ASAS Midwestern Section and ADSA® Midwest Branch

Scientific Sessions & Business Meeting

Des Moines, IA • March 10-13

2013
<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Date</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>March</td>
<td>16-18</td>
<td>Des Moines</td>
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<tr>
<td>2015</td>
<td>March</td>
<td>15-18</td>
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<tr>
<td>2016</td>
<td>March</td>
<td>13-16</td>
<td>Des Moines</td>
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</tbody>
</table>
# AMERICAN SOCIETY OF ANIMAL SCIENCE

## OFFICERS 2012-2013

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. James L. Sartin</td>
<td>President</td>
<td>Auburn University, Auburn, AL</td>
<td></td>
</tr>
<tr>
<td>Dr. Gregory P. Lardy</td>
<td>President-Elect</td>
<td>North Dakota State University, Fargo, ND</td>
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</tr>
<tr>
<td>Dr. Margaret E. Benson</td>
<td>Past President</td>
<td>Washington State University, Pullman, WA</td>
<td></td>
</tr>
<tr>
<td>Dr. Steven A. Zinn</td>
<td>Editor-in-Chief</td>
<td>University of Connecticut, Storrs, CT</td>
<td></td>
</tr>
<tr>
<td>Dr. David P. Casper</td>
<td>Foundation Trustee Chair</td>
<td>South Dakota State University, Brookings, SD</td>
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</tr>
<tr>
<td>Dr. Jack C. Whittier</td>
<td>Program Chair/Director</td>
<td>Colorado State University, Fort Collins, CO</td>
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<tr>
<td>Dr. Debora L. Hamernik</td>
<td>Recording Secretary/Director</td>
<td>University of Nebraska, Lincoln, NE</td>
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<tr>
<td>Dr. Todd A. Armstrong</td>
<td>Director</td>
<td>Elanco Animal Health, Greenfield, IL</td>
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<tr>
<td>Dr. Harvey C. Freetly</td>
<td>Director</td>
<td>USDA ARS, Clay Center, NE</td>
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<tr>
<td>Dr. Bruce L. Golden</td>
<td>Director</td>
<td>California Polytechnic State University, San Luis Obispo, CA</td>
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<tr>
<td>Dr. Elizabeth B. Kegley</td>
<td>Director</td>
<td>University of Arkansas, Fayetteville, AR</td>
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<tr>
<td>Dr. Kimberly A. Vonnahme</td>
<td>Director</td>
<td>North Dakota State University, Fargo, ND</td>
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<tr>
<td>Dr. Dean Hawkins</td>
<td>Director</td>
<td>West Texas A&amp;M University, Canyon, TX</td>
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<tr>
<td>Dr. Linda Martin</td>
<td>Director</td>
<td>The Ohio State University, Columbus, OH</td>
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<tr>
<td>Dr. William Flowers</td>
<td>Director</td>
<td>North Carolina State University, Raleigh, NC</td>
<td></td>
</tr>
<tr>
<td>Dr. Neal R. Merchen</td>
<td>Midwest Section Director</td>
<td>University of Illinois, Urbana, IL</td>
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</tbody>
</table>
Dr. Thomas A. Hoagland, Northeastern Section Director  
University of Connecticut, Storrs, CT

Dr. Joel V. Yelich, Southern Section Director  
University of Florida, Gainesville, FL

Dr. Jack C. Whittier, Western Section Director  
Colorado State University, Fort Collins, CO

Ms. Angela Boyer, Graduate Director  
University of Arkansas, Fayetteville, AR

Mr. Casey Maxwell, Graduate Director  
Oklahoma State University, Stillwater, OK

Mr. Jerry C. Weigel, ASAS Representative to FASS  
BASF Plant Science, Research Triangle Park, NC

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

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

**ASAS MIDWESTERN SECTION**

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University of Missouri, Columbia, MO

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ADM Alliance Nutrition, Inc., Quincy, IL

Dr. J. Scott Radcliffe, Past-President  
Purdue University, West Lafayette, IN

Dr. Neal R. Merchen, ASAS Director  
University of Illinois, Urbana, IL

Ms. Kaitlyn McClelland, Graduate Student Director  
University of Minnesota, Saint Paul, MN

Mr. Chad Pilcher, Graduate Student Director  
Iowa State University, Ames, IA

Ms. Ligia Prezotto, Graduate Student Director  
North Dakota State University, Fargo, ND
AMERICAN DAIRY SCIENCE ASSOCIATION®

OFFICERS 2012-2013

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McGuffey Dairy Consulting, Indianapolis, IN

Dr. Scott Rankin, Vice President
University of Wisconsin, Madison, WI

Mr. Peter Studney, Executive Director
ADSA, Champaign, IL

Dr. Robert Roberts, Past President
The Pennsylvania Sate University, University Park, PA

Dr. Jim Linn, Past, Past President
University of Minnesota, St. Paul, MN

Dr. Mike Schutz Treasurer
Purdue University, West Lafayette, IN

Dr. Roger Shanks, Editor-in-Chief
University of Illinois, Urbana, IL

Dr. Geoff Dahl, Director
University of Florida, Gainesville, FL

Dr. Susan Duncan, Director
Virginia Tech, Blacksburg, VA

Dr. Richard Erdman, Director
University of Maryland, College Park, MD

Dr. Rafael Jimenez-Flores, Director
California Polytechnic State University, San Luis Obispo, CA

Dr. David McCoy, Director
Dairy Research Institute, Rosemont, IL

Dr. Lou Armentano, Director
University of Wisconsin, Madison, WI

Dr. Cindie Luhman, Foundation Chair
Land O’Lakes Purina Feed, Gray Summit, MO

Ms. Rachel Campbell, GSD President
North Carolina State University, Raleigh, NC

Ms. Emily Krekelberg, SAD President
University of Minnesota, St. Paul, MN
**ADSA® MIDWEST BRANCH**

**OFFICERS 2012-2013**

- Dr. Lance H. Baumgard, President  
  Iowa State University, Ames, IA

- Dr. Michael J. Brouk, Vice President  
  Kansas State University, Manhattan, KS

- Dr. David B. Carlson, Secretary  
  Milk Products LLC

- Dr. Kenneth F. Kalscheur, Past President  
  South Dakota State University, Brookings, SD

- Dr. Dan Illg, ADSA Director  
  Standard Dairy Consultants, Omaha, NE

- Dr. Wendy J. Powers, ASAS/ADSA Director-at-Large  
  Michigan State University, East Lansing, MI
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REGISTRATION
Community Choice Credit Union Convention Center (CCCUCC), Lobby
Sunday, March 10, 3:00 pm – 5:00 pm (Pre-registration pickup only)
  Monday, March 11, 7:00 am – 7:30 pm
  Tuesday, March 12, 7:00 am – 4:00 pm
  Wednesday, March 13, 9:00 am – 11:00 am

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

<table>
<thead>
<tr>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
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</thead>
<tbody>
<tr>
<td>7:30am to 8:30am</td>
<td>7:30am to 8:30am</td>
<td>6:00am to 9:30am</td>
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<tr>
<td>12:00pm to 2:00pm</td>
<td>12:00pm to 2:00pm</td>
<td>11:00am to 12:00pm</td>
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<tr>
<td>4:00pm to 7:30pm</td>
<td>4:00pm to 7:30pm</td>
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</tbody>
</table>

Shuttle 1: Des Moines Marriott – Renaissance Savery and Convention Center
Shuttle 2: Embassy Suites – Holiday Inn Downtown and Convention Center

IMPORTANT PHONE NUMBERS
Renaissance Savery:  515.244.2151
Embassy Suites:  515.244.1700
Des Moines Marriott (Downtown):  515.245.5500
Holiday Inn Downtown:  515.283.0151
JOB RESOURCE CENTER

Continuing in 2013: The traditional Job Resource Center will be located in the Grand Ballroom of the 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 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 in Des Moines beginning at noon on Monday, March 11, 2013.

ARPAS CONTINUING EDUCATION UNITS

The 2013 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 at the ARPAS booth to schedule an exam.
SCHEDULE OF EVENTS

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

MONDAY, MARCH 11, 2013

7:30 am  Breakfast to kick off AQ Activities, 101-102
8:00 am  AQ Written Exams, Community Choice Credit Union Convention Center (See AQ organizer for room assignment)
8:00 am  Gary Allee Symposium: Science in Practice, 316/317
8:30 am  ADSA/ASAS Midwest Board of Directors, Renaissance Savery Hotel
10:00 am  AQ Quiz Bowl Preliminary Rounds, 302/303, 304/305, and 306/307
12:30 pm  Undergraduate Student Oral Competition, 318/319
1:00 pm  David H. Baker Amino Acid Symposium, 316/317
1:00 pm  Graduate Student Competition: MS Oral, 312/313
1:00 pm  Graduate Student Competition: PhD Oral, 314/315
4:30 pm  Poster Presentation, Grand Ballroom
5:30 pm  Reception (Sponsored by Catch Des Moines* & Alltech) & Recognition of Young Scholar Winners, Grand Ballroom
7:00 pm  Final AQ Quiz Bowl Competition and Awards Presentation, Grand Ballroom
7:15 pm  Graduate Student Dinner and Learn, 101-102
8:30 pm  Program Committee Reception, Renaissance Savery Hotel
9:00 pm  Graduate Student Social, TBA

TUESDAY, MARCH 12, 2013 / MORNING

8:00 am  Animal Behavior, Housing and Well-Being, 302/303
8:00 am  Billy Day Symposium: Considering Sow Housing, 316/317
8:00 am  Breeding & Genetics Symposium: Genotyping technologies and their application in breeding programs, 318/319
8:00 am  Nonruminant Nutrition: Co-Product Feedstuffs, 304/305
8:00 am  Nonruminant Nutrition: Nursery Pig Nutrition and Management, 306/307
8:00 am  Ruminant Nutrition Symposium: Economical and environmental impact of maximizing feed efficiency while minimizing risk in an era of $8 corn, 312/313
8:00 am  Ruminant Nutrition: Dairy Nutrition, 314/315
8:00 am  Teaching Symposium: Involving Undergraduate Students in Animal Sciences Research: Best Practices and Benefits, 320
12:00 pm  Bentley Symposium and Lunch, Grand Ballroom

*Catch Des Moines, (Greater Des Moines Convention & Visitors Bureau)
### TUESDAY, MARCH 12, 2013 / AFTERNOON

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 pm</td>
<td>Extension - Dairy: Symposium - Rumen bypass fat sources and their effect on milk production and milk fat, 308/309</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>Growth, Development, Muscle Biology, Meat Science: Maternal Nutrition Symposium, 302/303</td>
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<tr>
<td>1:00 pm</td>
<td>Harlan Ritchie Beef Symposium, 316/317</td>
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<tr>
<td>1:00 pm</td>
<td>Nonruminant Nutrition: Feed Ingredients and Additives, 304/305</td>
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<tr>
<td>1:00 pm</td>
<td>Physiology, 318/319</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>Ruminant Nutrition: Co-Products, 312/313</td>
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<tr>
<td>1:00 pm</td>
<td>Ruminant Nutrition: General Ruminant Nutrition I, 314/315</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>Teaching, 320</td>
</tr>
<tr>
<td>1:00 pm</td>
<td>Opportunities of Soybean Meal Characteristics Symposium, 306/307</td>
</tr>
<tr>
<td>4:00 pm</td>
<td>Nonruminant Nutrition: Sow Nutrition and Management, 304/305</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Graduate Student Poster Competition MS &amp; PhD, Grand Ballroom</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Undergraduate Student Poster Competition, Grand Ballroom</td>
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<tr>
<td>5:30 pm</td>
<td>Reception, Grand Ballroom (Sponsored by Catch Des Moines* &amp; Alltech)</td>
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### WEDNESDAY, MARCH 13, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:45 am</td>
<td>Breakfast, Business Meeting, Awards Program, Grand Ballroom</td>
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<tr>
<td></td>
<td>(Sponsored by Land O’ Lakes)</td>
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<tr>
<td>9:00 am</td>
<td>Breeding &amp; Genetics, 318/319</td>
</tr>
<tr>
<td>9:00 am</td>
<td>David Schingoethe Symposium, 316/317</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Extension - Beef/Small Ruminant, 320</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Extension - Swine, 302/303</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Nonruminant Nutrition: Growing-Finishing Nutrition and Management, 304/305</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Nonruminant Nutrition: Minerals, 306/307</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Physiology Symposium: Characteristics of the follicle and oocyte that impact fertilization, embryonic development, and pregnancy success, 312/313</td>
</tr>
<tr>
<td>9:00 am</td>
<td>Ruminant Nutrition: General Ruminant Nutrition II, 308/309</td>
</tr>
<tr>
<td>11:30 am</td>
<td>Improvest Lunch and Symposium, Grand Ballroom (Sponsored by Pfizer)</td>
</tr>
<tr>
<td>12:00 pm</td>
<td>ADSA/ASAS Midwest Board of Directors, Renaissance Savery Hotel</td>
</tr>
</tbody>
</table>

### 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 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 2013 meeting to the following companies:

Outstanding Young Scientist Awards
Extension Award – Land O’ Lakes Purina Feed LLC
Research Award – DSM Nutritional Products Inc.
Teaching Award – ASAS Foundation

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

Innovation in Dairy Research Award
Land O’ Lakes Purina Feed LLC

Agribusiness Award
BASF Plant Science

Student Competition Paper Awards
Graduate Oral, Ph.D. – Akey
Graduate Poster, M.S. – Cargill Animal Nutrition
Graduate Poster, Ph.D. – Cargill Animal Nutrition
Undergraduate Oral – ASAS Foundation
Undergraduate Poster – ADSA ASAS MW Board

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

Academic Quadrathalon
Agri-King
ASAS Foundation
Iowa State University
2013 MIDWEST MEETING SPONSORS

PLATINUM LEVEL

Alltech Inc.
American Society of Animal Science
ASAS Foundation
Boehringer Ingelheim Vetmedica Inc.
Catch Des Moines (Greater Des Moines Convention and Visitors Bureau)
ChemGen
Pfizer
US Soybean

GOLD LEVEL

BASF
Cargill Animal Nutrition
Diamond V Mills Inc.
Kemin Industries
Land O’Lakes Purina Feed LLC
National Pork Board

SILVER LEVEL

Agri-King Inc.
Akey
Danisco Animal Nutrition
DSM Nutritional Products Inc.
Elanco Animal Health
Zinpro Performance Minerals

BRONZE LEVEL

Iowa State University
JBS United Inc.
Lucta

FRIEND LEVEL

American Dairy Science Association (ADSA)
American Meat Science Association (AMSA)
American Registry of Professional Animal Scientists (ARPAS)
POSTER SCHEDULE & GUIDELINES

Posters sponsored by: Zinpro

All posters will be in the Grand Ballroom and will be in place from Monday at 1:00 pm until Wednesday at noon. Authors are to be present on their assigned day from 4:30 pm to 6:00 pm. Posters entered in Graduate and Undergraduate Research Paper Competitions have been incorporated into their appropriate disciplinary sections. Judging of student competition posters will take place on TUESDAY afternoon.

MONDAY, MARCH 11, 2013
All authors present from 4:30 pm to 6:00 pm

Extension – Swine
Nonruminant Nutrition: Nursery and Grow-Finish Nutrition
Nonruminant Nutrition: Vitamins and Minerals
Physiology
Ruminant Nutrition
Teaching

TUESDAY, MARCH 12, 2013
All authors present from 4:30 pm to 6:00 pm

Graduate Student Poster Competition-M.S.
Graduate Student Poster Competition-Ph.D.
Undergraduate Student Poster Competition
Animal Behavior, Housing and Well-Being
Breeding and Genetics
Extension – Beef/Small Ruminant
Growth, Development, Muscle Biology and Meat Science
Nonruminant Nutrition: Amino Acids
Nonruminant Nutrition: Ingredients and Feed Additives
Nonruminant Nutrition: Sow Nutrition and Management
**SPECIAL EVENTS**

**Reception & Recognition of Young Scholar Winners**  
**Monday, March 11 • 5:30 pm • Grand Ballroom**
Join us for the opening reception of the 2013 Midwest Meeting. This is a great time to catch up with your colleagues. We will also take the time to recognize the 2013 Young Scholar Winners.

**Graduate Student Dinner - Developing Your Professional Network**  
**Monday, March 11 • 7:15-8:30 pm • Room 101-102**
Join us for a networking and career development event. Graduate students will have the opportunity to interact with faculty or industry professionals in small group discussions. Attendees will learn about networking and hear useful tips on getting a job, planning a career, and much more.  
*Preregistration is required. Registration fee is $5.00.*

**Graduate Student Mixer**  
**Monday, March 11 • 9:00 pm • Location TBD**
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 so don’t miss it.  
*Preregistration is highly recommended; all students are welcome. Registration fee is $5.00.*

**Bentley Lecture**  
**Tuesday, March 12 • 12:00 pm • Grand Ballroom**
**Promoting Immunity and performance of young pigs during early life**
Professor Denise Kelly, *RINH, Institute of Medical Sciences, University of Aberdeen, Foresterhill, Aberdeen, Scotland*
Considered one of the world’s leaders in her field, Dr. Kelly has a unique ability to discuss complex biological subjects in a way that appeals to practical nutritionists and management specialists. We are delighted that she has agreed to be our first Bentley lecturer.  
*Sponsored by: ASAS Midwestern Section / ADSA® Midwestern Branch Joint Board*
*Registration is required; attendance is limited to the first 400 registrants. Registration fee $0.00.*

**Reception**  
**Tuesday, March 12 • 5:30 pm • Grand Ballroom**
Come socialize with your fellow attendees for one last reception during the 2013 Midwest Annual Meeting.

**Breakfast, Business Meeting and Awards Program**  
**Wednesday, March 13 • 6:45 am • Grand Ballroom**
Please join the ADSA Midwest Branch/ASAS Midwestern Section Board this morning for breakfast. After breakfast we will hold the annual Business Meeting and recognize the 2013 Award Winners.
Monday, March 11

SYMPOSIA AND ORAL SESSIONS

GARY ALLEE SYMPOSIUM

SCIENCE IN PRACTICE

Chair: Aaron Gains, The Maschhoffs

Sponsor: Allee Appreciation Fund, ASAS Foundation

316/317

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Introduction to Gary Allee</td>
</tr>
<tr>
<td>8:15</td>
<td>(Invited) Fat Quality - What does it mean to the packer and can we effectively measure it? J. Cannon*, Hormel Foods.</td>
</tr>
<tr>
<td>9:45</td>
<td>BREAK</td>
</tr>
<tr>
<td>10:30</td>
<td>O004 (Invited) Economic implications of achieving fat quality specifications. A. Gaines¹, D. DiPietre²*, ¹The Maschhoffs, Carlyle IL, ²Knowledge Ventures LLC, Columbia MO.</td>
</tr>
<tr>
<td>11:00</td>
<td>What’s confusing and where do we go from here? (Breakout session)</td>
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<td>Time</td>
<td>Session</td>
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<td>12:45</td>
<td>O006</td>
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<td>O007</td>
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<td>1:30</td>
<td>O009</td>
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<tr>
<td>3:45</td>
<td>O017</td>
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<tr>
<td>4:30</td>
<td>O020</td>
</tr>
<tr>
<td>4:45</td>
<td>O021</td>
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</tbody>
</table>
### GRADUATE STUDENT COMPETITION
#### MS ORAL
**Chair:** Gary Cromwell, University of Kentucky  
**312/313**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation ID</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00</td>
<td>O022</td>
<td>Effects of feeding high- and low-fibre fractions of air-classified canola meal on diet nutrient digestibility and growth performance of weaned pigs.</td>
<td>X. Zhou¹,*, M. A. Oryschak², R. T. Zijlstra¹, E. Beltranena²</td>
<td>¹Department of Agricultural, Food &amp; Nutritional Science, University of Alberta, ²Alberta Agriculture and Rural Development, Edmonton, Canada.</td>
</tr>
<tr>
<td>1:15</td>
<td>O023</td>
<td>Bioavailability of lysine in Rhizopus microsporus for nursery pigs as determined by slope-ratio bioassay.</td>
<td>D. M. van Sambeek¹,*, A. Rahkshendah¹, B. J. Kerr², J. (H.) van Leeuwen³, N. K. Gabler¹</td>
<td>¹Animal Science, Iowa State University, ²USDA-ARS, ³Civil and Construction Engineering, Iowa State University, Ames.</td>
</tr>
<tr>
<td>1:30</td>
<td>O024</td>
<td>Evaluation of chocolate candy feed as an alternative carbohydrate source to lactose for weanling pigs.</td>
<td>J. Guo¹,*, C. Phillips³, M. T. Coffey², S. W. Kim¹</td>
<td>¹Animal Science, North Carolina State University, Raleigh, ²Murphy Brown LLC, Rose Hill.</td>
</tr>
<tr>
<td>1:45</td>
<td>O025</td>
<td>Effect of cranberry on salmonella colonization and performance of nursery pigs.</td>
<td>M. Stanley¹, M. Rostagno, B. Richert, S. Eicher</td>
<td>Purdue University, West Lafayette, IN.</td>
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<tr>
<td>2:00</td>
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<td>BREAK</td>
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<td>2:15</td>
<td>O026</td>
<td>Please see page 46 for presentation.</td>
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<tr>
<td>2:15</td>
<td>O027</td>
<td>Divergent selection for residual feed intake impacts carcass composition of pigs on high or low energy diets.</td>
<td>E. K. Arkfeld¹,*, E. R. Benedict¹, R. C. Johnson², J. M. Young¹, J. F Patience¹, J. C. M. Dekkers¹, N. K. Gabler¹, S. M. Lonergan¹, E. Huff-Lonergan¹</td>
<td>¹Animal Science, Iowa State University, Ames, ²Farmland Foods, Denison.</td>
</tr>
</tbody>
</table>
2:30 O028 Response of swine divergently selected for feed efficiency to an exogenous adrenocorticotropin hormone (ACTH) challenge.
J. D. Jenkins¹,*, A. K. Johnson¹, L. L. Anderson¹, J. C. M. Dekkers¹, N. K. Gabler¹, F. R. Dunshea², ¹Iowa State University, Ames., ²The University of Melbourne, Parksville, Australia.

2:45 O029 The effect of heat stress on inflammatory signaling in porcine skeletal muscle.
S. I. Rosado Montilla¹,*, S. C. Pearce¹, D. Gardan-Salmon¹, N. K. Gabler¹, J. W. Ross¹, R. P. Rhoads², L. H. Baumgard¹, S. M. Lonergan¹, J. T. Selsby¹, ¹Animal Science, Iowa State University, Ames., ²Animal Science, Virginia Technical Institute, Blacksburg.

3:00 BREAK

3:15 O030 Impact of maternal exercise on ovarian development in the pig.

3:30 O031 Effects of continuous or rotational grazing schemes on available forage, performance, parasite burden, and reproductive measurements by yearling Katahdin ewes grazing tall fescue.
E. A. Backes ¹, ²,*, J. D. Caldwell², B. C. Shanks², K. R. Ness², A. N. V. Stewart², L. S. Wilbers², C. A. Clifford-Rather², A. Wurst², H. A. Swartz², D. L. Kreider¹, M. L. Looper¹, ¹Department of Animal Science, University of Arkansas, Fayetteville, ²Department of Agriculture and Environmental Sciences, Lincoln University, Jefferson City.

3:45 O032 Effect of winter supplementation level on yearling system profitability
K. L. Gillespie*, T. J. Klopfenstein, B. L. Nuttelman, C. J. Schneider, G. E. Erickson, Animal Science, University of Nebraska, Lincoln.

4:00 O033 Performance characteristics of beef cows limit-fed by-products from corn ethanol production.
M. Faulkner¹,*, P. Walker¹, R. Atkinson², L. Forster³, ¹Department of Agriculture, Illinois State University, Bloomington, ²Department of Animal Science, Food & Nutrition, Southern Illinois University, Carbondale, ³Archer Daniel’s Midland Co., Decatur.
4:15 O034 Dietary inclusion of dried distillers grains with solubles modifies milk composition and production in lactating dairy cows.
E. D. Testroet1*, G. Li1, D. C. Beitz2, S. Clark1, 1Food Science & Human Nutrition, 2Animal Science, Iowa State University, Ames.

4:30 O035 Effects of feeding CaO treated WDGS or treated corn stover to cattle on performance, carcass characteristics, and ruminal metabolism.

4:45 O036 Effects of modified distillers grains plus solubles and condensed distillers solubles with and without oil extraction on finishing performance.

GRADUATE STUDENT COMPETITION
PHD ORAL
Chair: Matt Wilson, West Virginia University
Sponsor: Akey
314/315

1:00 Detrimental effects of oxidized lipids in nursery diets.
D. Rosero1*, J. Odle1, A. Moeser2, R. D. Boyd3, E. van Heugten1, 1Department of Animal Sciences, 2Department of Population Health and Pathobiology, NCSU, Raleigh, NC, 3Hanor Company, Inc., Franklin, KY.

1:15 Efficacy of plasma protein to mitigate the negative effects on performance of pigs fed mycotoxin contaminated corn.
A. C. Weaver1*, J. Campbell2, J. D. Crenshaw2, J. Polo2, S. W. Kim1, 1Animal Science, North Carolina State University, Raleigh, 2APC, Inc., Ankeny.

1:30 Relative bioavailability of L-Methionine to Dl-Methionine for nursery pigs.
Y. B. Shen1*, S. W. Kim, Animal Science, North Carolina State University, Raleigh.
<table>
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<th>Time</th>
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<th>Authors</th>
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<tr>
<td>1:45</td>
<td>O040</td>
<td>Effect of different feed enzyme combinations on metabolizable energy (me) and nitrogen digestibility (nd) of corn and DDGS for growing pigs.</td>
<td>A. A. Passos*, S. W. Kim, Animal Science, North Carolina State University, Raleigh.</td>
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<tr>
<td>2:00</td>
<td>O041</td>
<td>Effects of feeding ractopamine (paylean) to physical and immunological castrates (improvest) in a commercial setting on carcass characteristics.</td>
<td>B. K. Lowe1*, G. D. Gerlemann2, S. N. Carr3, P. J. Rincker3, A. L. Schroeder4, D. B. Petry5, G. L. Allee2, F. K. McKeith1, A. C. Dilger1, 1Animal Sciences, University of Illinois, Urbana, 2Animal Sciences, University of Missouri, Columbia, 3Elanco Animal Health, Greenfield, IN, 4Pfizer Animal Health, Kalamazoo, MI, 5Newsham Choice Genetics, West Des Moines, IA.</td>
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<tr>
<td>2:30</td>
<td>O043</td>
<td>Evaluation of energy digestibility of canola co-products using in vitro analyses and digestion discrepancies using spectroscopy.</td>
<td>L. Wang1*, M.-L. Swift1, 2, R. Zijlstra1, 1University of Alberta, Edmonton, 2Alberta Agriculture and Rural Development, Lacombe, Canada.</td>
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<td>1:40</td>
<td>O046</td>
<td>(Invited) Determination of tryptophan requirements for grow-finish pigs raised under commercial conditions.</td>
<td>M. Young1,*, V. Zamora1, N. Campbell1, R. T. Zijlstra2, J. Usry3, M. Stevenson4, 1Gowans Feed Consulting, Wainwright, AB, 2University of Alberta, Edmonton, AB, Canada, 3Ajinomoto Heartland LLC, Chicago, IL., 4Halchemix, Port Perry, ON, Canada.</td>
</tr>
<tr>
<td>3:20</td>
<td>O050</td>
<td>(Invited) Utilization of the pig in biomedical research: a realization of the pig genome sequencing project.</td>
<td>L. B. Schook*, Department of Animal Sciences, University of Illinois, Urbana.</td>
</tr>
</tbody>
</table>
Monday, March 11
POSTER PRESENTATIONS

EXTENSION - SWINE

P014 Backfat thickness at farrowing affects litter size in the subsequent litter.  
P. Ramackers\textsuperscript{*}, H. van Hees, Nutreco R&D and Quality Affairs, Nutreco Nederland BV, Boxmeer, Netherlands.

P016 Predicting belly fatty acid composition from jowl and backfat in swine.  
Z. Rambo\textsuperscript{*}, A. Schinckel, B. Richert, Animal Science, Purdue University, West Lafayette, IN

P017 Industry productivity analysis - Seasonality in sow farm traits.  
M. R. Bryan\textsuperscript{1,*}, C. E. Hostetler\textsuperscript{2}, M. T. Knauer\textsuperscript{1}, \textsuperscript{1}North Carolina State University, Raleigh, \textsuperscript{2}National Pork Board, Des Moines, IA.

P018 The impact of eradication of ad and PRRS on reproductive and growth performance on Japanese Swine commercial farms.  
Y. Sasaki\textsuperscript{*}, R. Uemura, M. Sueyoshi, Department of Veterinary Sciences, University of Miyazaki, Miyazaki, Japan.

Nonruminant Nutrition  
NURSERY AND GROW-FINISH NUTRITION

P068 An evaluation of dietary natural zeolite or humic acid substances and high sulfate water on nursery pig performance.  
J. R. Flohr\textsuperscript{*}, M. D. Tokach, J. L. Nelssen, S. S. Dritz, J. M. DeRouchey, R. D. Goodband, Kansas State University, Manhattan, KS.

P069 Effects of varying ingredient particle size and diet form on nursery pig growth performance and caloric efficiency.  
J. A. De Jong\textsuperscript{*}, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. L. Nelssen, Animal Science, Kansas State University, Manhattan, KS.

P070 The effects of feeder design (conventional dry vs. Wet-dry) on growth performance of 20- to 112-kg pigs.  
S. Nitikanchana\textsuperscript{*}, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouchey, J. L. Nelssen, Kansas State University, Manhattan, KS.
P071 The effects of increasing levels of pellet fines on growth performance of 14 to 34 kg nursery pigs.
E. D. Frugé1,*, E. L. Hansen1, S. A. Hansen1, K. A. Frerichs1, C. W. Hastad2, 1Hubbard Feeds, Mankato, 2New Fashion Pork, Jackson, MN.

P072 Effects of increasing dietary bakery meal on growing-finishing pig growth performance and carcass quality.
C. Paulk1,*, S. Nitikanchana2, S. Dritz3, M. Tokach1, J. Nelssen1, J. DeRouchey1, R. Goodband1, K. Prusa1, 1Animal Science and Industry, 2Diagnostic Medicine Pathobiology, Kansas State University, Manhattan, KS, 3Animal Science, Iowa State University, Ames.

P073 The effects of soybean hulls and their particle size on growth performance and carcass characteristics of finishing pigs.
D. Goehring1,*, J. M. DeRouchey, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. L. Nelssen, Kansas State University, Manhattan, KS.

P074 Effect of replacing soybean meal with low oligosaccharide soybean meal in the diets of early weaned pigs.
D. Pangeni1,*, J. A. Jendza2, L. Anil2, S. K. Baidoo2, 1Department of Animal Science, University of Minnesota, Saint Paul, MN, 2Southern Research and Outreach Center, University of Minnesota, Waseca, MN.

P075 The effects of dietary soybean hulls, particle size, and diet form on nursery pig performance.
D. Goehring1,*, J. M. DeRouchey1, M. D. Tokach1, S. S. Dritz1, R. D. Goodband1, J. L. Nelssen1, B. W. James2, 1Kansas State University, Manhattan, KS, 2Kalmbach Feeds, Inc., Upper Sandusky, OH.

P076 Energy value of a low oligosaccharide soybean meal in pigs.
V. Perez1,*, N. Bajjalieh2, T. Radke1, D. Holzgraefe1, 1ADM Alliance Nutrition, Quincy, IL, 2Integrative Nutrition, Inc., Decatur, IL.

P077 Grain distillers dry yeast on nursery pig performance.
V. Perez1,*, J. Less2, T. Radke1, D. Holzgraefe1, 1ADM Alliance Nutrition, Quincy, IL, 2ADM, Specialty Feed Ingredients, Decatur, IL.

P078 Inclusion of fermented soybean meal, chicken meal, or poultry by-product meal in phase 1, phase 2, and phase 3 diets fed to weanling pigs.
O. J. R. Martinez1,*, H. H. Stein, Animal Sciences, University of Illinois, Urbana, IL.

P079 Effects of feeding low or high peroxidized distillers dried grains with solubles (DDGS) to sows and their progeny on growth performance and carcass characteristics of progeny.
X. Li1, G. C. Shurson1, S. K. Baidoo2, D. D. Gallaher3, J. E. Anderson4, L. J. Johnston5,*, 1Department of Animal Science, University of Minnesota, Saint Paul, MN, 2Southern Research and Outreach Center, University of Minnesota, Waseca, MN, 3Department of Food Science and Nutrition, University of Minnesota, Saint Paul, MN, 4Division of Science and Math, 5West Central Research and Outreach Center, University of Minnesota, Morris, MN.
P080  Effect of dietary iodine value on tissue fatty acids and iodine value in market pigs.  
Z. Rambo1,*, A. Jones1, A. Schinckel1, D. Kelly1, B. Richert1, M. Latour2, 1Animal Science, Purdue University, West Lafayette, IN, 2Animal Science, Southern Illinois University, Carbondale, IL.

P081  Validation of the net energy content of canola meal and efficacy of a multi-enzyme product in 15 to 34 kg nursery pigs.  
E. L. Hansen1,*, E. D. Frugé1, S. A. Hansen1, K. A. Frerichs1, C. W. Hastad2, 1Hubbard Feeds, Mankato, MN, 2New Fashion Pork, Jackson, MN.

P082  Energy concentration and phosphorus digestibility in canola, cottonseed, and sunflower products fed to growing pigs.  
D. A. Rodríguez, R. C. Sulabo, J. C. Gonzalez-Vega1, H. H. Stein, Animal Sciences, University of Illinois, Urbana, IL.

P083  Effects of molasses supplementation on growth performance, nutrient digestibility, blood characteristics, fecal moisture, fecal noxious gas emission, and meat quality in finishing pigs.  
S. C. Kim, L. Yan, I. H. Kim1, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.

P084  Effect of rate of daily gain on nutrient and energy digestibility in growing-finishing pigs.  
N. W. Jaworski1,*, A. Owusu-Asiedu1, D. Petri3, H. H. Stein1, 1Animal Science, University of Illinois, Urbana, IL, 2Danisco Animal Nutrition, DuPont Industrial Biosciences, 3Animal and Environmental Applications, DuPont Nutrition and Health, Waukesha, WI.

P085  Effect of levan supplementation on the immune response of growing pig challenged with lipopolysaccharide.  
Z. F. Zhang, H. Y. Baek, I. H. Kim1, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.

P086  Interaction of Grobiotic-S and antibiotics on growth performance of nursery pigs raised under substandard conditions.  
H. Tran1, J. W Bundy, Y. S. Li, T. E. Burkey, P. S. Miller, Animal Science, University of Nebraska, Lincoln, NE.

P087  Effect of dietary addition of tiamulin and chlortetracycline on pig performance immediately after placement in the finishing barn.  
S. Nitikanchana1, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouche, J. L. Nelssen, Kansas State University, Manhattan, KS.

P088  Cytokine gene expression and secretion by alveolar macrophages derived from pigs fed spray dried porcine plasma.  
H. Tran1, J. W Bundy, P. S. Miller, T. E. Burkey, Animal Science, University of Nebraska, Lincoln, NE.

P089  Long term effects of spray-dried plasma in nursery diets on intestinal immune response to subsequent stress.  
A. Moeser1, J. Campbell2,*, J. Crenshaw2, J. Polo2, 1North Carolina State University, Raleigh, 2APC, Inc., Ankeny, IA.
P093 The effects of fat soluble vitamin administration by oral gavage or injection on plasma vitamin status of newborn pigs.
Y. D. Jang1*, M. D. Lindemann1, H. J. Monegue1, R. Stuart2, 1Animal and Food Sciences, University of Kentucky, Lexington KY, 2Stuart Products, Bedford TX.

P094 Effects of including microbial phytase in diets fed to pigs and broilers.
J. Lowell*, M. Song, J. Mathai, H. Stein, Animal Science, University of Illinois, Urbana, IL.

P095 Optimization of dietary phosphorus and calcium to maximize their utilization by growing pigs for sustainable farming.
E. Gonzalo*, M.-P. Létourneau-Montminy, C. Pomar, Agriculture and Agri-Food Canada, Sherbrooke, Canada.

P096 Evaluation of the energy and amino acid matrix of a novel microbial phytase (Quantum Blue).
C. Walk1*, T. Santos1, J. Chewning2, P. Wilcock1, 1AB Vista, Marlborough, United Kingdom, 2SRS, Fayetteville, AR.

P097 Inclusion of high levels of phytase (Quantum Blue) improves the performance of pigs from weaning to 21 days post-weaning.
G. Cordero*, T. Santos, C. Walk, P. Wilcock, AB Vista, Marlborough, United Kingdom.

P098 Effects of phytase with different calcium and phosphorous density diets on growth performance, nutrient digestibility, blood profiles, fecal noxious gas emission, and meat quality in finishing pig.
S. M. Hong, K. H. Kim, I. H. Kim*, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.

P099 Phosphorus digestibility and concentration of digestible and metabolizable energy in corn, corn co-products, and bakery meal fed to pigs.
O. J. Rojas*, H. H. Stein, Animal Sciences, University of Illinois, Urbana, IL.

P100 Meta-analysis of the impact of dietary phosphorus, calcium and microbial phytase on growth performance in pigs.
M.-P. Létourneau-Montminy1*, A. Narcy2, 1Agriculture and Agri-Food Canada, Sherbrooke, Canada, 2INRA, Nouzilly, France.
P101 An economical farm technology to quantify estrous cervix morphology in lactating dairy cows.
A. Nikkhah*, S.M. Karimzadeh, Animal Sciences, University of Zanjan, Zanjan, Islamic Republic of Iran.

P102 Libido, semen characteristics and fertility of boars housed in crates versus pens.
E. R. Tosky*, N. E. Dysart, S. E. Swing, W. L. Flowers, Animal Science, North Carolina State University, Raleigh, NC.

P103 Methylation patterns in fetal tissues generated from gilts inseminated with fresh or cryopreserved semen.
L. A. Rempel*, J. R. Miles, Reproduction Research Unit, USDA, ARS, USMARC, Clay Center, NE.

P104 Effectiveness of OvuGel® for induction of ovulation in a single, fixed-timed insemination program for weaned sows.
W. L. Flowers1*, M. E. Johnston2, S. K. Webel2, M. E. Swanson2, 1Animal Science, North Carolina State University, Raleigh, NC, 2JBS United, Inc, Sheridan, IN.

P105 Fetal liver glycogen production and glycogenic transcript expression during prenatal development from pig breeds differing in preweaning survivability.
J. R. Miles1*, J. A. Noel2, L. A. Rempel1, J. L. Vallet1, B. A. Freking1, 1Reproduction Research Unit, USDA, ARS, USMARC, Clay Center, NE, 2Animal Science and Industry, Kansas State University, Manhattan, KS.

P106 Effect of melatonin (MEL) or maternal nutrient restriction on cell proliferation in the ovine placenta.
A. W Eifert1*, M. E Wilson1, K. A Vonnahme3, P. P. Borowicz2,3, D. A Redmer2,3, S. Dorsam2, J. Haring2, C. O Lemley4, 1Animal and Nutritional Sciences, West Virginia University, Morgantown, 2Animal Science, 3Advanced Imaging and Microscopy Core Lab, North Dakota State University, Fargo, ND, 4Animal and Dairy Sciences, Mississippi State University, MS.

P107 Short term protein supplementation during late gestation in beef cows reduces pulsatility index in the uterine artery.

P108 Feeding time regulation of circadian and periprandial blood glucose patterns in high-producing lactating cows.
A. Nikkhah, Animal Science, University of Zanjan, Zanjan, Islamic Republic of Iran.
P109  Periprandial peripheral lactate rhythmicity in lactating cows: feeding
time and diet effects.
A. Nikkhah*, Animal Science, University of Zanjan, Zanjan, Islamic
Republic of Iran.

RUMINANT NUTRITION

P113  Effects of evening vs. Morning mixed ration delivery on rumen
microbial protein synthesis.
Akbar Nikkhah*, Animal Science, University of Zanjan, Zanjan, Islamic
Republic of Iran.

P114  Effects of feed provision timing (2100 vs. 0900 H) on cow milk fatty
acids profiles.
A. Nikkhah*, Animal Science, University of Zanjan, Zanjan, Islamic
Republic of Iran.

P115  Feeding timing: a chronophysiological regulator of postprandial
intake circadian rhythms in dairy cows.
A. Nikkhah*, Animal Science, University of Zanjan, Zanjan, Islamic
Republic of Iran.

P116  Feeding corn Shredlage™ increases total tract dietary starch and fiber
digestibility by lactating dairy cows.
L. Ferraretto*, R. Shaver, Department of Dairy Science, University of
Wisconsin - Madison, Madison, WI.

P117  Ruminal fermentation by dairy cows fed low-fat corn dried distillers
grains with solubles in combination with rumen-inert fat.
H. A. R. Ramirez¹*, P. J. Kononoff¹, K. Karges², ¹University of Nebraska-
Lincoln, NE, ²Dakota Gold Research Association, Sioux Falls, SD.

P118  Finishing beef cattle on totally mixed and self-fed rations.
C. L. Engel¹*, V. L. Anderson¹, B. R. Ilse², ¹Carrington Research
Extension Center, North Dakota State University, NE, Carrington, ²Big
Horn County, Montana State University, Hardin, MT.

P119  Effect of soybean hull and enzyme inclusion on corn-based diet
digestibility.
J. R. Russell¹*, M. S. Kerley, University of Missouri, Columbia, MO.

P120  Complex 1 and 3 ratio and complex 1 proteins diverge among steers
with different residual feed intake phenotypes.
M. M. Masiero¹*, N. O. Minton, M. Kerley, W. J. Sexten, Animal
Science, University of Missouri, Columbia, MO.

P121  Effect of feeding distillers dried grains with solubles during lactation
on milk fatty acid composition.
C. Shee¹*, R. P. Lemenager, M. C. Claeys, J. P. Schoonmaker, Animal
Science, Purdue University, West Lafayette, IN.
P122 Effects of maternal metabolizable protein supplementation during late gestation on wether offspring organ weights.
M. Van Emon1,*, C. Schauer3, A. Meyer3, K. Maddock-Carlin1, K. Vonnahme1, 1Department of Animal Sciences, North Dakota State University, Fargo, ND, 2Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, 3Department of Animal Science, University of Wyoming, Laramie, WY.

P123 Comparison of liver and jejunal mass and energy use between high and low efficiency steers.
L. Prezotto1,*, F. E. Doscher1, S. I. Paisley2, K. C. Swanson1, A. M. Meyer1, 1Animal Science, North Dakota State University, Fargo, ND, 2Animal Science, University of Wyoming, Laramie, WY.

P124 Effects of rumen-protected arginine supplementation and arginine-HCl injection on site and extent of digestion, ruminal fermentation, and intestinal amino acid disappearance in forage-fed steers.
A. M. Meyer1,*, S. I. Klein2, M. Kapphahn2, D. V. Dhuyvetter3, R. E. Musser4, J. S. Caton3, 1Department of Animal Science, University of Wyoming, Laramie, WY, 2Department of Animal Sciences, North Dakota State University, Fargo, ND, 3Ridley Block Operations, 4SODA Feed Ingredients, LLC, Mankato, MN.

P125 Chemical composition and in vitro intestinal digestibility of isolated rumen microbial fractions.
A. J. Carpenter1,*, S. W. Fessenden2, M. D. Stern2, 1Animal Sciences and Industry, Kansas State University, Manhattan, KS, 2Department of Animal Science, University of Minnesota, Saint Paul, MN.

P126 Non-esterified fatty acids and its relationship with mediators of the acute phase response in dairy cows.
F. da Rosa1, 2, 3, 4, P. Montagner3, 4, E. Schmitt5, A. Schneider3, 6, C. C. Brauner2, 3, E. Schweiger2, 3, M. Weschenfelder2, 3, A. R. Krause2, 3, F. Del Pino3, 7, M. N. Corrêa3, 4, 1Animal Sciences, University of Illinois, Urbana, IL, 2Animal Sciences, 3Núcleo de Pesquisa, Ensino e Extensão em Pecuária (NUPEEC), 4Department of Veterinary Clinics, Federal University of Pelotas, Pelotas, 5Brazilian Agricultural Research Corporation, EMBRAPA - CPAFRO, Porto Velho, 6Nutrition College, 7Department of Biochemistry, Federal University of Pelotas, Pelotas, Brazil.

P127 Loin quality of Brazilian native lambs fed with different levels of crude glycerin.
P128 Increasing preconception RUP supplementation improves mature beef cow return to estrous cyclicity but does not impact milk production or reproductive performance.
A. F. Summers*, D. M. Larson, A. S. Cupp, Animal Science, University of Nebraska-Lincoln, Lincoln, NE.

P129 Evaluation of field pea forages in growing and finishing feedlot rations.
V. Anderson¹*, B. Ilse², ¹Carrington Research Extension Center, North Dakota State University, Carrington, ND, ²Big Horn County Extension, Montana State University, Hardin, MT.

P130 Effect of treating corn stover with calcium hydroxide on nutrient digestibility.
C. Kirby¹*, A. Wertz-Lutz², D. Holzgraefe², M. Kerley¹, ¹University of Missouri, Columbia, MO, ²ADM Alliance Nutrition, Quincy, IL.

P131 Dietary inclusion of condensed distillers solubles in gestating and lactating beef cows.
C. N. Shee*, R. P. Lemenager, M. C. Claeys, J. P. Schoonmaker, Animal Sciences, Purdue University, West Lafayette, IN.

P132 Pancreatic enzyme activity in high and low efficiency steers.
F. Doscher¹*, L. Prezotto¹, S. Paisley², A. Meyer², K. Swanson¹, ¹Animal Science, North Dakota State University, Fargo, ND, ²Animal Science, University of Wyoming, Laramie, WY.

P133 Effects of corn processing methods on rumen digestion and microbial growth in no-roughage diets.

P134 Influence of increasing supplementation of corn dried distiller’s grains with solubles to growing steers fed medium-quality hay on growth performance, feeding behavior, and blood metabolites.
A. Islas*, R. S. Goulart, T. C. Gilbery, M. L. Bauer, K. C. Swanson, Animal Science, North Dakota State University, Fargo, ND.

P135 Evaluation of supplement level and supplemental protein source for growing cattle on medium quality hay.
W. Moore*, W. J. Sexten, B. R. Wiegand, M. S. Kerley, Animal Science, University of Missouri, Columbia, MO.

P136 Effect of cinnamaldehyde, monensin and tannin on trans fatty acid formation in continuous culture system.
A. Ishlak¹*, M. Gunal², A. AbuGhazaleh¹, ¹Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL, ²Department of Animal Science, Süleyman Demirel University, Isparta, Turkey.
P137 Effect of blackberry and pomegranate oils on trans fatty acid formation in continuous culture system.
A. AbuGhazaleh1*, M. Gunal2, A. Ishlak1, 1Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL, 2Department of Animal Science, Süleyman Demirel University, Isparta, Turkey.

P138 Intake, in situ disappearance, and ruminal fermentation characteristics of bermudagrass hay diets supplemented with different types of distillers’ grains for lactating cows.
K. P. Coffey*, A. N. Young, E. B. Kegley, P. Hornsby, J. Hollenback, D. Philipp, Animal Science, University of Arkansas Division of Agriculture, Fayetteville, AR.

P139 Influence of nutrient restriction and melatonin supplementation of pregnant ewes on maternal and fetal pancreatic β-cell morphology.
F. Doscher1*, C. Lemley2, L. Camacho1, P. Borowicz1, J. Caton1, A. Meyer3, K. Vonnahme1, K. Swanson1, 1Animal Science, North Dakota State University, Fargo, ND, 2Animal Science, Mississippi State University, MS, 3Animal Science, University of Wyoming, Laramie, WY.

P140 Prediction of barley silage dry matter by near infrared reflectance spectroscopy.
C. F. O’Neill1*, A. R. Harding1, S. E. Murray1, M. L. May2, L. O. Burciaga-Robles2, O. R. Rasmussen2, C. R. Krehbiel1, 1Oklahoma State University, Stillwater, OK, 2Feedlot Health Management Services Ltd., Okotoks, Canada, 2FOSS North America, Eden Prairie, MN.

TEACHING

P144 Illustrating the effects of fetal crowding on brain development in teaching laboratories.
J. Morton*, T. Rathbun, J. Gonzalez, D. Davis, Animal Sciences and Industry, Kansas State University, Manhattan, KS.
Tuesday, March 12

SYMPOSIA AND ORAL SESSIONS

ANIMAL BEHAVIOR, HOUSING AND WELL-BEING
Chair: Sylvia Kehoe, University of Wisconsin–River Falls
302/303

8:00 O051 Effect of core body temperature or time of day on lying behavior of lactating dairy cows.
J. Allen¹,², L. Hall¹, R. Collier¹, J. Smith¹, ¹Animal Sciences, University of Arizona, Tucson, ²Agriculture Sciences, Northwest Missouri State University, Maryville.

8:15 O052 Effects of nursery floor-space allowance on growth, physiology, and immunology in replacement gilts.
S. R. Callahan¹,*, M. J. Estienne¹, A. E. DeDecker², A. J. Cross³, ¹Animal and Poultry Sciences, Virginia Tech, Blacksburg, ²Murphy-Brown, LLC, Rose Hill, NC, ³North Carolina State University, Raleigh.

8:30 O053 (Invited ASAS Animal Science Young Scholar) Social stress and space allowance in gestational group housing influences sow and piglet welfare.
L. A. Mack¹,*, S. D. Eicher², A. K. Johnson³, D. C. Lay Jr.³, B. T. Richert¹, E. A. Pajor⁴, ¹Animal Sciences, Purdue University, ²LBRU, USDA-ARS, West Lafayette, ³Animal Science, Iowa State University, Ames., ⁴Production Animal Health, University of Calgary, Calgary, Canada.

9:00 O054 Performance and well-being of pregnant sows housed in pens retrofitted from stalls.
I. Johnston*, Y. Li, A. Hilbrands, West Central Research and Outreach Center, University of Minnesota, Morris.

9:15 BREAK

9:30 O055 Is analgesic transfer to piglets via the sow’s milk an option for pain mediation at castration?
J. A. Brown¹,*, Y. M. Seddon¹, J. Stookey², J. Alcorn³, ¹Ethology, Prairie Swine Centre, ²Western College of Veterinary Medicine, ³Department of Pharmacy, University of Saskatchewan, Saskatoon, Canada.
9:45 O056 Effect of mannan oligosaccharide (Bio-Mos®) and outdoor access housing on pig growth, feed efficiency, ultrasound carcass composition and health.
B. A. Wenner¹,*, H. N. Zerby¹, W. A. Gebreyes², D. D. Boler¹, S. J. Moeller¹, ¹Animal Sciences, ²Veterinary Preventative Medicine, The Ohio State University, Columbus.

10:00 O057 Effects of management options on performance of gestating sows housed in an electronic sow feeder system.
Y. Li¹,*, H. Gonyou², ¹West Central Research and Outreach Center, University of Minnesota, Morris., ²Prairie Swine Center, Saskatoon, SK, Canada.

BILLY DAY SYMPOSIUM
CONSIDERING SOW HOUSING
Chair: Timothy J. Safranski, University of Missouri
Sponsor: Billy Day Appreciation Club, ASAS Foundation
316/317

8:00 Welcome and Introduction
8:10 O058 (Invited) The history of gestation sow housing in the United States.
S. Niekamp¹, Swine Welfare, Clive.

8:50 O059 (Invited) Sow housing from the perspective of the pig.
E. Pajor*, Veterinary Medicine, Production Animal Health, University of Calgary, Calgary, Canada.

9:30 O060 (Invited) Sow housing from the perspective of the consumer
G. Tonsor*, Agricultural Economics, Kansas State University, Manhattan.

10:10 BREAK
H. Feitsma*, E. F. Knol, Research and Development, TOPIGS Research Center IPG, Beuningen, Netherlands

11:05 O062 (Invited) Sow housing: summary and perspectives from Australia.
P. H. Hemsworth¹,²*, ¹Department of Agriculture and Food Systems, University of Melbourne, Parkville, Australia, ²Department of Animal Science, The Ohio State University, Columbus.
8:00  O063 (Invited) Development and applications of low-cost, high-throughput genotyping.
R. M. Thallman1,*, A. K. Lindholm-Perry1, J. D. Curry2, V. Y. Fofanov1, H. Koshinsky2, 1USDA, Agricultural Research Service, U.S. Meat Animal Research Center, Clay Center, NE, 2Eureka Genomics, Hercules, CA, 3Eureka Genomics, Sugarland, TX.

8:30  O064 (Invited) Comparison of genomic predictions in hereford using actual or imputed 50K genotypes.
M. Saatchi1, E. Marques2,*, S. Bauck2, D. J. Garrick1, 1Animal Science, Iowa State University, Ames, 2GeneSeek, Lincoln.

9:00  O065 Influence of accuracy of phasing on accuracy of imputation from 7K to 50K genotypes in Cattle.
Z. Weng1,*, M. Saatchi1, R. Schnabel2, J. Taylor2, D. J. Garrick1, 1Animal Science, Iowa State University, Ames, 2Devision of Animal Science, University of Missouri, Columbia., 3Institute of Veterinary, Animal and Biomedical Sciences, Massey University, Palmerston North, New Zealand

9:15  O066 (Invited) Incorporation of genomic predictions into the American Hereford Association (AHA) national cattle evaluation.
J. Ward1,*, D. Garrick2, M. Saatchi3, D. Johnston3, B. Crook3, 1AHA, Kansas City, 2NBCEC and Iowa State University, Ames., 3AGBU, Abri, Australia

9:45  O067 (Invited) Genomic-enhanced EPDs in the American Angus Association National Cattle Evaluation.

10:15 O068 Genomic prediction in Red Angus beef cattle is improved by using a multi-breed reference population.
M. Saatchi1, D. J. Garrick, Animal Science, Iowa State University, Ames.
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<td>10:30</td>
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<td>11:30</td>
<td>O071</td>
<td>(Invited) Genomic selection in layer chickens outperforms pedigree-based selection.</td>
<td>A. Wolc¹, ², ³, ⁴, J. Arango¹, P. Settar¹, J. E. Fulton¹, N. P. O'Sullivan¹, R. Preisinger⁴, D. Habier², R. L. Fernando², D. J. Garrick², S. J. Lamont², J. C.M. Dekkers², ¹Hy-Line Int., Dallas Center, ²Department of Animal Science, Iowa State University, Ames., ³Department of Genetics and Animal Breeding, Poznan University of Life Sciences, Poznan, Poland, ⁴Lohmann Tierzucht GmbH, Cuxhaven, Germany</td>
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### NONRUMINANT NUTRITION

**CO-PRODUCT FEEDSTUFFS**

**Chair: Omar Mendoza, The Maschoffs 304/305**

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<tr>
<td>8:00</td>
<td>O072</td>
<td>Carbohydrate composition and in vitro digestibility of dry matter and non-starch polysaccharides in grains and grain co-products.</td>
<td>N. W. Jaworski ¹, H. N. Lærke², K. E. B. Knudsen², H. H. Stein ¹, ¹Animal Science, University of Illinois, Urbana, ²Animal Science, Aarhus University, Tjele, Denmark.</td>
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<td>8:15</td>
<td>O073</td>
<td>Energy concentration and amino acid digestibility in corn and corn co-products fed to growing pigs.</td>
<td>M. Song¹, J. K. Mathai², F. N. Almeida², O. J. Rojas², S. L. Tilton³, M. J. Cecava³, H. H. Stein², ¹Animal Sciences, Chungnam National University, Daejeon, Korea, Republic Of, ²Animal Sciences, University of Illinois, Urbana, ³Archer Daniels Midland Company, Decatur.</td>
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</table>
8:30 O074 Effects of diet form and fiber level before marketing on growth performance, carcass yield, and iodine value of finishing pigs.

8:45 O075 The effects of medium-oil dried distillers grains with solubles on growth performance and carcass traits in finishing pigs.

9:00 O076 Empiric narrowing of the net energy value of low-oil corn DDGS on pig growth performance and carcass characteristics.
V. Zamora1, M. Young1,*, N. Campbell1, B. Uttaro2, E. Beltranena3, 1Gowans Feed Consulting, Wainwright, AB, 2Agriculture and Agri-Food Canada, Lacombe, AB, 3Alberta Agriculture and Rural Development, Edmonton, AB, Canada.

9:15 O077 Evaluation of various inclusion rates of dried distillers grain with solubles in sow lactation diets.
L. Greiner1,*, Z. Jiang2, C. Neil1, J. Connor1, G. Allee4, 1Innovative Swine Solutions, LLC, Carthage, 2Ajinomoto Heartland, Chicago, 3PIC, Hendersonville, 4Porktech, LLC, Columbia.

9:30 O078 The effects of soybean hulls in corn-soybean meal and corn-soybean meal-DDGS diets on nursery pig performance.
D. Goehring1,*, J. M. DeRouchey1, M. D. Tokach1, S. S. Dritz2, R. D. Goodband1, J. L. Nelssen1, B. W. James2, 1Kansas State University, Manhattan, 2Kalmbach Feeds, Inc., Upper Sandusky.

9:45 O079 The effects of soybean hulls on nursery pig growth performance.

10:00 O080 Nutritional value of lentil and micronized full-fat soybean fed to growing pigs.
T. A. Woyengo1,*, R. Jha1,2, E. Beltranena1,3, A. Pharazyn1, R. T. Zijlstra1, 1University of Alberta, Edmonton, Canada, 2University of Hawaii at Manoa, Honolulu, 3Alberta Agriculture and Rural Development, Edmonton, 4Nutreco Canada Inc, Guelph, Canada.
10:15 O081 Concentration of metabolizable energy and digestibility of amino acids in chicken meal, poultry by-product meal, Ultrapro, AV-E Digest, and conventional soybean meal fed to pigs.

10:30 O082 Amino acid digestibility in canola meal, 00-rapeseed meal, and 00-rapeseed expellers fed to growing pigs.
T. Maison*, H. H. Stein
Animal Science, University of Illinois, Urbana.

J. L. Landero1,*, E. Beltranena1,2, R. T. Zijlstra1,
1University of Alberta, 2Alberta Agriculture and Rural Development, Edmonton, Canada.

11:00 O084 (Invited ASAS Animal Science Young Scholar) Effects of heat damage on the nutritional composition and on the amino acid digestibility of canola meal, sunflower meal, and cottonseed meal fed to pigs.
F. N. Almeida1,*, J. K. Htoo2, J. Thomson3, H. H. Stein1,
1Animal Sciences, University of Illinois, Urbana., 2Evonik Industries AG, Hanau, Germany, 3Evonik Degussa Corporation, Kennesaw.

11:30 O085 Performance, organ weights and blood parameters in growing pigs fed diets containing expeller extracted canola meal.
J. S Sands1,*, K. Schuh1, T. A. Woyengo2, C. M. Nyachoti1, 1Animal Science, University of Manitoba, Winnipeg, 2Animal Science, University of Alberta, Edmonton, Canada.

11:45 O086 Feeding value of green canola seed fed to growing-finishing pigs.
T. A. Woyengo1,*, J. Yáñez1, M. Young2, G. Lanz2, E. Beltranena1,3, R. T. Zijlstra1,
1University of Alberta, Edmonton, 2Gowans Feed Consulting, Wainwright, 3Alberta Agriculture and Rural Development, Edmonton, Canada.

12:00 O087 Effect of levan supplementation on the growth performance, nutrient digestibility, fecal microflora, and fecal noxious gas content in weaning pigs.
J. Li*, B. R. Lee, I. H. Kim, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.
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<td><strong>NONRUMINANT NUTRITION</strong></td>
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<td><strong>NURSERY PIG NUTRITION AND MANAGEMENT</strong></td>
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<td>8:00</td>
<td>O089</td>
<td>Effects of increasing wheat middlings (midds) and ne formulation on nursery pig growth performance.</td>
<td>J. A. De Jong*, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. L. Nelssen, Animal Science, Kansas State University, Manhattan.</td>
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<tr>
<td>8:15</td>
<td>O090</td>
<td>(Invited ASAS Animal Science Young Scholar) Effects of dietary oxidized lipid on the growth performance and metabolic oxidative status of nursery pigs.</td>
<td>A. R. Hanson1*, L. J. Johnston2, S. K. Baidoo3, J. L. Torrison4, C. Chen5, G. C. Shurson1, 1Animal Science, University of Minnesota, St Paul, 2West Central Research and Outreach Center, University of Minnesota, Morris, 3Southern Research and Outreach Center, University of Minnesota, Waseca, 4Veterinary Diagnostic Laboratory, 5Department of Food Science and Nutrition, University of Minnesota, St Paul.</td>
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<td>8:45</td>
<td>O092</td>
<td>Feed preference of nursery pigs fed diets with soybean meal, napus canola meal or juncea canola meal.</td>
<td>J. L. Lander01*, E. Beltranena12, R. T. Zijlstra1, 1University of Alberta, 2Alberta Agriculture and Rural Development, Edmonton, Canada.</td>
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<tr>
<td>9:00</td>
<td>O093</td>
<td>Simple assessment of piglet robustness in relation to nursery diet quality and feeding antibiotics.</td>
<td>C. Levesque*, E. Miller, J. Zhu, K. de Lange, Animal and Poultry Science, University of Guelph, Guelph, Canada</td>
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38
9:30 BREAK

9:45 O094 Effect of dietary lysine and sanitary condition on performance of weaned pigs fed antibiotic-free diets. R. K. Kahindi1,*, J. Sands1, J. Htoo2, M. Nyachoti1, 1Animal Science, University of Manitoba, Winnipeg, Canada, 2Evonik Industries, Hanau, Germany

10:00 O095 Soybean meal level in diets for pigs challenged with porcine reproductive and respiratory syndrome (PRRS) virus. G. C. Rocha1, R. D. Boy2, J. A. S. Almeida1,*, Y. Liu1, T. M. Che1, R. Dilger1, J. E. Pettigrew1 1Animal Sciences, University of Illinois, Urbana, 2Hanor, Franklin, KY.


10:30 O097 Spray-dried animal plasma mitigates the negative impact of deoxynivalenol (DON) in nursery pigs. L. Eastwood1,*, J. Shea, D. Gillis, D. Beaulieu, Prairie Swine Centre Inc., Saskatoon, Canada.

10:45 O098 Growth performance, fecal consistency and intestinal function in weaned pigs fed diets containing spray dried porcine plasma or egg yolk antibodies. J. S. Sands*, J. M. Heo, C. M. Nyachoti, Animal Science, University of Manitoba, Winnipeg, Canada.

11:00 O099 Mucosal bacteria associated with periods of reduced and compensatory growth in pigs. C. Levesque1,*, K. Swanson2, K. de Lange1, 1Animal and Poultry Science, University of Guelph, Guelph, Canada, 2Animal Science and Division of Nutritional Science, University of Illinois, Urbana.

11:15 O100 Rate of starch digestion influences glucose and short chain fatty acid signaling pathway mRNA abundance in the porcine intestine. A. D. Woodward1,*, P. R. Regmi1, M. G. Ganzle1, T. A. T. G. van Kempen2, R. T. Zijlstra1, 1Agricultural, Food, and Nutritional Science, University of Alberta, Edmonton, Canada, 2North Carolina State University, Raleigh.
### RUMINANT NUTRITION SYMPOSIUM
**ECONOMICAL AND ENVIRONMENTAL IMPACT OF MAXIMIZING FEED EFFICIENCY WHILE MINIMIZING RISK IN AN ERA OF $8 CORN**

Chair: John Schoonmaker, Purdue University  
312/313

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### RUMINANT NUTRITION
**DAIRY NUTRITION**

Chair: Daryl Kleinschmit, AgriKing  
314/315

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<td>8:00</td>
<td>O104</td>
<td>Effects of diet energy levels fed during the dry period on performance parameters of dairy cows. A. Pineda*, F. Cardoso, J. K. Drackley, Animal Sciences, University of Illinois, Urbana.</td>
</tr>
<tr>
<td>8:15</td>
<td>O105</td>
<td>(Invited ADSA Young Dairy Scholar) Provision of non-immunoglobulin protein and rate of passage effects efficiency of Immunoglobulin G absorption in neonatal calves. R. Cabral1*, P. Erickson2, 1Molecular, cellular and biomedical sciences, University of New Hamsphire, Durham, 2Biological Sciences, University of New Hamsphire, Durham.</td>
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</table>
(Invited ADSA Young Dairy Scholar) Butyrate supplementation effects on metabolism and production in lactating dairy cows.
K. Herrick*, K. Kalscheur, South Dakota State University, Brookings.

(Invited ADSA Young Dairy Scholar) Effects of feeding fat from distillers grains on growth, metabolic profile, and long-term performance of dairy heifers.
J. L. Anderson*, K. F. Kalscheur, Dairy Science Department, South Dakota State University, Brookings.

(Invited ADSA Young Dairy Scholar) Expression of mRNA for ureagenesis in early-lactation dairy cows is responsive to post-ruminal protein supply.
H. Tucker*, S. Donkin, Animal Science, Purdue University, West Lafayette.

Influence of the direct-fed microbial Bovamine on feed efficiency and milk production of lactating Holstein cows.
M. O’Neil1*, E. Testroet2, M. Osman1, W. Kreikemeier3, D. Ware3, D. C. Beitz4, 1Department of Animal Science, 2Department of Food Science and Human Nutrition, Iowa State University, Ames, 3Nutrition Physiology Company, Guymon, OK, 4Department of Biochemistry, Biophysics, and Molecular Biology, Iowa State University, Ames.

TEACHING SYMPOSIUM
INVOLVING UNDERGRADUATE STUDENTS IN ANIMAL SCIENCES RESEARCH: BEST PRACTICES AND BENEFITS
Chair: Karol Fike, Kansas State University
320

(Invited) Developing scholars and future employees: building a sustainable undergraduate research program in agriculture.
T. Nichols*, South Dakota State University, Brookings.

(Invited) Industry perspective: Engaging students in research in order to obtain skills and knowledge to make them more successful in the job market.
J. M. Rumph*, Pfizer Animal Genetics, Kalamazoo, MI.

(Invited) Best practices and benefits of involving students in animal sciences research - early career faculty perspective.
S. Hansen*, Animal Science, Iowa State University, Ames.
10:00 O112 (Invited) Department initiatives to engage undergraduate students in animal sciences research.

10:20 Panel Discussion

EXTENSION – DAIRY SYMPOSIUM
RUMEN BYPASS FAT SOURCES AND THEIR EFFECT ON MILK PRODUCTION AND MILK FAT
Chair: Tamilee Nennich, Purdue University
308/309

1:00 (Invited) Effects of feeding various fat sources on milk fat production in lactating dairy cattle.
A. Lock*, Michigan State University, East Lansing.

1:45 (Invited) Manipulating lipid metabolism in fresh cows.
N. Litherland*, University of Minnesota, St. Paul.

2:15 O113 (Invited) Applied principles of feeding fat to lactating dairy cows, with emphasis on byproducts as the primary source.

3:00 BREAK


J. Davidson*, Land O’Lakes Purina Feeds, Gray Summit, MO.

3:55 Industry Panel and Discussion
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<td>1:00</td>
<td>O114</td>
<td>(Invited) Exposure to heat stress during pregnancy impairs metabolism in the ruminant fetus.</td>
<td>S. W. Limesand*, Animal Sciences, University of Arizona, Tucson.</td>
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<td>2:30</td>
<td>O116</td>
<td>(Invited) Implications of maternal nutrition on developmental programming of economically relevant traits in livestock production.</td>
<td>A. E. Radunz*, University of Wisconsin, River Falls.</td>
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<td>3:15</td>
<td>BREAK</td>
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<td>3:30</td>
<td>O209</td>
<td>Impact of ractopamine hydrochloride on finishing pigs in a three phase marketing scheme.</td>
<td>G. D. Gerlemann1, G. L. Allee1, P. J. Rincker2, D. D. Boler3*, S. N. Carr2, 1Animal Sciences, University of Missouri, Columbia, 2Elanco Animal Health, Greenfield, 3Animal Sciences, Ohio State University, Columbus.</td>
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<td>3:45</td>
<td>O210</td>
<td>Effect of growth rate during the stocker period on satellite cell-mediated preadipocyte differentiation in beef cattle.</td>
<td>M. A. Vaughn1*, J. D. Starkey1, K. C. Hutton1, P.A. Lancaster2, U. DeSilva2, G. W. Horn2, C.R. Krehbiel2, 1Animal and Food Sciences, Texas Tech University, Lubbock, 2Animal Science, Oklahoma State University, Stillwater.</td>
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<td>4:00</td>
<td>O211</td>
<td>Effects of increasing hydrolysable tannin levels in diets of boars on growth, carcass traits, boar taint, and cytochrome P450 gene expression.</td>
<td>A. L. Wealleans1, J. C. Litten-Brown1, I. Mueller-Harvey1, I. Givens2, P. Silacci1, G. Bee3*, 1School of Agriculture, Policy and Development, University of Reading, 2School of Agriculture, Policy and Development, University of Reading, Reading, United Kingdom, 3Agroscope, Posieux, Switzerland</td>
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4:30 O213 Effect of timing of mixing during the grow-finish period on the growth performance and carcass characteristics of barrows and gilts under commercial conditions. L. Ochoa1,*, M. Ellis1, B. Isaacson2, B. A. Peterson2, 1Animal Sciences, University of Illinois, Urbana, 2The Maschhoffs, Carlyle, IL.

4:45 O214 Prenatal and postnatal nutritional effects on postnatal growth and carcass characteristics of steers. K. J. McLean*, B. H. Boehmer, C. L. Maxwell, G. W. Horn, R. P. Wettemann, Oklahoma Agricultural Experiment Station, Oklahoma State University, Stillwater.

HARLAN RITCHIE BEEF SYMPOSIUM
Chair: Larry Corah, Certified Angus Beef Program
Sponsor: Harlan Ritchie Appreciation Club, ASAS Foundation
316/317

1:00 O117 (Invited) The future of genomic selection in animal agriculture. J. Taylor*, University of Missouri, Columbia.

1:45 O118 (Invited) Industry issue or opportunity – increasing carcass weights? J. Stika*, C. E. Walenciak, Certified Angus Beef LLC, Wooster, OH.

2:30 O119 (Invited) Creating customer-centric beef production systems. N. Speer*, Western Kentucky University, Bowling Green.

1:00 | O121 | Effect of β-mannanase and β-glucanase on pig performance, active glucose absorption, and intestinal microbial population in the early nursery period. Z. Rambo¹, M. Rostagno², J. Radcliffe¹, J. Ferrel¹, A. Jones¹, D. Kelly¹, B. Richert¹, ¹Animal Sciences, Purdue University, West Lafayette, IN ²USDA-ARS, Livestock Behavior Research Unit, West Lafayette, IN, ³ChemGen Corp, Gaithersburg, MD.

1:15 | O122 | The effects of cereal type and xylanase supplementation on growing pig growth performance and nutrient and energy digestibility. A. J. Myers⁷, J. Patience, Animal Science, Iowa State University, Ames.

1:30 | O123 | Effects of phytase and xylanase supplementation on energy and nutrient digestibilities in growing pigs fed wheat and wheat co-products-based diets. A. Kofi Agyekum¹,*, A. Owusu-Asiedu², J. Min Heo¹, M. Nyachoti¹, ¹Department of Animal Science, University of Manitoba, Winnipeg, Canada, ²DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom

1:45 | O124 | Growth performance and gastrointestinal responses in growing pigs fed either corn and corn DDGS or wheat and wheat co-products based diets without or with supplemental xylanase. E. G. Kiarie¹,*, L. Romero¹, S. Baidoo², ¹Research, DuPont Industrial Biosciences-Danisco Animal Science, Marlborough, United Kingdom, ²Animal Science, University of Minnesota, Waseca.

2:00 | O125 | Effect of supplementing of protease, phytase, and carbohydrase enzymes on nutrient digestibility of canola meal in growing pigs. Z. Nasir¹,*, J. Broz², R. T. Zijlstra¹, ¹Dept. of Agriculture, Food and Nutritional Science, University of Alberta, Edmonton, Canada, ²DSM Nutritional Products, Basel, Switzerland
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<td>2:15</td>
<td>O126</td>
<td>Protease and carbohydrase supplementation increased carcass weight and yield in finishing pigs eating an alternative diet.</td>
<td>J. Escobar*, Y. Ma, N. Odetallah, M. Vazquez-Añón, Novus International, St. Charles, MO.</td>
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<td>2:30</td>
<td>O127</td>
<td>(Invited ASAS Animal Science Young Scholar) Oral hen egg antibodies for the control of hyperphosphatemia during chronic kidney disease.</td>
<td>E. A. Bobeck¹,²*, M. E. Cook², ¹Animal Science, Iowa State University, Ames, ²Animal Science, University of Wisconsin-Madison, Madison.</td>
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<td>3:15</td>
<td>O129</td>
<td>Effects of grow-finish diets supplemented with CALSPORIN® (Bacillus subtilis C-3102 spores) or Stafac® on pig performance.</td>
<td>T. A. Meyer¹, S. Crowder¹*, T. Weeden¹, N. Otomo², T. Lohrmann³, ¹Purina Animal Nutrition LLC, Shoreview, MN, ²Calpis USA, Inc., Mt. Prospect, IL, ³Quality Technology International (QTI), Inc., Elgin, IL.</td>
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<td>3:30</td>
<td>O130</td>
<td>The effects of feeding narasin or virginiamycin on the performance of grow-finish pigs.</td>
<td>R. A. Arentson¹*, D. Mowrey¹, E. McMillan², ¹Elanco, Greenfield, ²Nutreco, Burford, Canada.</td>
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<td>3:45</td>
<td>O026</td>
<td>Increasing dietary levels of extruded and expeller-pressed canola juncea meal on pig growth performance and carcass traits.</td>
<td>X. Zhou¹*, M. Young², V. Zamora², R. T. Zijlstra¹, E. Beltranena³, ¹Department of Agricultural, Food &amp; Nutritional Science, University of Alberta, Edmonton, ²Gowans Feed Consulting Ltd, Wainwright, ³Alberta Agriculture and Rural Development, Edmonton, Canada.</td>
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## Nonruminant Nutrition
### Sow Nutrition and Management

**Chair:** Buddy Hinson, JBS United  
**304/305**

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| 4:00  | O131      | Variability in daily urinary nitrogen excretion in gestating gilts at 2 levels of energy intake.  
E. G. Miller*, D. Wey, C. F. M. de Lange, C. Levesque,  
Animal and Poultry Science, University of Guelph, Guelph, Canada. |
| 4:15  | O132      | The effects of added vitamin D3 in maternal diets on sow and pig performance.  
J. Flohr¹*, M. D. Tokach¹, J. L. Nelssen¹, S. S. Dritz¹,  
J. M. DeRouche⁴, R. D. Goodband¹, J. R. Bergstrom²,  
¹Kansas State University, Manhattan, ²DSM Nutritional Products Inc., Parsippany. |
| 4:30  | O133      | Development of a prediction equation to estimate post-partum sow body weight from pre-partum weight.  
D. Rosero¹*, C. Arellano², E. van Heugten¹, M. E.  
Johnston³, R. D. Boyd³, ¹Department of Animal Sciences,  
²Department of Statistics, NCSU, Raleigh, NC, ³JBS United, Sheridan, IN, ⁴Hanor Company, Inc., Franklin, KY. |
| 4:45  | O134      | Effects of commercial diets with or without CALSPORIN® (Bacillus subtilis C-3102 spores) on fresh fecal microbial profiles of sows from breeding through lactation.  
B. K. Knudson¹*, N. Otomo², T. Hamaoka², B. Lee², S.  
C. Johnson³, ¹Nutrition Services – Livestock Management Company (LiManCo), Waverly, IA, ²Calpis USA, Inc., Mt. Prospect, IL, ³Quality Technology International (QTI), Inc., Elgin, IL. |
| 5:00  | O135      | Sow and nursery pig performance are improved when diets are supplemented with a Saccharomyces cerevisiae fermentation product.  
J. W. Frank⁴, K. L. Dorton, Diamond V, Cedar Rapids, IA. |
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<th>Time</th>
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<tr>
<td>1:00</td>
<td>O136</td>
<td>(Invited ASAS Animal Science Young Scholar) Bovine females with thecal cell androgen excess result in altered oocyte maternal effect gene abundance.</td>
<td>A. F. Summers¹ *, W. E. Pohlmeier¹, V. M. Brauer¹, K. M. Sargent¹, R. M. McFee¹, R. A. Cushman², J. R. Wood¹, A. S. Cupp¹, ¹Animal Science, University of Nebraska- Lincoln, Lincoln, ²USDA-ARS U.S. Meat Animal Research Center, Clay Center.</td>
</tr>
<tr>
<td>1:30</td>
<td>O137</td>
<td>(Invited ADSA Young Dairy Scholar) Inflammation in the transition dairy cow: Hormesis to homeorhesis.</td>
<td>J. Farney *, B. Bradford, Animal Science, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>2:00</td>
<td>O138</td>
<td>The effects of porcine reproductive syndrome virus (PRRSV) on immune biomarkers.</td>
<td>G. Mastromano¹, T. E. Burkey¹ *, A. Rakhshandeh², G. Gourley³, T. E. Weber³, M. Fitzsimmons³, K. Schwartz², J. C. M. Dekkers², C. Sparks⁴, J. Odle⁵, N. K. Gabler², ¹University of Nebraska, Lincoln, ²Iowa State University, ³Swine Graphics Enterprises, Webster City, IA, ⁴Newsham Choice Genetics, Des Moines, IA, ⁵North Carolina State University, Raleigh.</td>
</tr>
<tr>
<td>2:15</td>
<td>O139</td>
<td>Measures of immune function as biomarkers in serum of pigs infected with porcine reproductive and respiratory syndrome virus.</td>
<td>A. Rakhshandeh¹ *, T. E. Burkey², T. E. Weber¹, M. Fitzsimmons², K. Schwartz¹, J. C. M. Dekkers¹, C. Sparks⁴, J. Odle⁵, N. K. Gabler¹, G. Gourley³, ¹Iowa State University, Ames, ²University of Nebraska, Lincoln, ³Swine Graphics Enterprises, Webster City, ⁴Newsham Choice Genetics, Des Moines, ⁵North Carolina State University, Raleigh.</td>
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<tr>
<td>2:30</td>
<td>O140</td>
<td>Effects of zinc amino acid complex on gut integrity and metabolism in acutely heat-stressed pigs.</td>
<td>S. C. Pearce¹ *, M. V. Sanz-Fernandez¹, J. Torrison², M. E. Wilson², N. K. Gabler¹, L. H. Baumgard¹, ¹Animal Science, Iowa State University, Ames, ²Zinpro Corporation, Eden Prairie, MN.</td>
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<td>2:45</td>
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<td><strong>BREAK</strong></td>
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<tr>
<td>3:30</td>
<td>O143</td>
<td>Effects of metabolizable protein during gestation on vasoreactivity in response to angiotensin II and mRNA expression of angiotensin receptors in cotyledonary arteries.</td>
<td>L. A. Lekatz¹, A. Reyaz¹, M. S. Sane², F. Yao³, S. T. O'Rourke², C. Schwartz¹, M. L. V. Emon³, C. S. Schauer³, K. R. Maddock-Carlin¹, C. O. Lemley¹, J. S. Haring⁴, K. A. Vonnahme¹, ¹Center for Nutrition and Pregnancy, Animal Sciences, North Dakota State University, ²Pharmaceutical Sciences, North Dakota State University, Fargo, ND, ³Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, ⁴Animal and Dairy Sciences, Mississippi State University, Mississippi State, MS.</td>
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<tr>
<td>4:15</td>
<td>O145</td>
<td>Reduction in the risk of peripartum transmission of mycobacterium avium subsp. Paratuberculosis in holstein calves born in individual calving pens.</td>
<td>P. Pithua¹, L. Espejo², S. M. Godden³, S. J. Wells², ¹University of Missouri, Columbia, ²University of Minnesota, ³University of Minnesota, St. Paul.</td>
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<td>Time</td>
<td>O146</td>
<td>Presentation</td>
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<td>1:00</td>
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<td>Supplementing modified distillers grains plus solubles mixed with low quality forage to replace grazed intake of cow-calf pairs.</td>
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<tr>
<td>1:15</td>
<td>O147</td>
<td>Influence of corn processing and distiller’s grains inclusion for finishing cattle on feeding behavior, gain efficiency, and carcass quality.</td>
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<td>A. Islas*, T. C. Gilbery, M. L. Bauer, K. Swanson, Animal Science, North Dakota State University, Fargo.</td>
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<tr>
<td>1:30</td>
<td>O148</td>
<td>Effect of feeding increasing levels of wet distillers grains plus solubles with and without oil extraction on finishing performance.</td>
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<tr>
<td>1:45</td>
<td>O149</td>
<td>Effect of varying doses of vitamin C growth and carcass characteristics of cattle consuming a high sulfur diet.</td>
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<td>D. Pogge*, S. Hansen, Animal Science, Iowa State University, Ames.</td>
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<td>2:00</td>
<td>O150</td>
<td>Effects of feeding condensed distillers solubles with and without oil extraction on growing cattle performance.</td>
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<td>M. L. Jolly*, C. J. Schneider, D. B. Burken, B. L. Nuttelman, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</td>
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<td>2:15</td>
<td>O151</td>
<td>Effect of feeding distillers dried grains with solubles during lactation on feedlot performance and carcass characteristics of steer progeny.</td>
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<td>C. N. Shee*, R. P. Lemenager, M. C. Claeys, J. P. Schoonmaker, Animal Science, Purdue University, West Lafayette.</td>
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</table>
Replacement of grazed forage and animal performance when distillers grains are fed in a bunk or on the ground. K. L. Gillespie*, T. J. Klopfenstein, J. D. Volesky, L. A. Stalker, J. A. Musgrave, B. L. Nuttelman, C. J. Schneider, G. E. Erickson, Animal Science, University of Nebraska, Lincoln.

Effect of calcium oxide inclusion in beef feedlot diets containing 60% dried distillers grains with solubles on rumen pH, volatile fatty acids, and nutrient digestibility. A. J. C. Nunez1, T. L. Felix2, S. C. Loerch3, R. P. Lemenager4, J. P. Schoonmaker4*, 1Animal Sciences, University of Sao Paulo, Pirassununga, Brazil, 2Animal Sciences, University of Illinois, Champaign, 3Animal Sciences, The Ohio State University, Wooster, 4Animal Sciences, Purdue University, West Lafayette.

Effect of calcium oxide inclusion in beef feedlot diets containing 60% dried distillers grains with solubles on performance and carcass characteristics. A. J. C. Nunez2, T. L. Felix1, S. C. Loerch3, R. P. Lemenager4, J. P. Schoonmaker4*, 1Animal Sciences, University of Illinois, Champaign., 2Animal Sciences, University of Sao Paulo, Pirassununga, Brazil, 3Animal Sciences, The Ohio State University, Wooster, 4Animal Sciences, Purdue University, West Lafayette.

Effects of corn processing method and dietary inclusion of corn wet distillers grains with solubles (WDGS) on nutrient metabolism and enteric gas production in finishing steers. J. Jaderborg 1,*, G. I. Crawford1, A. DiCostanzo1, M. J. Spiels2, K. E. Hales3, 1Animal Science, University of Minnesota, Saint Paul, 2Environmental Management Unit, USDA-ARS U.S. Meat Animal Research Center, 3Nutrition Research Unit, USDA-ARS Meat Animal Research Center, Clay Center, NE.

Distillers grains supplementation in a forage system with spayed heifers. K. L. Gillespie*, T. J. Klopfenstein, B. L. Nuttelman, J. D. Volesky, G. E. Erickson, C. J. Schneider, Animal Science, University of Nebraska, Lincoln.

Effects of abruptly transitioning cattle from RAMP to a finishing diet on feedlot performance and carcass traits. C. J. Schneider*, B. L. Nuttelman1, D. B. Burken1, T. J. Klopfenstein1, G. E. Erickson1, R. A. Stock2, 1Animal Science, University of Nebraska, Lincoln, 2Cargill Inc., Blair, NE.
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<td>4:15</td>
<td>O157</td>
<td>Comparing condensed distillers soluble concentration in steam-flaked corn finishing diets on cattle performance and carcass characteristics.</td>
<td>M. E. Harris¹,*, G. E. Erickson¹, K. H. Jenkins¹, M. K. Luebbe², ¹Animal Science, University of Nebraska, Lincoln, ²Animal Science, University of Nebraska, Scottsbluff.</td>
</tr>
<tr>
<td>4:30</td>
<td>O158</td>
<td>Effects of increasing soybean hulls in finishing diets with distiller’s grains on performance and carcass characteristics.</td>
<td>C. J. Bittner¹,*, B. L. Nuttelman¹, C. J. Schneider¹, D. B. Burken¹, L. Johnson², T. L. Mader², T. J. Klopfenstein¹, G. E. Erickson¹, ¹Animal Science, University of Nebraska, Lincoln, ²Animal Science, University of Nebraska, Concord.</td>
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**RUMINANT NUTRITION**

**GENERAL RUMINANT NUTRITION I**

Chair: Daryl Kleinschmit, AgriKing

314/315

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<th>Time</th>
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<tr>
<td>1:00</td>
<td>O160</td>
<td>Effects of crude glycerin on ruminal fermentation parameters of Nellore steers.</td>
<td>E. H. C. B. Van Cleef¹,*, J. M. B. Ezequiel², F. B. de Oliveira Scarpino², D. A. Vey Silva³, A. P. D’Aurea², J. B. D. Sancanari³, ¹Animal Science and Industry, Kansas State University, Manhattan., ²Animal Science, ³Veterinary Medicine, Sao Paulo State University, Jaboticabal, Brazil.</td>
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<tr>
<td>1:15</td>
<td>O161</td>
<td>(Invited ADSA Young Dairy Scholar) Methods to study the contribution of rumen microorganisms to metabolizable protein.</td>
<td>E. C. Lopez’, T. Klopfenstein, S. Fernando, P. Kononoff, Animal Science Department, University of Nebraska, Lincoln.</td>
</tr>
<tr>
<td>1:45</td>
<td>O162</td>
<td>Feeding Next Enhance® 300 improved growth performance and carcass measurements of beef steers.</td>
<td>M. Westerhold¹,*, M. S. Kerley¹, W. J. Sexten¹, B. R. Wiegand¹, T. J. Wistuba², ¹Division of Animal Sciences, University of Missouri, Columbia, ²Novus International, Inc., St. Charles.</td>
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<td>2:00</td>
<td>O164</td>
<td>Effects of a terminal sorting system with Zilpaterol hydrochloride on feedlot performance and carcass characteristics of yearling steers.</td>
<td>F. H. Hilscher(^1)*, B. L. Nuttelman(^1), D. B. Burken(^1), G. E. Erickson(^1), K. J. Vander Pol(^2), (^1)Animal Science, University of Nebraska-Lincoln, (^2)Technical Services Specialist, Merck Animal Health, Lincoln.</td>
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<tr>
<td>2:15</td>
<td>O163</td>
<td>Effect of source and concentration of copper on cattle growth and copper status.</td>
<td>M. Drewnoski(^1)*, S. Hansen(^2), (^1)Animal and Vet Sci, University of Idaho, Moscow, (^2)Animal Science, Iowa State University, Ames.</td>
</tr>
<tr>
<td>2:30</td>
<td>O165</td>
<td>Changes in steer performance throughout the feeding period.</td>
<td>J. C. MacDonald(^1)*, C. J. Schneider, K. M. Rolfe, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</td>
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<td>2:45</td>
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<td>3:00</td>
<td>O166</td>
<td>Effects of dietary change on viral-bacterial interactions in the rumen of cattle.</td>
<td>C. Anderson(^1)*, M. Jolly, G. E. Erickson, T. Klopfenstein, S. Fernando, Animal Science, University of Nebraska, Lincoln.</td>
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<tr>
<td>3:15</td>
<td>O167</td>
<td>(Invited ASAS Animal Science Young Scholar) Small intestinal digestion of raw cornstarch in cattle is rapidly increased by duodenal infusion of casein.</td>
<td>D. Brake(^1)*(^2), E. Titgemeyer(^1), D. E. Anderson(^2), (^1)Animal Sciences and Industry, (^2)Department of Clinical Sciences, Kansas State University, Manhattan.</td>
</tr>
<tr>
<td>3:45</td>
<td>O168</td>
<td>(Invited ADSA Young Dairy Scholar) Peripartal immunometabolic indices and hepatic transcriptomics in transition dairy cows in response to methionine supplementation.</td>
<td>J. S. Osorio(^1)*(^2), E. Trevisi(^2), P. Ji(^3), D. Luchini(^4), S. Rodriguez-Zas(^1), R. E. Everts(^1), H. A. Lewin(^1), J. K. Drackley(^1), G. Bertoni(^2), J. J. Loor(^4), (^1)University of Illinois, Urbana, IL., (^2)Institute of Zootechnic, Università Cattolica del Sacro Cuore, Piacenza, Italy, (^3)The William H. Miner Agricultural Research Institute, Chazy, NY, (^4)ADISSEO, Alpharetta, GA.</td>
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</table>
Effects of two dietary concentrations of Levucell SC in growing or finishing feedlot diets.

TEACHING
Chair: Karol Fike, Kansas State University
320

Factors impacting undergraduate student success in genetics.
J. M. Bormann*, D. Moser, K. Bates, Animal Sciences and Industry, Kansas State University, Manhattan.

Teaching the fundamentals of swine nutrition using guided discovery.
B. D. Whitaker*, Animal Science, University of Findlay, Findlay.

Development and use of an extensive swine production system in interdisciplinary education.

Student leadership skills development after experiences in both intensive and extensive swine production systems.

Development of a teamwork/leadership activity across two animal science courses.

Student evaluations of a teamwork/leadership activity across two swine courses in animal science at Iowa State University.

Swine-specific career night for animal science students at Iowa State University.
OPPORTUNITIES OF SOYBEAN MEAL CHARACTERISTICS SYMPOSIUM  
Chair: Greg Engelke, Cornerstone Resources LLC  
Sponsor: US Soybean  
306/307

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<th>Session Details</th>
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| 1:00  | (Invited) The production of soybeans today: measurement, nutrient content, geographical influence and plant technology application.  
N. Bajjalieh\(^1\)*, S. Naeve\(^2\), \(^1\)Integrative Nutrition, Inc., Decatur, IL, \(^2\)University of Minnesota, St. Paul |
| 1:55  | (Invited) Soybean meal processing the mechanics: yesterday, today and tomorrow.  
R. Clough*, Texas A&M University, College Station |
| 2:25  | Break |
| 2:40  | (Invited) Opportunities that trait enhanced soybean meal bring to broilers.  
B. Dozier*, Auburn University, Auburn, AL. |
| 3:20  | (Invited) Opportunities that trait enhanced soybean meal bring to swine.  
Speaker TBA |
| 3:50  | Where to Next.  
G. Engelke, Cornerstone Resources LLC, New Brighton, MN |
| 4:20  | Discussion |
Tuesday, March 12
POSTER PRESENTATIONS

GRADUATE STUDENT POSTER COMPETITION – M.S.

Sponsor: Cargill

P015 (ES)  Effects of immunological castration and distillers dried grains with solubles on belly slicing yields of male pigs slaughtered at two time points.
B. M. Bohrer¹,*, M. A. Tavarez², A. L. Schroeder³, D. D. Boler¹,
¹Animal Sciences, the Ohio State University, Columbus, OH,
²Animal Sciences, University of Illinois at Urbana-Champaign, Urbana, IL,
³Pfizer Animal Health, Kalamazoo, MI.

B. T. Klinkner¹,*, D. S. Buchanan¹, C. C. Carr², R. B. A. Dahlen¹,
R. J. Delmore³, K. Grimshaw⁴, W. R. Henning⁵, R. K. Miller⁴,
S. J. Moeller⁶, H. N. Zerby⁶, D. J. Newman¹,
¹Animal Sciences, North Dakota State University, Fargo, ND,
²Animal Sciences, University of Florida, Gainesville, FL,
³Animal Sciences, California Polytechnic State University, San Luis Obispo, CA,
⁴Animal Sciences, Texas A&M University, College Station, TX,
⁵Dairy and Animal Sciences, the Pennsylvania State University, University Park, PA,
⁶Animal Sciences, the Ohio State University, Columbus, OH.

P040 (GDMM)  Effect of lactic acid enhancement pH on beef quality attributes of cull cow strip loins.
J. Hollenbeck¹,*, J. Apple, J. Yancey, A. Young, C. Moon, T. Johnson, D. Galloway,
Division of Agriculture, University of Arkansas, Fayetteville, AR.

P066 (NR)  Effect of spray dried plasma protein compared to spray dried chicken egg protein on growth performance of nursery pig.
E. K. Pegg¹,*, P. M. Walker¹, R. L. Atkinson², B. G. Harmon³, P. J. Lammers¹,
¹Agriculture, Illinois State University, Normal, IL,
²Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL,
³Railsplitter Feed Technology Inc., Wildwood, MO.

P111 (PHY)  Correlation of jejunal vascularity with feed efficiency and angiogenic factor mRNA expression in calves from a gestational nutrient restriction model.
H. C. Cunningham¹,*, R. D. Yunusova², M. Du¹, B. W. Hess¹,
J. S. Caton³, A. M. Meyer¹,*
¹Department of Animal Science, University of Wyoming, Laramie, WY,
²Department of Animal Sciences, North Dakota State University, Fargo, ND.
Nutrient restriction during early and mid-gestation followed by realimentation alters caruncular arterial vasoreactivity in response to bradykinin in beef cows.

A. Reyaz1,*, M. S. Sane2, F. Yao2, L. E. Camacho1, C. O. Lemley3, J. S. Haring1, K. C. Swanson1, S. T. O’Rourke2, K. A. Vonnahme1, 1Department of Animal Sciences, 2Department of Pharmaceutical Sciences, North Dakota State University, Fargo, ND, 3Department of Animal and Dairy Sciences, Mississippi State University, Starkville, MS.

GRADUATE STUDENT POSTER COMPETITION – PH.D.

Sponsor: Cargill

P008 (BG) Lifetime reproductive performance in mice divergently selected for heat loss.
A. S. Bhatnagar*, M. K. Nielsen, University of Nebraska-Lincoln, Lincoln, NE.

P038 (GDMM) Background grazing, supplementation, finishing diet and aging affect flavor in beef bottom round steaks.
K. Varnold1,*, C. Calkins1, R. Miller2, G. E. Erickson1, 1Animal Science, University of Nebraska, Lincoln, NE, 2Animal Science, Texas A & M University, College Station TX.

P039 (GDMM) Investigation of protease activity in early postmortem muscle subjected to alternative chilling conditions.
D. Mohrhauser1,*, S. Lonergan2, E. Huff-Lonergan2, K. Underwood1, A. Weaver1, 1Department of Animal Science, South Dakota State University, Brookings, SD, 2Department of Animal Science, Iowa State University, Ames.

P065 (NR) Amino acid digestibility in heat damaged distillers dried grains with solubles fed to pigs.
F. N. Almeida1,*, J. K. Htoo2, J. Thomson3, H. H. Stein1, 1Animal Sciences, University of Illinois, Urbana, IL, 2Evonik Industries AG, Hanau, Germany, 3Evonik Degussa Corporation, Kennesaw, GA.

P067 (NR) Impact of an acute water and feed deprivation event on performance, histology, and stress markers in weaned pigs.
N. Horn1,*, F. Ruch2, K. Ajuwon1, G. Miller3, O. Adeola3, 1Animal Sciences, Purdue University, West Lafayette, IN, 2Enzyvia, LLC, Sheridan, IN, 3Biomatrix, Princeton, MN.

P110 (PHY) Effects of maternal nutrient restriction followed by realimentation during early to mid-gestation on conceptus development in beef cows.
L. E. Camacho1,*, C. O. Lemley2, K. C. Swanson1, K. A. Vonnahme1, 1Department of Animal Sciences, North Dakota State University, Fargo, ND, 2Department of Animal and Dairy Sciences, Mississippi State University, MS.
P141 (RN) Near-infrared reflectance spectroscopy to predict starch concentration in lactating dairy cattle feces.
S. M. Fredin*, L. F. Ferraretto, M. S. Akins, C. R. Heuer, P. C. Hoffman, R. D. Shaver, Dairy Science, University of Wisconsin, Madison, WI.

UNDERGRADUATE STUDENT POSTER COMPETITION

P013 (EBSR) Effects of pyrethroid insecticide on reproductive parameters of beef cows.
A. M. Kloth1,*, C. F. Shipley2, H. M. French2, V. L. Jarrell2, D. B. Faulkner1, D. W. Shike1, 1Animal Sciences, 2College of Veterinary Medicine, University of Illinois, Urbana, IL.

P019 (ES) The effects of immunological castration in mature boars.
C. Metzger1, 2,*, M. Brubaker2, M. Barker2, W. Singleton2, R. O. Bates1, 1Michigan State University, East Lansing, MI, 2Whitshire Hamroc, Albion IN, 3Purdue University, W. Lafayette, IN.

P142 (RN) Effects of microbial fermentation products on milk production in dairy cows during heat stress.
R. M. Wagner1,*, S. I. Kehoe1, D. DuBourdieu2, 1Animal and Food Science, University of Wisconsin-River Falls, River Falls, WI, 2R&D Lifesciences, Menomonie, WI.

P143 (RN) Effect of corn processing and distiller’s grains inclusion on intake, rumination, and resting time of finishing steers fed a high concentrate diet.
Z. E. Carlson*, A. Islas, R. S. Goulart, T. Gilbery, M. L. Bauer, K. C. Swanson, Animal Science, North Dakota State University, Fargo, ND.

ANIMAL BEHAVIOR, HOUSING & WELL-BEING

P001 Can feeding stalls be used by low ranking sows as hiding spaces at mixing?
J. Swanson1, 2,*, Y. He1, 3, L. J. Johnston1, Y. Li1, 1West Central Research and Outreach Center, University of Minnesota, MN, 2Dept. of Biology and Psychology, University of Minnesota-Morris, Morris, MN, 3Dept. of Animal Science, University of Minnesota, St Paul, MN.

P002 The relationship between surface temperature and welfare measures at loading and transport losses in market weight pigs at the plant.
R. K. Kephart1,*, A. Johnson1, J. J. McGlone2, A. Sapkota2, K. J. Stalder1, 1Animal Science, Iowa State University, Ames, 2Animal and Food Science, Texas Tech University, Lubbock, TX.
P003 Interactive effects of distillers dried grains with solubles (DDGS) and housing system on litter performance, sow productivity, and sow longevity over 3 reproductive cycles.
X. Li¹, G. C. Shurson¹, S. K. Baidoo², Y. Li³, L. J. Johnston¹⁺, ¹Department of Animal Science, University of Minnesota, Saint Paul, MN, ²Southern Research and Outreach Center, University of Minnesota, Waseca, MN, ³West Central Research and Outreach Center, University of Minnesota, Morris, MN.

P004 Effect of chamber stocking density on the efficacy of carbon dioxide euthanasia of suckling pigs.
K. Fiedler*, L. Sadler, S. Millman, Iowa State University, Ames.

P005 Short investigation of eating behavior of eurasian collared dove found within 4 Arizona dairy operations experiencing bird depredation.
J. Allen¹⁺²⁺, L. Hall², J. Smith², ¹Agriculture Sciences, Northwest Missouri State University, Maryville, MO, ²Animal Sciences, University of Arizona, Tucson, AZ.

P006 Impact of providing shade on grazing dairy heifer performance.
T. Dennis*, H. Schmitz, A. Mosiman, J. Tower, T. Nennich, Purdue University, West Lafayette, IN.

BREEDING AND GENETICS

P007 Association between hair coat shedding and ADG in weaned calves.
B. Richardson*, J. Cassady, Animal Science, North Carolina State University, Raleigh, NC.

EXTENSION – BEEF/SMALL RUMINANT

P009 Estimating beef cow maintenance efficiency with a fasting protocol.
G. Dahlke*, D. Loy, Animal Science, Iowa State University, Ames.

P010 Prevalence of caprine paratuberculosis in boar goat herds in Missouri.
P. Patrick*, N. S. Kollias, University of Missouri-Columbia, Columbia, MO.

J. Ramsay*, L. Tisor, W. Ottmar, P. Ashley, K. Ringwall, Dickinson Research Extension Center, North Dakota State University, Dickinson, ND.
P012 Effects of pasture size on the efficacy of off-stream water or restricted stream access to alter the spatial/temporal distribution of grazing cows.
J. Bisinger*, J. Russell, Iowa State University, Ames.

GROWTH, DEVELOPMENT, MUSCLE BIOLOGY AND MEAT SCIENCE

P021 Lipid oxidation and color stability of processed pork from pigs fed varied levels of dried distiller’s grains.
C. Perkins*, Z. Callahan, C. Ballard, M. Shannon, B. Wiegand, Division of Animal Sciences, University of Missouri, Columbia, MO.

P022 Enhancement of mature camel-meat quality traits with calcium chloride injection.
A. Aloawimer*, Animal production, King Saud University, Riyadh, Saudi Arabia.

P023 Vein steak differences in strip loins of heifers due to the inactive myostatin allele.
M. Semler*, C. Calkins, L. Senaratne-Lenagala, K. Varnold, G. Erickson, Animal Science, University of Nebraska, Lincoln, NE.

P024 Background grazing, supplementation, finishing diet and aging affect biochemical constituents of beef bottom round steaks.
K. Varnold*, C. Calkins, B. Nuttelman, L. Seneratne-Lenagala, J. Stevenson, M. Semler, M. Chao, G. Erickson, Animal Science, University of Nebraska, Lincoln, NE.

P025 Relationship among EUROP carcass classification and retail production of Brazilian lambs.
H. Almeida Ricardo1*, R. Oliveira Roça2, S. Aparecida Tavares2, C. Augusto Surge2, A. Rodrigo Mendes Fernandes1, 1Grande Dourados Federal University, Dourados-MS, 2Sao Paulo State University (UNESP), Botucatu-SP, Brazil.

P026 Maternal nutrition during the second trimester of gestation alters gene transcription in the resultant offspring.
A. R. Taylor1*, T. Jennings1, J. Koltes2, M. Gonda1, K. Underwood1, J. Reecy2, A. Wertz-Lutz1, A. Weaver1, 1Animal Science, South Dakota State University, Brookings, SD, 2Animal Science, Iowa State University, Ames.

P027 Effects of amino acid supplementation of Reduced Crude Protein (RCP) diets on lm quality of growing-finishing swine.
A. N. Young1*, J. K. Apple1, J. W. S. Yancey1, J. J. Hollenbeck1, T. M. Johnson 1, B. E. Bass1, T. C. Tsai1, C. V. Maxwell1, M. D. Hanigan2, J. S. Radcliffe3, B. T. Richert3, J. S. Popp3, R. Ulrich5, G. Thoma5, 1Animal Science, University of Arkansas Division of
P028 Proteomic analysis of fetal ovine skeletal muscle as influenced by maternal metabolizable protein supplementation in isocaloric diets during late pregnancy.
C. A. Schwartz1,*, K. A. Vonnahme1, C. S. Schauer2, S. M. Lonergan3, K. J. Grubbs4, J. B. Shabb4, W. W. Muhonen4, W. L. Keller1, K. R. Maddock-Carlin1, 1Department of Animal Sciences, North Dakota State University, Fargo, ND, 2Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, 3Department of Animal Science, Iowa State University, Ames, 4Department of Biochemistry and Molecular Biology, University of North Dakota, Grand Forks, ND.

P029 Changes in within-pen variation in body weight and in individual pig body weight rank from weaning to finish in a commercial facility.
C. M. Shull1,*, M. Ellis1, B. A. Peterson2, B. F. Wolter2, B. W. Isaacson2, 1University of Illinois, Urbana, IL, 2The Maschhoffs, Carlyle, IL.

P030 Development of growth curves for pigs reared to heavy weights in a commercial wean-to-finish facility.
C. M. Shull1,*, M. Ellis1, B. A. Peterson2, B. F. Wolter2, C. M. Peterson2, 1University of Illinois, Urbana, IL, 2The Maschhoffs, Carlyle, IL.

P031 Growth performance and carcass characteristics of pigs reared to heavy weights in a commercial facility.
C. M. Shull1,*, M. Ellis1, B. A. Peterson2, B. F. Wolter2, C. M. Peterson2, 1University of Illinois, Urbana, IL, 2The Maschhoffs, Carlyle, IL.

P032 Relationship between birth order and piglet pre-weaning mortality and other factors under commercial conditions.
L. M. Gesing1,*, H. M. Rothe1, M. Ellis1, B. A. Peterson2, A. M. Gaines2, B. F. Wolter2, C. M. Peterson2, 1University of Illinois, Urbana, 2The Maschhoffs, Carlyle, IL.

P033 Carcass characteristics and beef tenderness differences in cattle qualified as kosher and non-kosher.
K. Sorensen1,*, K. Maddock-Carlin1, N. Hayes1, W. Keller1, K. Phelps2, C. Schwartz1, R. Maddock1, 1North Dakota State University, Fargo, ND, 2Kansas State University, Manhattan, KS.
Lactate concentration at exsanguination is related to feedlot heifer temperament but not fresh beef color.
K. Wellnitz*, J. Magolski, K. Carlin, V. Anderson, E. Berg, Animal Sciences, North Dakota State University, Fargo, ND.

Carcass traits and shelf-life analysis of beef derived from steers in commercial feedlot settings administered Zilpaterol Hydrochloride with and without Hydro-Lac supplementation.
L. Hoffman1,*, D. Kohls2, H. Doering-Resch2, G. Crawford2, S. Scramlin1, A. Weaver1, K. Underwood1, 1South Dakota State University, Brookings, SD, 2Form-A-Feed, Steward, MN.

Effect of frequency of mixing during finishing on the growth rate, carcass characteristics, and morbidity and mortality levels of barrows and gilts reared in a commercial wean-to-finish facility.
L. Ochoa1,*, M. Ellis1, B. Isaacson2, B. A. Peterson2, 1Animal Sciences, University of Illinois, Urbana, IL, 2The Maschhoffs, Carlyle, IL.

Effect of live weight at mixing at the start of the finishing phase on growth rate and morbidity and mortality of barrows and gilts in a commercial wean-to-finish facility.
L. Ochoa1,*, C. Shull1, M. Ellis1, B. Isaacson2, B. A. Peterson2, 1Animal Sciences, University of Illinois, Urbana, IL, 2The Maschhoffs, Carlyle, IL.

Effect of feeding reduced crude protein diets on nursery pig performance and feed costs.

Maximum replacement of CP with synthetic amino acids in nursery pigs.
B. E. Bass1, T. Tsai1,*, M. D. Hanigan2, J. K. Apple1, R. Ulrich3, J. S. Radcliffe4, B. T. Richert4, G. Thoma4, J. S. Popp5, C. V. Maxwell1, 1Animal Science, University of Arkansas, Fayetteville, AR, 2Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, 3Chemical Engineering, University of Arkansas, Fayetteville, AR, 4Animal Science, Purdue University, West Lafayette, IN, 5Agriculture Economics & Agribusiness, University of Arkansas, Fayetteville, AR.
Amino acid digestibility by growing pigs in distillers dried grains with solubles with conventional, medium, or low concentrations of fat.
S. Curry*, D. Navarro, F. Almeida, H. Stein, Animal Science, University of Illinois, Urbana, IL.

Amino acid and organic matter digestibility in six distillers dried grains with solubles samples fed to growing pigs.
K. de Ridder1,*, P. McEwen1, C. F. M. de Lange1, I. Mandell1, R. Lackey2, 1Animal and Poultry Science, University of Guelph, Guelph, Canada, 2Ontario Ministry of Agriculture Food and Rural Affairs, Stratford, Canada.

Predicting standardized ileal digestibility of dietary amino acids in pigs: A meta-analysis.
F. Messad 1,*, E. Charbonneau1, M. Létourneau-Montminy2, F. Guay1, 1Department of Animal Science, Laval University, Quebec, Canada, 2Agriculture and Agri-Food Canada, Dairy and Swine Research and Development Centre, Sherbrooke, Canada.

Evaluation of three models of digestible lysine requirements applied to two genetic populations of pigs.
M. S. S. Ferreira1,2,*, A. P. Schinckel3, 1CAPES Foundation scholar process nº 8944-11-3, Brazilia, 2Veterinary Medicine, Federal University of Lavras, Lavras, Brazil, 3Animal Science, Purdue University, West Lafayette, IN.

The effects of phytogenics on the growth performance, nutrient digestibility, blood profiles, intestinal microflora, meat color and relative organ weight after oral challenge with Clostridium perfringens in broilers.
H. L. Li2, S. E. Kian1, I. H. Kim1,*, 1Delacon Biotechnik Ges.m.b.H., Steyregg, Austria, 2Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.

The effect of phytogenics on the growth performance, nutrient digestibility, noxious gas emission, meat grade and quality in growing-finishing pigs fed with different energy density diets.
H. Y. Baek1, S. E. Kian2, I. H. Kim1,*, 1Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, 2Delacon Biotechnik Ges.m.b.H., Steyregg, Austria.
P049 The effects of phytogenics on growth performance, fecal score, blood profiles, fecal noxious gas emission, nutrient digestibility, intestinal morphology in weanling pigs challenged with Escherichia coli K88.
J. W. Park¹, Sze Eng Kian², I. H. Kim¹*, ¹Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, ²Delacon Biotechnik Ges.m.b.H., Steyregg, Austria.

P050 The effects of phytogenics on egg production, egg quality, excreta microbiota, noxious gas emission, and nutrient digestibility in laying hens with different nutrient density diets.
J. P. Lee¹, Sze Eng Kian², I. H. Kim¹*, ¹Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, ²Delacon Biotechnik Ges.m.b.H., Steyregg, Austria.

P051 Effects of 25-Hydroxycholecalciferol on growth performance, skeletal integrity, and intestinal transporter gene expression in growing pigs.
A. Regassa*, R. Adhikari, J. Heo, M. Nyachoti, W. K. Kim, Animal Science, University of Manitoba, Winnipeg, Canada.

P052 Dietary plant extracts altered gene expression profile in alveolar macrophages of weaned pigs experimentally infected with PRRSV.
Y. Liu ¹*, J. J. Lee¹, M. Song¹, T. M. Che¹, J. A. S. Almeida¹, D. Bravo², W. G. Van Alstine³, J. E. Pettigrew¹, Animal Sciences, University of Illinois, Urbana, IL, ²Pancosma SA, Geneva, Switzerland, ³Purdue University, West Lafayette, IN.

P053 Effects of plant extracts on gene expression profiles of alveolar macrophages of weaned pigs.
Y. Liu ¹*, J. J. Lee¹, M. Song¹, T. M. Che¹, J. A. S. Almeida ¹, D. Bravo², W. G. Van Alstine³, J. E. Pettigrew¹, Animal Sciences, University of Illinois, Urbana, IL, ²Pancosma SA., Geneva, Switzerland, ³Purdue University, West Lafayette, IN.

P054 Effects of fructan supplementation on growth performance, nutrient digestibility, blood profiles, fecal noxious gas content, and fecal microflora in growing pigs.

P055 The effects of a novel Lactobacillus acidophilus fermentation product on growth performance and fecal bacteria in 5 to 14 kg pigs.
E. D. Frugé¹*, E. L. Hansen¹, S. A. Hansen¹, K. A. Frerichs¹, C. W. Hastad², M. Scott³, J. W. Frank³, Hubbard Feeds, Mankato, MN, ²New Fashion Pork, Jackson, MN, ³Diamond V, Cedar Rapids, IA.
P056 The Interactive effects of a non-starch polysaccharide enzyme and phytase in diets with high-fiber co-products on growth performance of nursery pigs.
A. B. Graham1, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, S. Nitikanchana, J. L. Nelssen, Kansas State University, Manhattan, KS.

P057 Effect of Xylanase supplementation both with and without phytase on apparent total tract digestibility (ATTD) in growing and finishing pigs.
Y. D. Jang1*, M. D Lindemann1, R. A. Cabrera2, 1Animal and Food Sciences, University of Kentucky, Lexington, KY, 2Huvepharma, Inc., Peachtree City, GA.

P058 Effect of supplemental Xylanase on apparent digestibility and blood parameters in growing pigs fed wheat/wheat bran or corn/corn DDGS based diets.
J. M. Heo1*, E. Kiarie2, A. K. Agyekum1, M. Nyachoti1, 1Animal Science Department, University of Manitoba, Winnipeg, Canada, 2DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom.

Z. Rambo1, J. Ferrel2, D. Kelly1, B. Richert1*, 1Animal Sciences, Purdue University, West Lafayette, IN, 2ChemGen Corp, Gaithersburg, MD.

P060 Effects of added zinc on growth performance and carcass characteristics of finishing pigs fed Ractopamine HCl.
C. Paulk1*, M. Tokach1, J. Nelssen1, J. Gonzalez1, J. DeRouchey1, R. Goodband1, S. Dritz2, 1Animal Science and Industry, 2Diagnostic Medicine/Pathobiology, Kansas State University, Manhattan, KS.

P061 The effects of Microsource S and diet-type on pig performance, fecal consistency, pen cleaning time and microbial load of growing-finishing pigs.
S. Nitikanchana1*, S. S. Dritz1, M. D. Tokach1, R. D. Goodband1, J. M. DeRouchey1, J. L. Nelssen1, J. R. Bergstrom2, 1Kansas State University, Manhattan, KS, 2DSM, Nutritional Products, Parsippany, NJ.

P062 Evaluating indicators of bone metabolism and turnover in geriatric, ovariectomized rats fed varied sources of conjugated linoleic acid.
K. Kanosky1, E. Benavides, D. Keisler, B. Wiegand, Division of Animal Sciences, University of Missouri, Columbia, MO.
P063 The effect of Tempeh supplementation on growth performance, nutrient digestibility, blood profiles, fecal microflora, and fecal score in weanling pigs.

P064 Disappearance of butyrate in the digestive tract of weanling and growing pigs fed diets containing different sources of butyrate.
K. Sotak¹*, M. Song¹, H. Stein¹, S. Moreland², ¹University of Illinois, Urbana, IL, ²Nutriad Inc., Elgin, IL.

Nonruminant Nutrition
SOW NUTRITION AND MANAGEMENT

P090 Effects of Dietary L-Carnitine and Chromium Picolinate on sow reproductive performance.
N. W Shelton¹*, J. L Nelssen¹, M. D Tokach¹, S. S Dritz¹, R. D Goodband¹, J. M DeRouchey¹, L. L Greiner², J. Connor², J. C Woodworth³, ¹Kansas State University, Manhattan, KS, ²Innovative Swine Solutions, Cardthage, IL, ³Lonza, Allendale, NJ.

P091 Effects of feeding low or high peroxidized distillers dried grains with solubles (DDGS) to sows on reproductive performance, incidence of low birth weight pigs, and within-litter variation of piglet birth weight.
X. Li¹, G. C. Shurson¹, S. K. Baidoo², D. D. Gallaher³, J. E. Anderson⁴, L. J. Johnston⁵*, ¹Department of Animal Science, University of Minnesota, Saint Paul, MN, ²Southern Research and Outreach Center, University of Minnesota, Waseca, MN, ³Department of Food Science and Nutrition, University of Minnesota, Saint Paul, MN, ⁴Division of Science and Math, ⁵West Central Research and Outreach Center, University of Minnesota, Morris, MN.

P092 Effects of feeding distillers dried grains with solubles (DDGS) to sows on reproductive performance over 3 reproductive cycles.
X. Li¹, G. C. Shurson¹, S. K. Baidoo², Y. Li³, L. J. Johnston⁵*, ¹Department of Animal Science, University of Minnesota, Saint Paul, MN, ²Southern Research and Outreach Center, University of Minnesota, Waseca, MN, ³West Central Research and Outreach Center, University of Minnesota, Morris, MN.
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<th>Time</th>
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<tr>
<td>9:00</td>
<td>O181</td>
<td>Accurate prediction of genomic breeding values across families combining linkage disequilibrium and co-segregation.</td>
<td>X. Sun*, R. L. Fernando, D. J. Garrick, J. C. M. Dekkers, Animal Science, Iowa State University, Ames.</td>
</tr>
<tr>
<td>9:15</td>
<td>O182</td>
<td>Accuracy of genomic prediction when accounting for population structure and polygenic effects.</td>
<td>N. Piyasatian*, J. C. M. Dekkers, Animal Science, Iowa State University, Ames.</td>
</tr>
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</table>
| 9:30  | O183    | Improving the accuracy of genomic prediction of milk traits in the New Zealand holstein friesian population. | M. Hayr1,*, M. Saatchi1, D. Johnson2, D. Garrick1,  
1Animal Science, Iowa State University, Ames., 2LIC, Hamilton, New Zealand |
| 9:45  | O184    | Comparison of actual 50K and imputed 770K genotypes for QTL mapping in hereford cattle using 1MB SNP windows and bayesian inference. | V. K. Katneni1, M. Saatchi2,*, D. Berry3, D. J. Garrick2,  
1Central Institute of Brackishwater Aquaculture, Chennai, India, 2Animal Science, Iowa State University, Ames., 3Animal & Grassland Research & Innovation Center, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland |
| 10:00 | O185    | A genome-wide association study identified CYP2J2 As a major gene controlling serum vitamin D status in beef cattle. | E. Casas1,*, R. J. Leach2, T. A. Reinhardt1, R. M. Thallman2, J. D. Lippolis1, G. L. Bennett2, L. A. Kuehn2,  
1National Animal Disease Center, ARS, USDA, Ames, IA, 2U. S. Meat Animal Research Center, ARS, USDA, Clay Center, NE. |
10:15  O186  Estimation of genetic marker effects for Capn1, Cast, and GHR on carcass quality traits in Angus cattle selected to increase minor marker frequencies.
R. G. Tait, Jr.*, S. D. Shackelford¹, T. L. Wheeler¹, D. A. King¹, E. Casas², R. M. Thallman¹, T. P. L. Smith¹, G. L. Bennett¹, ¹U.S. Meat Animal Research Center, USDA, Agricultural Research Service, Clay Center, NE, ²National Animal Disease Center, USDA, Agricultural Research Service, Ames, IA.

10:30  O187  (Invited ASAS Animal Science Young Scholar) Genetic basis of host response to PRRSV infection.
N. J. Boddicker¹*, J. K. Lunney², B. R. R. Rowland³, D. J. Garrick¹, J. M. Reecy¹, J. C. M. Dekkers¹, ¹Animal Science, Iowa State University, Ames, ²USDA, ARS, BARC, Beltsville, MD, ³Kansas State University, Manhattan.

11:00  O188  Factors associated with neutralizing antibody response in piglets after experimental infection with the porcine reproductive and respiratory syndrome.
A. Hess¹*, B. Trible², N. Boddicker¹, R. Rowland², J. Lunney³, S. Carpenter¹, J. Dekkers¹, ¹Animal Science, Iowa State University, Ames, ²Department of Diagnostic Medicine & Pathobiology, Kansas State University, Manhattan, KS, ³USDA, ARS, BARC, APDL, Beltsville, MD.

11:15  O189  Identification of QTL affecting a piglet’s ability to acquire and absorb Γ-Immunoglobulin from colostrum.

11:30  O190  Estimation of genetic parameters of sow body traits and litter size.
D. Thekkoot¹*, B. Kemp², M. F. Rothschild¹, J. C. M. Dekkers¹, ¹Animal Science, Iowa State University, Ames, ²Genesus Inc., Manitoba, Canada.

11:45  O191  Genome-wide association identifies candidate genes for ovulation rate in swine.

12:00  O192  The effect of feeding low energy high fiber diets on performance of pigs divergently selected for residual feed intake.
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<tbody>
<tr>
<td>10:45</td>
<td>O197</td>
<td>(Invited) Co-Product availability and their value in dairy cattle diets.</td>
<td>M. Jerred</td>
<td>Cargill, Elk River, MN.</td>
</tr>
<tr>
<td>11:20</td>
<td>O198</td>
<td>(Invited) Ways to feed dairy cattle to get through current conditions.</td>
<td>L. Whitlock</td>
<td>Progressive Dairy Solutions, Merced, CA.</td>
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**DAVID SCHINGOETHE SYMPOSIUM**

Chair: David Casper, South Dakota State University  
Sponsor: David Schingoethe Appreciation Club, ASAS Foundation

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**EXTENSION – BEEF/SMALL RUMINANT**

Chair: Amy Radunz, University of Wisconsin–River Falls  

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<tr>
<td>9:00</td>
<td>O199</td>
<td>Predicting marbling score and feedlot gain in angus steers utilizing gene max technology.</td>
<td>G. Fike, M. King, L. Corah, M. McCully, K. Andersen</td>
<td>Certified Angus Beef LLC, Manhattan, Certified Angus Beef LLC, Wooster, Pfizer Animal Health, Kalamazoo.</td>
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<tr>
<td>9:15</td>
<td>O200</td>
<td>Effect of limit feeding and feeding frequency on cultural energy use and sustainability of yearling beef steers.</td>
<td>H. Koknaroglu¹, T. Akunal¹*, O. Koskan¹, T. M. Delehant², M. P. Hoffman², ¹Animal Science Department, Suleyman Demirel University, Isparta, Turkey, ²Animal Science Department, Iowa State University, Ames.</td>
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<tr>
<td>9:30</td>
<td>O201</td>
<td>Inclusion of condensed corn distillers solubles in beef cattle diet affects sustainability in terms of cultural energy use efficiency.</td>
<td>H. Koknaroglu¹*, T. Akunal¹, O. Koskan¹, F. E. Doscher², M. P. Hoffman³, ¹Animal Science Department, Suleyman Demirel University, Isparta, Turkey, ²Animal Science Department, North Dakota State University, Fargo, ³Animal Science Department, Iowa State University, Ames.</td>
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<tr>
<td>9:45</td>
<td>O202</td>
<td>Sustainability, under which conditions: Sustainability revisited.</td>
<td>H. Koknaroglu¹, O. Koskan¹*, T. Akunal¹, M. P. Hoffman², ¹Animal Science Department, Suleyman Demirel University, Isparta, Turkey, ²Animal Science Department, Iowa State University, Ames.</td>
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<tr>
<td>10:00</td>
<td>O203</td>
<td>Effect of bale feeder design and forage quality on hay waste.</td>
<td>W. Moore*, W. J. Sexten, Animal Science, University of Missouri, Columbia.</td>
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**EXTENSION – SWINE**  
Chair: Christopher M. Peter  
302/303

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<tr>
<td>9:00</td>
<td>O204</td>
<td>Traits associated with gilt cyclicity in a heat stressed environment.</td>
<td>M. Knauer*, A. Terpening, Department of Animal Science, North Carolina State University, Raleigh.</td>
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<tr>
<td>9:15</td>
<td>O205</td>
<td>Relationships between body condition and subsequent reproductive performance for sows housed in individual pens.</td>
<td>M. R. Bryan¹*, D. C. Kendall², D. Baitinger³, M. T. Knauer¹, ¹North Carolina State University, Raleigh, ²Prestage Farms, Clinton, NC, ³Baitinger Engineering, Ankeny, IA.</td>
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<td>9:30</td>
<td>O206</td>
<td>Effect of deviations from predicted lactation feed intake on reproductive performance.</td>
<td>C. Yoder\textsuperscript{1,}\textsuperscript{*}, J. S. Fix\textsuperscript{2}, C. R. Schwab\textsuperscript{3}, T. J. Baas\textsuperscript{4}, 1Iowa State University, Ames, 2National Swine Registry, West Lafayette, IN, 3The Maschhoffs, Carlyle, IL.</td>
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<tr>
<td>9:45</td>
<td>O207</td>
<td>Feed efficiency of swine - A survey of current knowledge.</td>
<td>J. Flohr\textsuperscript{1,}\textsuperscript{*}, M. D. Tokach\textsuperscript{1}, J. L. Nelssen\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, J. M. DeRouche\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, J. F. Patience\textsuperscript{2}, 1Kansas State University, Manhattan, 2Iowa State University, Ames.</td>
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<tr>
<td>10:00</td>
<td>O208</td>
<td>Production performance factor analysis of commercial swine operations.</td>
<td>C. Abell\textsuperscript{1,}\textsuperscript{*}, J. Mabry\textsuperscript{1}, C. Hostetler\textsuperscript{2}, K. Stalder\textsuperscript{1}, 1Iowa State University, Ames, 2National Pork Board, Clive, IA.</td>
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<td><strong>NONRUMINANT NUTRITION</strong></td>
<td><strong>GROWING-FINISHING NUTRITION AND MANAGEMENT</strong></td>
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<td><strong>Chair: Steve Kitt, Pillen Family Farms</strong></td>
<td><strong>304/305</strong></td>
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<tr>
<td>9:00</td>
<td>O215</td>
<td>Effects of pellet quality and feeder adjustment on growth performance of finishing pigs.</td>
<td>J. Nemechek\textsuperscript{1,}\textsuperscript{*}, M. Tokach\textsuperscript{1}, E. Frugé\textsuperscript{2}, E. Hansen\textsuperscript{2}, S. Dritz\textsuperscript{1}, R. Goodband\textsuperscript{1}, J. DeRouche\textsuperscript{1}, J. Nelssen\textsuperscript{1}, 1Animal Science and Industry, Kansas State University, Manhattan, 2Hubbard Feeds, Inc, Mankato.</td>
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<td>9:15</td>
<td>O216</td>
<td>Effects of corn particle size, complete diet grinding, and diet form on pig growth performance, caloric efficiency, and carcass characteristics.</td>
<td>J. A. De Jong\textsuperscript{1,}\textsuperscript{*}, J. M. DeRouche\textsuperscript{1}, M. D. Tokach\textsuperscript{1}, R. D. Goodband\textsuperscript{1}, S. S. Dritz\textsuperscript{1}, J. L. Nelssen\textsuperscript{1}, C. Hastad\textsuperscript{2}, 1Animal Science, Kansas State University, Manhattan, 2New Fashion Pork, Jackson.</td>
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<td>9:30</td>
<td>O217</td>
<td>Interaction between feeder space availability and corn DDGS on grow-finish pig performance and total tract digestibility in a commercial setting.</td>
<td>E. K. Weber\textsuperscript{1,}\textsuperscript{*}, K. J. Stalder, J. F. Patience, Animal Science, Iowa State University, Ames.</td>
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</table>
9:45 O218  Effects of high-fiber diets and ractopamine HCL on finishing pig growth performance and carcass fat quality.
Kansas State University, Manhattan.

10:00 O219  Effects of ractopamine HCl on the efficiency of feed and nutrient utilization of finishing pigs.
K. Coble1*, S. Carter1, M. Pierdon1, K. Haydon3, H. Kim1, M. Bible1, 1Animal Science, Oklahoma State University, Stillwater, 2University of Pennsylvania School of Veterinary Medicine, Kennet Square, PA, 3Elanco Animal Health, Greenfield, IN.

10:15 O220  Comparison of the performance of growing pigs offered feeding programs developed using either the ME or NE system.
J. A. Acosta1, Cate E. Zier-Rush2, M. McGrath2, R. Palan2, J. Steckel2, J. F. Patience1,*, R. D. Boyd2, 1Animal Science, Iowa State University, Ames, IA, 2The Hanor Company, Franklin, KY.

10:30 O221  The impact of duration of feeding and saturation of dietary fats on changes in body fat over time and on final carcass lipid iodine values.
T. A. Kellner1,*, K. J. Prusa2, J. F. Patience1, 1Animal Science, 2Food Science and Human Nutrition, Iowa State University, Ames.

10:45 O222  Evaluation of collection method on nutrient digestibility of corn-soybean meal (CSBM) and CSBM-dried distillers grains with soluble (DDGS) based diets in growing pigs.
Y. S. Li1,*, H. Tran1, J. W. Bundy1, T. E. Burkey1, M. K. Nielsen1, B. J. Kerr2, P. S. Miller, 1Animal Science, University of Nebraska, Lincoln, 2Agroecosystems Management Research Unit, USDA, Ames, IA.

11:00 O223  Development and validation of a spectroscopic method to predict fat and fatty acids digestibility.
L. Wang1,*, M. Swift1,2, R. Zijlstra, 1University of Alberta, Edmonton, 2Alberta Agriculture and Rural Development, Lacombe, Canada.
11:15 O224  Effects of amino acid supplementation of reduced crude protein (rcp) diets on performance and carcass composition of growing-finishing swine.
J. K. Apple1,*, B. E. Bass1, T. C. Tsai1, C. V. Maxwell1, J. W. S. Yancey1, A. N. Young1, M. D. Hanigan2, R. Ulrich3, J. S. Radcliff4, B. T. Richert4, G. Thoma5, J. S. Popp6, 1Animal Science, University of Arkansas Division of Agriculture, Fayetteville, 2Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg, 3Chemical Engineering, University of Arkansas, Fayetteville, 4Animal Science, Purdue University, West Lafayette, 5Agricultural Economics & Agribusiness, University of Arkansas Division of Agriculture, Fayetteville.

11:30 O225  The effects of SID Trp: Lys Ratio and Trp source in diets containing DDGS on growth performance and carcass characteristics of finishing pigs.
S. Nitikanchana1,*, M. D. Tokach1, S. S. Dritz1, J. Usry2, R. D. Goodband1, J. M. DeRouchey1, J. L. Nelssen1, 1Kansas State University, Manhattan, 2Ajinomoto Heartland LLC, Chicago, IL.

11:45 O226  Effect of sampling method on the accuracy and precision of estimating the distribution of pig weights in a population.
C. Paulk1,*, G. Highland2, M. Tokach1, J. Nelssen1, S. Dritz2, R. Goodband1, J. DeRouche1y, K. Haydon4, 1Animal Science and Industry, 2Statistics, 3Diagnostic Medicine Pathobiology, Kansas State University, Manhattan, 4Elanco Animal Health, Greenfield.

NONRUMINANT NUTRITION
MINERALS
Chair: Brent Ratliff, TechMix, LLC
306/307

9:00 O227  The site of absorption of calcium from the intestinal tract of growing pigs.
J. C. González-Vega1,*, C. L. Walk2, H. H. Stein1, 1Animal Sciences, University of Illinois, Urbana., 2AB Vista feed ingredients, Marlborough, United Kingdom
9:15  O228  Standardized total tract digestibility of phosphorus in brassica napus black and brassica juncea yellow in growing pigs.
P. Adhikari*, J. M. Heo, M. Nyachoti, Animal Science, University of Manitoba, Winnipeg, Canada.

9:30  O229  Inclusion of high levels of phytase (Quantum Blue) improves the performance of pigs between 20 and 55 kg live weight.
C. Walk¹, T. Santos¹, J. Chewning², P. Wilcock¹, ¹AB Vista, Marlborough, United Kingdom, ²SRS, Fayetteville.

9:45  O232  The effect of the lysine:calorie ratio on the response to zinc supplementation in late finishing diets containing ractopamine hydrochloride.
J. Patience¹, A. Chipman¹, M. Wilson², ¹Animal Science, Iowa State University, Ames, ²Zinpro Corp, Eden Prairie.

10:00 O231  Effect of dietary zinc level and source and ractopamine level on performance and carcass traits of finishing pigs.

10:15 O230  High Cu supplementation improves growth performance in weaned pigs but the sudden removal of the high cu level may reduce pig performance.
P. Bikker*, A. W. Jongbloed, Wageningen UR Livestock Research, Lelystad, Netherlands

10:30 O233  Effect of supplementing Zn, Mn and Cu metal amino acid complexes for two reproductive cycles on performance of sows.
M. E. Wilson¹*, C. Rapp², J. Torrison¹, T. L. Ward³, ¹RNS, Zinpro Corporation, Eden Prairie, ²RNS, Zinpro Corporation, Boxmeer, Netherlands, ³Global RNS director, Zinpro Corporation, Eden Prairie.

10:45 O234  Effects of partial replacement of trace metal amino acid complexes during gestation and lactation on sow performance over three parities.
M. E. Wilson¹*, J. L. Torrison¹, T. L. Ward², ¹RNS, ²Global RNS director, Zinpro Corporation, Eden Prairie.
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<td>11:00</td>
<td>O238</td>
<td>(Invited) Follicular determinants of pregnancy establishment and maintenance in beef cattle.</td>
<td>M. Smith¹*, K. G. Pohler¹, J. A. Atkins¹, G. A. Perry², E. M. Jinks¹, M. D. MacNeil³, T. W. Geary³, ¹Animal Science, University of Missouri, Columbia, ²Animal Science, South Dakota State University, Brookings, ³Fort Keogh Livestock and Range Research Laboratory, USDA ARS, Miles City.</td>
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<td>9:00</td>
<td>O240</td>
<td>The effect of commensal microbial communities on the fecal shedding of Shiga toxin-producing E. coli (STEC) in beef cattle.</td>
<td>N. D. Aluthge*, Y. A. Wanniarachchi, G. E. Erickson, T. J. Klopfenstein, B. L. Nuttelman, C. J. Schneider, S. C. Fernando, Animal Science, University of Nebraska, Lincoln.</td>
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<td>9:15</td>
<td>O241</td>
<td>Meta-analysis examining the effects of Saccharomyces cerevisiae fermentation product on feedlot performance and carcass traits.</td>
<td>J. J. Wagner1,*, T. E. Engle1, C. R. Belknap2, 1Animal Sciences Department, Colorado State University, Fort Collins, 2Diamond V, Cedar Rapids, IA.</td>
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<td>10:00</td>
<td>O244</td>
<td>Intake and digestibility of heat-damaged hay by Katahdin ewes.</td>
<td>W. B. Smith1,*, K. Paul Coffey1, E. B. Kegley1, J. D. Caldwell2, A. N. Young1, E. A. Backes1,2, J. K1, D. Philipp1, 1Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, 2Department of Agriculture and Environmental Sciences, Lincoln University, Jefferson City.</td>
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<td>10:30</td>
<td>O246</td>
<td>The effect of trace mineral source and concentration on ruminal digestion and mineral solubility.</td>
<td>O. Genther*, S. Hansen, Animal Science, Iowa State University, Ames.</td>
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<td>11:00</td>
<td>O249</td>
<td>Applying corn condensed distillers solubles to hay windrows prior to baling: I. Procedure, and effects on bale temperature and nutrient composition.</td>
<td>J. M. Warner*, G. E. Erickson, R. J. Rasby, Animal Science, University of Nebraska, Lincoln.</td>
</tr>
<tr>
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<td>11:30</td>
<td>Introduction</td>
<td>A. Schroeder, G. Allee</td>
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<td>1:05</td>
<td>O256</td>
<td>Effects of immunocastration and dried distillers grains with solubles (DDGS) withdrawal on growth performance and carcass characteristics of grow–finish pigs.</td>
<td>M. Asmus1,*, A. L. Schroeder2, M. A. Tavarez3, M. D. Tokach1, J. L. Nelssen1, S. S. Dritz1, J. M. DeRouche1, R. D. Goodband1, 1Animal Science and Industry, Kansas State University, Manhattan, 2Pfizer Animal Health, Kalamazoo, 3University of Illinois, Urbana.</td>
</tr>
<tr>
<td>1:20</td>
<td>O257</td>
<td>Combined effects of immunological castration and distillers dried grains with solubles (DDGS) on carcass yield of pigs slaughtered at two time points.</td>
<td>M. A. Tavárez1,*, A. L. Schroeder2, M. D. Asmus3, F. K. McKeith1, A. C. Dilger1, 1Animal Science, University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI, 3Animal Science and Industry, Kansas State University, Manhattan.</td>
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1:35 O258 Behavior of immunologically-castrated barrows in comparison to gilts, physically-castrated barrows, and intact males.
C. L. Puls1,*, A. Rojo1, M. Ellis1, D. D. Boler1, F. K. McKeith1, J. Killefer1, P. D. Matzat2, A. L. Schroeder2, 1University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI.

2:00 P019 The effects of immunological castration in mature boars.
C. Metzger1,2,*, M. Brubaker1, M. Barker1, W. Singleton3, R. O. Bates2, 1Whiteshire Hamroc, Albion IN, 2Michigan State University, East Lansing, 3Purdue University, W. Lafayette, IN.

2:20 BREAK

2:35 O260 Effects of feeding ractopamine to immunologically- and physically-castrated barrows, and gilts on pig growth performance.
C. L. Puls1,*, M. Ellis1, F. K. McKeith1, A. L. Schroeder2, 1University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI.

2:50 O261 Effects of feeding ractopamine to gilts, physical castrates, and immunological castrates on carcass characteristics, yields, and meat quality.
B. K. Lowe1,*, C. L. Puls1, A. L. Schroeder2, M. Ellis1, F. K. McKeith1, A. C. Dilger1, 1Animal Sciences, University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI.

3:05 O262 Effects of feeding Ractopamine (Paylean) to physical and immunological castrates (improvest) in a commercial setting on growth performance.

3:20 O041 Effects of feeding Ractopamine (Paylean) to physical and immunological castrates (improvest) in a commercial setting on carcass characteristics.
3:35 O263 Changes in ultrasound carcass measures of immunologically-castrated barrows in comparison to physically-castrated barrows, intact males, and gilts. C. L. Puls1,*, M. Ellis1, F. K. McKeith1, A. L. Schroeder2, 1University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI.

3:50 O264 Effect of immunocastration and time after second anti-GnRF (Improvest) injection on fatty acid profile of finishing pigs. M. A. Tavarez1,*, A. L. Schroeder2, F. K. McKeith1, A. C. Dilger1, 1Animal Science, University of Illinois, Urbana, 2Pfizer Animal Health, Kalamazoo, MI.

4:05 O265 The effects of immunocastration and dried distillers grains with solubles (DDGS) withdrawal on carcass fat quality of grow-finish pigs. M. Asmus1,*, A. L. Schroeder3, M. A. Tavarez3, M. D. Tokach1, J. L. Nelssen1, S. S. Dritz1, J. M. DeRouchey1, R. D. Goodband1, 1Animal Science and Industry, Kansas State University, Manhattan, 2Pfizer Animal Health, Kalamazoo, 3University of Illinois, Urbana.

4:20 O266 Sensory characteristics of loins from immunologically castrated barrows. K. Jones-Hamlow1,*, D. D. Boler2, A. L. Schroeder3, K. J. Prusa4, F. K. McKeith1, A. C. Dilger1, 1Animal Science, University of Illinois, Urbana, 2Animal Science, Ohio State University, Columbus, 3Pfizer Animal Health, Kalamazoo, 4Animal Science, Iowa State University, Ames.

4:35 O267 A comparison of fresh and frozen chops and roasts from gilts, physical castrates, entire males and immunologically castrated males. A. J. Elsbernd1,*, J. F. Patience1, K. J. Prusa2, 1Animal Science, 2Food Science and Human Nutrition, Iowa State University, Ames.

4:50 O268 Effects of immunological castration (Improvest) on commercial bacon slicing yields of finishing pigs. J. M. Kyle1,*, B. M. Bohrer1, A. L. Schroeder2, D. D. Boler1, 1Animal Sciences, The Ohio State University, Columbus, 2Pfizer Animal Health, Kalamazoo.

5:05 Panel Discussion
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M. L. Day
W. L. Flowers

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B. R. Wiegand
Y. Li
J. L. Salak-Johnson

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M. G. Gonda
A. Lindholm-Perry

David H. Baker Symposium
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Extension - Dairy
T. D. Nennich, Chair
N. B. Litherland
J. A. Salfer
L. H Baumgard
Extension - Equine
R. C. Bott, Chair
K. L. Martinson
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Extension - Swine
C. M. Peter, Chair
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K. J. Stalder

Growth, Development, Muscle Biology, and Meat Science
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S. N. Carr
C. A. Stahl

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R. D. Geisert

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K. F. Kalscheur
B. R. Wiegand
T. D. Crenshaw
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ASAS Nominations
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J. S. Radcliffe

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T. E. Burkey
M. E. Wilson
S. I. Kehoe
B. D. Banks
A. Cobb
A. J. Seykora
K. E. Fike
G. W. Onan
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K. Carlin
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J. N. Tembei
B. D. Whitaker
A. Woodward
T. J. Safranski
P. S. Kuber
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ASAS Midwestern Section Graduate Student Paper Competition
  M. E. Wilson
  K. A. Vonnahme

ASAS Midwestern Section Undergrad Student Paper Competition
  P. M. Walker

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  B. R. Wiegand
  T. D. Crenshaw
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Agribusiness
  J. D. Spencer
  D. H. Kleinschmit
  W. J. Powers
  A. M. Gaines

Innovation in Dairy Research Award
  D. R. Mertens
  S. M. Fredin
  D. J. Schingoethe
  D. E. Graugnard
  K. F. Kalscheur

Extension
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  A. D. Garcia
  G. A. Perry
  P. C. Hoffman
  D. B. Carlson
  D. J. Illg
National Pork Board Award Swine Innovation
   H. H. Stein
   J. E. Pettigrew
   M. E. Wilson
   A. L. Currie
   J. S. Radcliffe

Public Policy
   K. F. Kalscheur

Research
   D. K. Beede
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   J. DeRouchey
   S. S. Donkin
   N. R. Merchen
   B. R. Wiegand

Tim. S. Stahly Award
   P. K. Brown
   M. G. Hogberg
   R. Hinson
   J. R. Bergstrom

Teaching
   K. A. Vonnahme
   H. A. Maiga
   S. C. Kelm
   S. A. Wagner
   B. R. Wiegand
   J. S. Radcliffe
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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
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1986  P. L. Houghton, Purdue University
1987  M. H. Wilde, The Ohio State University
1988  T. R. Radke, University of Nebraska
1989  K. K. Kreikemeier, Kansas State University
1990  R. A. Nold, Kansas State University
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1998  K. J. Rozeboom, University of Minnesota
1999  L. A. Averette, North Carolina State University
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2001  T. G. McDaneld, University of Nebraska*
       J. H. Hampton, University of Missouri**
2002  K. M. Hargrave, University of Nebraska*
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2003  J. Luther, North Dakota State University*
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2005  J. M. Koch, West Virginia University*
       N. D. Fastinger, The Ohio State University**
2006  D. M. Larson, North Dakota State University*
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2007  P. E. Urriola, University of Minnesota*
       R. N. Dilger, University of Illinois**
2008  J. M. Mapes, Michigan State University*
       E. Kiarie, University of Manitoba, Winnipeg, Canada**
2009  L. A. Lekatz, North Dakota State University*
       D. M. Gorbach, Iowa State University**
2010  H. L. Evans, University of Missouri*
       R. C. Sulabo, Kansas State University**
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**
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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**

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

PAST WINNERS OF UNDERGRADUATE CONTEMPORARY ISSUES

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

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  

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
TIM S. STAHLY OUTSTANDING SWINE NUTRITION MIDWEST
GRADUATE STUDENT AWARD

2009  T. M. Che, University of Illinois
2010  R. Hinson, University of Missouri
2011  J. R. Bergstrom, Kansas State University
2012  Cassandra Jones, Iowa State University

ASAS MIDWESTERN SECTION PRESIDENTS

1963  O. G. Bentley, University of Illinois
1964-65  R. H. Grummer, University of Wisconsin
1966-67  G. R. Johnson, The Ohio State University
1968  R. J. Meade, University of Minnesota
1969  J. A. Hoefer, Michigan State University
1970-71  W. E. Dinusson, North Dakota State University
1972  J. F. Lasley, University of Missouri
1973  U. S. Garrigus, University of Illinois
1974-75  V. C. Speer, Iowa State University
1976  H. S. Teague, The Ohio State University
1977  R. M. Luther, South Dakota State University
1978  B. N. Day, University of Missouri
1979-80  D. R. Zimmerman, University of Nebraska
1981  A. L. Pope, University of Wisconsin
1982  R. D. Goodrich, University of Minnesota
1983  E. R. Miller, Michigan State University
1984  W. R. Woods, Purdue University
1985  L. R. Corah, Kansas State University
1986  B. D. Moser, University of Missouri
1987  S. E. Curtis, University of Illinois
1988  R. G. Zimbelman, Upjohn; D. J. Meisinger, Indiana
1989  T. J. Klopfenstein, University of Nebraska
1990  J. R. Romans, South Dakota State University
1991  J. E. Pettigrew, University of Minnesota
1992  C. E. Sasse, Cenex/Land O’Lakes
1993  M. G. Hogberg, Michigan State University
1994  G. L. Allee, University of Missouri
1995  S. K. Webel, Purina Mills
1996  D. L. Meeker, National Pork Producers Council
1997  T. S. Stahly, Iowa State University
1998  R. P. Lemenager, Purdue University
1999  S. P. Ford, Iowa State University
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