ASAS Midwestern Section and ADSA® Midwest Branch
Scientific Sessions & Business Meeting
Des Moines, IA • March 12-16
FUTURE MEETINGS MOVING TO OMAHA, NE

2017  March 13 - March 15
2018  March 12 - March 14
2019  March 11 - March 13
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University of Arkansas, Fayetteville, AR

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University of Nebraska - Lincoln, Lincoln, NE

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University of Connecticut, Storrs, CT

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Auburn University, Auburn, AL

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University of Nebraska - Lincoln, Scottsbluff, NE

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Kansas State University, Manhattan, KS

Dr. Joseph Cassady, Director-at-Large  
South Dakota State University, Brookings, SD

Dr. Sally Johnson, Director-at-Large  
Virginia Tech, Blacksburg, VA

Dr. Connie Larson, Director-at-Large  
Zinpro Corporation, Eden Prairie, MN

Dr. Elisabeth Lonergan, Director-at-Large  
Iowa State University, Ames, IA

Dr. Chantal Farmer, Director-at-Large  
AAFC, Sherbrooke, QC, Canada

Dr. Mark Petersen, Director-at-Large  
USDA-ARS, Miles City, MT
Dr. Teresa Davis, Director-at-Large
Baylor College of Medicine, Houston, TX

Kyle McLean, Graduate Director
North Dakota State University, Fargo, ND

Amanda Jones, Graduate Director
University of Connecticut, Storrs, CT

Dr. Meghan Wulster-Radcliffe, Chief Executive Officer
American Society of Animal Science, Champaign, IL

Ms. Jacelyn Hemmelgarn, Chief Operations Officer
American Society of Animal Science, Champaign, IL

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Zinpro Corporation, Yankton, SD
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REGISTRATION
Community Choice Credit Union Convention Center (CCCUCC), Lobby
Sunday, March 13, 3:00 pm – 5:00 pm
Monday, March 14, 7:00 am – 6:00 pm
Tuesday, March 15, 7:00 am – 4:00 pm
Wednesday, March 16, 7:00 am – 11:00 am

COMPLIMENTARY SHUTTLE SCHEDULE
Continuous shuttle service between the noted hotels (per route) and the CCCUCC during these time periods:

SHUTTLE 1
Des Moines Marriott – Renaissance Savery – CCCUCC

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
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<tr>
<td>7:30 am to 8:30 am</td>
<td>7:00 am to 9:00 am</td>
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<tr>
<td>4:00 pm to 7:30 pm</td>
<td>6:00 pm to 8:00 pm</td>
<td>11:00 am to 1:00 pm</td>
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SHUTTLE 2
Embassy Suites – Holiday Inn Downtown – CCCUCC

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<tr>
<th>Time</th>
<th>Monday</th>
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<th>Wednesday</th>
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<td>7:00 am to 9:00 am</td>
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<td>12:00 pm to 2:00 pm</td>
<td>12:00 pm to 2:00 pm</td>
<td>11:00 am to 1:00 pm</td>
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<tr>
<td>4:00 pm to 7:30 pm</td>
<td>6:00 pm to 8:00 pm</td>
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IMPORTANT PHONE NUMBERS
Des Moines Marriott (Downtown): 515.245.5500
Renaissance Savery: 515.244.2151
Embassy Suites: 515.244.1700
Holiday Inn Downtown: 515.283.0151
Holiday Inn Express and Suites Des Moines (Downtown): 515.657.8181
Hyatt Place Des Moines (Downtown): 515.282.5595
JOB RESOURCE CENTER

The traditional Job Resource Center and the Cyber Café will be located in the Foyer on Level Three in the Community Choice Credit Union Convention Center. Sign-up sheets for making “connections” and instructions for use of the Placement Center will be posted.

Students, graduates and experienced professionals are encouraged to post résumés at the Job Resource Center. Professionals from hundreds of companies, universities and governmental agencies are represented each year at the Midwest Meeting. Prospective employees are requested to bring 25 to 50 copies of their (two-page) résumés.

Employers from industry, academia and government are encouraged to post position announcements. Employers are asked to bring 25 to 50 copies of all position announcements.

Job descriptions and résumés can be posted at the Job Resource Center beginning at noon on Monday, March 14, 2016.

ARPAS CONTINUING EDUCATION UNITS

The 2016 Midwest Meeting has been approved for up to 16 continuing education units (CEUs) for the American Registry of Professional Animal Scientists (ARPAS) certification requirements. Check the schedule of events for times and location of the ARPAS exams.

ASAS CAREER CENTER

ASAS Career Center is the premier electronic recruitment resource for the animal science industry. This site is a great tool that offers benefits to both employers and job seekers alike.

<table>
<thead>
<tr>
<th>EMPLOYERS</th>
<th>JOB SEEKERS</th>
</tr>
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<tbody>
<tr>
<td>Here, employers and recruiters can access the most qualified talent pool with relevant work experience to fulfill staffing needs.</td>
<td>This site offers job seekers the opportunity to send information out to potential employers and search job postings.</td>
</tr>
</tbody>
</table>

http://careers.asas.org/
SCHEDULE OF EVENTS

All rooms are at the Community Choice Credit Union Convention Center (CCCUCC) unless otherwise noted.

Schedule note

Continued in 2016: All posters will be presented as ePosters. This format offers some new and exciting options for poster presenters and attendees. Most notably, all posters will be on display for the duration of the meeting and available to all attendees to view at their leisure. The posters have been divided into six poster sessions to allow greater access to the presenters. Please see page 12 for a full description of the ePosters and a list of the poster sessions.

MONDAY, MARCH 14, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:30 AM</td>
<td>Gary Allee Breakfast, Grand Ballroom A</td>
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<tr>
<td>7:30 AM</td>
<td>Graduate Student Breakfast and Learn, 101/102</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>AQ Written Exams, CCCUCC (See AQ organizer for room assignments)</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Gary Allee Symposium: Changing Consumer/Customer Demands, Grand Ballroom A</td>
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<tr>
<td>8:30 AM</td>
<td>ADSA/ASAS Midwest Board of Directors, Boardroom 2</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>AQ Quiz Bowl Preliminary Rounds, 103, 104 and 105</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Bentley Symposium and Lunch, Grand Ballroom B</td>
</tr>
<tr>
<td>12:45 PM</td>
<td>Poster Session I, Grand Ballroom Foyer</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>David H. Baker Amino Acid Symposium, 318/319/320</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Graduate Student Oral Competition – MS, 302/303</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Graduate Student Oral Competition – PhD, 306/307</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Undergraduate Student Oral Competition I, 312/313</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Undergraduate Student Oral Competition II, 304/305</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Poster Session II, Grand Ballroom Foyer</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Reception and Recognition of Young Scholar Winners, Grand Ballroom A</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>AQ Quiz Bowl Finals and Awards Presentation, Grand Ballroom A</td>
</tr>
<tr>
<td>8:00 PM</td>
<td>Graduate Student Mixer, Johnny’s Hall of Fame (off-site)</td>
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TUESDAY, MARCH 15, 2016

MORNING

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:30 AM</td>
<td>Poster Session III, Grand Ballroom Foyer</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Animal Behavior, Housing and Well-Being Symposium: Part I - Solution to challenges in animal well-being, 302/303</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Breeding and Genetics Symposium, 304/305</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>David Schingoethe Symposium: Modifying milk composition to enhance marketability, 306/307</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Growth, Development, Muscle Biology and Meat Science Symposium, 318/319</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Harlan Ritchie Symposium: 2016 Beef NRC, 312/313</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Nonruminant Nutrition: Grow/Finish I, 314/315</td>
</tr>
</tbody>
</table>
8:30 AM  Nonruminant Nutrition Symposium: Antibiotic replacement in pork production, 316/317
8:30 AM  Physiology, 401
8:30 AM  Ruminant Nutrition: By-Products 308/309

**AFTERNOON**

12:00 PM  Digestive Physiology of Pigs Lecture and Lunch, Grand Ballroom B
12:30 PM  AQ Lunch, 101/102
12:45 PM  Poster Session IV, Grand Ballroom Foyer
1:30 PM   Animal Behavior, Housing and Well-Being Symposium: Part II - Solution to challenges in animal well-being, 302/303
1:30 PM   Breeding and Genetics, 304/305
1:30 PM   Extension – Dairy Symposium, 306/307
1:30 PM   Growth, Development, Muscle Biology and Meat Science, 318/319
1:30 PM   Nonruminant Nutrition: Feed Additives, 314/315
1:30 PM   Nonruminant Nutrition: Feed Manufacturing, 316/317
1:30 PM   Reproductive Physiology, 401
1:30 PM   Ruminant Nutrition, 308/309
1:30 PM   Ruminant Nutrition Symposium: VFD and antibiotic alternatives in beef production, 312/313
3:15 PM   Nonruminant Nutrition: Sow/Boar, 316/317
5:00 PM   Poster Session V, Grand Ballroom Foyer
6:00 PM   Business Meeting and Awards Program, Grand Ballroom A
7:00 PM   Reception, Grand Ballroom A

**WEDNESDAY, MARCH 16, 2016**

7:30 AM  Poster Session VI, Grand Ballroom Foyer
8:30 AM  Animal Behavior, Housing and Well-Being, 312/313
8:30 AM  Equine Welfare Symposium, 304/305
8:30 AM  Extension – Swine, 314/315
8:30 AM  Extension – Beef/Small Ruminant, 318/319
8:30 AM  Nonruminant Nutrition: Grow/Finish II, 306/307
8:30 AM  Nonruminant Nutrition: Nursery Pigs, 308/309
8:30 AM  Physiology Symposium: Fetal and postnatal nutritional programming, 316/317
8:30 AM  Ruminant Nutrition: Feed Additives, 302/303
8:30 AM  Teaching Symposium: Evolving the Science Curriculum, 401

**CAMERA, VIDEO CAMERA, AND CELL PHONE POLICY**

Use of cameras, video cameras, and cell phones (for calls or as cameras) is prohibited during oral and poster presentations to minimize disruption and unauthorized dissemination of data. Violators may be asked to leave the session/conference. Exceptions to this policy must be approved in advance by Midwest ASAS Program Secretary.
A SPECIAL THANK YOU

From the American Society of Animal Science Midwestern Section and the American Dairy Science Midwest Branch for support of the 2016 awards to the following companies:

Outstanding Young Scientist Awards
Extension Award – Land O’ Lakes Purina Feed, LLC
Research Award – DSM Nutritional Products, Inc.
Teaching Award – ADSA /ASAS MW Board

National Pork Board Swine Innovation (Abstract) Awards
Research – National Pork Board
Education – National Pork Board

Agribusiness Award
BASF

Student Competition Awards
Gretchen Hill Appreciation Club
AFIA/iFeeder

The Tim S. Stahly & Ernie Peo Outstanding Swine Nutrition Midwest Graduate Student Award
The Tim S. Stahly & Ernie Peo Memorial and Tribute Fund

Academic Quadrathalon
Agri-King
ASAS Foundation
Iowa State University

ARPAS AND MW ARPAS SPONSORED EVENTS

Graduate Student Breakfast and Learn
Monday March 14 • 7:30 AM • 101/102

Teaching Symposium: Evolving the Science Curriculum
Wednesday, March 16 • 8:30 AM • 401

ARPAS Exams
Tuesday March 15 • 7:30 AM and 5:00 PM • 402

MW ARPAS Chapter Membership Meeting
Tuesday March 15 • 12:45 PM • 402
2016 MIDWEST MEETING SPONSORS

PLATINUM LEVEL
American Society of Animal Science (ASAS)
ASAS Foundation
Zoetis

GOLD LEVEL
AB Vista
Catch Des Moines (Greater Des Moines Convention and Visitors Bureau)
Diamond V Mills, Inc.
Kemin Industries
National Pork Board

SILVER LEVEL
Adisseo
Agri-King, Inc.
ADM Animal Nutrition
American Registry of Professional Animal Scientists (ARPAS)/MW ARPAS Chapter
BASF
DSM Nutritional Products Inc.
DPP-NA
Elanco Animal Health
NutriQuest
Puretein Bioscience

BRONZE LEVEL
DuPont
F. L. Emmert
Iowa State University
JBS United, Inc.
Land O’ Lakes Purina Feed, LLC
Zinpro

FRIEND LEVEL
American Dairy Science Association (ADSA)
AFIA/iFeeder
International Society for Animal Genetics (ISAG) 2016
POSTER SCHEDULE

**Returning in 2016 – ePosters**

All posters will be presented as ePosters. This format offers exciting options for poster presenters and attendees. Most notably, all posters will be on display for the duration of the meeting and available to all attendees to view at their leisure. This new technology is less expensive, more convenient and provides enhanced presentation capabilities than printed posters. Some features of the ePosters include:

- Posters are no longer constrained to a single page; ePosters offer the option to have multiple pages per poster.
- Videos, animations, graphs and images can be embedded into the poster.
- Graphs and images can be expanded to full screen view with a single click, allowing for a more detailed presentation.

The posters have been divided into six poster sessions to allow greater access to presenters. The list of poster sessions, with presentation times, appears below.

**MONDAY, MARCH 14, 2016**

**Poster Session I – Authors present 12:45 pm – 1:30 pm**

- Graduate Student Poster Competition-M.S Growth, Development, Muscle Biology, and Meat Science Physiology
- Undergraduate Student Poster Competition I

**Poster Session II – Authors present 5:00 pm – 5:45 pm**

- Graduate Student Poster Competition-Ph.D Nonruminant Nutrition I
- Undergraduate Student Poster Competition II

**TUESDAY, MARCH 15, 2016**

**Poster Session III – Authors present 7:30 am – 8:15 am**

- Nonruminant Nutrition II
- Ruminant Nutrition I

**Poster Session IV – Authors present 12:45 pm – 1:30 pm**

- Animal Behavior, Housing and Well-Being Extension - Swine
- Nonruminant Nutrition III

**Poster Session V – Authors present 5:00 pm – 5:45 pm**

- Extension - Dairy Extension – Beef/Small Ruminant
- Nonruminant Nutrition IV
- Ruminant Nutrition II

**WEDNESDAY, MARCH 16, 2016**

**Poster Session VI – Authors present 7:30 am – 8:15 am**

- Nonruminant Nutrition V
- Odor and Nutrient Management
SPECIAL EVENTS

Bentley Lecture
Monday, March 14 • 12:00 pm • Grand Ballroom

Dietary strategies to ameliorate the physiological effects of heat stress in livestock
Dr. Frank Dunshea, The University of Melbourne

To view information about Dr. Dunshea and his research, please visit his website:

Sponsored by: Bentley Appreciation Club
Registration is required; attendance is limited to the first 400 registrants. Registration fee is $10.00.

Reception & Recognition of Young Scholar Winners
Monday, March 14 • 6:00 pm • Grand Ballroom A

Join us for the opening reception of the 2016 Midwest Meeting. This is a great time to catch up with your colleagues. We will also take the time to recognize the 2016 Young Scholar Winners. Young Scholars must be in attendance to receive their award.

ASAS Undergraduate Midwestern Academic Quadrathlon Quiz Bowl Finals & Award Presentation
Monday, March 14 • 7:00 pm • Grand Ballroom

ASAS is excited to offer our undergraduates the chance to compete in the Midwestern Section Academic Quadrathlon (AQ). The AQ competition will conclude with the Quiz Bowl final Monday night as the final two teams compete for the honor of representing the Midwestern Section at the National AQ in Salt Lake City. Following the Quiz Bowl final the AQ Awards will be presented. Please come out and support our undergraduates.

Sponsored by: Agri-King, ASAS Foundation, and Iowa State University

Graduate Student Breakfast and Learn
Monday, March 14 • 7:30 AM-8:30 AM • Room 101/102

This Breakfast and Learn event will provide a valuable experience for individuals interested in both academic or industry positions! Dr. Mike (Mose) Moseley will represent a potential employer and will conduct an interactive “interview workshop” discussing the interviewing process, how to prepare yourself before the interview, and conduct mock interviews, providing examples from experiences with potential job candidates. Dr. Moseley ’s 35 year tenure has run through Upjohn, Pharmacia, Pfizer, and Zoetis serving in both Discovery and Development. He ultimately landed a job as Director in Global Development & Operations and Global Project Team Leader for Zoetis as well as being a Dale Carnegie Instructor for the last 25 years.

Sponsored by: Zoetis, Zinpro, ARPAS, and ASAS
Preregistration is required. Registration fee is $10.00.
Graduate Student Mixer  
**Monday, March 14 • 8:00 pm • Johnny’s Hall of Fame**  
Join your fellow graduate students at a mixer for all to enjoy. This event will provide an opportunity to catch up with old friends and make new ones. *Preregistration is highly recommended; all students are welcome. Registration fee is $10.00.*

Digestive Physiology of Pigs Lecture and Lunch  
**Tuesday, March 15 • 12:00 pm • Grand Ballroom B**  
**Microbial colonisation, metabolism and immunity in the young piglet**  
*Dr. Mick Bailey, University of Bristol, School of Clinical Veterinary Science, Langford House, Langford, Bristol, UK*  
Optimal function of the intestinal microbiota is a critical component to enteric health: maintaining intestinal barrier function; immune responses to pathogens; and maintaining optimal metabolism. This presentation will address the development and function of the intestinal microbiota as well as pre-, pro- and syn-biotics. What is the science telling us, and how do we make progress in this area, against a backdrop of increasing pressure on antibiotics?  
Sponsored by: DPP-NA  
*Registration is required; attendance is limited to first 400 registrants. Registration is $10.00.*

Business Meeting and Awards Program  
**Tuesday, March 15 • 6:00 pm • Grand Ballroom A**  
Please join the ASAS Midwestern Section / ADSA® Midwest Branch Joint Board this evening for the annual Business Meeting and 2016 Awards Program. Immediately following the Awards Program, everyone is invited to the Awards Reception.

Awards Reception  
**Tuesday, March 15 • 7:00 pm • Grand Ballroom A**  
Come and join us after the Business Meeting and Awards Program to celebrate and congratulate all of the 2016 Midwest award winners.
GARY ALLEE SYMPOSIUM:
CHANGING CONSUMER/CUSTOMER DEMANDS,
OPPORTUNITIES FOR NUTRITIONISTS
Chair: Dustin Kendall, Prestage Farms, Inc.
Sponsor: ASAS Foundation, Gary Allee Appreciation Club
Grand Ballroom

8:00 AM Welcome
8:05 AM 89 Challenges of shifting consumer demand in the pork processing industry.
C. Kaster*, Smithfield Foods, Kansas City, MO
8:50 AM 90 Electronic sow feeding (ESF): The lemonade of pen gestation.
T. D. Parsons*, Department of Clinical Studies, School of Veterinary Medicine, University of Pennsylvania, Kenneth Square
9:30 AM 91 Crate-free sow housing and electronic feeding systems – a value proposition for improved sow nutrition.
O. F. Mendoza* and A. M. Gaines, The Maschhoffs, LLC, Carlyle, IL
10:05 AM Break.
10:15 AM 92 Exploring connections between metabolic profiles, stress responses and immune function.
J. A. Carroll*, N. C. Burdick Sanchez, and P. R. Broadway, USDA-ARS, Livestock Issues Research Unit, Lubbock, TX
11:00 AM 93 Production specific marketing programs: What do they mean for nutritionists and how do we adapt?
M. J. Bertram*, First Choice Livestock, Urbandale, IA
11:45 AM Panel Discussion.
11:55 AM Concluding Remarks.

BENTLEY LECTURE
* This is a ticketed event.
Grand Ballroom B
Sponsor: ASAS Foundation, Bentley Appreciation Club

12:00 PM Dietary strategies to ameliorate the physiological effects of heat stress in livestock.
Dr. Frank Dunshea, The University of Melbourne
Welcoming Remarks.

David H. Baker: A study in academic scholarship.  
R. A. Easter*, University of Illinois at Urbana-Champaign

Comparison of the effects of reduced CP, amino acid supplemented diets on growth performance in swine.  
C. E. Vonderohe¹, K. M. Mills¹, M. D. Asmus¹, E. R. Otto-Tice¹,  
C. V. Maxwell¹, B. T. Richert¹, and J. S. Radcliffe¹, ¹Purdue University, ²Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville

Quantifying variable amino acid efficiencies in lactating sows.  
R. R. White*, S. Zhang², N. Regmi², and N. L. Trottier², ¹Virginia Tech, Blacksburg, ²Michigan State University, East Lansing

Citrulline and de novo arginine synthesis in perinatal and young pigs.  
J. C. Marini*, U. Agarwal¹, I. C. Didelija¹, B. Stoll¹, and D. G. Burrin¹, ¹USDA-ARS Children’s Nutrition Research Center, Baylor College of Medicine, Houston, TX, ²Section of Critical Care Medicine, Baylor College of Medicine, Houston, TX

An update on modeling dose response relationships: accounting for correlated data structures and heterogeneous variance in linear and non-linear mixed models.  
M. A. D. Goncalves, N. M. Bello*, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, J. C. Woodworth, and R. D. Goodband, Kansas State University, Manhattan

Effects of standardized ileal digestible valine:lysine ratio on growth performance of 25- to 45-kg pigs under commercial conditions.  
M. A. D. Goncalves*, M. D. Tokach¹, S. S. Dritz¹, N. M. Bello¹,  
K. J. Touchette¹, R. D. Goodband¹, J. M. DeRouchey¹, and J. C. Woodworth¹, ¹Kansas State University, Manhattan, ²Jinomoto Heartland, Inc., Chicago, IL

Determination of lysine adequacy on a population basis for growing pigs.  
C. E. Zier-Rush¹, C. Neill², S. B. Jungst², N. Matthews², D. S. Rosero*, and R. D. Boyd¹, ¹The Hanor Company, Inc., Franklin, KY, ²PIC, Hendersonville, TN
Evaluating protein quality of human foods using the pig as a model.

H. Stein*, J. Mattai, University of Illinois at Urbana-Champaign

GRADUATE STUDENT ORAL COMPETITION-M.S

Chair: Michael Looper, University of Arkansas
Sponsor: ASAS Foundation, Gretchen Hill Appreciation Club

1:30 PM 94 Effect of harvest method on corn residue quality and RUP supplementation on residue quality and performance of growing calves.
T. M. King*, R. G. Bondurant, J. L. Harding, J. C. MacDonald, and T. J. Klopfenstein, University of Nebraska-Lincoln

1:45 PM 95 Evaluation of a xylanase and an emulsifier in broilers fed different levels of dried yeast.

2:00 PM 96 Effect of sorting boar spermatozoa by sex chromosomes on oviduct cell binding.
R. A. Winters*, L. M. Nettenstrom*, D. G. Lopez*, K. L. Willenburg*, R. Vishwanath*, and D. J. Miller*, 1University of Illinois at Urbana-Champaign, 2Sexing Technologies Inc., DeForest, WI

2:15 PM 97 Effects of standardized ileal digestible valine:lysine ratio on nursery pig performance.

2:30 PM 98 Impact of elevated preovulatory estradiol during a fixed-time AI protocol on uterine environment and embryonic survival to day 16.

L. A. Bachmeier*, S. J. Moeller*, C. Carr*, J. M. Young*, X. Sun*, J. H. Liu*, S. B. Schauanaman*, and D. J. Newman*, 1North Dakota State University, Fargo, 2The Ohio State University, Columbus, 3University of Florida, Gainesville
3:00 PM 100  Post-mortem proteolysis and meat tenderness in crossbred steers identified as lowly or highly feed efficient.

3:15 PM 101  In vitro investigations on the use of non-nutritive sorbent additives to sequester boar taint compounds.
P. Park*, I. B. Mandell¹, C. F. M. de Lange², and J. Squires¹,
¹Department of Animal and Poultry Science, University of Guelph, ON, Canada, ²University of Guelph, ON, Canada

3:30 PM 102  Changes in late gestation beef cow circulating metabolite and metabolic hormone concentrations due to feeding stockpiled tall fescue versus tall fescue hay.
J. M. Larson*, K. N. Niederecker¹, and A. M. Meyer², ¹Division of Animal Sciences, University of Missouri, Columbia,
²University of Missouri, Columbia

3:45 PM 103  Effects of treating sorghum wet distillers grains plus solubles with calcium hydroxide in steam-flaked corn-based finishing diets on dry matter intake and ruminal fermentation characteristics.
W. W. Gentry*, C. P. Weiss¹, C. M. Meredith¹, C. L. Brauer¹,
F. T. McCollum¹, N. A. Cole², and J. S. Jennings¹, ¹Texas A & M AgriLife Research and Extension Center, Amarillo, ²USDA-ARS, Bushland, TX

4:00 PM 104  Gross return to corn acres through cattle feeding as influenced by choice of harvest endpoint.
T. A. Johnson*, A. Hohertz¹, and A. DiCostanzo¹, ¹University of Minnesota, St. Paul

GRADUATE STUDENT ORAL COMPETITION-PH.D

Chair: James Sartin, ASAS - JAS EiC
Sponsor: AFIA
306-307

1:30 PM 105  Effect of Feeding a Corn Hybrid Containing Alpha Amylase on Finishing Cattle Performance and Carcass Characteristics.
M. L. Jolly-Breithaupt*, M. E. Harris¹, B. L. Nuttelman¹, D. B. Burken¹, G. E. Erickson¹, J. C. MacDonald¹, and M. K. Luebbe²,
¹University of Nebraska-Lincoln, ²University of Nebraska, Scottsbluff

1:45 PM 106  Effects of supplemental soy peptide on growth performance and gut health of nursery pigs.
L. Zheng*, I. Park, and S. W. Kim, North Carolina State University, Raleigh
2:00 PM  107  Evaluating the inclusion level of medium chain fatty acids to reduce the risk of PEDV in feed and spray-dried animal plasma.
R. A. Cochrane\textsuperscript{1}, M. Saensukjaroenphon\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, J. C. Woodworth\textsuperscript{1}, A. R. Huss\textsuperscript{1}, C. R. Stark\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, J. F. Bai\textsuperscript{1}, Q. Chen\textsuperscript{1}, J. Zhang\textsuperscript{2}, P. C. Gauger\textsuperscript{2}, R. Main\textsuperscript{2}, and C. K. Jones\textsuperscript{1}, 1Kansas State University, Manhattan, 2Iowa State University, Ames

2:15 PM  108  Liquid feeding fermented DDGS to weanling pigs: Improvement of growth performance with added enzymes and microbial inoculants.
M. Wiseman\textsuperscript{1}, D. Wey\textsuperscript{1}, and C. F. M. de Lange\textsuperscript{2}, 1Department of Animal Biosciences, University of Guelph, ON, Canada, 2University of Guelph, ON, Canada

2:30 PM  109  Impact of sex on composition and quality of fresh loins, bellies, and fresh and processed hams.
E. K. Arkfeld\textsuperscript{1}, D. A. Mohrhauser\textsuperscript{1}, D. A. King\textsuperscript{1}, T. L. Wheeler\textsuperscript{1}, A. C. Dilger\textsuperscript{1}, S. D. Shackelford\textsuperscript{3}, and D. D. Boler\textsuperscript{1}, 1University of Illinois at Urbana-Champaign, 2Smithfield Foods, Denison, IA, 3USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

2:45 PM  110  Immune system stimulation (ISS) induced by E. coli lipopolysaccharide (LPS) alters amino acid metabolism in growing pigs.
W. D. Stuart\textsuperscript{1}, T. E. Burkey\textsuperscript{2}, N. K. Gabler\textsuperscript{3}, K. J. Schwartz\textsuperscript{3}, D. Klein\textsuperscript{1}, J. A. Dawson\textsuperscript{1}, A. R. Pendleton\textsuperscript{1}, C. F. M. de Lange\textsuperscript{1}, and A. Rakhshandeh\textsuperscript{1}, 1Texas Tech University, Lubbock, 2University of Nebraska-Lincoln, 3Iowa State University, Ames, 4Amarillo College, Amarillo, 5University of Guelph, ON, Canada

3:00 PM  111  Effects of heat stress and zinc supplementation on the lipidome of growing pigs.
L. Wang\textsuperscript{2}, P. E. Urriola\textsuperscript{2}, Z. Luo\textsuperscript{2}, Z. J. Rambo\textsuperscript{3}, M. E. Wilson\textsuperscript{3}, J. L. Torrison\textsuperscript{3}, G. C. Shurson\textsuperscript{2}, and C. Chen\textsuperscript{1}, 1Department of Food Science and Nutrition, University of Minnesota, St. Paul, 2Department of Animal Science, University of Minnesota, St. Paul, 3Zinpro Corporation, Eden Prairie, MN

3:15 PM  112  Genetic parameters and genomic regions associated with piglet response to vaccination for porcine reproductive and respiratory syndrome (PRRS) virus and co-infection with PRRS virus and porcine circovirus type 2b (PCV2b).
J. R. Dunkelberger\textsuperscript{1}, N. V. L. Serão\textsuperscript{1,2}, M. A. Kerrigan\textsuperscript{1}, J. K. Lunney\textsuperscript{1}, R. R. R. Rowland\textsuperscript{1}, and J. C. M. Dekkers\textsuperscript{1}, 1Iowa State University, Ames, 2North Carolina State University, Raleigh, 3Kansas State University, Manhattan, 4USDA, ARS, BARC, APDL, Beltsville, MD
3:30 PM 113  Optimizing Cost and Environmental Impact of Pig Diets.  
J. BurekJ, G. ThomaJ, C. V. MaxwellJ, J. PoppJ, and R. UlrichJ,  
1University of Arkansas, Fayetteville, AR, 2Department of  
Animal Science, Division of Agriculture, University of Arkansas,  
Fayetteville, 3University of Arkansas, Fayetteville

UNDERGRADUATE STUDENT ORAL COMPETITION I

Chair: Paul M. Walker, Illinois State University  
Sponsor: ASAS Foundation, Gretchen Hill Appreciation Club

1:30 PM 400  Spinning straw into milk: Can a 95% byproduct diet  
support milk production?  
M. HulettM, C. M. YliojaM, T. A. WickershamM, and B. J.  
BradfordM, 1Department of Animal Sciences and Industry,  
Kansas State University, Manhattan, 2Texas A&M University,  
College Station

1:45 PM 401  Impact of initiating a fixed-time AI program on herd calving  
date and weaning weight.  
L. K. QuailL, R. A. CushmanL, and G. A. PerryL, 1South Dakota  
State University, Brookings, SD, 2USDA, ARS, U.S. Meat Animal  
Research Center, Clay Center, NE, 3Department of Animal  
Science, South Dakota State University, Brookings

2:00 PM 402  Circulating blood urea nitrogen and glucose concentrations  
of neonatal beef calves during the first 72 hours.  
K. A. PearlK, J. M. LarsonK, and A. M. MeyerK, 1Division of  
Animal Sciences, University of Missouri, Columbia, 2University  
of Missouri, Columbia

2:15 PM 403  Effects of neonatal litter size and age on ovarian gene  
expression and follicular development in gilts.  
LentsM, 1University of Tennessee-Martin, 2USDA, ARS, U.S. Meat  
Animal Research Center, Clay Center, NE

2:30 PM 404  Effects of copper oxide bolus supplementation on  
performance of stocker calves grazing endophyte infected  
tall fescue.  
and M. J. KramerG, 1Lincoln University, Jefferson City, MO,  
2Purina Animal Nutrition Center LLC, Gray Summit, MO,  
3Department of Agriculture and Environmental Science, Lincoln  
University, Jefferson City, MO
2:45 PM 405  Evaluation of parasite resistance to commonly used commercial anthelmintics in meat goats.
M. K. Goolsby\(^1\), M. L. Leite-Browning\(^2\), and R. Browning, Jr.\(^1\), \(^1\)Tennessee State University, Nashville, \(^2\)Alabama A&M University, Huntsville

3:00 PM 406  Differential expression of genes in the liver associated with gain and intake in beef steers.
C. M. Zarek\(^1\), A. K. Lindholm-Perry\(^2\), and H. C. Freetley\(^3\), \(^1\)U.S. Meat Animal Research Center, Clay Center, NE, \(^2\)USDA, ARS, US MARC, Clay Center, NE, \(^3\)USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

UNDERGRADUATE STUDENT ORAL COMPETITION II
Chair: Gretchen Hill
Sponsor: ASAS Foundation, Gretchen Hill Appreciation Club
304-305

1:30 PM 407  The effect of diet on serum antibody response to vaccine in horses.
O. A. Kendall\(^*\), A. Young\(^1\), E. D. Lamprecht\(^2\), J. L. Leatherwood\(^3\), and R. C. Bott\(^1\), \(^1\)South Dakota State University, Brookings, \(^2\)Cargill, Elk River, MN, \(^3\)Sam Houston State University, Huntsville, TX

1:45 PM 408  Determining the standardized ileal digestible lysine requirement of 6.8 to 15.9 kg pigs.

2:00 PM 409  Comparison of delayed weaning on lamb growth and parasitism while grazing red clover.
K. Nickles\(^*\), J. S. McCutcheon\(^2\), D. Clevenger\(^3\), G. Lowe\(^3\), M. Sword\(^3\), and F. L. Fluharty\(^3\), \(^1\)The Ohio State University, Columbus, \(^2\)The Ohio State University, Mount Gilead, \(^3\)The Ohio State University, Wooster

2:15 PM 410  Effects of commercial formaldehyde inclusion and lysine level on nursery pig performance.
L. G. Sica\(^*\), R. A. Cochrane, J. C. Woodworth, S. S. Dritz, C. R. Stark, and C. K. Jones, Kansas State University, Manhattan
2:30 PM 411  Increased dietary soybean meal does not affect performance during a PRRSV-Mycoplasma hyopneumoniae challenge.  
A. L. O’Connell1, W. P. Schweer1, K. Schwartz1, G. Gourley2,  
M. A. FitzSimmons3, and N. K. Gabler1, 1Iowa State University,  
Ames, 2Gourley Research Group LLC, Webster City, IA, 3Swine  
Graphics Enterprises, Webster City, IA

2:45 PM 412  Concentrations of progesterone, estrogen, and insulin in serum during early pregnancy in crossbred Angus beef heifers.  
T. L. Ellig1, K. J. McLean1, C. R. Dahlen1,2, P. P. Borowicz1,2, L.  
P. Reynolds1,2, and J. S. Caton1,2, 1North Dakota State University,  
Fargo, 2Center for Nutrition and Pregnancy, Fargo, ND

3:00 PM 413  Calcium and magnesium absorption and retention by growing goats offered diets with different calcium sources.  
J. E. Long1, K. P. Coffey2, J. D. Caldwell3, D. Philipp2, R. T.  
Rhein1, and A. N. Young1, 1Department of Animal Science,  
University of Arkansas Division of Agriculture, Fayetteville,  
2University of Arkansas, Division of Agriculture, Fayetteville,  
3Purina Animal Nutrition Center LLC, Gray Summit, MO

3:15 PM 414  Influence of semen handling on post-thaw sperm motility.  
C. L. Mogck and G. A. Perry, Department of Animal Science,  
South Dakota State University, Brookings
ANIMAL BEHAVIOR, HOUSING AND WELL-BEING SYMPOSIUM: PART I - SOLUTION TO CHALLENGES IN ANIMAL WELL-BEING

Chair: Jennifer A. Brown, Prairie Swine Centre
302-303

8:30 AM Welcoming Remarks.

8:40 AM 10 The role of breeding in positive welfare change.

9:25 AM 11 Implementing animal well-being technologies, U.S. producer perspective.
A. E. DeDecker*, Smithfield Hog Production Division, Rose Hill, NC

10:10 AM Break.

10:25 AM 12 Engineering solutions to address challenges to animal well-being.
A. R. Green*, University of Illinois at Urbana-Champaign

11:10 AM 13 Six questions for veterinarians.
J. Deen*, Dept. of Veterinary Population Medicine, University of Minnesota, St. Paul

BREEDING AND GENETICS SYMPOSIUM

Chair: Juan P. Steibel, Michigan State University
304-305

8:30 AM Welcoming Remarks.

8:35 AM 34 Genomic prediction using a model based on haplotype clusters.
S. D. Kachman*, University of Nebraska-Lincoln

9:10 AM Break.

9:20 AM 35 Advances in genomic selection and GWA.
I. Misztal*, University of Georgia, Athens

9:55 AM 36 Discovery of QTL using a QTL-Effects Model in a Multi-Generational Pedigree.
R. L. Fernando1, J. Zeng1, H. Cheng3, D. Habier1, A. Wolc2, D. J. Garrick4, and J. C. M. Dekkers1, 1Iowa State University, Ames, 2Iowa State University, Ames, 3Hy-Line International, Dallas Center, IA, 4Massey University, Palmerston North, New Zealand
Modeling networks for prediction and causal inference in quantitative genetics and genomics.
G. J. M. Rosa*, University of Wisconsin-Madison

DAVID SCHINGOE THE SYMPOSIUM:
MODIFYING MILK COMPOSITION TO ENHANCE MARKETABILITY
Chair: Daryl H Kleinschmit, Zinpro Corporation
Sponsor: ASAS Foundation, David Schingoethe Appreciation Club

306-307
8:30 AM 46
Modifying the composition of milk to increase marketability.
D. J. Schingoethe*, South Dakota State University, Brookings

9:10 AM 47
The history, mechanism, and modification of milk fat synthesis in ruminants.
K. J. Harvatine*, Penn State University, State College

9:50 AM 48
Milk composition and synthesis in dairy goats and sheep.
M. Rovai*1 and G. Caja2, 1South Dakota State University, Brookings, SD, 2Group of Ruminant Research (G2R), Universitat Autonoma de Barcelona, Bellaterra, Barcelona, Spain

10:30 AM 49
(Young Scholar) Physiological and molecular mechanisms associated with performance, immunometabolic status, and liver function in transition dairy cows fed rumen protected methionine or choline.
Z. Zhou*1, M. Vailati Riboni1, O. Bulgari1, E. Trevisi2, T. A. Garrow1, J. K. Drackley1, P. Cardoso1, D. N. Luchini1, and J. J. Loor1, 1University of Illinois at Urbana-Champaign, 2Università Cattolica del Sacro Cuore, Piacenza, Italy, 3Adisseo S.A.S., Alpharetta, GA

11:00 AM 50
(Young Scholar) Control of bovine pyruvate carboxylase expression by saturated and unsaturated fatty acids and impact on fatty acid metabolism.
K. E. Boesche*, S. L. Koser, and S. S. Donkin, Purdue University, West Lafayette, IN

11:30 AM 51
(Young Scholar) Postpartum protein nutrition for dairy cows.
W. D. Weich*, K. F. Kalscheur*, and D. P. Casper1, 1South Dakota State University, Brookings, 2USDA-ARS Dairy Forage Research Center, Madison, WI
GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE SYMPOSIUM
Chair: Chad A. Stahl, F.A.C.T.S.
318-319

8:30 AM  137  Use of visible and near infrared spectroscopy to predict beef and pork quality.

9:15 AM  138  The quandaries of measuring meat quality.
J. K. Apple*1 and J. W. S. Yancey2, 1Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, 2Department of Animal Science, University of Arkansas, Fayetteville

10:00 AM  139  Differentiating lamb flavor.
D. R. Woerner*, T. W. Hoffman, J. D. Tatum, and K. E. Belk, Colorado State University, Fort Collins

HARLAN RITCHIE SYMPOSIUM: 2016 BEEF NRC
Chair: W. J. Sexten, Certified Angus Beef, LLC
Sponsor: ASAS Foundation, Harlan Ritchie Appreciation Club
312-313

8:30 AM  Welcoming Remarks.

8:35 AM  150  Alternative cow-calf production systems: Opportunities and challenges.
R. J. Rasby*, J. M. Warner2, K. H. Jenkins3, and T. J. Klopfenstein2, 1Department of Animal Science, University of Nebraska-Lincoln, 2University of Nebraska-Lincoln, 3University of Nebraska, Scottsbluff

Ron Lemenager, Purdue University, West Lafayette, IN

10:05 AM  Break.

10:20 AM  Implementing the 2016 Beef NRC changes in growing and finishing cattle.
Galen Erickson, University of Nebraska-Lincoln

11:05 AM  Transparency in the food system: Communicating science to the consumer.
J. Jones, The Center for Food Integrity
NONRUMINANT NUTRITION: GROW/FINISH I
Chair: Victor G. Perez, ADM Animal Nutrition; Roman Moreno, Seaboard Foods
Sponsor: NutriQuest
314-315

8:30 AM  218  (Young Scholar) Characterization of variability in the U.S. pork supply.
E. K. Arkfeld1, S. D. Shackelford2, A. C. Dilger1, and D. D. Boler1,
1University of Illinois at Urbana-Champaign, 2USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

9:00 AM  219  (Young Scholar) Requirements for digestible Ca by growing pigs.
J. C. González-Vega1, C. L. Walk2, and H. H. Stein1,
1University of Illinois at Urbana-Champaign, 2AB Vista, Marlborough, United Kingdom

9:30 AM  220  Digestible calcium requirements for 25 to 50 kg pigs.
J. C. González-Vega1, C. L. Walk2, and H. H. Stein1,
1University of Illinois at Urbana-Champaign, 2AB Vista, Marlborough, United Kingdom

9:45 AM  221  Impact of increasing dietary energy concentration through graded levels of corn oil or choice white grease on carcass characteristics in pigs.
T. Kellner1, S. Wisdom2, G. Gourley3, and J. F. Patience1,
1Iowa State University, Ames, 2Swine Graphics Enterprises, Webster City, IA, 3Gourley Research Group, Webster City, IA

10:00 AM  222  Impact of the source and level of dietary fat on growth performance as well as apparent and true total tract digestibility of acid hydrolyzed ether extract in growing and finishing pig diets.
T. Kellner1, G. Gourley2, S. Wisdom3, and J. F. Patience1,
1Iowa State University, Ames, 2Gourley Research Group, Webster City, IA, 3Swine Graphics Enterprises, Webster City, IA

10:15 AM  223  Efficacy of supplemental liquid L-lysine for pigs in comparison to crystalline L-lysine HCl.
W. Parnsen1, J. Wang2, K. J. Touchette2, Z. Jiang2, and S. W. Kim1,
1North Carolina State University, Raleigh, 2Ajinomoto Heartland, Inc., Chicago, IL
10:30 AM 224 Diet nutrient digestibility and growth performance of weaned pigs fed canola meal samples varying in nutritive quality. L. F. Wang1, E. Beltranena1,2, and R. T. Zijlstra3, 1Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 2Alberta Agriculture and Forestry, Edmonton, AB, Canada

10:45 AM 225 Prediction of the concentration of standardized ileal digestible (SID) amino acids among sources of distillers dried grains with solubles (DDGS) for growing pigs: A meta-analysis. Z. Zeng*, G. C. Shurson, and P. E. Urriola, Department of Animal Science, University of Minnesota, St. Paul

11:00 AM 226 Amino acid digestibility of five samples of canola meal fed to ileal-cannulated grower pigs. B. V. Le Thanh1, X. Zhou1, E. Beltranena2, and R. T. Zijlstra3, 1University of Alberta, Edmonton, AB, Canada, 2Alberta Agriculture and Forestry, Edmonton, AB, Canada, 3Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada

11:15 AM 227 Amino acid digestibility in dairy proteins compared with plant proteins. J. K. Mathai*, Y. Liu, and H. H. Stein, University of Illinois at Urbana-Champaign

11:30 AM 228 Effect of fat sources on ATTD of minerals. L. A. Merriman*, C. L. Walk2, and H. H. Stein1, 1University of Illinois at Urbana-Champaign, 2AB Vista, Marlborough, United Kingdom

11:45 AM 233 Evaluating the effects of sodium sesquicarbonate in the grow-finish phase fed during summer months. L. Greiner1, A. Graham1, B. Knopf1, and W. Plocher2, 1Carthage Innovative Swine Solutions, LLC, Carthage, IL, 2Tronox Specialty Alkali Corporation, Green River, WY

12:00 PM 230 Effect of divergent selection for Residual Feed Intake on whole body protein turnover in growing gilts fed either adequate or lysine deficient diets. D. J. Hewitt1, C. F. M. de Lange2, T. Antonick1, J. C. M. Dekkers3, A. R. Pendleton1, and A. Rakhshandeh1, 1Texas Tech University, Lubbock, 2University of Guelph, ON, Canada, 3Iowa State University, Ames, 4Amarillo College, Amarillo, TX
SYMPOSIA AND ORAL SESSIONS / TUESDAY, MARCH 15, 2016

NONRUMINANT NUTRITION SYMPOSIUM:
ANTIBIOTIC REPLACEMENT IN PORK PRODUCTION
Chair: Thomas E. Burkey, University of Nebraska-Lincoln
Sponsor: AB Vista
316-317

8:30 AM  Welcoming Remarks.

8:50 AM 267  What is ‘gut health’ and how do you quantify/measure it?
A. J. Moeser*, North Carolina State University, Raleigh

9:20 AM 268  New probiotic Bacillus strain improving gut health in piglets.
B. Lantz*, B. K. Nielsen1 and R. Cernat2, 1Chr. Hansen A/S, Clumbus, Ohio, 2Chr. Hansen A/S, Hoersholm, Denmark

9:35 AM 269  Use of dietary carbohydrates as prebiotic in swine diets.
R. T. Zijlstra*, J. M. Fouhse2, E. Beltranena3, A. M. H. Le3, and M. G. Gaenzle2, 1Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, 2University of Alberta, Edmonton, AB, Canada, 3Alberta Agriculture and Forestry, Edmonton, AB, Canada

10:05 AM 270  Impact of different high fiber diets on intestinal cell proliferation and differentiation in finishing pigs.
Z. Huang*, P. E. Urriola, G. C. Shurson, and M. Saqui-Salces, Department of Animal Science, University of Minnesota, St. Paul

10:20 AM  Break.

10:35 AM 271  Effects of dietary supplementation of phytobiotics on growth performance and health status of growing-finishing pigs.
I. Park*, W. Parnsen, and S. W. Kim, North Carolina State University, Raleigh

10:50 AM 428  Lysozymes as an alternative to antibiotics in swine feed.
W. T. Oliver and J. E. Wells, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

11:20 AM 272  Alternatives to antibiotics: biotechnological approach to deliver recombinant bioactive proteins.
E. Huynh, C. F. M. de Lange, and J. Li*, University of Guelph, ON, Canada

28
8:30 AM  336  Heat stress affects the serum concentrations of free amino acids in growing pigs.
A. Morales¹, M. Cota¹, N. Ibarra¹, N. Arce¹, J. K. Htoo², and M. Cervantes³, ¹ICA - Universidad Autónoma de Baja California, Mexicali, Mexico, ²Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

8:45 AM  305  Does heat stress alter the pig’s response to dietary fat source, as it relates to apparent or true total tract digestibility of dietary lipids?.
T. Kellner*, L. H. Baumgard, and J. F. Patience, Iowa State University, Ames

9:00 AM  306  Effects of dietary chromium propionate during heat stress on finishing pigs.
E. J. Mayorga¹, S. K. Stoakes¹, J. T. Seibert¹, E. A. Horst¹, M. Abuajamieh¹, S. Lei¹, L. Ochoa², B. Kremer², and L. H. Baumgard¹, ¹Iowa State University, Ames, ²Kemin Industries, Inc., Des Moines, IA

9:15 AM  307  Supplementation of a Lactobacillus acidophilus fermentation product can attenuate the acute phase response following a lipopolysaccharide challenge in pigs.
P. R. Broadway¹, J. A. Carroll¹, N. C. Burdick Sanchez¹, B. E. Bass², and J. W. Frank², ¹USDA-ARS, Livestock Issues Research Unit, Lubbock, TX, ²Diamond V, Cedar Rapids, IA

9:30 AM  308  Intestinal microbiota and expression of genes involved in immunity are modulated in nursing piglets by growth performance in the first week of life.
M. Lessard¹, K. Deschêne², B. Morissette², M. Blais², F. Beaudoin², K. Lauzon², and G. Talbot², ¹Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada, ²Agriculture and Agri-Food Canada, Dairy and Swine Research and Development Centre, Sherbrooke, QC, Canada, ³Université de Sherbrooke, Sherbrooke, QC, Canada

9:45 AM  309  Evaluation of a QTL for porcine circovirus type 2b (PCV2) viral load on growth performance in inoculated and vaccinated pigs for PCV2.
D. M. van Sambeek*, E. R. Tosky, P. S. Miller, D. C. Ciobanu, and T. E. Burkey, University of Nebraska-Lincoln
10:00 AM 310 Piglet growth before weaning has long-term effects on intestinal barrier function.  
A. Mereu1, J. J. Pastor1, D. Chin2, G. Rimbach2, and I. R. Ipharrague1,2, 1Lucta S.A., Barcelona, Spain, 2Institute of Human Nutrition and Food Science, University of Kiel, Kiel, Germany

10:30 AM 311 Dietary D-xylose effects on growth performance and portal-drained viscera nutrient fluxes, insulin production, and oxygen consumption in growing pigs.  
A. K. Agyekum1, M. C. Walsh2, E. Kiarie1,3,4, J. S. Sands1,5, and C. M. Nyachoti1, 1University of Manitoba, Winnipeg, MB, Canada, 2Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom, 3DuPont Industrial Biosciences - Danisco Animal Nutrition, Marlborough, United Kingdom, 4University of Guelph, ON, Canada, 5BioQuest UK Ltd, Marlborough, United Kingdom

10:45 AM 312 Use of AliveCor heart monitor for heart rate and rhythm evaluation in domestic water buffalo calves.  
J. Smith1, J. Ward1, T. Urbano2, and M. Mueller3, 1Iowa State University College of Veterinary Medicine, Ames, 2School of Veterinary Medicine, University of California, Davis, 3Blue Pearl Veterinary Partners, Seattle, WA

11:00 AM 313 Plasma analytes concentrations of beef heifers diverging in frame size and known feed efficiency group.  
A. B. P. Fontoura1, F. E. Doscher, C. R. Dahlen, K. Ringwall, K. A. Vonnahme, L. L. H. Hanna, and K. C. Swanson, North Dakota State University, Fargo

RUMINANT NUTRITION: BY-PRODUCTS
Chair: Mary Drewnoski, University of Nebraska-Lincoln  
Sponsor: ADM Animal Nutrition
308-309

8:30 AM 366 Accurate amounts and nutritive values of corn residue.  
S. E. Gardine1, A. K. Watson2, J. L. Harding1, and T. J. Klopfenstein1, 1University of Nebraska-Lincoln, 2Department of Animal Science, University of Nebraska-Lincoln

8:45 AM 367 Evaluation of different byproduct combinations along with treated corn stover on growing steer performance.  
K. M. Ulmer2, C. J. Bittner, F. H. Hilscher, G. E. Erickson, and J. C. MacDonald, University of Nebraska-Lincoln
9:00 AM 368 Effects of co-ensiling high moisture corn stover with co-products on spoilage, aerobic stability, nutrient composition, and in situ digestibility.
M. H. Sena*, T. L. Felix, W. T. Meteer, and D. W. Shike, University of Illinois at Urbana-Champaign

9:15 AM 369 The effect of delayed corn silage harvest on performance of yearling steers fed 15 or 45% silage finishing diets.
F. H. Hilscher*, C. J. Bittner, D. B. Burken, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska-Lincoln

9:30 AM 370 The effect of corn silage harvest DM and rumen undegradable protein supplementation in silage growing diets growing beef cattle.
F. H. Hilscher*, J. L. Harding, R. G. Bondurant, T. J. Klopfenstein, and G. E. Erickson, University of Nebraska-Lincoln

9:45 AM 371 Influence of two fat levels of dry distillers grains in diets with corn or barley on growing and finishing feedlot and carcass performance of steers.
C. L. Engel**, V. L. Anderson, and K. C. Swanson, 1North Dakota State University, Carrington Research Extension Center, Carrington, ND, 2Carrington Research Extension Center, North Dakota State University, Carrington, 3North Dakota State University, Fargo

10:00 AM 372 Evaluation of the value of fiber in distillers grains plus solubles on performance of finishing cattle.
J. E. Burhoop*, L. J. Schneider, C. J. Bittner, F. H. Hilscher, J. C. MacDonald, R. A. Moxley, D. R. Smith, and G. E. Erickson, 1University of Nebraska-Lincoln, 2Mississippi State University, Mississippi State, 3School of Veterinary Medicine and Biomedical Sciences, University of Nebraska-Lincoln

10:15 AM 373 Effects of feeding isolated nutritional components in distillers grains on growing cattle performance.
B. B. Conroy, C. J. Bittner, J. C. MacDonald, M. K. Luebbe, and G. E. Erickson, 1University of Nebraska, Scottsbluff, 2University of Nebraska-Lincoln

10:30 AM 374 Effects of feeding corn condensed distillers solubles and crude glycerin alone or in combination on growth performance and carcass characteristics of finishing steers.
C. P. Weiss, W. W. Gentry, C. L. Brauer, F. T. McCollum, N. A. Cole, and J. S. Jennings, 1Texas A & M AgriLife Research and Extension Center, Amarillo, 2USDA-ARS, Bushland, TX

10:45 AM 375 Effect of crude glycerin concentration on growing steer performance in forage diets.
R. G. Bondurant*, J. C. MacDonald, G. E. Erickson, and T. J. Klopfenstein, University of Nebraska-Lincoln
11:00 AM  376  Effects of ruminal alkalinizing and/or buffering agents fed to feedlot steers on performance and carcass characteristics.  
N. A. Lancaster* and J. P. Schoonmaker, Purdue University, West Lafayette, IN

11:15 AM  377  Effects of different inoculum used for in vitro and in situ digestion procedures performed on corn residue samples.  
H. C. Hamilton1, J. L. Harding2, J. C. MacDonald1, and T. J. Klopfenstein2, 1Department of Animal Science, University of Nebraska-Lincoln, 2University of Nebraska-Lincoln

11:30 AM  378  Relationship between TDN and OM digested in beef cattle finishing diets.  
H. C. Hamilton1, J. L. Harding2, J. C. MacDonald1, T. J. Klopfenstein2, and A. K. Watson1, 1Department of Animal Science, University of Nebraska-Lincoln, 2University of Nebraska-Lincoln

11:45 AM  379  Effects of diet type and feeding phase on intake and feed efficiency of beef cattle.  
C. Cassady*, T. L. Felix, and D. W. Shike, University of Illinois at Urbana-Champaign

**DIGESTIVE PHYSIOLOGY OF PIGS LECTURE**  
* This is a ticketed event.  
Sponsor:  DPP-NA  
Grand Ballroom B

12:00 PM  
Microbial colonisation, metabolism and immunity in the young piglet.  
M. Bailey*, University of Bristol

**ANIMAL BEHAVIOR, HOUSING AND WELL-BEING SYMPOSIUM: PART II**  
Chair: Jennifer A. Brown, Prairie Swine Centre  
302-303

1:30 PM  23  Opportunities for monitoring and improving animal welfare using precision dairy monitoring technologies.  
J. M. Bewley*, University of Kentucky, Lexington

2:15 PM  24  Improving welfare, health and productivity in pigs by optimizing adaptation.  
J. E. Bolhuis* and B. Kemp, Adaptation Physiology Group, Wageningen University, Wageningen, Netherlands
BREEDING AND GENETICS
Chair: Juan P. Steibel, Michigan State University
Sponsor: ISAG 2016
304-305

1:30 PM 25 Number born alive accuracy changes by including crossbred records when estimating Large White and Landrace breeding values from a large seedstock supplier.
D. L. Beam*1, J. W. Mabry2, and K. J. Stalder1, 1Department of Animal Science, Iowa State University, Ames, 2Iowa State University, Ames

1:45 PM 26 Genome-wide association study (GWAS) for residual feed intake (RFI) and component traits of feed efficiency in pigs divergently selected for RFI.
N. V. Serão*1,2, E. D. Mauch1, S. K. Onteru1, M. F. Rothschild2, and J. C. M. Dekkers3, 1North Carolina State University, Raleigh, NC, 2Iowa State University, Ames, 3National Dairy Research Institute, Karnal, India

2:00 PM 27 Performance of genomic prediction using haplotypes in New Zealand dairy cattle.
M. K. Hayr*1, T. Druet2, and D. J. Garrick3, 1Iowa State University, Ames, 2University of Liège, Liège, Belgium, 3Massey University, Palmerston North, New Zealand

2:15 PM 28 The use of alternative genomic metrics in swine nucleus herds to manage the diversity of purebred and crossbred animals.
J. T. Howard*1, F. Tiezzi1, Y. Huang2, K. A. Gray2, and C. Maltecca1, 1North Carolina State University, Raleigh, 2Smithfield Premium Genetics, Rose Hill, NC

2:30 PM 29 Mitigating the effect of seasonality on sow reproductive performance using genetic selection.
M. R. Bryan*1, C. Maltecca1, K. A. Gray2, Y. Huang2, and F. Tiezzi1, 1North Carolina State University, Raleigh, 2Smithfield Premium Genetics, Rose Hill, NC

2:45 PM 30 Genome-wide association study for meat quality traits in an F2 Duroc x Pietrain population.
S. Casiro*1, D. Velez-Irizarry1, R. O. Bates1, C. W. Ernst2, and J. P. Steibel1, 1Department of Animal Science, Michigan State University, East Lansing, 2Genetics Program, Michigan State University, East Lansing
3:00 PM  31  Characterization of objective feet and leg joint measurements between selection and second gestation and between separate gestation ages in swine.
J. D. Stock*1, J. A. Calderón Díaz1, B. E. Mote3,4, and K. J. Stalder1, 1Department of Animal Science, Iowa State University, Ames, 2Iowa State University, Ames, 3University of Nebraska-Lincoln, 4Fast Genetics Inc., Saskatoon, SK, Canada

3:15 PM  32  QTL and candidate genes associated with heifer pregnancy rate and stayability in beef cattle.
M. Saatchi*1,2 and D. J. Garrick1,3, 1Iowa State University, Ames, 2American Simmental Association, Bozeman, MT, 3Massey University, Palmerston North, New Zealand

EXTENSION - DAIRY SYMPOSIUM

Chair: Jill L. Anderson, South Dakota State University
Sponsor: Diamond V Mills, Inc.
306-307

1:30 PM  66  Midwest dairy processing needs, trends, and changes.
V. V. Mistry*, South Dakota State University, Brookings

2:00 PM  67  Organic pasture versus conventional dairying – is there a difference in sustainability.
B. J. Heins*, University of Minnesota West Central Research and Outreach Center, Morris, MN

2:30 PM  68  Field observations of automated dairy calf feeding systems in the upper Midwest.
N. B. Litherland* and A. M. Hoskins, Vita Plus Corporation, Madison, WI

3:00 PM  69  Key factors affecting automated milking system performance.
J. A. Salfer*1 and M. I. Endres2, 1University of Minnesota, St. Cloud, 2University of Minnesota, Saint Paul

3:30 PM  70  (Young Scholar) Effects of milk replacer feeding regimen to the pre-ruminant calf on crude protein utilization, digestibility, and growth.
C. E. Chapman*, University of New Hampshire, Durham

4:00 PM  71  (Young Scholar) Potential body site reservoirs for coagulase negative staphylococcal intramammary infection in heifers.
P. R. F. Adkins* and J. R. Middleton, University of Missouri, Columbia

4:30 PM  72  (Young Scholar) Strategies for programming the lactation.
A. J. Carpenter*, Department of Animal Sciences and Industry, Kansas State University, Manhattan
GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE

Chair: Chad A. Stahl, F.A.C.T.S.
Sponsor: Zoetis

318-319

1:30 PM 127 Pork Quality: 2015 National retail benchmarking study.
L. A. Bachmeier*, S. J. Moeller, C. Carr, J. M. Young, X. Sun, J. H. Liu, S. B. Schauunman, and D. J. Newman, North Dakota State University, Fargo, The Ohio State University, Columbus, University of Florida, Gainesville

1:45 PM 128 Moringa oleifera as an alternative protein source to soybean meal in pig production.
A. Ruckli and G. Bee, Institute for Livestock Sciences, Posieux, Switzerland, Agroscope Institute for Livestock Sciences, Posieux, Switzerland

2:00 PM 129 Effect of marketing group on the variability of fresh loin, belly, and fresh and processed ham quality from pigs sourced from a commercial processing facility.

2:15 PM 130 Carcass length is a poor predictor of the number of boneless chops from a pork loin.
K. B. Wilson, M. F. Overholt, E. K. Hogan, C. M. Shull, A. C. Dilger, and D. D. Bolter, University of Illinois at Urbana-Champaign, The Maschhoffs, LLC, Carlyle, IL

2:30 PM 131 Intramuscular variation in fresh ham muscle color.

2:45 PM 132 A mitochondrial protein increases glycolytic flux in muscle postmortem.
S. K. Matarneh*, E. M. England, T. L. Scheffler, C. N. Yen, and D. E. Gerrard, Virginia Polytechnic Institute and State University, Blacksburg, VA, The Ohio State University, Columbus, University of Florida, Gainesville
3:00 PM 133 Low fat ground beef patties have increased oxidation compared with high fat ground beef patties.
D. R. Reynolds\textsuperscript{1}, J. V. Cooper\textsuperscript{1}, B. R. Wiegand\textsuperscript{1}, Z. D. Callahan\textsuperscript{2}, A. B. Koc\textsuperscript{3}, L. Schumacher\textsuperscript{1}, L. Fernando\textsuperscript{1}, and C. L. Lorenzen\textsuperscript{1}, \textsuperscript{1}University of Missouri, Columbia, \textsuperscript{2}Division of Animal Sciences, University of Missouri, Columbia, \textsuperscript{3}Clemson University, Clemson

3:15 PM 134 Comparison of new and modern lighting technologies on ground beef color.
J. V. Cooper\textsuperscript{1}, D. R. Reynolds\textsuperscript{1}, B. R. Wiegand\textsuperscript{1}, Z. D. Callahan\textsuperscript{2}, A. B. Koc\textsuperscript{3}, L. Schumacher\textsuperscript{1}, and C. L. Lorenzen\textsuperscript{1}, \textsuperscript{1}University of Missouri, Columbia, \textsuperscript{2}Division of Animal Sciences, University of Missouri, Columbia, \textsuperscript{3}Clemson University, Clemson

3:30 PM 135 Grass fed or DFD?.
A. Apaoblaza\textsuperscript{1}, S. K. Matarneh\textsuperscript{1}, E. M. England\textsuperscript{2}, T. L. Scheffler\textsuperscript{3}, S. K. Duckett\textsuperscript{1}, and D. E. Gerrard\textsuperscript{1}, \textsuperscript{1}Virginia Polytechnic Institute and State University, Blacksburg, \textsuperscript{2}The Ohio State University, Columbus, \textsuperscript{3}University of Florida, Gainesville, \textsuperscript{4}Clemson University, Clemson

3:45 PM 136 Autophagy induction in the pig follicular stage ovary during heat stress.
B. J. Hale\textsuperscript{*}, C. L. Hager, A. A. Al-Shaibi, J. T. Seibert, L. H. Baumgard, A. F. Keating, and J. W. Ross, Iowa State University, Ames

NONRUMINANT NUTRITION: FEED ADDITIVES

Chair: Huyen Tran, University of Nebraska; Tofuko Awori Woyengo, University of Alberta
Sponsor: AB Vista

314-315

1:30 PM 151 Evaluation of copper source addition in the grow-finish phase.
L. Greiner\textsuperscript{1}, A. Graham\textsuperscript{1}, B. Knopf\textsuperscript{1}, R. J. Harrell\textsuperscript{2}, and J. Connor\textsuperscript{3}, \textsuperscript{1}Carthage Innovative Swine Solutions, LLC, Carthage, IL, \textsuperscript{2}Professional Swine Management, Carthage, IL, \textsuperscript{3}Carthage Veterinary Service, Ltd, Carthage, IL

1:45 PM 152 Effects of Lactobacillus acidophilus fermentation product supplementation in different nutrient density diets on growth performance, nutrient digestibility, fecal microbiota and fecal noxious gas emissions in weanling pigs.
R. X. Lan\textsuperscript{1}, J. M. Koo\textsuperscript{2}, S. I. Lee\textsuperscript{1}, and I. H. Kim\textsuperscript{1}, \textsuperscript{1}Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, \textsuperscript{2}Shinhan BioChem Co., Hwaseong, South Korea
2:00 PM 153 Inclusion of a hydrolyzed yeast product in grow/finish pig diets reduced mortality.
C. L. Levesque1, S. Jalukar2, N. Gutierrez2, and J. F. Patience3, 1South Dakota State University, Brookings, 2Arm and Hammer Animal Nutrition, Mason City, IA, 3Iowa State University, Ames

2:15 PM 154 The effects of feeding narasin or virginiamycin on growth and harvest performance of pigs during the grow-finish period.
R. A. Arentson1 and J. J. Chewning2, 1Elanco, Greenfield, IN, 2Swine Research Services, Inc., Springdale, AR

2:30 PM 155 Growth performance and serum IgA concentrations in weanling pigs fed dietary prebiotics.
Y. S. Li1, M. D. Trenhaile1, M. M. Lima1, K. C. Moore1, D. M. van Sambeek1, T. E. Burkey2, and P. S. Miller1, 1University of Nebraska-Lincoln, 2Department of Animal Science, São Paulo State University, Jaboticabal/SP, Brazil

2:45 PM 156 Effects of modified yeast cell wall extract on growth performance and health status of pigs fed diets with low level mycotoxins.
I. Park1, J. Guo, and S. W. Kim, North Carolina State University, Raleigh

3:00 PM 157 Effects of dietary Cu, Zn, and ractopamine-HCl on finishing pig growth performance, carcass characteristics, and antimicrobial susceptibility of enteric bacteria.
J. A. Feldpausch1, R. Amachawadi1, M. D. Tokach1, H. M. Scott2, S. S. Dritz1, T. G. Nagaraja1, R. D. Goodband1, J. C. Woodworth1, and J. M. DeRouchey1, 1Kansas State University, Manhattan, 2Texas A&M University, College Station

3:15 PM 158 Lactobacillus acidophilus fermentation product modulates inflammatory activity by regulating the TLR4 and NFkB expression in porcine peripheral blood mononuclear cells after lipopolysaccharide challenge.
S. I. Lee1, J. M. Koo2, R. X. Lan1, and I. H. Kim1, 1Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, 2Shinhana BioChem Co., Hwaseong, South Korea

3:30 PM 159 Effects of copper source and level on growth performance and bone mineralization in pigs fed phytase-supplemented diets.
R. Davin1, F. N. Almeida2, J. Zhao2, J. Escobar2, and M. Vázquez-Añón2, 1University of Missouri, Columbia, 2Novus International, Inc., St. Charles, MO
3:45 PM  160  The effect of feeding a phytogenic (Ambitine™FT) with and without added copper on late finishing pig performance.  
S. A. Crowder*, T. L. Weeden1, M. B. Lachmann Sevilla1, B. De Rodas1, and T. P. Karnezos2, 1Purina Animal Nutrition LLC, Shoreview, MN, 2PMI Nutritional Additives, Shoreview, MN

4:00 PM  161  Effects of fiber, a direct-fed microbial, and feeding duration on ileal and total tract digestibility of energy and nutrients by pigs.  
N. W. Jaworski*, M. C. Walsh, and H. H. Stein, 1University of Illinois at Urbana-Champaign, 2Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom

4:15 PM  162  Improved growth performance of nursery pigs fed diets supplemented with a Bacillus subtilis-based direct-fed microbial feed additive.  
N. R. Augspurger*, J. D. Spencer1, S. Son2, J. A. Ley1, and M. R. King2, 1JBS United, Inc., Sheridan, IN, 2Microbial Discovery Group, Franklin, WI

4:30 PM  265  (Young Scholar) Evaluating the impact of maternal dietary vitamin D supplementation on sow performance, serum 25OHD3, and subsequent pig performance.  
J. R. Flohr*, J. R. Bergstrom2, J. C. Woodworth1, M. D. Tokach1, J. M. DeRouchey1, S. S. Dritz1, and R. D. Goodband1, 1Kansas State University, Manhattan, 2DSM Nutritional Products, Parsippany, NJ

NONRUMINANT NUTRITION: FEED MANUFACTURING

Chair: Omarh F. Mendozo, The Maschhoffs
316-317

1:30 PM  163  Utilizing feed sequencing to decrease the risk of porcine epidemic diarrhea virus (PEDV) cross-contamination during feed manufacturing.  
L. L. Schumacher*, R. A. Cochrane1, J. C. Woodworth1, A. R. Huss1, C. R. Stark1, C. K. Jones1, Q. Chen2, R. Main2, J. Zhang2, P. C. Gauger2, S. S. Dritz1, and M. D. Tokach1, 1Kansas State University, Manhattan, 2Iowa State University, Ames

1:45 PM  164  Evaluating the effect of manufacturing porcine epidemic diarrhea virus (PEDV)-contaminated feed on subsequent feed mill environmental surface contamination.  
L. L. Schumacher*, R. A. Cochrane1, C. E. Evans1, J. R. Kalivoda1, J. C. Woodworth1, A. R. Huss1, C. R. Stark1, C. K. Jones1, Q. Chen2, R. Main2, J. Zhang2, P. C. Gauger2, S. S. Dritz1, and M. D. Tokach1, 1Kansas State University, Manhattan, 2Iowa State University, Ames
To determine if hand held near infrared spectroscopy can be used to measure corn particle size, corn particle distribution and corn moisture.

A. Criado\textsuperscript{1*}, C. Piotrowski\textsuperscript{1}, P. Wilcock\textsuperscript{2}, C. L. Bradley\textsuperscript{1}, B. Haberl\textsuperscript{1}, and B. C. Smith\textsuperscript{3}, \textsuperscript{1}Aunir, Towcester, United Kingdom, \textsuperscript{2}AB Vista Feed Ingredients, Marlborough, United Kingdom, \textsuperscript{3}Iowa Select Farms, Iowa Falls

(Young Scholars) Effects of feed truck unloading and swine barn feed line location on pellet quality and nutrient segregation.

J. A. De Jong\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, R. D. Goodband\textsuperscript{2}, J. C. Woodworth\textsuperscript{1}, C. K. Jones\textsuperscript{1}, C. R. Stark\textsuperscript{1}, H. E. Williams\textsuperscript{1*}, L. McKinney\textsuperscript{2}, G. Smith\textsuperscript{2}, and B. Haberl\textsuperscript{3}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}DFS, Newell, IA, \textsuperscript{3}Iowa Select Farms, Iowa Falls

Effect of ground corn fractionation on flowability.

J. R. Kalivoda\textsuperscript{1*}, C. K. Jones, and C. R. Stark, Kansas State University, Manhattan

The evaluation of liquid disinfectants to reduce Salmonella contamination on animal food manufacturing surfaces.

M. B. Muckey\textsuperscript{1*}, A. R. Huss, and C. K. Jones, Kansas State University, Manhattan

REPRODUCTIVE PHYSIOLOGY

Chair: Patrick J. Gunn, Iowa State University
Sponsor: Elanco Animal Health

(Young Scholar) The effects of the nitric oxide (NO) system and nutritional plane on ovarian function in sheep.

C. Bass\textsuperscript{1*}, D. A. Redmer, and A. T. Grazul, North Dakota State University, Fargo

Rapid fluctuations in ambient temperature before conception reduce fetal viability in replacement gilts.

J. S. Johnson\textsuperscript{1*}, K. L. Martin\textsuperscript{2}, and K. R. Stewart\textsuperscript{2}, \textsuperscript{1}USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN, \textsuperscript{2}Purdue University, West Lafayette, IN

Gonadotropin-releasing hormone II receptor (GnRHR-II) knockdown reduces testis size and decreases testosterone secretion during pubertal development in swine.

A. T. Desaulniers\textsuperscript{1*}, R. A. Cederberg\textsuperscript{1}, G. A. Mills\textsuperscript{1}, C. A. Lents\textsuperscript{2}, and B. R. White\textsuperscript{1}, \textsuperscript{1}University of Nebraska-Lincoln, \textsuperscript{2}USDA, ARS, U.S. Meat Animal Research Center; Clay Center, NE
2:30 PM  328  Physiological characteristics of late puberty gilts administered P.G. 600.
E. B. Kennedy*, M. T. Knauer, and W. L. Flowers, North Carolina State University, Raleigh

2:45 PM  329  Effects of feeding melatonin during proestrus and early gestation in gilts and PI sows to minimize the effects of seasonal infertility.
L. Arend*, R. V. Knox, L. Greiner, A. Graham, and J. Connor, 1University of Illinois at Urbana-Champaign, 2Carthage Innovative Swine Solutions, LLC, Carthage, IL, 3Carthage Veterinary Service, Ltd, Carthage, IL

3:00 PM  330  (Young Scholar) Effect of inducing high or low progesterone concentrations during ovulatory follicle development on double ovulation and fertility of lactating dairy cows.
J. P. N. Martins*, D. Wang, N. Mu, A. P. Martini, G. F. Rossi, V. R. Martins, and J. R. Pursley, 1Department of Animal Science, Michigan State University, East Lansing, MI, 2Shuozhou Vocational and Technical College, Shuozhou City, China, 3Universidade Federal de Santa Maria, Santa Maria, Brazil, 4FCAV-UNESP, Jaboticabal, Brazil

3:30 PM  331  Reproducibility of heat stress susceptibility and future reproductive success during heat stress in pigs.

3:45 PM  332  Use of an electronic activity detection system to characterize estrus activity in crossbred beef heifers differing in follicle number.
4:00 PM 333  Influence of vaccination with an inactivated or modified live viral reproductive vaccine on reproductive parameters in beef cows.
G. A. Perry*, E. L. Larimore¹, M. R. Crosswhite², B. W. Neville³, V. Cortese⁴, R. F. Daly⁵, G. L. Stokka², J. C. Rodgers⁴, J. T. Seeger⁴, and C. R. Dahlen⁵, ¹Department of Animal Science, South Dakota State University, Brookings, ²Department of Animal Sciences, North Dakota State University, Fargo, ³Central Grasslands REC, North Dakota State University, Streeter, ⁴Beef Veterinary Technical Services, Zoetis, Florham Park, NJ, ⁵Department of Veterinary and Biomedical Sciences, South Dakota State University, Brookings


4:30 PM 335  (Young Scholar) Divergent VEGFA signaling determines spermatogonial stem cell fate.

RUMINANT NUTRITION
Chair: Kristen E. Hales, USDA - ARS
Sponsor: ADM Animal Nutrition
308-309

1:30 PM 354  A pragmatic challenge of total mixed ration: time to contemplate component feeding.
A. Nikkhah*, University of Zanjan, Zanjan, Iran

1:45 PM 355  Effects of wintering system on cow and calf performance in a summer-calving intensive production system.
S. E. Gardine*, J. M. Warner¹, C. J. Bittner¹, R. G. Bondurant¹, K. H. Jenkins², R. J. Rasby³, M. K. Luebbe², G. E. Erickson¹, and T. J. Klopfenstein¹, ¹University of Nebraska-Lincoln, ²University of Nebraska, Scottsbluff, ³Department of Animal Science, University of Nebraska-Lincoln

2:00 PM 356  Feeding microbially-enhanced soy protein in starter pellets to dairy calves.
N. D. Senevirathne*, J. L. Anderson, and W. R. Gibbons, South Dakota State University, Brookings
2:15 PM  357  Seasonal effects and husbandry practices on fat-soluble vitamin status of beef and dairy cows and their offspring. M. R. O’Neil¹, D. C. Beitz¹, and R. L. Stuart². ¹Iowa State University, Ames, ²Stuart Products Inc, Bedford, TX

2:30 PM  358  Effect of supplementing methionine hydroxy analog on beef cow performance, milk production and reproduction. A. R. Clements*, F. A. Ireland, and D. W. Shike, University of Illinois at Urbana-Champaign

2:45 PM  359  Effect of delayed wrapping and wrapping source on intake and digestibility of alfalfa silage in sheep. V. Niyigena¹, K. P. Coffey², W. K. Coblenz³, D. Philipp², A. N. Young¹, R. T. Rhein¹, and J. K. Clark¹. ¹Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, ²University of Arkansas, Division of Agriculture, Fayetteville, ³US Dairy Forage Research Center, Marshfield, WI

3:00 PM  360  Effect of winter distillers grains supplementation level on spayed heifer performance. R. G. Bondurant*, B. L. Nuttelman, C. J. Bittner, J. C. MacDonald, and T. J. Klopfenstein, University of Nebraska-Lincoln

3:15 PM  361  Effect of increasing protein and fat inclusion in the diet of beef cows during gestation and lactation on performance, milk production, pregnancy rate, and pre-weaning progeny growth. A. J. C. Nuñez*, R. P. Lemenager, K. R. Stewart, E. G. Taylor, and J. P. Schoonmaker, Purdue University, West Lafayette, IN

3:30 PM  362  Effects of enzymatically hydrolyzed yeast supplementation and supplementation frequency on nitrogen balance and apparent diet digestibility in periparturient beef cows. J. E. Swartz*, D. W. Brake¹, E. E. Grings¹, E. A. Nelson¹, C. L. Wright¹, J. A. Walker¹, E. J. Blom¹, and G. A. Perry². ¹South Dakota State University, Brookings, ²Department of Animal Science, South Dakota State University, Brookings

3:45 PM  363  Evaluation of rumen bacterial composition in Holstein and Jersey cows under similar dietary conditions using different sampling methods. H. A. Paz Manzano*, P. J. Kononoff, and S. C. Fernando, University of Nebraska-Lincoln
4:00 PM 364 The influence of grain source and dried corn distiller’s grains plus solubles oil concentration on finishing cattle performance and feeding behavior.
M. A. Rodenhuis*, F. E. Keomanivong¹, J. J. Gaspers¹, T. C. Gilbery¹, S. R. Underdahl¹, M. L. Bauer¹, V. L. Anderson¹, C. L. Engel¹, and K. C. Swanson¹, ¹North Dakota State University, Fargo, ²North Dakota State University, Carrington, ³North Dakota State University, Carrington Research Extension Center, Carrington

4:15 PM 337 Evaluation of the relative contribution of protein in distillers grains in finishing diets on performance and carcass characteristics.
Z. E. Carlson*, G. E. Erickson¹, J. C. MacDonald¹, and M. K. Luebbe², ¹University of Nebraska-Lincoln, ²University of Nebraska, Scottsbluff

4:30 PM 365 (Young Scholar) Impact of nutrition on the ruminal microbiome and epithelial tissue.
J. C. McCann*, F. C. Cardoso², E. Khafipour³, D. W. Shike², and J. J. Loor², ¹Texas A&M University, College Station, ²University of Illinois at Urbana-Champaign, ³Department of Medical Microbiology and Infectious Diseases, Winnipeg, MB, Canada

RUMINANT NUTRITION SYMPOSIUM
Chair: Phil Cardoso, University of Illinois at Urbana-Champaign
Sponsor: DSM Nutritional Products, Inc.
312-313

1:30 PM Welcome Remarks.

1:35 PM 391 Veterinary Feed Directive (VFD) and its practical considerations for the beef industry.

2:20 PM 392 Gut bacterial communities and their association with production parameters in beef cattle.
P. R. Myer*, J. E. Wells², T. P. L. Smith², L. A. Kuehn², and H. C. Freetly², ¹The University of Tennessee Institute of Agriculture, Knoxville, ²USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

3:05 PM 393 Alternatives to antibiotics.
J. P. Schoonmaker*, Purdue University, West Lafayette, IN
NONRUMINANT NUTRITION: SOW/BOAR
Chair: Luis Ochoa, Carthage Innovative Swine Solutions, LLC
Sponsor: JBS United, Inc.
316-317

3:15 PM  260  (Young Scholar) Insights into nutrient inputs that affect the initiation of bone lesions in pigs.
L. A. Amundson*, University of Wisconsin-Madison

3:45 PM  261  The evaluation of increasing lysine or feed amounts in late gestation on piglet birth weights.
L. Greiner1*, A. Graham1, K. J. Touchette2, and C. R. Neill3,
1Carthage Innovative Swine Solutions, LLC, Carthage, IL, 2Ajinomoto Heartland, Inc., Chicago, IL, 3Genus PIC, Hendersonville, TN

4:00 PM  262  Effect of natural betaine on estimates of semen quality in mature AI boars during summer heat stress.
F. A. Cabezon1*, K. R. Stewart1, A. P. Schinckel1, B. Barnes2, R. D. Boyd3, P. Wilcock4, and J. Woodliff3,
1Purdue University, West Lafayette, IN, 2The Hanor Company Inc, Franklin, KY, 3The Hanor Company, Franklin, KY, 4AB Vista, Plantation, FL

4:15 PM  263  Effect of betaine supplementation during summer on sow lactation performance and subsequent farrowing performance.
F. A. Cabezon1*, A. P. Schinckel1, B. T. Richert4, K. R. Stewart4, M. Gandarillas2, and W. A. Peralta3,
1Purdue University, West Lafayette, IN, 2Universidad Austral de Chile, Valdivia, Chile, 3Agrícola Super Ltda, Rancagua, Chile

4:30 PM  264  Effect of altered lysine : energy ratio during gestation on wean pig growth performance.
A. Ampaire* and C. L. Levesque, South Dakota State University, Brookings

4:45 PM  266  Development of precision gestation feeding program using electronic sow feeders and effects on gilt performance.
R. Q. Buis*1, D. Wey1, and C. F. M. de Lange2,
1Department of Animal Biosciences, University of Guelph, ON, Canada, 2University of Guelph, ON, Canada
ANIMAL BEHAVIOR, HOUSING AND WELL-BEING

Chair: Jennifer A. Brown, Prairie Swine Centre

8:30 AM 14 The effect of temperament on pork quality.

8:45 AM 15 Development of equations to predict the influence of floor space on ADG, ADFI, and G:F of finishing pigs.
J. R. Flohr*, J. C. Woodworth, M. D. Tokach, S. S. Dritz, J. M. DeRouchey, and R. D. Goodband, Kansas State University, Manhattan

9:00 AM 16 Evaluating the effects of floor space allowance and pig removal from a group on the growth of finishing pigs.
J. R. Flohr*, J. C. Woodworth¹, M. D. Tokach¹, S. S. Dritz¹, J. M. DeRouchey¹, R. D. Goodband¹, and G. Gourley², ¹Kansas State University, Manhattan, ²Gourley Research Group LLC, Webster City

9:15 AM 17 Effect of lameness on hock angles of replacement gilts.
J. M. Mumm*, K. J. Stalder, J. D. Stock, and J. A. Calderon Diaz, Department of Animal Science, Iowa State University, Ames

9:30 AM Break.

9:45 AM 18 Understanding tail biters and victimized pigs during outbreaks of tail biting.
Y. Li*, J. Anderson², A. Holten², A. M. Hilbrands¹, J. Holen¹, and L. J. Johnston¹, ¹West Central Research and Outreach Center, University of Minnesota-Morris, ²University of Minnesota-Morris

10:00 AM 19 An assessment of swine marketed through buying stations and development of fitness for transport guidelines.
M. McGee¹, A. K. Johnson², A. M. O’Connor¹, K. R. Tupper¹,², and S. T. Millman¹,², ¹Department of Veterinary Diagnostic & Production Animal Medicine, Iowa State University, Ames, ²Iowa State University, Ames, ³Department of Biomedical Science, Iowa State University, Ames
10:15 AM 20  Aversion to CO2 gas in pigs using approach-avoidance and
condition place avoidance paradigms.  
L. KC³, A. K. Johnson¹, T. A. Shepherd¹, J. P. Stinn¹, H. Xin¹,
K. J. Stalder³, L. A. Karriker³, M. A. Sutherland⁴, D. C. Lay Jr.³,
and S. T. Millman¹, ¹Iowa State University, Ames, ²Department
of Animal Science, Iowa State University, Ames, ³Swine
Medicine Education Center, Department of Vet Diagnostic &
Production Animal Medicine, Ames, ⁴AgResearch, Hamilton,
New Zealand, ⁵U.S. Dept of Agriculture, West Lafayette, IN

10:30 AM 21  (Young Scholar) Divergent selection for residual feed intake
alters pig behavioral reactivity to novel stimuli tests.  
J. D. Colpoys³, N. K. Gabler², S. T. Millman², and A. K.
Johnson², ¹Truman State University, Kirksville, MO, ²Iowa State
University, Ames

11:00 AM 22  Effects of transdermal flunixin meglumine on pain
biomarkers at dehorning.  
M. D. Kleinhenz³, N. Van Engen¹, P. J. Gorden¹, and J. F.
Coetzeé, ¹Veterinary Diagnostic and Production Animal
Medicine, Iowa State University, Ames, ²Pharmacology
Analytical Support Team, Iowa State University College of
Veterinary Medicine, Ames

EQUINE WELFARE SYMPOSIUM
Chair: Peggy A. Miller, Iowa State University  
Sponsor: Zinpro  
304-305

8:30 AM  Welcoming Remarks.

8:45 AM 52  Equine welfare in a competitive setting...what can 10+ years
of research by the Equitation Science community tell us?
(And what critical pieces are still missing?).  
C. R. Heleski³, Michigan State University, East Lansing

9:30 AM  Break.

9:40 AM 53  Equine welfare in a competitive setting: The human role.  
K. L. Waite, Ph. D.*, Michigan State University, East Lansing

10:25 AM 54  Perceptions of equine well-being in South Dakota.  
H. K. Carroll*, R. C. Bott, S. L. Mastellar, L. R. McNeill, and G.
D. Djira, South Dakota State University, Brookings

10:40 AM  Break.

10:50 AM  Discussion.

11:20 AM  Concluding Remarks.
SYMPOSIA AND ORAL SESSIONS / WEDNESDAY, MARCH 16, 2016

EXTENSION - SWINE
Chair: R. D. Goodband, Kansas State University
Sponsor: JBS United, Inc.
314-315

8:30 AM 74 Birth weight threshold for identifying piglets at-risk for pre-weaning mortality.  
J. A. Feldpausch*, J. Jourquin1, J. R. Bergstrom3, C. D. Bokenkroger4, J. L. Nelssen1, M. J. Ritter4, D. L. Davis1, and J. M. Gonzalez1, 1Kansas State University, Manhattan, 2Elanco, Antwerpen, Belgium, 3DSM Nutritional Products, Parsippany, NJ, 4Elanco Animal Health, Greenfield, IN

8:45 AM 73 Impact of piglet birth weight increase on survivability and days to market, a simulation model.  
J. Jourquin1, J. Morales2, and C. D. Bokenkroger1, 1Elanco, Antwerpen, Belgium, 2PigCHAMP Pro Europa, Segovia, Spain, 3Elanco Animal Health, Greenfield, IN

9:00 AM 75 Early predictors of puberty in gilts.  
G. M. See* and M. T. Knauer, North Carolina State University, Raleigh

9:15 AM 76 Using boar feeding patterns and classification trees to predict performance.  
C. E. Abell*, A. Prochaska, M. Anderson, and T. Rathje, DNA Genetics, Columbus, NE

9:30 AM 77 Enterobacteriaceae counts from livestock truck wash stations offering different service levels located in Iowa.  
A. M. Danielson1, S. Azarpajouh1, R. B. Baker2, C. J. Rademacher1, J. S. Dickson1, A. K. Johnson1, L. A. Karriker3, T. T. Bigelow1, and K. J. Stalder1, 1Department of Animal Science, Iowa State University, Ames, 2Department of Vet Diagnostic and Production Animal Medicine, Iowa State University, Ames, 3Swine Medicine Education Center, Department of Vet Diagnostic & Production Animal Medicine, Ames, IA, 4Iowa State University, Ames, 5USDA, APHIS, Des Moines, IA

9:45 AM 78 Probabilities of producing feed under nutrient threshold.  
L. Fabà1, D. Solà-Oriol2, L. Blavi2, M. Farré2, and J. Gasa2, 1Animal Nutrition and Welfare Service, Department of Animal and Food Science, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain, 2Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain, 3Department of Mathematics, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain., Bellaterra (08193), Spain
10:00 AM 79 Identification of the range of hock angles in replacement gilts.
J. M. Mumm$^1$, K. J. Stalder$^1$, J. D. Stock$^1$, J. C. M. Dekkers$^2$, and J. A. Calderon Diaz$^1$, $^1$Department of Animal Science, Iowa State University, Ames, $^2$Iowa State University, Ames

EXTENSION – BEEF/SMALL RUMINANT
Chair: J. E. Held, South Dakota State University
318-319

8:30 AM 164 Evaluation of distillers grains components singly or in combination for finishing calf feds.
R. A. Oglesbee$^1$, C. J. Bittner$^1$, F. H. Hilscher$^1$, G. E. Erickson$^1$, J. C. MacDonald$^1$, and M. K. Luebbe$^2$, $^1$University of Nebraska-Lincoln, $^2$University of Nebraska, Scottsbluff

8:45 AM 162 Determination of climatologically suitable places in Midwest for feedlot cattle production by using the comprehensive climate index model.
H. Koknaroglu$^1$, J. A. Harrington Jr$^2$, and T. L. Mader$^3$, $^1$Suleyman Demirel University, Isparta, Turkey, $^2$Kansas State University, Manhattan, $^3$Mader Consulting, LLC, Gretna, NE

9:00 AM 163 Breed and gender interact to affect the sale price of beef calves sold through video auctions from 2010 through 2014.
E. D. McCabe$^1$, M. E. King$^1$, K. E. Fike$^1$, K. L. Hill$^2$, G. M. Rogers$^3$, and K. G. Odde$^1$, $^1$Kansas State University, Manhattan, $^2$Merck Animal Health, Kaysville, UT, $^3$Grassy Ridge Consulting, Aledo, TX

9:15 AM 61 Perceptions of crop consultants and producers in Nebraska on grazing corn residue.
J. L. Cox$^1$, K. M. Ulmer$^1$, M. Rakkar$^2$, L. Franzen-Castle$^3$, H. Blanco-Canqui$^2$, M. E. Drewnoski$^1$, J. C. MacDonald$^1$, and R. J. Rasby$^1$, $^1$Department of Animal Science, University of Nebraska-Lincoln, $^2$Department of Agronomy and Horticulture, University of Nebraska-Lincoln, $^3$Department of Nutrition and Health Sciences, University of Nebraska-Lincoln
Nonruminant Nutrition: Grow/Finish II

Chair: William T. Oliver, USDA, ARS, U.S. Meat Animal Research Center; Ferdinando N. Almeida, Novus International, Inc.

306-307

8:30 AM 231 Superdosing phytase fed to mature boars improves semen concentration and reproductive efficiency.
K. R. Stewart¹, C. L. Bradley², P. Wilcock³, F. Domingues⁴, M. Kleve-Feld⁵, and J. Hundley⁵, ¹Purdue University, West Lafayette, IN, ²AB Vista Feed Ingredients, Marlborough, United Kingdom, ³PIC North America, Hendersonville, TN, ⁴PIC Deutschland GmbH, Hannover, Germany, ⁵Birchwood Genetics, West Manchester, OH

8:45 AM 232 Xylanase effects on apparent total tract digestibility of energy and dry matter with or without DDGS at 46, 54 and 70 kg bodyweight.
S. Weiland* and J. F. Patience, Iowa State University, Ames

9:00 AM 229 Amino acid digestibility in six sources of meat and bone meal fed to growing pigs.
D. M. D. L. Navarro*, N. W. Jaworski, and H. H. Stein, University of Illinois at Urbana-Champaign

9:15 AM 234 Effects of exogenous xylanase on digestibility of dry matter, organic matter, neutral detergent fiber, and energy and the concentrations of digestible and metabolizable energy in rice co-products fed to weanling pigs.
G. A. Casas*¹,² and H. H. Stein², ¹Universidad Nacional de Colombia, Bogota, Colombia, ²University of Illinois at Urbana-Champaign

9:30 AM 235 Xylanase solubilization of corn and wheat arabinoxylans in mixed growing pig diets subjected to upper gut in-vitro digestion and in ileal digesta.
M. C. Walsh¹, E. Kiarie², L. Romero³, and S. Arent⁴, ¹Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom, ²Department of animal biosciences, University of Guelph, Guelph, ON, Canada, ³Dupont Industrial biosciences - Danisco animal nutrition, Marlborough, United Kingdom, ⁴Dupont, Industrial Biosciences, Brabrand, Denmark

9:45 AM 236 Evaluating the efficacy of a novel phytase source.
J. R. Flohr*, J. M. DeRouchey, M. D. Tokach, S. S. Dritz, J. C. Woodworth, and R. D. Goodband, Kansas State University, Manhattan
10:00 AM 237  Effect of combined xylanase and phytase supplementation on growth performance, carcass characteristics, and apparent total tract digestibility in pigs fed corn-based diets containing multiple by-products.
Y. D. Jang, P. Wilcock, R. D. Boyd, and M. D. Lindemann,
University of Kentucky, Lexington, KY, AB Vista Feed Ingredients, Marlborough, United Kingdom, The Hanor Company, Inc., Franklin, KY

10:15 AM 238  Impact of super-dosing phytase in diets fed to 40 kg, 60 kg and 80 kg pigs on phytate catabolism.
C. L. Holloway, R. D. Boyd, C. L. Walk, and J. F. Patience,
Iowa State University, Ames, The Hanor Company, Franklin, KY, AB Vista, Marlborough, United Kingdom

10:30 AM 239  Impact on growth performance and carcass characteristics of “super-dosing” phytase in growing pig diets.
C. L. Holloway, R. D. Boyd, C. E. Zier-Rush, C. L. Walk, and J. F. Patience,
Iowa State University, Ames, The Hanor Company, Inc., Franklin, KY, AB Vista, Marlborough, United Kingdom

10:45 AM 240  The effect of microbial phytase on the apparent and standardized total tract digestibility of calcium in feed ingredients of animal origin.
L. A. Merriman, C. L. Walk, and H. H. Stein,
University of Illinois at Urbana-Champaign, AB Vista, Marlborough, United Kingdom

11:00 AM 241  Stability of commercial phytase products stored under different environmental conditions.
Kansas State University, Manhattan, AB Vista Feed Ingredients, Marlborough, United Kingdom, Maverick Nutrition, Fairmont, MN, DSM Nutritional Products, Parsippany, NJ

11:15 AM 242  Effect of a dry acidulant coating on the palatability of dry extruded dog food.
A. M. Jeffrey, G. C. Aldrich, A. R. Huss, C. J. Knueven, and C. K. Jones,
Kansas State University, Manhattan, Jones-Hamilton Co., Walbridge, OH

11:30 AM 243  Effects of a novel phytase on growth performance and metacarpal bone ash in weanling pigs.
Y. Liu, J. C. González-Vega, M. Vázquez-Añón, J. Zhao, J. Escobar, F. N. Almeida, and H. H. Stein,
University of Illinois at Urbana-Champaign, Novus International, Inc., St. Charles, MO
The feed enzyme xylanase improves finish pig viability and carcass feed efficiency.
C. E. Zier-Rush¹, C. Groom¹, M. Tillman¹, J. Remus², and R. D. Boyd¹, ¹The Hanor Company, Inc., Franklin, KY, ²Danisco Animal Nutrition, Spicer, MN

Xylanase responses on apparent ileal digestibility of nutrients, fibre and energy in growing pigs fed corn, 30% corn co-products and soybean meal based diets as influenced by microbial phytase and acclimatization period.
E. Kiarie¹, Y. Liu², M. C. Walsh¹, H. H. Stein², and L. Payling², ¹Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom, ²University of Illinois at Urbana-Champaign

NONRUMINANT NUTRITION: NURSERY PIGS
Chair: Crystal L. Levesque, South Dakota State University; Ryan S. Samuel, Alltech Inc.

Sources and routes of administration of copper and vitamins A and D on metabolic status of these micronutrients in suckling piglets.
J. J. Matte¹, I. Audet¹, B. Ouattara¹, N. Bissonnette¹, G. Talbot¹, J. Lapointe¹, F. Guay², L. Lo Verso¹, and M. Lessard¹, ¹Agriculture and Agri-Food Canada, Sherbrooke, QC, Canada, ²Universite Laval, Quebec City, QC, Canada

Effect of feeding protease at two soybean meal inclusion rates for nursery pigs.
L. Greiner¹, A. Graham¹, B. Knopf¹, L. Ochoa³, R. J. Harrell², and Y. Ma¹, ¹Carthage Innovative Swine Solutions, LLC, Carthage, IL, ²Professional Swine Management, Carthage, IL, ³Novus International Inc., St. Charles, MO

Sodium buffered formic acid improves sow and piglet performance when fed during lactation and the nursery periods.
J. A. Jendza⁴, X. Yang², H. Y. Chen³, A. Tekeste², and S. K. Baidoo³, ¹BASF Corp., Florham Park, NJ, ²Southern Research and Outreach Center, University of Minnesota, Waseca, ³BASF SE, Lampertheim, Germany
9:15 AM 249  High lactose pellets fed from 4 days of age convey lifetime benefits when compared to a standard pre-weaning diet.  
P. Toplis\*1, I. J. Wellock\*2, A. Stewart\*3, M. Bailey\*4, and L. Salmon\*5, 1AB Neo, Peterborough, United Kingdom, 2Primary Diets, Melmerby, United Kingdom, 3Harper Adams University, Newport, United Kingdom, 4Bristol Veterinary School, Bristol, United Kingdom, 5Premier Nutrition, Rugeley, United Kingdom

9:30 AM 250  Evaluation of bovine plasma in early nursery pig diets.  
L. Greiner\*1, A. Graham\*1, B. Knopf\*1, R. J. Harrell\*2, and J. Connor\*3, 1Carthage Innovative Swine Solutions, LLC, Carthage, IL, 2Professional Swine Management, Carthage, IL, 3Carthage Veterinary Service, Ltd, Carthage, IL

9:45 AM 251  Effect of a Lactobacillus acidophilus fermentation product and dietary antibiotics, alone or in combination, on nursery pig performance and frequency of medical treatment.  
J. Acosta\*1, J. W. Frank\*2, and J. F. Patience\*1, 1Iowa State University, Ames, 2Diamond V, Cedar Rapids, IA

10:00 AM 252  Oral Salmonella challenge alters feed preference in nursery pigs.  
N. C. Burdick Sanchez\*1, J. A. Carroll\*1, P. R. Broadway\*1, K. M. Yeater\*2, B. De Rodas\*3, D. Brown\*4, and S. D. Lawhon\*5, 1USDA-ARS, Livestock Issues Research Unit, Lubbock, TX, 2USDA-ARS Plains Area, Fort Collins, CO, 3Land O'Lakes, Gray Summit, MO, 4Purina Animal Nutrition Center, Gray Summit, MO, 5Department of Veterinary Pathobiology, Texas A&M University, College Station

10:15 AM 253  Digestibility of energy and lipids, and metabolic oxidation status in nursery pigs fed various lipids.  
S. C. Lindblom\*1, G. C. Shurson\*2, W. A. Dozier\*3, and B. J. Kerr\*4, 1Iowa State University, Ames, 2Department of Animal Science, University of Minnesota, St. Paul, 3Auburn University, Auburn, AL, 4USDA - ARS, Ames, IA

10:30 AM 254  Pigs inoculated with Porcine Epidemic Diarrhea Virus have decreased growth performance and tissue accretion compared with Controls after 42 days.  

10:45 AM 256  Determination of additivity of acid-binding capacity in diets.  
N. Lu\*1, P. Arnaut, and M. D. Lindemann, University of Kentucky, Lexington
11:00 AM 257 Effects of Porcine Reproductive Respiratory Syndrome (PRRS) status (stable vs active) on the performance of weaned pigs when fed either a complex diet, a simple diet or a simple diet with lactose.
M. R. Bible*, S. J. England, and F. B. Sandberg, Furst McNess Company, Freeport, IL

11:15 AM 258 Effects of supplementation with Aspergillus oryzae derived phytase (Ronozyme® HiPhos) and fiber degrading enzymes (Victus™ Swine Starter) on growth performance, intestinal morphology, leukocyte differential, and nutrient digestibility in nursery pigs.
J. R. Bergstrom*, T. C. Tsai, H. J. Kim, and C. V. Maxwell, 1DSM Nutritional Products, Parsippany, NJ, 2Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville

11:30 AM 259 Effect of rearing strategies during lactation on growth performance and the population of innate and adaptive immune cells in pigs from pre-weaning to market.
T. C. Tsai*, H. J. Kim, M. A. Sales, X. Wang, G. F. Erf, E. B. Kegley, F. G. Carbonero, M. van der Merwe, R. K. Buddington, and C. V. Maxwell, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2Department of Poultry Science, Division of Agriculture, University of Arkansas, Fayetteville, 3Department of Food Science, Division of Agriculture, University of Arkansas, Fayetteville, 4University of Memphis, TN

PHYSIOLOGY SYMPOSIUM
Chair: Patrick J. Gunn, Iowa State University
316-317

8:30 AM Welcoming Remarks.

8:35 AM 322 Fetal and postnatal nutritional programming of reproductive performance in ruminants.
R. A. Cushman*, M. Soares, M. Abedal-Majed, A. S. Cupp, G. A. Perry, and H. C. Freestly, 1USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, 2Federal University of Santa Maria, Santa Maria, Brazil, 3University of Nebraska-Lincoln, 4Department of Animal Science, South Dakota State University, Brookings
9:20 AM 323 Postnatal programming and reproductive development.  
F. F. Bartol\textsuperscript{1} and C. A. Bagnell\textsuperscript{2}, \textsuperscript{1}Auburn University, Auburn, \textsuperscript{2}Rutgers University, New Brunswick, NJ

10:05 AM 324 Recent advances in boar management.  
W. L. Flowers*, North Carolina State University, Raleigh

**Ruminant Nutrition: Feed Additives**  
Chair: Tara L. Felix, Pennsylvania State University  
302-303

8:30 AM 380 Effect of backgrounding system on feedlot performance and carcass characteristics of beef steers.  
J. L. Cox\textsuperscript{1}, K. E. Hales\textsuperscript{2}, K. M. Ulmer\textsuperscript{1}, R. J. Rasby\textsuperscript{1}, S. D. Shackelford\textsuperscript{2}, H. C. Freely\textsuperscript{2}, and M. E. Drewnoski\textsuperscript{1}, \textsuperscript{1}Department of Animal Science, University of Nebraska-Lincoln, \textsuperscript{2}USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE

8:45 AM 381 Effects of feeding rumen protected amino acids in finishing cattle diets on performance and carcass characteristics.  
C. R. Oney\textsuperscript{1}, A. K. Watson\textsuperscript{2}, C. J. Bittner\textsuperscript{1}, P. W. Rounds\textsuperscript{3}, F. H. Hilscher\textsuperscript{1}, T. J. Klopfenstein\textsuperscript{1}, and G. E. Erickson\textsuperscript{1}, \textsuperscript{1}University of Nebraska-Lincoln, \textsuperscript{2}Department of Animal Science, University of Nebraska-Lincoln, \textsuperscript{3}Kemin Industries, Inc., Des Moines, IA

9:00 AM 382 Effect of energy source, level, and sex on growth and performance of lambs.  
J. R. Jaborek\textsuperscript{1}, H. N. Zerby\textsuperscript{1}, and F. L. Fluharty\textsuperscript{2}, \textsuperscript{1}The Ohio State University, Columbus, \textsuperscript{2}The Ohio State University, Wooster

9:15 AM 383 Metabolic and body temperature responses to environmental conditions across seasons in finishing steers.  
B. M. Boyd\textsuperscript{1}, T. L. Mader\textsuperscript{2}, C. J. Bittner\textsuperscript{1}, D. B. Burken\textsuperscript{3}, F. H. Hilscher\textsuperscript{2}, G. Wijffels\textsuperscript{3}, J. B. Gaughan\textsuperscript{1}, M. L. Sullivan\textsuperscript{1}, A. J. Cawdell-Smith\textsuperscript{1}, and G. E. Erickson\textsuperscript{3}, \textsuperscript{1}University of Nebraska-Lincoln, \textsuperscript{2}Mader Consulting, LLC, Gretna, NE, \textsuperscript{3}The University of Queensland, Gatton, Australia

9:30 AM 384 The effect of feeding a yeast supplement or finely ground fiber during the summer on body temperature, performance, and blood metabolites of finishing steers.  
B. M. Boyd\textsuperscript{1}, T. L. Mader\textsuperscript{2}, C. J. Bittner\textsuperscript{1}, F. H. Hilscher\textsuperscript{1}, G. Wijffels\textsuperscript{3}, J. B. Gaughan\textsuperscript{1}, M. L. Sullivan\textsuperscript{1}, A. J. Cawdell-Smith\textsuperscript{3}, and G. E. Erickson\textsuperscript{1}, \textsuperscript{1}University of Nebraska-Lincoln, \textsuperscript{2}Mader Consulting, LLC, Gretna, NE, \textsuperscript{3}The University of Queensland, Gatton, Australia
9:45 AM 385  Effect of feeding a corn hybrid containing alpha amylase as dry rolled or high moisture corn on finishing performance and carcass characteristics.
M. L. Jolly-Breithaupt**, C. J. Bittner¹, D. B. Burken¹, G. E. Erickson¹, J. C. MacDonald¹, and M. K. Luebbe², ¹University of Nebraska-Lincoln, ²University of Nebraska, Scottsbluff

10:00 AM 386  Effect of a zinc injection on finishing performance and carcass characteristics of Limousin steers.
E. K. Niedermayer*, O. N. Genther-Schroeder, and S. L. Hansen, Iowa State University, Ames

10:15 AM 387  Impact on site and extent of digestion of feeding a corn hybrid containing alpha amylase in finishing cattle diets.
M. L. Jolly-Breithaupt**, J. L. Gramkow¹, G. E. Erickson¹, J. C. MacDonald¹, and M. K. Luebbe², ¹University of Nebraska-Lincoln, ²University of Nebraska, Scottsbluff

10:30 AM 388  An initial look at the nutrient requirements of heavy finishing steers.
N. Kenney-Rambo*¹ and A. DiCostanzo², ¹University of Minnesota, St. Paul, MN, ²University of Minnesota, Saint Paul

10:45 AM 389  Antimicrobial resistance in direct-fed microbials used in cattle.
F. Giok**, D. Pillai¹, G. Peterson², and S. Narayanan¹, ¹Kansas State University, Manhattan, ²University of Kansas, Lawrence

11:00 AM 390  Impact of metabolizable protein source on performance and carcass quality in finishing cattle fed dry-rolled corn-based diets.
M. R. Fiene*, D. W. Brake, and M. R. McDaniel, South Dakota State University, Brookings

11:15 AM 338  Enhancing the feeding value of corn residues to improve beef cattle production.
P. H. V. Carvalho*, W. T. Meteer¹, A. R. Schroeder¹, A. DiCostanzo², T. L. Felix¹, ¹University of Illinois at Urbana-Champaign, ²University of Minnesota, Saint Paul

11:30 AM 339  Effects of supplement type and forage quality on ruminal metabolism and diet digestibility of cattle.
M. R. Stierwalt¹, H. M. Blalock², T. L. Felix¹, ¹University of Illinois at Urbana-Champaign, ²Quality Liquid Feeds, Dodgeville, WI
TEACHING SYMPOSIUM:
EVOLVING THE ANIMAL SCIENCE CURRICULUM
Chair: Bryon R. Wiegand, University of Missouri

8:30 AM  Welcoming Remarks.

8:35 AM  Evaluation and subsequent modification of a traditional, land grant animal sciences curriculum.
T. A. Strauch*, M. J. Crosby, A. M. Meyer, M. F. Smith, and B. R. Wiegand, University of Missouri, Columbia

9:05 AM  Changing animal science curriculum at a non-land grant university.
J. W. Rickard*, Illinois State University, Normal

9:35 AM  Break.

9:50 AM  The next generation of animal science students: changing demographics dictate curriculum changes.
J. A. Sterle* and H. D. Tyler, Iowa State University, Ames

10:20 AM  An administrator’s perspective on meeting changing curriculum needs with limited resources.
G. P. Lardy*, North Dakota State University, Fargo

10:50 AM  Panel Discussion.

11:05 AM  Evaluation of case-based reasoning to promote learning and swine industry interest in an undergraduate reproductive physiology course.
A. T. Desaulniers*, R. M. McFee, and B. R. White, University of Nebraska-Lincoln

11:20 AM  Integrating experiential learning into animal science curriculum through a hands-on beef cattle management and marketing contest.
C. J. Malone*, J. W. Rickard, and K. W. Tudor, Illinois State University, Normal
GRADUATE STUDENT POSTER COMPETITION-M.S

114 S01 Alterations of the rumen bacterial and archaeal communities in growing and finishing beef cattle and its effects on methane emissions. A. L. Knoell*, C. L. Anderson, A. C. Pesta, G. E. Erickson, T. J. Klöffenstein, and S. C. Fernando, University of Nebraska-Lincoln


116 S03 Improving the feeding value of corn stover to enhance cattle performance in a backgrounding phase. K. Nenn*, P. H. V. Carvalho2, E. Mousel3, G. A. Bridges3, S. L. Bird3, T. L. Felix2, and A. DiCostanzo1, 1University of Minnesota, Saint Paul, 2University of Illinois at Urbana-Champaign, 3University of Minnesota, Grand Rapids

117 S04 Effect of milk yield genotype on lipidomic profiles of multiparous Holstein cows during the first 9-weeks of lactation. F. Ding*, G. T. Cousillas2, W. J. Weber2, B. A. Crooker2, and C. Chen1, 1Department of Food Science and Nutrition, University of Minnesota, St. Paul, 2Department of Animal Science, University of Minnesota, St. Paul

118 S05 Mob grazing effects on cattle performance in Southeast Arkansas. H. L. Bartimus1,2, T. G. Montgomery3, D. Philipp1, J. Cater1, K. P. Coffey1, and B. C. Shanks2, 1University of Arkansas, Division of Agriculture, Fayetteville, AR, 2Lincoln University, Jefferson City, 3University of Arkansas-Monticello

119 S06 Cortisol agonist improves growth performance and subsides systemic inflammation in newly weaned pigs. H. Wooten*, J. J. McGlone3, M. Wachtel2, and A. Rakhshandeh1, 1Texas Tech University, Lubbock, 2Texas Tech University Health Sciences Center, Lubbock
140  S07  Effects of M. hyopneumoniae vaccination program and water-delivered antibiotic programs on growth performance and morbidity and mortality in wean-to-finish pigs.
N. M. Stas¹, M. Ellis¹, J. E. Estrada¹, B. A. Peterson², C. M. Shull², E. Parr³, and C. Johnson¹, ¹University of Illinois at Urbana-Champaign, ²The Maschhoffs, LLC, Carlyle, IL

141  S08  Effects of Reduced-Fat Modified Distillers Grains with Solubles in Finishing Diets of Feedlot Steers on Carcass Characteristics, Fresh and Processed Beef Quality.
M. A. Nelson*, C. Fehrman, A. A. Hohertz, A. DiCostanzo, and R. B. Cox, University of Minnesota, Saint Paul

142  S09  Diets with organic trace minerals Bioplex®) and yeast Protein (NuPro®) improved the water-holding capacity of pork loin meat.
R. M. Delles¹, A. Naylor², A. Kocher², K. A. Dawson¹, and R. S. Samuel¹, ¹Center for Animal Nutrigenomics and Applied Animal Nutrition, Alltech Inc., Nicholasville, KY, ²Alltech Australia, Roseworthy, Australia

143  S10  Predicting pork color scores using machine vision and support vector machine technologies.

144  S11  Using machine vision technology to determine pork intramuscular fat percentage.

145  S12  Cutability, nutrient content, and comparison of harvested big game species at progressive stages of processing.
D. D. Reed*, E. P. Berg, M. J. Marchello, W. D. Slanger, and P. T. Berg, North Dakota State University, Fargo

146  S13  Use of plasma orosomucoid in newborn piglets to predict pre-weaning growth performance and its potential mechanism of action.
T. G. Ramsay¹, L. A. Blomberg¹, J. L. Vallet², and T. J. Caperna¹, ¹USDA, ARS, BARC, Beltsville, MD, ²USDA, ARS, US MARC, Clay Center, NE
Effects of feeding calcium hydroxide treated corn stover during backgrounding on carcass characteristics and beef quality.
C. Fehrman*, E. Mousel, A. DiCostanzo, and R. B. Cox, University of Minnesota, Saint Paul, University of Minnesota, Grand Rapids

Effects of late gestational cow tall fescue forage system on steer offspring carcass characteristics.

Evaluation of glycated albumin as a metabolic marker for marbling in commercial feeder cattle.
M. Alkhuriji*, S. Vetter, K. C. Swanson, and E. P. Berg, North Dakota State University, Fargo

A technique to ovariohysterectomize cattle for use in gestational research.
K. J. McLean*, C. R. Dahlen, P. P. Borowicz, L. P. Reynolds, B. W. Neville, and J. S. Caton, North Dakota State University, Fargo, Center for Nutrition and Pregnancy, Fargo, ND, Central Grasslands REC, North Dakota State University, Streeter

Relationship between ovarian reserve and preovulatory estradiol during a fixed-time ai protocol in beef heifers.
M. Soares*, R. A. Cushman, E. J. Northrop, E. L. Larimore, and G. A. Perry, Federal University of Santa Maria, Santa Maria, Brazil, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE, Department of Animal Science, South Dakota State University, Brookings, Department of Animal Science, South Dakota State University, Brookings

Does sampling time matter? Relationships of circulating metabolites at various neonatal sampling times in beef calves.
J. M. Larson*, B. L. Vander Ley, S. M. Bolen, N. B. Duncan, and A. M. Meyer, Division of Animal Sciences, University of Missouri, Columbia, Department of Veterinary Medicine and Surgery, University of Missouri, Columbia, University of Missouri, Columbia

Relationships between pig birth weight and expression of the immediate early gene EGR-1 in umbilical cord Wharton's jelly.
J. M. Morton*, T. Rathbun, and D. L. Davis, Kansas State University, Manhattan
Impact of cyclical heat stress during follicular development on ovarian TLR4, PI3K and steroidogenic proteins in synchronized post-pubertal gilts.
A. A. Al-Shaibi*, B. J. Hale, C. L. Hager, J. W. Ross, L. H. Baumgard, and A. F. Keating, Iowa State University, Ames

The protective effects of Butipearl™ Z during heat stress as measured through in vitro studies with swine intestinal epithelial cells and an in vivo swine trial.
V. Mani*, J. K. Rubach1, D. A. Koltes2, N. K. Gabler3, and M. J. Poss1, 1Kemin Industries, Des Moines, IA, 2University of Arkansas, Fayetteville, 3Iowa State University, Ames

Effect of hot temperature and drinker type on growth performance of and water disappearance by growing-finishing pigs.
K. Vande Pol*, N. S. Grohmann1, T. E. Weber2, M. J. Ritter2, and M. Ellis1, 1University of Illinois at Urbana-Champaign, 2Elanco Animal Health, Greenfield, IN

Effects of room temperature on ear surface temperature of late-finishing pigs.
M. Hayes*, K. Vande Pol1, T. E. Weber2, M. J. Ritter2, and M. Ellis1, 1University of Illinois at Urbana-Champaign, 2Elanco Animal Health, Greenfield, IN

Characterizing body temperature and movement differences at the onset of estrus in replacement gilts.
K. A. Shade*, K. R. Stewart2, and J. S. Johnson1, 1USDA-ARS Livestock Behavior Research Unit, West Lafayette, IN, 2Purdue University, West Lafayette, IN

The effects of nursery environmental enrichments on subsequent finishing hogs.
D. J. Shawk*, P. L. Deeter, and B. D. Whitaker; The University of Findlay, OH

Effects of PMSG dosage on reproductive performance of farm-raised whitetail deer.
W. M. Haslag1, B. C. Shanks1, J. D. Caldwell2, D. R. Hill3, and N. L. Forsythe3, 1Department of Agriculture and Environmental Science, Lincoln University, Jefferson City, MO, 2Purina Animal Nutrition Center LLC, Gray Summit, MO, 3Oak Creek Whitetail Ranch, Bland, MO
418 S29  Corpus luteum blood flow correlation with circulating progesterone during the bovine estrous cycle. 
A. Egloff*, Purdue University, West Lafayette, IN

419 S30  Effects of diets containing psyllium seed husks on carcass composition, fatty acid profile, and cholesterol of rabbits. 
K. M. Jones*1, B. C. Shanks1, J. D. Caldwell2, J. A. Apple3, B. R. Wiegand4, L. S. Wilbers1, T. M. Johnson2, A. L. Bax1, C. L. Thomas1, K. L. Basinger1,3, and J. W. S. Yancey1. 1Department of Agriculture and Environmental Science, Lincoln University, Jefferson City, MO, 2Purina Animal Nutrition Center LLC, Gray Summit, MO, 3Department of Animal Science, University of Arkansas, Fayetteville, 4University of Missouri, Columbia

POSTER SESSION II
Grand Ballroom – Foyer
Presentation Time: 5:00 pm – 5:45 pm

GRADUATE STUDENT POSTER COMPETITION-PH.D

120 S01  Characterization of nutrient content, yield, and gross return to cattle feeding at three corn crop endpoints.  
H. E. Larson*1, A. A. Hohertz, M. Lostetter2, and A. DiCostanzo, 1University of Minnesota, St. Paul, 2University of Minnesota Rosemount Research and Outreach Center, Rosemount

121 S02  Carcass gain, efficiency, quality, and profitability in steers at extended days on feed.  
R. G. Bondurant*1, J. C. MacDonald1, G. E. Erickson1, K. Brooks1, K. W. Bruns2, and R. N. Funston3, 1University of Nebraska-Lincoln, 2University of Nebraska-Lincoln, West Central Research & Extension Center, North Platte, 3University of Nebraska, North Platte

122 S04  Weaned pig responses to Escherichia coli lipopolysaccharide challenge when receiving dietary yeast-based nucleotides.  
S. M. Waititu1, M. C. Nyachoti1, F. Yin1, R. Patterson2, and J. C. Rodriguez-Lecompte3, 1University of Manitoba, Winnipeg, MB, Canada, 2Canadian Biosystems, Calgary, AB, Canada, 3University of Prince Edward Island, Charlottetown, PE, Canada
Dietary lysine affected the expression of genes related to ubiquitin-proteasome protein degradation pathway in skeletal muscle of finishing pigs.
T. Wang*, N. Regmi, J. M. Feugang, M. A. Crenshaw, J. R. Blanton, and S. F. Liao, Mississippi State University, Mississippi State

Impacts of early weaning and winter feeding strategy on cow-calf performance.
J. J. Kincheloe*, K. C. Olson*, P. S. Johnson*, R. N. Gates¹, D. Landblom², H. A. Richter³, and A. V. Grove⁴, ¹South Dakota State University, Rapid City, ²North Dakota State University, Dickinson, ³Natural Resources Conservation Service, Pierre, SD, ⁴AG Research, LLC, White Sulphur Springs, MT

Influence of growing phase feed efficiency classification on finishing phase growth performance and carcass characteristics of beef steers fed different diet types.
J. R. Russell*, E. L. Lundy¹, N. O. Minton², W. J. Sexten², M. Kerley², and S. L. Hansen¹, ¹Iowa State University, Ames, ²University of Missouri, Columbia

Effects of grinding corn through a 2-, 3-, or 4-high roller mill on milling characteristics, and finishing pig growth performance and carcass characteristics.
J. T. Gebhardt*, M. D. Tokach¹, J. C. Woodworth¹, J. M. DeRouchey¹, R. D. Goodband¹, K. F. Coble², C. R. Stark¹, C. K. Jones¹, and S. S. Dritz¹, ¹Kansas State University, Manhattan, ²New Fashion Pork, Jackson, MN

Effects of lactic acid bacteria complex and Enterococcus faecium DSM 7134 in weanling pigs.
P. Y. Zhao*, H. N. Tran, H. Y. Shin, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

Effects of complex direct-fed microbial supplementation in different basal diets on growth performance, nutrient digestibility, blood profiles, fecal microbial shedding and noxious gas emission in growing pigs.
W. C. Liu¹, Y. H. Kim¹, M. G. Jung¹, J. H. Cho², and I. H. Kim¹, ¹Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, ²Department of Animal Science, Chungbuk National University, Cheongju, South Korea
C. L. Levesque*, S. Jalukar, S. Gould, and J. F. Patience, 1South Dakota State University, Brookings, 2Arm and Hammer Animal Nutrition, Mason City, IA, 3Iowa State University, Ames

172 S12  Tri-strain probiotics improves performance, excreta microbial shedding and reduces noxious gas emission in broilers.  
M. M. Hossain*, M. Begum, J. H. Cho, Y. H. Kim, and I. H. Kim, 1Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, 2Department of Animal Science, Chungbuk National University, Cheongju, South Korea

173 S13  Potentials of probiotics B. subtilis RX7 and B. methylotrophicus C14 strains as an alternative to antibiotics in Salmonella challenged weaning pigs.  
S. D. Upadhaya*, S. Mohana Devi, S. I. Lee, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

174 S14  Efficacy of probiotics B. subtilis RX7 and B. methylotrophicus C14 strains as an alternative to antibiotics in weaned pigs.  
S. D. Upadhaya*, W. C. Liu, Y. H. Liu, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

175 S15  Effects of Lactobacillus acidophilus fermentation product on growth performance, nutrient digestibility, and fecal microbiota in weanling pigs.  
R. X. Lan*, J. M. Koo, S. I. Lee, J. H. Cho, and I. H. Kim, 1Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, 2Shinhan BioChem Co., Hwaseong, South Korea, 3Department of Animal Science, Chungbuk National University, Cheongju, South Korea

176 S16  The effects of feeding 15 or 30 ppm of narasin on the growth performance of pigs during the grower period.  
R. A. Arentson*, S. Fry, T. A. Marsteller, and E. L. Christianson, 1Elanco, Greenfield, IN, 2Elanco Animal Health, Greenfield, IN

177 S17  Determining the impact of By-O-Reg+ in diets with or without feed grade antibiotic on growth performance of nursery pigs.  
L. L. Thomas*, J. C. Woodworth, R. D. Goodband, J. M. DeRouchev, M. D. Tokach, and S. S. Dritz, Kansas State University, Manhattan
178 S18 Evaluation of porcine IPEC-J2 cell line immune response to escherichia coli (0111:B4) lipopolysaccharide.  
* X. Wang, T. C. Tsai, M. A. Sales, C. V. Maxwell, K. Novak, and E. Davis, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, 2DuPont Nutrition and Health, Waukesha, WI, 3Danisco A/S, Waukesha, WI

179 S19 Effect of topsoil exposure during lactation on subsequent performance and abundance of innate and adaptive immune cells in pigs.  
* T. C. Tsai, H. J. Kim, M. A. Sales, X. Wang, G. F. Erf, E. B. Kegley, F. G. Carbonero, M. van der Merwe, R. K. Buddington, and C. V. Maxwell, 1Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, AR, 2Department of Poultry Science, Division of Agriculture, University of Arkansas, Fayetteville, 3Department of Food Science, Division of Agriculture, University of Arkansas, Fayetteville, 4University of Memphis, TN

180 S20 Effect of a 3-strain bacillus-based direct-fed microbial on relative tissue gene expression in nursery and finishing pigs fed low- or high-fiber diets.  
* N. W. Jaworski, M. C. Walsh, and H. H. Stein, 1University of Illinois at Urbana-Champaign, 2Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom

UNDERGRADUATE STUDENT POSTER COMPETITION II

420 S21 Electrical impedance correlations to pork quality.  
* S. B. Schauunaman, J. M. Young, X. Sun, J. H. Liu, L. A. Bachmeier, R. Somers, and D. J. Newman, North Dakota State University, Fargo

421 S22 Development of an imaging technique using clinical CT-scans to detect osteochondritic-like lesions in femoral growth plates of growing pigs.  

422 S23 Evaluation of perennial switchgrass as a replacement for corn-stalks in high sulfur beef cattle diets.  
* A. K. Reis, R. Ostrem, K. J. Heiderscheit, O. N. Genther-Schroeder, C. A. Clark, D. D. Loy, and S. L. Hansen, 1Iowa State University, Ames, 2Armstrong Memorial Research and Demonstration Farm, Iowa State University, Lewis
423  S24  College student perceptions of animal welfare and production agriculture practices at a small historical black university.  
  J. D. Rippeto\textsuperscript{1}, K. A. Cash\textsuperscript{1}, B. C. Shanks\textsuperscript{1}, J. D. Caldwell\textsuperscript{2}, and M. S. Aruguete\textsuperscript{1}, \textsuperscript{1}Lincoln University, Jefferson City, MO, \textsuperscript{2}Purina Animal Nutrition Center, Grays Summit, MO

424  S25  Effects of level of soybean meal and Yucca schidigera addition to diets on growth performance of nursery pigs.  
  C. V. Cooper\textsuperscript{*}, S. D. Carter, S. Schaaf, and S. L. Becker, Oklahoma State University, Stillwater

427  S25  Relationship of frame size and body measurements with feed efficiency traits in heifers.  
  C. R. Kuehl\textsuperscript{*}, A. B. P. Fontoura, F. E. Keomanivong, C. R. Dahlen, K. Ringwall, K. A. Vonnahme, L. L. L. H. Hanna, and K. C. Swanson, North Dakota State University, Fargo

425  S27  Effects of foliar fungicide application on the growing corn plant.  
  K. Robinson\textsuperscript{*1}, C. Kalebich\textsuperscript{1}, G. M. Fellows\textsuperscript{2}, and F. C. Cardoso\textsuperscript{1}, \textsuperscript{1}University of Illinois at Urbana-Champaign, \textsuperscript{2}BASF Corporation, Research Triangle Park, NC

426  S28  Determine nutritional and anti-parasitic benefits of Cleome gynandra for goats.  
  J. Kirk\textsuperscript{*1}, R. Lawrence\textsuperscript{2}, O. Gekara\textsuperscript{2}, J. Onyilagha\textsuperscript{2}, and U. Adamu\textsuperscript{2}, \textsuperscript{1}University of Arkansas At Pine Bluff, Pine Bluff, \textsuperscript{2}University of Arkansas at Pine Bluff
NONRUMINANT NUTRITION II

181 S01 Effects of standardized ileal digestible isoleucine and valine:lysine ratio on growth performance of 12 to 25 kg nursery pigs.

182 S02 Use of wheat gluten as an alternative protein source in nursery diets.
C. M. De Mille*, D. J. Bloxham, C. R. Dove, S. Bassi, and M. J. Azain, 1University of Georgia, Athens, GA, 2Manildra Group USA, Shawnee Mission, KS

183 S03 Interactive effect of dietary fermented corn and nutrient density of diets on growth performance, nutrient digestibility, ileal microorganisms and fecal noxious gas emission in growing pigs.
H. L. Li*, P. Y. Zhao, J. H. Park, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

184 S04 Interactive effect of dietary fermented oat and density of diets on growth performance, nutrient digestibility, and ileal microorganisms in weaning pigs.
H. L. Li*, T. S. Li, J. H. Cho, S. Kathannan, and I. H. Kim, 1Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, 2Department of Animal Science, Chungbuk National University, Cheongju, South Korea

185 S05 Evaluation of SID lysine to energy ratio based on NRC or National Swine Nutrition Guide on pig performance.
X. Yang*, A. Tekeste, D. P. Pangeni, H. Manu, P. Ren, and S. K. Baidoo, Southern Research and Outreach Center, University of Minnesota, Waseca
Effects of dietary tryptophan:lysine ratio on the reproductive performance of primiparous and multiparous lactating sows. Z. Fan1,2,3, X. Yang1, J. Kim1, D. Menon1, and S. K. Baidoo1, 1Southern Research and Outreach Center, University of Minnesota, Waseca, 2Institute of Animal Nutrition, Hunan Agricultural University, Changsha, China, 3State Key Laboratory of Animal Nutrition, Beijing, China

Effects of dietary inclusion level of distillers dried grains with solubles (DDGS) and high-protein distillers dried grains (HP-DDG) on the growth performance and carcass characteristics of wean-to-finish pigs. A. Rojo1, M. Ellis1, E. B. Gaspar1, A. M. Gaines2, B. A. Peterson2, F. K. McKeith1, and J. Killefer1, 1University of Illinois at Urbana-Champaign, 2The Maschhoffs, LLC, Carlyle, IL

Effects of low dietary inclusion levels of soybean meal and non-essential amino acid supplementation on the growth performance of late-finishing pigs. A. Rojo1, M. Ellis1, E. B. Gaspar1, A. M. Gaines2, F. K. McKeith1, and J. Killefer1, 1University of Illinois at Urbana-Champaign, 2The Maschhoffs, LLC, Carlyle, IL

Effect of dietary inclusion level of high-protein distillers grains (HP-DDG) and of dietary excesses of branched chain amino acids (BCAA) on the growth performance of pigs. A. Rojo1, M. Ellis1, E. B. Gaspar1, A. M. Gaines2, F. K. McKeith1, and J. Killefer1, 1University of Illinois at Urbana-Champaign, 2The Maschhoffs, LLC, Carlyle, IL

Efficacy of soybean meal in reducing the effects of a PRRSv challenge in weaned pigs. M. R. Fiene* and R. C. Thaler, South Dakota State University, Brookings

Impact of dietary protein and dried citrus pulp contents on gut morphology of weaning pigs. V. V. Almeida1, A. J. C. Nuñe1, P. V. A. Alvarenga1, F. R. Castelini2, Y. V. Silva-Guillen2, and M. C. Thomaz1, 1Department of Animal Sciences, Purdue University, West Lafayette, IN, 2Department of Animal Science, São Paulo State University, Jaboticabal/SP, Brazil

High inclusion of distillers dried grains with solubles as a dietary fiber source reduces cytokine levels in growing-finishing pigs. M. Ferrandis Vila*, Z. Huang, P. E. Urriola, G. C. Shurson, and M. Saqui-Salces, Department of Animal Science, University of Minnesota, St. Paul
193 S13  Total body amino acid composition of two genetic lines of barrows and gilts from twenty to one hundred twenty-five kilograms of body weight.

P. Xue*, A. P. Schinckel¹, O. Adeola², T. Wiseman³, and D. C. Mahan⁴,
¹Purdue University, West Lafayette, IN, ²Department of Animal Sciences, Purdue University, West Lafayette, IN, ³Ohio State University Extension Perry County, Somerset, ⁴The Ohio State University, Delaware

194 S14  Supplementation of feed grade essential and non-essential amino acids to control levels in pigs fed reduced crude protein (RCP) diets meeting the SID His:Lys ratio requirement maintained growth performance and carcass composition in growing/finishing swine.

C. V. Maxwell*, T. C. Tsai¹, H. J. Kim¹, J. K. Apple², K. J. Touchette³, and J. J. Chewning⁴, ¹Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, ²Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, ³Ajinomoto Heartland, Inc., Chicago, IL, ⁴Swine Research Services, Inc., Springdale, AR

195 S15  Effect of energy restriction on feed efficiency, nutrient digestibility, and immune biomarkers of growing/finishing pigs.

S. M. Barnett*, K. C. Moore, M. D. Trenhaile, A. T. Desaulniers, Y. S. Li, D. M. van Sambeek, H. Tran, B. R. White, and T. E. Burkey, University of Nebraska-Lincoln

196 S16  Effects of feed grade L-methionine on intestinal redox status, intestinal development, and growth performance of turkey pouls compared with conventional DL-methionine.


197 S17  Diet nutrient digestibility and growth performance of weaned pigs fed chickpea.

Y. Han*, L. F. Wang¹, E. Beltranena², and R. T. Zijlstra³, ¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada, ²Alberta Agriculture and Forestry, Edmonton, AB, Canada

198 S18  Effects of aggressive feed-grade amino acid supplementation in reduced CP diets formulated on ME or NE basis on growth performance of nursery pigs.

H. J. Kim*, T. C. Tsai¹, J. J. Chewning², J. K. Apple³, K. J. Touchette⁴, J. E. Thomson⁵, J. Less⁶, and C. V. Maxwell⁷, ¹Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, ²Swine Research Services, Inc., Springdale, AR, ³Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, ⁴Ajinomoto Heartland, Inc., Chicago, IL, ⁵Evonik Degussa Corp, Kennesaw, GA, ⁶ADM Animal Nutrition, Decatur, IL
199 S19  Effect of fish meal source on nursery pig performance.  
A. M. Jones*, J. C. Woodworth, R. D. Goodband, M. D. Tokach, S. S. Dritz, and J. M. DeRouchey, Kansas State University, Manhattan

200 S20  Effect of corn germ meal inclusion level on the growth performance and carcass characteristics of wean-to-finish pigs.  
J. E. Estrada¹¹, M. Ellis¹, A. M. Gaines², B. A. Peterson², and O. F. Mendoza³, ¹University of Illinois at Urbana-Champaign, ²The Malschhoifs, LLC, Carlyle, IL

201 S21  Lysine requirement titration for barrows and gilts from 25- to 75-kg.  
J. L. Landero¹, M. G. Young¹, K. J. Touchette², M. J. Stevenson³, A. B. Clark⁴, M. A. D. Gonçalves⁴, and S. S. Dritz⁴, ¹Gowans Feed Consulting, Wainwright, AB, Canada, ²Ajinomoto Heartland, Inc., Chicago, IL, ³Halchemix Canada Inc, Port Perry, ON, Canada, ⁴Kansas State University, Manhattan

202 S22  High levels of soybean meal reduces medical treatment in nursery pigs affected by PRRS.  
K. Moran¹¹, E. van Heugten¹, C. E. Zier-Rush², and R. D. Boyd², ¹North Carolina State University, Raleigh, ²The Hanor Company, Inc., Franklin, KY

203 S23  Performance responses of weaned pigs when fermented soybean meal (NF8) was replaced with a modified grain by-product (Gold Pro).  
F. B. Sandberg*, S. J. England, and M. R. Bible, Furst McNess Company, Freeport, IL

204 S24  Responses to feeding higher levels of Dried Distiller Grains and Solubles (DDGS) of gilts and barrows, when supplemented with plant extracts (Lean Fuel).  
F. B. Sandberg*, S. J. England, and M. R. Bible, Furst McNess Company, Freeport, IL

205 S25  Effect of increasing sow feeding level in late gestation on piglet quality and sow body condition.  
M. T. Knauer*, North Carolina State University, Raleigh

RUMINANT NUTRITION I

340 S26  Rumen microbial protein synthesis in multigrain and barley fed lactating dairy cows.  
A. Nikkhah*, University of Zanjan, Zanjan, Iran
341  S27  Influence of dry-rolled corn processing and distillers grain inclusion rate on ruminal digestive enzyme activity.
F. E. Keomanivong*, M. C. Ruch, J. D. Kirsch, C. R. Dahlen, M. L. Bauer, and K. C. Swanson, North Dakota State University, Fargo

342  S28  Nutrient variability of distillers grains with solubles.
K. J. Herrick and B. J. Breitling*, POET Research, Inc., Sioux Falls, SD

343  S29  Effects of whole or rolled corn and 20 or 40 percent grass hay levels on finishing performance of yearling steers.
C. L. Engel1*, A. Taylor2, C. S. Schauer3, R. J. Maddock4, and K. C. Olson5, 1North Dakota State University, Carrington Research Extension Center, Carrington, 2Cargill Nutrition Animal Innovation Campus, Elk River, MN, 3North Dakota State University, Hettinger Research Extension Center, Hettinger, 4North Dakota State University, Fargo, 5South Dakota State University, Rapid City

344  S30  Effects of different strategies for feeding alfalfa hay on productive performance, rumen fermentation and carcass characteristics of growing lambs.
M. M. Abdelrahman1*, I. A. Alhidary1, and A. H. Alyemni2, 1King Saud University, Riyadh, Saudi Arabia, 2ARASCO company, Riyadh, Saudi Arabia

POSTER SESSION IV
Grand Ballroom – Foyer
Presentation Time: 12:45 pm – 1:30 pm

ANIMAL BEHAVIOR, HOUSING AND WELL-BEING

1  S01  Evaluation of the behavioral differences between physically and immunologically castrated male pigs.
A. Keller1*, B. Lemmer2, S. Getty1, B. Post1, M. Nickel3, F. Baier4, D. Wagner4, and K. Vogel1, 1University of Wisconsin - River Falls, 2North Carolina State University, Raleigh, 3Iowa State University, Ames, 4Colorado State University, Fort Collins

2  S02  Differential postprandial eating behavior of morning and evening fed dairy cows.
A. Nikkhah*, University of Zanjan, Zanjan, Iran

3  S03  Eating behavior patterns of multigrain and barley fed lactating dairy cows.
A. Nikkhah*, University of Zanjan, Zanjan, Iran
4 S04 The effect of corrective claw trimming on gait analysis of the sow. A. Tinkle1, K. J. Duberstein1, M. E. Wilson2, M. A. Parsley3, M. K. Beckman1, M. J. Azain1, and C. R. Dove1, 1University of Georgia, Athens, GA, 2Zinpro Corporation, Eden Prairie, MN, 3Zinpro Corporation, Sheridan, IN

5 S05 The impact of gestation housing system (Individual vs. Group) on the reproductive performance of sows. A. L. Laudwig1, M. Ellis1, A. M. Gaines2, and B. A. Peterson2, 1University of Illinois at Urbana-Champaign, 2The Maschhoffs, LLC, Carlyle, IL

6 S06 The effect of farrowing pen size on pre-weaning mortality. A. L. Laudwig1, M. Ellis1, A. M. Gaines2, and B. A. Peterson2, 1University of Illinois at Urbana-Champaign, 2The Maschhoffs, LLC, Carlyle, IL

7 S07 Effect of water treatment on drinking preferences of dairy heifers. N. D. Senevirathne*, J. L. Anderson, and M. Rovai, South Dakota State University, Brookings

8 S08 Development of acclimation to reduce flooring novelty in nursery pigs. F. Baier*, A. Keller, A. Munger, and K. Vogel, University of Wisconsin - River Falls

9 S09 Effects of feeder space allowance on behavior of slow growing pigs during the nursery period. Y. He1, S. Cui2, J. Deen3, G. C. Shurson4, and Y. Li2, 1Dept. of Animal Science, University of Minnesota, St. Paul, MN, 2West Central Research and Outreach Center, University of Minnesota, Morris, 3Dept. of Veterinary Population Medicine, University of Minnesota, St. Paul, 4Department of Animal Science, University of Minnesota, St. Paul

EXTENSION - SWINE

80 S10 Evaluation of the inter-scorer reliability of body and leg conformation traits in replacement gilts. S. Azarpajouh*, J. M. Mumm1, and J. A. Calderon-Diaz2, 1Department of Animal Science, Iowa State University, Ames, 2Iowa State University, Ames

82 S12 Blood parameters as piglet health biomarkers in an experimental infection with Salmonella spp.
E. Barba-Vidal¹, V. F. Buttow², E. G. Manzanilla¹, L. Blavi³, C. Torrente³, J. F. Pérez³, and S. M. Martín-Orúe¹, ¹Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain, ²Department of Animal Science, Faculty of Agronomy Eliseu Maciel, Federal University of Pelotas, Pelotas (96010-900), Brazil, ³Servei d’Emergències i Cures Intensives de la Fundació Hospital Clínic Veterinari-UAB, Departament de Medicina i Cirurgia Animal, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain

83 S13 Initial use of statistics to be used to quantify the magnitude errors in the sorting on three finishing barns.
Y. Que*, F. A. Cabezon, and A. P. Schinckel, Purdue University, West Lafayette, IN

84 S14 Evaluation of statistics to be used to quantify the magnitude errors in the sorting of pigs for market via simulation.
F. A. Cabezon, A. P. Schinckel*, and Y. Que, Purdue University, West Lafayette, IN

85 S15 Analysis of lactation feed intakes for sows including data on environmental temperatures and humidity.
F. A. Cabezon*¹, A. P. Schinckel¹, B. T. Richert¹, K. R. Stewart¹, M. Gandarillas², and W. A. Peralta³, ¹Purdue University, West Lafayette, IN, ²Universidad Austral de Chile, Valdivia, Chile, ³Agrícola Super Ltda, Rancagua, Chile

86 S16 Alternative method to accurately predict the sows’ body weight in early gestation.
S. López-Vergé, L. Blavi*, D. Solà-Oriol, and J. Gasa, Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain

87 S17 Influence of Amaferm® Digest More® on swine lactation performance.
S. J. Moeller* and M. B. Hess, The Ohio State University, Columbus

88 S18 Evaluation of medium-chain fatty acid salts or Enterococcus faecium in front of a Salmonella Typhimurium challenge in piglets.
J. J. Mallo*, Norel SA, Madrid, Spain
295 S19 Effects of tribasic copper chloride (TBCC), Saccharomyces cerevisiae fermentation product (YFP), and narasin (NAR) supplementation on growth performance of 12 to 25 kg pigs.
E. D. Fruge\textsuperscript{1}, E. Hansen\textsuperscript{2}, S. Hansen\textsuperscript{3}, A. J. Gerhart\textsuperscript{4}, J. L. Usry\textsuperscript{5}, and C. W. Hastad\textsuperscript{6}, \textsuperscript{1}Hubbard Feeds, Inc., Mankato, MN, \textsuperscript{2}Hubbard Feeds Inc., Mankato, MN, \textsuperscript{3}Hubbard Feeds Inc, Mankato, MN, \textsuperscript{4}Hubbard Feeds, Mankato, MN, \textsuperscript{5}Micronutrients, Indianapolis, IN, \textsuperscript{6}New Fashion Pork, Jackson, MN

296 S20 Evaluation of interactive effects of vitamin E and linseed oil as a source of omega-3 fatty acids on growth performance, blood characteristics and meat quality of finishing pigs.
S. D. Upadhaya\textsuperscript{*}, T. S. Li, Y. M. Kim, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

297 S21 Effects of dietary zinc source and level on nursery pig performance.
K. E. Jordan\textsuperscript{1}, K. M. Gourley\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, J. C. Woodworth\textsuperscript{1}, and J. L. Usry\textsuperscript{2}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}Micronutrients, Indianapolis, IN

298 S22 Could Zinc Citrate supplementation during lactation increase the serum Zn levels at weaning?.
L. Blavi\textsuperscript{*}, D. Solà-Oriol, and J. F. Pérez, Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain

299 S23 Effect of diet type and added copper on growth performance, carcass characteristics, total tract digestibility, gut morphology, and mucosal mRNA expression of finishing pigs.
K. Coble\textsuperscript{1}, D. Burnett\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, J. M. Gonzalez\textsuperscript{1}, J. L. Usry\textsuperscript{2}, M. D. Tokach\textsuperscript{1}, J. Pluske\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, J. C. Woodworth\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, J. R. Flohr\textsuperscript{1}, and M. A. Vaughn\textsuperscript{1}, \textsuperscript{1}Kansas State University, Manhattan, \textsuperscript{2}Micronutrients, Indianapolis, IN, \textsuperscript{3}Murdoch University, Western Australia, Australia

300 S24 Low calcium levels improve growth in piglets after weaning.
L. Blavi\textsuperscript{*}, D. Solà-Oriol, and J. F. Pérez, Animal Nutrition and Welfare Service, Department of Animal and Food Sciences, Universitat Autònoma de Barcelona, Bellaterra (08193), Spain
301 S25 Effects of increasing zinc from zinc sulfate or zinc hydroxychloride on finishing pig growth performance and carcass characteristics.
C. B. Carpenter\textsuperscript{1}, K. Coble\textsuperscript{1}, J. C. Woodworth\textsuperscript{1}, J. M. DeRouchey\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, and J. L. Usry\textsuperscript{2}, \textsuperscript{1}\textit{Kansas State University, Manhattan}, \textsuperscript{2}\textit{Micronutrients, Indianapolis, IN}

206 S26 Effects of dietary calcium concentrations on the apparent total tract digestibility and the balance of calcium, phosphorus, and nitrogen in growing pigs.
Y. She\textsuperscript{*}, \textit{University of Illinois at Urbana-Champaign}

207 S27 Effects of proteinate complex zinc on trace elements concentrations, oxidative stress and immune functions in weaned piglets.
Y. She\textsuperscript{*}, \textit{University of Illinois at Urbana-Champaign}

208 S28 Efficiency of Ca and P retention in growing pigs fed diets with different Ca:P ratios provided by monocalcium phosphate or phytase supplementation.
M. Grez\textsuperscript{*} and T. D. Crenshaw, \textit{University of Wisconsin-Madison}

\textbf{POSTER SESSION V}

\textit{Grand Ballroom – Foyer}
Presentation Time: 5:00 pm – 5:45 pm

\textbf{EXTENSION - DAIRY}

65 S01 A study to examine the relationship between uterine pathology and depletion of oxytetracycline in plasma and milk after intra-uterine infusion.
P. J. Gorden\textsuperscript{*1}, J. Ydstie\textsuperscript{1}, M. D. Kleinhenz\textsuperscript{2}, L. W. Wulf\textsuperscript{3}, R. Gehring\textsuperscript{4}, C. Wang\textsuperscript{1}, and J. F. Coetzee\textsuperscript{1}, \textsuperscript{1}\textit{Iowa State University, Ames}, \textsuperscript{2}\textit{Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames}, \textsuperscript{3}\textit{Pharmacology Analytical Support Team, Iowa State University College of Veterinary Medicine, Ames}, \textsuperscript{4}\textit{Kansas State University, Manhattan}

\textbf{EXTENSION – BEEF/SMALL RUMINANT}

55 S02 Using corn co-products in post-partum diets of beef cows to optimize reproductive performance.
E. G. Taylor\textsuperscript{*}, R. P. Lemenager, and K. R. Stewart, \textit{Purdue University, West Lafayette, IN}
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tr>
<td>56 S03</td>
<td>Cultural energy analysis of cool- and warm-season grass pasturing systems into cattle finishing Programs.</td>
<td>H. Koknaroglu*¹, O. Koskan¹, R. A. Edler², and M. P. Hoffman², ¹Suleyman Demirel University, Isparta, Turkey, ²Iowa State University, Ames</td>
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<tr>
<td>57 S04</td>
<td>Cultural energy analyses of climatologically suitable places in Turkey for feedlot cattle production determined by using the comprehensive climate index model.</td>
<td>H. Koknaroglu*¹, J. A. Harrington Jr², and T. L. Mader³, ¹Suleyman Demirel University, Isparta, Turkey, ²Kansas State University, Manhattan, ³Mader Consulting, LLC, Gretna, NE</td>
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<tr>
<td>58 S05</td>
<td>Determination of suitable sample size and number of simulation for predicting dry matter intake of feedlot cattle.</td>
<td>O. Koskan*¹, H. Koknaroglu¹, D. D. Loy², and M. P. Hoffman², ¹Suleyman Demirel University, Isparta, Turkey, ²Iowa State University, Ames</td>
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<td>59 S06</td>
<td>The effect of age, plane of nutrition and progesterone pre-treatment on lambing rate in nulliparous females bred during the breeding season.</td>
<td>A. K. Redhead*, A. K. Adebiyi, C. D. Paul, E. N. Keller, K. J. Powell, and M. Knights, West Virginia University, Morgantown, WV</td>
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<tr>
<td>60 S07</td>
<td>Evaluating results of pre-breeding reproductive examinations in yearling and mature beef bulls via the BullTest data reporting system.</td>
<td>S. R. Underdahl*¹, C. L. Stoltenow¹, and C. R. Dahlen¹², ¹North Dakota State University, Fargo, ²Center for Nutrition and Pregnancy, Fargo</td>
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<tr>
<td>209 S08</td>
<td>Effects of extracted of rice bran supplementation on production performance, feed intake, egg quality and fecal microflora in laying hens.</td>
<td>D. H. Nguyen*¹, J. H. Cho², H. S. Kim¹, H. N. Tran¹, and I. H. Kim¹, ¹Department of Animal Resource &amp; Science, Dankook University, Cheonan, South Korea, ²Department of Animal Science, Chungbuk National University, Cheongju, South Korea</td>
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<td>210 S09</td>
<td>Evaluating the effects of microencapsulated blends of phytobiotics in the diet of broiler chickens.</td>
<td>M. Mohammadi Gheisar*, J. W. Park, S. Mohana Devi, and I. H. Kim, Department of Animal Resource &amp; Science, Dankook University, Cheonan, South Korea</td>
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</table>
211 S10  Effect of soybean cultivar on growth performance of broilers.
G. Hosotani*, M. S. Kerley, and M. C. Shannon, Division of Animal Sciences, University of Missouri, Columbia

212 S11  Effect of crumbled diet on growth performance, market day age and meat quality of growing-finishing pigs.
D. H. Nguyen*, S. Kathannan, Y. H. Liu, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

213 S12  Effects of creep feed pellet diameter on suckling and nursery pig performance.

214 S13  Stability of commercial phytase products under increasing thermal conditioning temperatures.

215 S14  Effects of grinding corn through a 2-, 3-, or 4-high roller mill on pig performance and feed preference of nursery pigs.

216 S15  Coating dog kibble with a commercial liquid acidifier reduces the risk of Salmonella cross-contamination.
A. R. Huss*, A. Deliephan, J. C. Fuller, Jr., and C. K. Jones, Kansas State University, Manhattan, Metabolic Technologies Inc, Ames

217 S16  Proof-of-Concept Method to Sanitize a Feed Mill Contaminated with Porcine Epidemic Diarrhea Virus.
A comparison of bale feeder types on forage waste by beef cows. 
K. Nenn*, N. Kenney-Rambo, and A. DiCostanzo, University of Minnesota, Saint Paul, University of Minnesota, St. Paul

Effects of a fenugreek extract (Nutrifén) in combination with organic trace minerals on feedlot performance in Angus heifers. 

Evaluation of a commercial genetic test to determine tolerance to fescue toxicity in beef cattle. 
M. M. Masiero*, C. A. Roberts, M. S. Kerley, and R. L. Kallenbach, University of Missouri, Columbia, AgBotanica, LLC, Columbia

Stocking management effects on forage composition, cow methane emissions, and soil properties of cool season pastures. 
J. R. Russell*, J. Bisinger, and W. J. Powers, Iowa State University, Ames, Michigan State University, East Lansing

Dimorphic chronological development of ruminant digestive system supports development of equivalent muscle fatty acid profiles in continuously suckled and weaned Katahdin lambs. 
Q. S. Baptiste*, M. Knights, A. K. Redhead, and E. Felton, Berea College, Berea, KY, West Virginia University, Morgantown, Division of Animal and Nutritional Sciences, West Virginia University, Morgantown

Estimates of duodenal microbial protein in free housed dairy cows fed total mixed ration vs. Component diet. 
A. Nikkhah*, University of Zanjan, Zanjan, Iran

A. Nikkhah*, University of Zanjan, Zanjan, Iran

Improving milk production through evening feeding of dairy Cows. 
A. Nikkhah*, University of Zanjan, Zanjan, Iran

Optimizing dairy cow production through multisource starch feeding. 
A. Nikkhah*, University of Zanjan, Zanjan, Iran
POSTER PRESENTATION
Wednesday, March 16, 2016

POSTER SESSION VI
Grand Ballroom – Foyer
Presentation Time: 7:30 am – 8:15 am

NONRUMINANT NUTRITION V

273 S01 Dietary kapok seed meal supplementation improved meat quality without adverse effects on growth performance in finishing pigs. H. L. Li*, H. M. Yun, J. K. Kim, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

274 S02 Dietary Levan-type fructan improved growth performance of lactating sows and their offspring and reduced fecal noxious gas emission. H. L. Li*, H. S. Kim¹, J. H. Cho², D. H. Nguyen¹, and I. H. Kim¹, ¹Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, ²Department of Animal Science, Chungbuk National University, Cheongju, South Korea

275 S03 Effect of dietary enzyme complex on growth performance, nutrient digestibility, and fecal noxious gas emission in growing pigs. P. Y. Zhao*, H. L. Li¹, J. S. Jeong¹, J. H. Cho², and I. H. Kim¹, ¹Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, ²Department of Animal Science, Chungbuk National University, Cheongju, South Korea

276 S04 Essential oil and emulsifier in low energy density diets increase growth performance and meat quality of finishing pigs. P. Y. Zhao*, J. H. Cho², B. Balasubramanian¹, S. Kathannan¹, and I. H. Kim¹, ¹Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, ²Department of Animal Science, Chungbuk National University, Cheongju, South Korea

277 S05 Effect of protease and anti-inflammatory supplementation with low nutrient diets on growth performance, nutrient digestibility, blood profile and fecal noxious gas in growing-finishing pigs. D. H. Nguyen*, J. K. Kim, S. Shanmugam, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea
278 S06  Bacillus subtilis, essential oil, chromium and glucose as sow pack are related to performance, immune and (or) stress of sows and piglets.
D. H. Nguyen*, R. X. Lan, W. C. Liu, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

279 S07  Effects of xylanase on growth performance and digestibility of fiber and energy in growing pigs fed corn, corn DDGS and soybean meal based diet supplemented with phytase.
X. Yang1, M. C. Walsh2, E. Kiarie1, A. Tekeste4, and S. K. Baidoo1, 1Southern Research and Outreach Center; University of Minnesota, Waseca, MN, 2Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, UK, United Kingdom, 3DuPont Industrial Biosciences - Danisco Animal Nutrition, Marlborough, United Kingdom, 4University of Guelph, ON, Canada, 5University of Manitoba, Winnipeg, MB, Canada

280 S08  Dietary effect of lactose on growth performance of nursery pigs on a liquid feeding system.
X. Yang*, J. Kim, and S. K. Baidoo, Southern Research and Outreach Center; University of Minnesota, Waseca

281 S09  The interactive effects of fenugreek seed extract supplementation and dietary metabolizable energy levels in growing pigs.
M. Begum1, J. H. Cho2, R. X. Lan1, M. M. Hossain1, and I. H. Kim1, 1Department of Animal Resource & Science, Dankook University, Cheonan, South Korea, 2Department of Animal Science, Chungbuk National University, Cheongju, South Korea

282 S10  Effects of \( \delta \)-aminolevulinic acid, and lactulose supplements in weaning piglets.
M. M. Hossain*, M. Begum, P. Y. Zhao, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

283 S11  Role of emulsifier as fat replacer in low density diet for growing and finishing pigs.
S. D. Upadhaya*, J. H. Park, H. M. Yun, and I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, South Korea

284 S12  Effects of a xylanase and an emulsifier in diets with dried yeast on nursery pig performance.
<table>
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<tr>
<td>285 S13</td>
<td>Spray dried plasma compared to alternative specialty proteins in weanling pig diets.</td>
<td>J. M. Campbell*, J. D. Crenshaw, and J. Polo, APC, Inc., Ankeny, IA</td>
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<td>286 S14</td>
<td>Effect of Saccharomyces cerevisiae fermentation product supplementation in late gestation and lactation on sow and litter performance, milk components, and fecal Clostridium perfringens.</td>
<td>T. C. Tsai*, H. J. Kim¹, X. Wang¹, B. E. Bass², J. W. Frank², and C. V. Maxwell³, ¹Department of Animal Science, Division of Agriculture, University of Arkansas, Fayetteville, ²Diamond V, Cedar Rapids, IA</td>
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<td>287 S15</td>
<td>Effects of Herbiotic FS Supplementation in weanling pigs.</td>
<td>S. Mohana Devi*, B. Balasubramanian, Y. M. Kim, and I. H. Kim, Department of Animal Resource &amp; Science, Dankook University, Cheonan, South Korea</td>
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<td>288 S16</td>
<td>Evaluation of the effects of a formaldehyde-based feed additive on free lysine.</td>
<td>C. Rude*, D. Mellick, A. Lamptey, and M. Bienhoff, Kemin Industries, Des Moines</td>
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<td>290 S18</td>
<td>Effect of feeding grower-finisher pig diets containing 20% soybean hulls with or without enzyme supplementation.</td>
<td>L. J. Schertz¹, G. A. Apgar², L. A. Lekatz¹, and P. J. Lammers³, ¹Illinois State University, Normal, ²Southern Illinois University, Carbondale, ³University of Wisconsin–Platteville</td>
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<td>291 S19</td>
<td>Sow performance in response to natural betaine fed during lactation and weaning-to-35 d post-insemination during non-summer months.</td>
<td>S. M. Mendoza⁴, G. Martinez¹, M. Knauer¹, E. van Heugten¹, P. Wilcock², D. S. Rosero⁴, and R. D. Boyd¹,³, ¹Department of Animal Science, North Carolina State University, Raleigh, ²AB Vista Feed Ingredients, Marlborough, United Kingdom, ³Hanan Company, Inc., Franklin, KY</td>
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<td>292 S20</td>
<td>Responses of growing-finishing pigs to two levels of a multi-enzyme blend (Natuzyme) as compared to pigs fed a lower energy-higher fiber, or a higher energy-lower fiber diet.</td>
<td>F. B. Sandberg*, S. J. England, and M. R. Bible, Furst McNess Company, Freeport, IL</td>
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</table>
Impact of lipid peroxidation and antioxidants on nursery pig performance and health.
P. L. Chang* and E. van Heugten, Department of Animal Science, North Carolina State University, Raleigh

Alteration of fecal bacterial communities in weanling pigs fed diets supplemented with chicory, mannan oligosaccharides, or chitosan.
Y. S. Li*, S. C. Fernando, P. S. Miller, and T. E. Burkey, University of Nebraska-Lincoln

Effect of feeding grower-finisher pig diets containing 20% soybean hulls with or without enzyme supplementation.
L. J. Schertz¹, G. A. Apgar², L. A. Lekatz¹, and P. J. Lammers³, ¹Illinois State University, Normal, ²Southern Illinois University, Carbondale, ³University of Wisconsin–Platteville

A comparison of antibiotic-free and conventional management on nutrient excretion in swine.
C. E. Vonderohe¹, K. M. Mills¹*, A. M. Jones², M. D. Asmus¹, E. R. Otto-Tice¹, J. Ni¹, B. T. Richert¹, and J. S. Radcliffe¹, ¹Purdue University, West Lafayette, IN, ²Kansas State University, Manhattan
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  N. L. Horn
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  J. P. Schoonmaker
  R. B. Hinson

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  T. L. Douthit
  J. M. Bormann
  T. A. Strauch
  B. D. Whitaker
  J. M. Kouba
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1984  M. F. Hutjens, University of Illinois
1985  G. L. Kuhl, Kansas State University
1986  D. D. Simms, Kansas State University
1987  F. K. Brazle, Kansas State University
1988  S. B. Laudert, Kansas State University
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1992  J. L. Nelsens, Kansas State University
1993  A. P. Schinckel, Purdue University
1994  D. A. Funk, University of Wisconsin – Madison
1995  G. C. Shurson, University of Minnesota
1996  R. D. Shaver, University of Wisconsin – Madison
1997  R. D. Goodband, Kansas State University
1998  Not given
1999  M. D. Tokach, Kansas State University
2000  J. F. Smith, Kansas State University
2001  W. O. Herring, University of Missouri
2002  M. J. Brouk, Kansas State University
2003  W. J. Powers, Iowa State University
2004  S. J. Moeller, The Ohio State University
2005  K. J. Stalder, Iowa State University
2006  P. M. Fricke, University of Wisconsin
2007  G. C. Lamb, University of Minnesota
2008  J. M. DeRouchey, Kansas State University
2009  P. S. Kuber, The Ohio State University
2010  C. L. Wright, South Dakota State University
2011  G. A. Perry, South Dakota State University
2012  W. J. Sexten, University of Missouri
2013  R. L. Weaber, Kansas State University
2014  G. K. Rentfrow, University of Kentucky
2015  M. L. Spangler, University of Nebraska
OUTSTANDING RESEARCHER AWARD

1971  D. H. Baker, University of Illinois
1972  C. E. Allen, University of Minnesota
1974  F. N. Owens, University of Illinois
1976  W. G. Bergen, Michigan State University
1977  D. E. Bauman, University of Illinois
1978  G. L. Allee, Kansas State University
1979  S. E. Curtis, University of Illinois
1980  T. L. Veum, University of Missouri
1982  B. D. Schanbacher, Roman L. Hruska U.S. Meat Animal Research Center
1983  H. A. Garverick, University of Missouri
1984  G. C. Fahey, Jr., University of Illinois
1985  J. J. Ford, Roman L. Hruska U.S. Meat Animal Research Center
1986  C. L. Ferrell, Roman L. Hruska U.S. Meat Animal Research Center
1987  D. Gianola, University of Illinois
1988  S. P. Ford, Iowa State University
1989  L. L. Berger, University of Illinois
1990  M. F. Rothschild, Iowa State University
1991  M. F. Smith, University of Missouri
1992  D. L. Harmon, Kansas State University
1993  M. Koohmaraie, Roman L. Hruska, U.S. Meat Animal Research Center
1994  L. G. Sheffield, University of Wisconsin – Madison
1995  J. Odle, University of Illinois
1996  J. L. Nelssen, Kansas State University
1997  R. S. Prather, University of Missouri
1998  D. Pomp, University of Nebraska
1999  R. W. Johnson, University of Illinois
2000  M. C. Lucy, University of Missouri
2001  C. K. Tuggle, Iowa State University
2002  M. Morrison, Ohio State University
2003  T. P. L. Smith, USDA, NE
2004  C. W. Ernst, Michigan State University
2005  E. Huff-Lonergan, Iowa State University
2006  A. S. Cupp, University of Nebraska
2007  J. C. Matthews, University of Kentucky
2008  J. M. Reecy, Iowa State University
2009  G. E. Erickson, University of Nebraska
2010  J. DeRouchey, Kansas State University
2011  K. A. Vonnahme, North Dakota State University
2012  G. A. Perry, South Dakota State University
2013  J. P. Steibel, Michigan State University
2014  L. A. Kuehn, USDA-ARS
2015  N. K. Gabler, Iowa State University
OUTSTANDING TEACHER AWARD

1971  B. G. Harmon, University of Illinois
1972  R. E. Hunsley, Purdue University
1974  D. H. Gee, South Dakota State University
1976  T. R. Cline, Purdue University
1977  P. J. Cunningham, University of Nebraska
1978  B. D. Moser, University of Nebraska
1979  C. L. Hauser, Southern Illinois University
1980  T. R. Carr, University of Illinois
1981  M. E. Dikeman, Kansas State University
1982  R. E. Morrow, University of Missouri
1983  D. J. Kesler, University of Illinois
1984  R. A. Easter, University of Illinois
1985  D. F. Parrett, University of Illinois
1986  J. G. Sebranek, Iowa State University
1987  D. R. Brink, University of Nebraska
1988  K. M. Irvin, The Ohio State University
1989  R. P. Lemenager, Purdue University
1990  B. R. Skaar, Iowa State University
1991  D. A. Nichols, Kansas State University
1992  M. A. Russell, Purdue University
1993  D. K. Combs, University of Wisconsin – Madison
1994  L. C. Martin, Kansas State University
1995  M. E. Benson, Michigan State University
1996  B. D. Banks, Michigan State University
1997  H. D. Tyler, Iowa State University
1998  C. R. Youngs, Iowa State University
1999  J. N. Spain, University of Missouri
2000  M. E. Doumit, Michigan State University
2001  S. M. Lonergan, Iowa State University
2002  W. N. Osburn, Michigan State University
2003  S. C. Kelm, University of Wisconsin-River Falls
2004  M. S. Weber Nielsen, Michigan State University
2005  B. D. Nielsen, Michigan State University
2006  B. A. Reiling, University of Nebraska
2007  K. W. Bruns, South Dakota State University
2008  H. N. Zerby, The Ohio State University
2009  B. R. Wiegand, University of Missouri
2010  K. A. Vonnahme, North Dakota State University
2011  S. A. Wagner, North Dakota State University
2012  J. M. Kouba, Kansas State University
2013  J. Minick Bormann, Kansas State University
              T. A. Strauch, University of Missouri
2014  T. Douthit, Kansas State University
2015  B. Whitaker, University of Findlay
OUTSTANDING EARLY CAREER AGRIBUSINESS AWARD

1996  J. A. Barmore, Vita Plus Corp.
1997  D. E. Dill, Dairy Strategies
1998  C. M. Luhman, Land O’lakes Research Farm
1999  Not Given
2000  D. L. Hancock, Elanco Animal Health
2002  Not Given
2003  J. M. Campbell, APC, Inc.
2004  D. M. Webel, United Feeds
2005  T. A. Rathje, Danbred North America
2006  T. E. Sauber, Pioneer, A Dupont Company
2007  M. J. Pettitt, Prairie Swine Centre, LLC, Canada
2008  J. C. Woodworth, Lonza Inc.
2009  Not given
2010  D. H. Kleinschmit, Agri-King, Inc.
2010  J. Spencer, JBS United Inc.
2011  A. M. Gaines, The Maschhoffs
2012  C. R. Schwab, National Swine Registry
2013  T. Loy, Adams Land and Cattle, Co.
2014  A. Brackenridge, Cargill
2015  M. Wolfe, Cargill

INNOVATION IN DAIRY RESEARCH AWARD

2007  D. B. Carlson, University of Illinois
2008  A. Bettegowda, Michigan State University
2009  R. A. Natikov, Iowa State University
2010  S. Fredin, University of Wisconsin – Madison
2011  D. E. Graugnard, University of Illinois
2012  Not given
2013  J. S. Osorio, University of Illinois
2014  Not given
2015  L. J. Wilsdorf
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*Education
**Research
## PAST WINNERS OF INVITATIONAL COMPETITIVE RESEARCH PAPER AWARDS

### UNDERGRADUATE STUDENTS - ORAL

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### UNDERGRADUATE STUDENTS - POSTER

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2011  J. Bishop, North Carolina State University*
       Y. Zhao, North Carolina State University**
2012  J. Flohr, Kansas State University*
       J. K. Farney, Kansas State University**
2013  K. L. Gillespie, University of Nebraska*
       D. B. Burken, University of Nebraska**
2014  F. Wu, University of Minnesota*
       B. Mordhorst, North Dakota State University*
       E. K. Harris, University of Minnesota**
       H. L. Frobose, Kansas State University**
2015  J. G. Wiegert, Virginia Tech*
       K. N. Niederecker, University of Missouri*
       J. R. Russell, Iowa State University**

GRADUATE STUDENTS - POSTER

2007  P. L. Nester, North Dakota State University*
       N. DiLorenzo, University of Minnesota**
2008  N. R. Bork, North Dakota State University*
       B. A. Peterson, University of Illinois**
2009  P. Gunn, Purdue University*
       C. O. Lemley, West Virginia University**
2010  N. S. Schmetz, Purdue University*
       L. Senaratne, University of Nebraska**
2011  K. E. Boesche, Purdue University*
       P. J. Gunn, Purdue University*
2012  M. Berg, University of Wisconsin – Madison*
       X. J. Li, University of Minnesota**
2013  B. M. Bohrer, The Ohio State University*
       L. E. Camacho, North Dakota State University**
2014  J. L. Peine, North Dakota State University*
       J. D. Colpoys, Iowa State University**
2015  R. S. Stokes, Iowa State University*
       K. F. Coble, Kansas State University**

* M.S. Division
** Ph.D. Division

PAST WINNERS OF UNDERGRADUATE CONTEMPORARY ISSUES COMPETITION

1998  M. Bode, University of Missouri
       D. Hasekamp, University of Missouri
       J. Rumph, Michigan State University
       M. Schoenfield, University of Minnesota
1999  L. Becker, University of Minnesota
2000  R. Hawkins, North Dakota State University
2001  Discontinued
ADSA YOUNG DAIRY SCHOLARS

2006  B. J. Bradford, Michigan State University  
      N. Litherland, University of Illinois  
      W. Miller, Kansas State University  
      R. Rastani, University of Wisconsin  

2007  M. Abdelqader, South Dakota State University  
      D. B. Carlson, University of Illinois  
      M. Carriquiry, University of Minnesota  
      M. Geha, University of Nebraska  
      N. A. Janovick-Guretzky, University of Illinois  
      D. H. Kleinschmit, South Dakota State University  
      E. D. Reid, University of Illinois  
      P. J. Ross, Michigan State University  

2008  A. Bettegowda, Michigan State University  
      J. M. Bewley, Purdue University  
      E. L. Karcher, Iowa State University  
      K. M. Moyes, University of Illinois  
      B. W. Pamp, South Dakota State University  
      M. L. Raeth-Knight, University of Minnesota  

2009  R. A. Nafikov, Iowa State University  

2010  B. J. Heins, University of Minnesota  
      C. O. Lemley, West Virginia University  
      C. D. Mikolayunas, University of Wisconsin  
      K. Mjoun, South Dakota State University  

2011  M. J. Aguerre, University of Wisconsin – Madison  
      N. M. Bello, Kansas State University  
      G. L. Golombeski, University of Minnesota  
      D. E. Graugnard, University of Illinois  
      H. M. White, Indiana University School of Medicine  

2012  M. Akins, University of Wisconsin  
      M. Osman, Iowa State University  
      S. Ranathunga, South Dakota State University  

2013  R. Cabral, University of New Hampshire  
      K. Herrick, South Dakota State University  
      J. Anderson, South Dakota State University  
      H. Tucker, Purdue University  
      J. Farney, Kansas State University  
      D. Koltes, Iowa State University  
      E. Castillo Lopez, University of Nebraska  
      J. Osorio, University of Illinois  

2014  K. Yuan, Kansas State University  
      P. Piantoni, Michigan State University  

2015  J. Boerman, Cargill Animal Nutrition  
      T. Dennis, Provimi  
      L. Ferraretto, University of Wisconsin  
      J. Laporta, University of Florida
ASAS ANIMAL SCIENCE YOUNG SCHOLARS

2010  J. Atkins, University of Missouri
T. M. Che, University of Illinois
S. Hooda, University of Alberta
J. A. Jendza, Purdue University
J. S. Jennings, South Dakota State University
V. G. Perez, University of Illinois
R. Poletto, Purdue University

2011  J. R. Bergstrom, Kansas State University
D. D. Boler, University of Illinois
A. E. DeDecker, University of Illinois
M. R. P. Elmore, University of Illinois
A. M. Meyer, North Dakota State University
B. W. Neville, North Dakota State University
C. E. Phillips, University of Minnesota
P. E. Urriola, Cargill Animal Nutrition

2012  R. Leach, USDA-ARS, US Meat Animal Research Center
J. Kelzer, University of Minnesota
R. Manjarin, Michigan State University
M. Song, University of Illinois
Y. Liu, University of Illinois
I. S. Choi, USDA
S. Cervantes-Pahm, University of Illinois
M. Weber, Cargill

2013  Y. Shen, North Carolina State University
L. Mack, Purdue University
F. Almeida, University of Illinois
A. Hanson, University of Minnesota
E. Bobeck, Iowa State University
A. Summers, University of Nebraska
D. Brake, Kansas State University
N. Boddicker, Iowa State University

2014  S. M. Cruzen, Iowa State University
E. K. Harris, University of Minnesota
J. L. Zambito, West Virginia University
M. V. Sanz Fernandez, Iowa State University
L. E. Camacho, North Dakota State University
C. M. Pilcher, Iowa State University
C. B. Paulk, Kansas State University
J. K. Grubbs, Iowa State University
C. L. Daigle, Michigan State University
D. Gonzalez-Pena Fundora, University of Illinois

2015  A. S. Bhatnagar, University of Nebraska-Lincoln
K. F. Coble, Kansas State University
B. W. Daigneault, University of Illinois
M. Erasmus, Michigan State University
O. N. Genther, Iowa State University
N. A. Gutierrez, Iowa State University
L. D. Prezotto, North Dakota State University
O. J. Rojas, University of Illinois
D. S. Rosero, Tapia, North Carolina State University
A. R. Taylor, South Dakota State University
L. Wang, University of Alberta
A. K. Watson, University of Nebraska-Lincoln

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<tr>
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<td>T. M. Che</td>
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<td>O. G. Bentley</td>
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<td>J. K. Apple</td>
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**ADSA MIDWEST BRANCH PRESIDENTS**

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<td>J. F. Keown</td>
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LEVEL 3

Meeting Room Level
Community Choice Credit Union Convention Center
LEVEL 1

Meeting Room Level
Hy-Vee Hall
Downtown Des Moines
Skywalk Navigation
3 THINGS YOU SHOULD KNOW

#1. Areas of our skywalk system are closed because we are building a new, 330-room convention center hotel. Come back and check it out in 2018!

#2. If you are headed to the Convention Center/Arena, exit points 1-4 will get you there.

#3. Lean on locals. If you have questions, stop someone passing by!

IMPORTANT INFO TO NOTE

- Exit Points 1, 2 and 3 are ADA accessible
- Closest elevator to Exit Point 4 is at Exit Point 3

WALKING DISTANCE/DIRECTIONS

Exit Point 1

3.5 blocks to the Convention Center/Arena
Once at street level, head East on Grand Avenue. Turn left/North on 4th Street and proceed 3 blocks to the Convention Center/Arena

Exit Point 2

4 blocks to the Convention Center/Arena
Once at street level, head East on Grand Avenue. Turn left/North on 4th Street and proceed 3 blocks to the Convention Center/Arena

Exit Point 3

3.5 blocks to the Convention Center/Arena
Once at street level, exit parking garage onto 5th Avenue. Turn right/North on 5th Avenue. Turn right/East on Watson Powell Jr Way. Then turn left/North on 4th Street and proceed 1 block to the Convention Center/Arena

Exit Point 4

3 blocks to the Convention Center/Arena
Once at street level, head East on Watson Powell Jr Way. Then turn left/North on 4th Street and proceed 1 block to the Convention Center/Arena

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**Nursery Pigs**

March 14 | 5:00-5:45 p.m. | Grand Ballroom Foyer | Abstract 175

*Lactobacillus acidophilus* fermentation product and nutrient digestibility, growth performance, fecal microbiota
R.X. Lan, et al.

March 15 | 9:15 a.m. | Room 401 | Abstract 307

*Lactobacillus acidophilus* fermentation product and acute phase immune response
P.R. Broadway, et al.

March 15 | 1:45 p.m. | Room 314-315 | Abstract 152

*Lactobacillus acidophilus* fermentation product in diets of different nutrient density -- effects on nutrient digestibility, growth performance, fecal microbiota, fecal noxious gas emissions
R.X. Lan, et al.

March 15 | 3:15 p.m. | Room 314-315 | Abstract 158

*Lactobacillus acidophilus* fermentation product modulates inflammatory activity through gene expression in peripheral blood mononuclear cells
S.I. Lee, et al.

March 16 | 9:45 a.m. | Room 308-309 | Abstract 251

*Lactobacillus acidophilus* fermentation product with or without dietary antibiotics -- effects on performance and frequency of medical treatment
J. Acosta, et al.

**Sows**

March 16 | 7:30-8:15 a.m. | Grand Ballroom Foyer | Abstract 286

*Saccharomyces cerevisiae* fermentation product in late gestation and lactation -- effects on sow and litter performance, milk components, fecal *Clostridium perfringens*
T.C. Tsai, et al.

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American Society of Animal Science
2016 Midwest Meeting