development and growth**

Jerad Jaborek¹, Francis L. Fluharty², Alejandro E. Relling¹

¹The Ohio State University, ²University of Georgia

2:15 p.m. 218 **Impact of diet and quality grade on tenderness of beef steaks.**

Nicolas Bland¹, Nicolas Herrera², Morgan Henriott³, Felipe Ribeiro³, Kellen Hart³, Chris Calkins³

¹University of Nebraska Lincoln, ²UNIVERSITY OF NEBRASKA, ³University of Nebraska

2:30 p.m. 219 **Effects of maternal nutrient restriction and rumen-protected arginine supplementation on post-ruminal digestive enzyme activities of lamb offspring**

Ronald J. Trotta¹, Faithe E. Keomanivong², Jena L. Bjertness², Joel S. Caton², Kendall C. Swanson³

¹University of Kentucky, ²North Dakota State University, ³North Dakota State University, Department of Animal Sciences

2:45 p.m. 220 **Effects of supplemental leucine in milk replacer on lamb growth performance and carcass characteristics**

Jessica N. Reiners¹, Steven Anderson¹, Travis Hoffman¹, Kendall C. Swanson²

¹North Dakota State University, ²North Dakota State University, Department of Animal Sciences

3:00 p.m. 221 **Effect of varying growth rates on early and aged pork loin and chop quality**

Emily Schunke¹, Jessica Lowell¹, Chad Stahl², Anna Dilger¹, Bailey Harsh¹

¹University of Illinois, ²Choice Genetics

3:15 p.m. 222 **Effect of genetic line and parity of dam on litter birth weight and weaning weight in swine**

Marcie I. Christianson¹, Kenneth J. Stalder¹, Alejandro Ramirez¹, Donald Beitz¹, Aileen F. Keating¹

¹Iowa State University

Ruminant Nutrition III: Mineral Nutrition and Feed Additives

Chair: Larry Berger

1:45 PM - 3:15 PM

211/212

1:45 p.m. 223 **The effects of supplemental zinc and ractopamine hydrochloride on the Longissimus dorsi proteome of finishing beef steers**

Katherine Hochmuth¹, Matthew Schulte¹, Elisabeth Huff-Lonergan², Stephanie L. Hansen¹

¹Iowa State University, ²Iowa State University - Department of Animal Science

2:00 p.m. 224 **Epimural microbiota and rumen epithelial gene expression in healthy and liver-abscessed animals**

Waseem Abbas¹, Amanda K. Lindholm-Perry², Brittney N. Keel², James E. Wells², Kristin Hales³, Allison Knoell¹, Henry A. Paz⁴, Samodha Fernando⁵

¹Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE 68583, USA,

²USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE 68933, USA, ³Texas Tech

University, ⁴Department of Animal and Dairy Sciences, Mississippi State University, MS, USA,

⁵University of Nebraska-Lincoln

2:15 p.m. 225 **Effects of late gestation Calcium salts of fatty acids supplementation to beef cows on offspring pre-weaning growth performance and gene expression**

Taoqi Shao¹, Frank Ireland¹, Joshua C. McCann¹, Daniel W. Shike¹

¹University of Illinois

2:30 p.m. 226 **Influence of trace mineral source on digestion, ruminal volatile fatty acid and soluble mineral on steers fed a dairy type diet balanced to meet requirements for a high producing lactating dairy cow.**

Octavio Guimaraes ¹, John Wagner ¹, Jerry W. Spears ², Terry Engle ¹

¹Colorado State University, ²North Carolina State University

2:45 p.m. 227 **Impact of feeding *Aspergillus* subspecies (ssp.) blend and different corn processing methods on finishing beef cattle performance and carcass characteristics**

Stacia M. Hopfauf ¹, Bradley M. Boyd ², Levi J. McPhillips ³, Galen E. Erickson ²

¹University of Nebraska-Lincoln, ²University of Nebraska - Lincoln, ³University of Nebraska

3:00 p.m. 228 **Effect of exogenous glucoamylase inclusion on in vitro digestion and feedlot cattle performance**

Alejandro Pittaluga ¹, Shukun Yu ², Wenting Li ², Joshua C. McCann ¹

¹University of Illinois, ²DuPont Animal Nutrition

3:15 p.m. 229 **Evaluation of Wheat Blended with Corn in Finishing Diets Containing Wet Distillers Grains**

Caitlin Coulson ¹, Bradley M. Boyd ¹, Brianna Conroy ¹, Galen E. Erickson ¹

¹University of Nebraska - Lincoln

Physiology II: Heat Stress and Disease Challenge

Chair: Alison Ward, North Dakota State University

1:45 PM - 3:45 PM

207

1:45 p.m. 230 **Young Scholar Presentation: Heat stress and its effects on energetics, gut integrity, and inflammation in pigs**

Edith J. Mayorga ¹, Lance H. Baumgard ¹

¹Iowa State University

2:15 p.m. 231 **Impact of *Brachyspira hyodysenteriae* on intestinal function and integrity**

Emma T. Helm ¹, Susanne J. Lin ¹, Nicholas Gabler ¹, Eric R. Burrough ¹

¹Iowa State University

2:30 p.m. 232 **Reduced growth performance during viral challenge primarily results from disease hypophagia**

Blaire Todd ¹, Larissa Becker ¹, Nicholas Gabler ¹

¹Iowa State University

2:45 p.m. 233 **NaturSafe® supplementation mitigates some aspects of the acute phase immune response to a lipopolysaccharide (LPS) challenge in weaned beef calves**

Nicole C. Burdick Sanchez ¹, Jeffery A. Carroll ¹, Paul R. Broadway ¹, Tom S. Edrington ², Ilkyu Yoon ², Craig R. Belknap ²

¹USDA-ARS, Livestock Issues Research Unit, ²Diamond V

3:00 p.m. 234 **In utero heat stress alters the postnatal immune and metabolic response of growing pigs subjected to a lipopolysaccharide challenge**

Jay S. Johnson ¹, Jacob M. Maskal ², Alan W. Duttlinger ², Kouassi R. Kpodo ², Betty R. McConn ³, Christopher Byrd ⁴, Brian T. Richert ², Donald C. Lay ¹, Jeremy Marchant-Forde ¹, Matthew Lucy ⁵, Tim Safranski ⁵

¹USDA-ARS Livestock Behavior Research Unit, ²Purdue University, ³Oak Ridge Institute for Science and Education, ⁴North Dakota State University, ⁵University of Missouri

3:15 p.m. 235 **Effects of rapamycin during an acute heat stress exposure in growing pigs**

Edith J. Mayorga ¹, Erin A. Horst ², Brady M. Goetz ¹, Sonia Rodriguez-Jiménez ¹, Megan A. Abeyta ¹, Mohammad Al-Qaisi ¹, Samantha Lei ¹, Robert P. Rhoads ³, Joshua T. Selsby ¹, Lance H. Baumgard ¹

¹Iowa State University, ²Iowa State University, ³Virginia Tech

3:30 p.m. 236 **Effects of mitoquinol during acute heat stress exposure in growing pigs**

Edith J. Mayorga ¹, Erin A. Horst ², Brady M. Goetz ¹, Sonia Rodriguez-Jiménez ¹, Megan A. Abeyta ¹, Mohammad Al-Qaisi ¹, Samantha Lei ¹, Robert P. Rhoads ³, Joshua T. Selsby ¹, Lance H. Baumgard ¹

¹Iowa State University, ²Iowa State University, ³Virginia Tech

Precision Livestock Farming Symposium II: Ruminant

Chair: Juan Steibel, Michigan State University

1:45 PM - 5:00 PM

Grand Ballroom South

1:45 p.m. **Precision Livestock Farming Symposium II Introduction**

1:50 p.m. 237 **Developing a Dairy Brain: Improved Decision-Making from Continuous Integrated Data**

Victor E. Cabrera ¹

¹University of Wisconsin-Madison

2:30 p.m. 238 **Linking livestock phenomics and precision livestock farming**

Manuel M. Juarez¹

¹Agriculture and Agri-Food Canada

3:10 p.m. **Precision Livestock Farming Symposium II Break**

3:25 p.m. 239 **Grazing Distribution of Beef Cattle: Acronyms of Technology and Spatial Measures**

Milton G. Thomas¹, Jasmine Dillon¹, Derek Bailey², Courtney Pierce¹, Scott Speidel¹, Mark Enns¹

¹Colorado State University, ²New Mexico State University

4:10 p.m. 240 **Enhancing beef production and quality using big data analytics and computer vision techniques.**

Guilherme J. Rosa¹, Vera C. Aiken¹, Arthur Fernandes¹, Joao R. Dorea¹

¹University of Wisconsin-Madison

4:50 p.m. **Precision Livestock Farming Symposium II: Ruminant Panel**

Beef/Small Ruminant Translational

Chair: Warren Rusche, SDSU Extension

3:30 PM - 4:15 PM

216

3:30 p.m. 241 **Trends in the percentage of modified live, killed, and combination respiratory viral vaccines administered to beef calves offered for sale in summer video auctions from 2000 through 2018**

Maggie J. Smith¹, Mike E. King¹, Karol E. Fike¹, Esther D. McCabe¹, Glenn M. Rogers², Kenneth G. Odde¹

¹Kansas State University, ²Grassy Ridge Consulting

3:45 p.m. 242 **Effect of trucking distance on sale price of beef calf and feeder cattle lots sold through video auctions from 2010 through 2018**

Esther D. McCabe¹, Mike E. King¹, Karol E. Fike¹, Maggie J. Smith¹, Glenn M. Rogers², Kenneth G. Odde¹

¹Kansas State University, ²Grassy Ridge Consulting

4:00 p.m. 243 **Effects of rubber matting on cattle performance and carcass characteristics in slatted facilities**

Cody Dawson ¹, Parker Henley ¹, Adam Schroeder ¹, Courtney Hayes ¹, Tara Felix ², Daniel W. Shike ¹, Joshua C. McCann ¹

¹University of Illinois, ²Penn State University

Equine Translational

4:15 PM - 4:30 PM

214

4:15 p.m. 246 **Effect of increasing levels of dietary starch on equine cecal microbiota**

Michael Y. Halpin ¹, James Drouillard ¹, Teresa Douthit ¹, Qinghong Ran ¹, Barry J. Bradford ¹, Douglas Marthaler ¹, Patricia Ochonski ¹, James M. Lattimer ¹

¹Kansas State University

Wednesday, March 4, 2020

Ruminant Nutrition IV: By-Products and Alternative Feeds

8:30 AM - 9:45 AM

211/212

8:30 a.m. 247 **The effect of diet on the microbial community structure and composition in lactating Jersey cows consuming a mixture of straw and dry distillers grains plus solubles in replacement of alfalfa hay**

Allison Knoell ¹, Nirosh Aluthge ², Waseem Abbas ¹, Alison Bartenslager ³, Jared Judy ², Dennis Morris ², Hannah C. Wilson ⁴, Kevin Herrick ⁵, Paul J. Kononoff ³, Samodha Fernando ³

¹Department of Animal Science, University of Nebraska-Lincoln, Lincoln, NE 68583, USA,

²UNL, ³University of Nebraska-Lincoln, ⁴University of Nebraska Lincoln, ⁵POET

8:45 a.m. 248 **Evaluation of RUP Content of NexPro Dried Distillers Grains plus Solubles in Corn Silage Based Growing Calf Diets**

Aksel Wiseman ¹, Zachary Carlson ¹, Levi J. McPhillips ², Scott Tilton ³, Andrea K. Watson ⁴, Galen E. Erickson ⁴

¹University of Nebraska-Lincoln, ²University of Nebraska, ³Flint Hills Resources, ⁴University of Nebraska - Lincoln

9:00 a.m. 249 **Evaluation of FluidQuip Dried Distillers Grains plus Solubles in Cattle Finishing Diets**

Aksel Wiseman ¹, Brad Boyd ¹, Levi J. McPhillips ², Scott Tilton ³, Andrea K. Watson ⁴, Galen E. Erickson ⁴

¹University of Nebraska-Lincoln, ²University of Nebraska, ³Flint Hills Resources, ⁴University of Nebraska - Lincoln

9:15 a.m. 250 **Evaluation of Green Grass as a feed ingredient in beef finishing rations and impact on cattle performance, carcass characteristics, and fatty acid profiles in meat**

Mitchell M. Norman ¹, Nicolas Bland ¹, Bradley M. Boyd ², Brianna Conroy ², Chris Calkins ³, Andrea K. Watson ², Galen E. Erickson ²

¹University of Nebraska Lincoln, ²University of Nebraska - Lincoln, ³University of Nebraska

9:30 a.m. 251 **Evaluation of Condensed Algal Residue Solubles as an Ingredient in Cattle Finishing Diets**

Calvin Gibbons ¹, Andrea K. Watson ², Galen E. Erickson ², Bradley M. Boyd ², Levi J. McPhillips ³, Hannah C. Wilson ¹, Jonathan W. Wilson ⁴

¹University of Nebraska Lincoln, ²University of Nebraska - Lincoln, ³University of Nebraska, ⁴DSM Nutritional Products

Teaching and Extension Education Symposium: Women in Animal Science

Chair: J. Whittier, University of Nebraska

8:30 AM - 10:15 AM

214

8:30 a.m. **Teaching and Extension Education Symposium Introduction**

8:35 a.m. 252 **Expand Your Horizons—Competition Helps!**

Gretchen Myers Hill ¹

¹Michigan State University

8:50 a.m. 253 **Make Yourself Really Good at Your Career**

Temple Grandin ¹

¹Colorado State University, Dept. of Animal Science

9:05 a.m. 254 **Presentation: Dr. Andrea Cupp**

Andrea Cupp ¹

¹University of Nebraska

9:20 a.m. 255 **Presentation: Lee-Anne Huber**

Lee-Anne Huber ¹

¹University of Guelph

9:35 a.m. **Teaching and Extension Education Symposium Panel Discussion**

Nonruminant Nutrition VI: Nursery Nutrition

Chair: Mariana Menegat, Holden Farms; Jorge Estrada, Premex

8:30 AM - 12:00 PM

Ballroom B

8:30 a.m. 257 **Young Scholar Presentation: Using an integrated systems biology platform to determine the mode of action of feed additives in nursery pig diets**

Michaela Trudeau ¹, Huyen Tran ², Brenda de Rodas ², Theodore Karnezos ³, Andres Gomez ⁴, Chi Chen ⁴, Pedro E. Urriola ⁴, Gerald C. Shurson ⁴

¹Department of Animal Science, University of Minnesota, ²Purina Animal Nutrition, ³Land O'Lakes, ⁴University of Minnesota

9:00 a.m. 258 **Effects of iron administration timing on subsequent nursery performance**

Hayden E. Williams ¹, Ryan T. Maurer ¹, Brittany Carrender ², Joel M. DeRouchey ¹, Jason C. Woodworth ³, Steve S. Dritz ⁴, Mike D. Tokach ³, Robert D. Goodband ¹, Kyle Coble ², Andrew Holtcamp ⁵

¹Kansas State University, ²JBS Live Pork, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁵CEVA Animal Health

9:15 a.m. 259 **Effects of dietary crude protein level on growth performance, fecal score, gastrointestinal pH, and blood characteristics in weanling pigs fed antibiotic-free diets**

Joseph R. Limbach ¹, Estefania Pérez Calvo ², Hans H. Stein ³

¹University of Illinois, ²DSM Nutritional Products France, ³University of Illinois at Urbana-Champaign

9:30 a.m. 260 **Effects of iron administration timing on pre-weaning performance and hematological criteria in pigs**

Hayden E. Williams ¹, Ryan T. Maurer ¹, Brittany Carrender ², Joel M. DeRouchey ¹, Jason C. Woodworth ³, Steve S. Dritz ⁴, Mike D. Tokach ³, Robert D. Goodband ¹, Kyle Coble ², Andrew Holtcamp ⁵

¹Kansas State University, ²JBS Live Pork, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁵CEVA Animal Health

9:45 a.m. 261 Increasing dietary amylose reduces rate of starch digestion and increases microbial fermentation in weaned pigs

F.P.Y. Tan¹, L. F. Wang², E. Beltranena³, R.T. Zijlstra¹

¹University of Alberta, ²Department of Agricultural, Food and Nutritional Science, University of Alberta, ³Alberta Agriculture and Forestry

10:00 a.m. Nonruminant Nutrition VI Break

10:15 a.m. 262 Effects of phase-feeding programs on growth performance of nursery pigs

Henrique S. Cemin¹, Luke A. Swalla¹, Jamie L. Pietig¹, Sharlie A. Hansen¹, Stewart T. Galloway¹, Ernie L. Hansen¹

¹Hubbard Feeds

10:30 a.m. 263 Effects of soybean meal level on growth performance of 11- to 25-kg nursery pigs

Henrique S. Cemin¹, Mike D. Tokach², Steve S. Dritz³, Jason C. Woodworth², Joel M. DeRouchey⁴, Robert D. Goodband⁴

¹Hubbard Feeds, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Kansas State University

10:45 a.m. 264 Effects of Water Quality on Nursery Pig Performance and Health

Brigit Lozinski¹, Brent Frederick², Adrienne Hilbrands¹, Yuzhi Li¹, Milena Saqui-Salces¹, Gerald C. Shurson¹, Pedro E. Urriola¹, Melissa Wilson¹, Lee Johnston¹

¹University of Minnesota, ²Christensen Family Farms

11:00 a.m. 265 Evaluating the route of antibiotic administration and its effect on nursery pig growth performance

Wade M. Hutchens¹, Annie B. Lerner¹, Hadley Williams¹, Mike D. Tokach², Steve S. Dritz³, Jason C. Woodworth², Joel M. DeRouchey¹, Robert D. Goodband¹, Hilda I. Calderon Cartagena¹, Kellen A. Habib⁴, Victor L. Ishengoma⁵, T.G. Nagaraja³, Raghavendra G. Amachawadi⁴

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁴Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 66506., ⁵Department of Clinical Sciences, College of Veterinary Medicine, Manhattan, KS 6650

11:15 a.m. 266 **Dietary strategies in diets without zinc oxide for nursery pigs**

Fernanda Laskoski¹, Wade M. Hutchens¹, Mike D. Tokach², Jason C. Woodworth², Robert D. Goodband¹, Steve S. Dritz³, Joel M. DeRouchey¹

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

11:30 a.m. 267 **Determining the effects of diet complexity and body weight categories on growth performance of nursery pigs**

Raquel Lunedo¹, Dani Perondi¹, Carine Vier², Uislei Orlando³, Gustavo Lima⁴, Ademir Junior¹, Rafael Kummer¹

¹Master Agroindustrial, ²Kansas State University, ³Genus PIC, ⁴Agroceres PIC

11:45 a.m. 268 **Administration of a *Bacillus* probiotic to sows improves growth response and health of their progeny after weaning.**

Ellen Davis¹, Jen Christianson¹, Samantha Anderson¹, Tom Rehberger¹, Justin Sawall¹

¹Arm & Hammer

Nonruminant Nutrition VII: Gestation and Lactation Nutrition

Chair: Márcio Gonçalves, Swine It; David Rosero, The Hanor Company LLC

8:30 AM - 12:00 PM

Ballroom C

8:30 a.m. 269 **Effects of high phytase supplementation in lactation diets on sow and litter performance**

Kelsey L. Batson¹, Hilda I. Calderon Cartagena¹, Robert D. Goodband¹, Jason C. Woodworth², Mike D. Tokach², Steve S. Dritz³, Joel M. DeRouchey¹

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

8:45 a.m. 270 **Efficacy of *Bacillus subtilis* and *Bacillus licheniformis* (BioPlus2B®) on sow lactation performance, litter growth, nursery performance and health of pigs challenged with PRRS virus post-wean**

Steve P. Lerner¹, Sage R. Becker², Scott A. Dee³, Steve J. Kitt⁴, Mark J. Bertram⁴, Todd E. Williams³, Brent J. Pepin³, Dan B. Hanson³, Erin A. Little³, Paul F. Frahm³

¹Chr. Hansen, Inc., ²Iowa State University, ³Pipestone Veterinary Services, ⁴First Choice Livestock LLC

9:00 a.m. 271 **Maternal transfer of phytogetic compounds supplemented during gestation and/or lactation of hyperprolific sows: effects on reproductive performance and colostrum-milk features**

David Reyes-Camacho ¹, José Francisco Pérez ², Tobias Aumiller ³, Jan Dirk van der Klis ³, David Solà-Oriol ⁴

¹Autonomous University of Barcelona, ²Animal Nutrition and Welfare Service. Universitat Autònoma de Barcelona (UAB), ³Delacon Biotechnik GmbH, ⁴Universitat Autònoma de Barcelona

9:15 a.m. 272 **Hybrid rye may replace up to 75% of the corn in diets for gestating and lactating sows without negatively impacting sow and piglet performance**

Molly L. McGhee ¹, Hans H. Stein ¹

¹University of Illinois at Urbana-Champaign

9:30 a.m. 273 **Impact of either high energy or high SID Lys:ME on Parity 1 performance in lactation**

Katherine A. McCormick ¹, Michael E. Johnston ¹, Grant I. Petersen ¹

¹United Animal Health

9:45 a.m. 274 **Determination of phosphorus requirement of lactating sows based on 24-hour urinary phosphorus excretion**

Mariola Grez Capdeville ¹, Ning Lu ², Uislei Orlando ², Jon Bergstrom ³, Thomas D. Crenshaw ¹

¹University of Wisconsin-Madison, ²Genus PIC, ³DSM Nutritional Products

10:00 a.m. 275 **Feeding a whole-cell inactivated *Pichia guilliermondii* yeast to gestating and lactating sows in a commercial production system**

Morgan T. Thayer ¹, Ricardo M. Garcia ¹, Alan W. Duttlinger ¹, Julie F. Mahoney ¹, Allan P. Schinckel ¹, Matthew D. Asmus ², Daniel B. Jones ², James L. Dunn ², Brian T. Richert ¹

¹Purdue University, ²ADM Animal Nutrition

10:15 a.m. **Nonruminant Nutrition VII Break**

10:30 a.m. 276 **Impact of pre-farrow feeding amount and timing on stillborn rate of sows**

Kayla Miller ¹, Trey A. Kellner ²

¹Iowa State University, ²AMVC Nutritional Services

10:45 a.m. 277 **Effects of timing and amount of feed prior to farrowing on sow and litter performance under commercial conditions**

Kiah M. Gourley¹, Analicia J. Swanson¹, Rafe Royall², Jason C. Woodworth³, Joel M. DeRouchey¹, Mike D. Tokach³, Steve S. Dritz⁴, Kayla J. Milnes⁵, Chad W. Hastad⁵

¹Kansas State University, ²Texas Tech University, ³Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ⁴Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506, ⁵New Fashion Pork

11:00 a.m. 278 **Feeding a whole-cell inactivated *Pichia guilliermondii* yeast to gestating and lactating sows over two consecutive parities**

Morgan T. Thayer¹, Matthew D. Asmus², Gene Gourley³, Emily Bruder³, Daniel B. Jones²

¹Purdue University, ²ADM Animal Nutrition, ³Gourley Research LLC

11:15 a.m. 279 **Evaluation of the NRC (2012) model in estimating standard maintenance metabolizable energy requirement of PIC sows during mid-gestation**

Mark Knauer¹, Jerry Purvis², Ning Lu³, Uislei Orlando³, Carine Vier⁴, Wayne Cast³

¹North Carolina State University, ²Purvis Farms, ³Genus PIC, ⁴Kansas State University

11:30 a.m. 280 **Effects of metabolizable energy and standardized ileal digestible lysine levels on lactating sow and litter performance**

Gustavo Silva¹, Robyn Thompson², Brandon Knopf², Laura L. Greiner³, Jose A. Soto⁴, Carine Vier⁵, Ning Lu⁶, Uislei Orlando⁶

¹Iowa State University Fellow, ²Carthage Innovative Swine Solutions, ³Iowa State University, ⁴Ajinomoto Animal Nutrition North America Inc., ⁵Kansas State University, ⁶Genus PIC

11:45 a.m. 25 **The effects of closely meeting estimated daily lysine and energy requirements for pregnant sows across two pregnancies on sow body weight change and litter characteristics at birth**

Victoria Stewart¹, Lauren Hansen¹, Ira Mandell¹, Lee-Anne Huber¹

¹University of Guelph

Nonruminant Nutrition VIII: Minerals

Chair: Caroline González-Vega, Evonik Nutrition & Care GmbH; Arkin Wu, Pipestone

8:30 AM - 12:00 PM

Ballroom A

8:30 a.m. 281 **Young Scholar Presentation: Digestibility of calcium and phosphorus in feed ingredients fed to gestating sows and growing pigs**

Su A Lee¹, Hans H. Stein¹

¹University of Illinois at Urbana-Champaign

9:00 a.m. 282 **Effect of formulating diets based on a ratio between STTD Ca and STTD P and the inclusion of phytase on the calcium and phosphorus balance of growing pigs**

Vanessa Lagos¹, Mike R. Bedford², Hans H. Stein³

¹University of Illinois, ²AB Vista, ³University of Illinois at Urbana-Champaign

9:15 a.m. 283 **Performance and mineral fecal excretion of post weaned piglets are influenced by different sources of zinc oxide**

Vitor Hugo C. Moita¹, Márvio L. Abreu², Bruno N. Silva³, Rhuan Chaves⁴, Ronaldo Lucas S. Tolentino⁵, Mateus F. Gonçalves³, Valesca Lima³

¹North Carolina State University, ²Universidade Federal de Lavras, ³Universidade Federal de Minas Gerais - Campus Montes Claros, ⁴Federal University of Lavras, ⁵Universidade Estadual de Londrina

9:30 a.m. 284 **Effect of formulating diets based on a ratio between STTD Ca and STTD P and the inclusion of phytase on growth performance, plasma Ca and P, and bone ash of pigs from 11 to 130 kg**

Vanessa Lagos¹, Mike R. Bedford², Hans H. Stein³

¹University of Illinois, ²AB Vista, ³University of Illinois at Urbana-Champaign

9:45 a.m. 285 **Effects of dietary MINTREX trace minerals and validation of serum biomarkers in measuring lameness in pigs**

Karen J. Wedekind¹, Ashley Provin², Chelsie Foran², Tom Hampton², Ping Ren³, Juxing Chen², Sara Herbstreit², Mercedes Vazquez-Anon²

¹Novus International, Inc., ²Novus International, Inc., ³University of Minnesota - Department of Animal Science

10:00 a.m. **Nonruminant Nutrition VIII Break**

10:15 a.m. 286 **Effects of dietary MINTREX trace minerals in a sodium urate-induced transient lameness model in pigs and validation of lameness measurements**

Karen J. Wedekind¹, Ashley Provin², Chelsie Foran², Tom Hampton², Ping Ren³, Juxing Chen², Sara Herbstreit², Mercedes Vazquez-Anon²

¹Novus International, Inc., ²Novus International, Inc., ³University of Minnesota - Department of Animal Science

10:30 a.m. 287 **Effects of copper hydroxychloride on growth performance and abundance of genes involved in lipid metabolism of growing pigs**

Charmaine Espinosa¹, Robert Scott Fry², Matthew Kocher², Hans H. Stein¹

¹University of Illinois at Urbana-Champaign, ²Micronutrients USA LLC

10:45 a.m. 288 **Dietary calcium decreases digestibility of phosphorus in late gestating sows, but blood biomarkers may be used to predict bone formation and resorption**

Su A Lee ¹, Mike R. Bedford ², Hans H. Stein ¹

¹University of Illinois at Urbana-Champaign, ²AB Vista

11:00 a.m. 289 **Effects of supranutritional levels of dietary zinc oxide on zinc, copper, and iron metabolism in post-weaned pigs**

Danyel Bueno Dalto ¹, Frédéric Guay ², Yan Martel-Kennes ³, Guylaine Talbot ¹, Martin Lessard ¹, Jacques Matte ¹, Jérôme Lapointe ¹

¹Agriculture and Agri-Food Canada, ²Université Laval, ³Centre de recherche en sciences animales de Deschambault and Université Laval

11:15 a.m. 290 **Phosphorus and calcium requirements of growing pigs predicted by mechanistic modelling**

Marion Lautrou ¹, Candido Pomar ², Jean-Yves Dourmad ³, Agnès Narcy ³, Philippe Schmidely ³, Marie-Pierre Létourneau-Montminy ¹

¹Laval University, ²Agriculture and Agri-Food Canada, ³INRA

11:30 a.m. 291 **Determining the effects of manganese source and level on growth performance, carcass characteristics, and economics of growing-finishing pigs**

Hayden R. Kerkaert ¹, Jason C. Woodworth ², Joel M. DeRouchey ¹, Steve S. Dritz ³, Mike D. Tokach ², Robert D. Goodband ¹

¹Kansas State University, ²Department of Animal Sciences & Industry, College of Agriculture, Manhattan, KS 66506, ³Department of Diagnostic Medicine & Pathobiology, College of Veterinary Medicine, Manhattan, KS 66506

11:45 a.m. 292 **The effect of pharmacological zinc on oral Salmonella vaccine efficacy**

Carson M. DeMille ¹, Eric R. Burrough ², Nicholas Gabler ²

¹Iowa State University Dept of Animal Science, ²Iowa State University

Ruminant Nutrition V: Environment and Animal Performance

9:45 AM - 10:30 AM

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9:45 a.m. 293 **Evaluation of the Water Footprint of Beef Cattle Production in Nebraska**

Tyler Spore ¹, Mesfin Mekonnen ¹, Christopher Neale ¹, Andrea K. Watson ¹, James C. MacDonald ¹, Galen E. Erickson ¹

¹University of Nebraska - Lincoln

10:00 a.m. 294 **Effects of bedding application on growth performance and carcass traits in finishing beef steers during the winter and spring in eastern South Dakota**

Dathan Smerchek ¹, Zachary K. Smith ²

¹SDSU Animal Science, ²South Dakota State University

10:15 a.m. 295 **Impact of increasing levels of fumonisin on performance of finishing beef steers**

Jenny Jennings ¹, Steve Ensley ², Ty Lawrence ³, Cathy Lockard ¹

¹Texas A&M AgriLife Research, ²Kansas State Veterinary Diagnostic Laboratory, ³West Texas A&M University