



American Dairy Science Association®

# MIDWEST

American Society of Animal Science



ASAS Midwestern Section and  
ADSA® Midwest Branch

## Scientific Sessions & Business Meeting

Des Moines, IA • March 10-13

# 2013

## **FUTURE MEETINGS**

2014	March 16-18	Des Moines
2015	March 15-18	Des Moines
2016	March 13-16	Des Moines

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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:

<b>MONDAY</b>	<b>TUESDAY</b>	<b>WEDNESDAY</b>
7:30am to 8:30am	7:30am to 8:30am	6:00am to 9:30am
12:00pm to 2:00pm	12:00pm to 2:00pm	11:00am to 12:00pm
4:00pm to 7:30pm	4:00pm to 7:30pm	

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



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## **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.

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## 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  
4:30pm 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  
7:15pm Graduate Student Dinner and Learn, 101-102  
8:30 pm Program Committee Reception, Renaissance Savery Hotel  
9:00pm 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  
12:00pm Bentley Symposium and Lunch, Grand Ballroom

\**Catch Des Moines, (Greater Des Moines Convention & Visitors Bureau)*

## TUESDAY, MARCH 12, 2013 / AFTERNOON

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

## WEDNESDAY, MARCH 13, 2013

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

### **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.

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## **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 Quadrathlon**

Agri-King

ASAS Foundation

Iowa State University

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## **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

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Cargill Animal Nutrition  
Diamond V Mills Inc.  
Kemin Industries  
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National Pork Board

### **SILVER LEVEL**

Agri-King Inc.  
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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)

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## **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

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## 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**

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8:00		<b>Introduction to Gary Allee</b>
8:15		<b>(Invited) Fat Quality-What does it mean to the packer and can we effectively measure it?</b> J. Cannon*, Hormel Foods.
8:45	<b>O001</b>	<b>(Invited) Factors to Consider When Doing Fat Quality Research – Perspectives of a Meat Scientist.</b> S. N. Carr*, P. J. Rincker, Elanco Animal Health, Greenfield.
9:15	<b>O002</b>	<b>(Invited) What factors need to be considered when doing fat quality research-perspective of a nutritionist.</b> M. D. Tokach*, R. D. Goodband, J. M. Derouchey, S. S. Dritz, J. L. Nelssen, Kansas State University, Manhattan.
9:45		<b>BREAK</b>
10:00	<b>O003</b>	<b>(Invited) Pork fat quality: Implications for international product specifications and determining its economic value.</b> E. B. Sheiss*, A. W. Duttlinger, Indiana Packers Corporation, Delphi.
10:30	<b>O004</b>	<b>(Invited) Economic implications of achieving fat quality specifications.</b> A. Gaines <sup>1</sup> , D. DiPietro <sup>2*</sup> , <sup>1</sup> The Maschhoffs, Carlyle IL, <sup>2</sup> Knowledge Ventures LLC, Columbia MO.
11:00		<b>What's confusing and where do we go from here?</b> <b>(Breakout session)</b>



## UNDERGRADUATE STUDENT ORAL COMPETITION

Chair: Paul Walker, Illinois State University

318/319

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12:30	O005	<p><b>Effects of glucuronic acid and N-acetyl-D-glucosamine supplementation on the in vitro maturation and fertilization of porcine oocytes.</b> <b>K. Boyd*</b>, T. Donley, C. Fahy, K. Lemon, B. D. Whitaker, Animal Science, University of Findlay, Findlay.</p>
12:45	O006	<p><b>Estrogen receptor 1 and 2 mRNA expression and protein localization in the porcine endometrium during the estrous cycle and early pregnancy.</b> <b>O. L. Swanson<sup>1,*</sup>, J. R. Miles<sup>2</sup>, J. L. Vallet<sup>2</sup>,</b> <sup>1</sup>Department of Animal Science, South Dakota State University, Brookings, <sup>2</sup>Reproduction Research Unit, USDA-ARS U.S. Meat Animal Research Center, Clay Center .</p>
1:00	O007	<p><b>Serum bovine pregnancy associated glycoproteins and progesterone in beef heifers that experienced late embryonic/fetal mortality.</b> <b>L. K. Kill<sup>1,*</sup>, K. G. Pohler<sup>2</sup>, G. A. Perry<sup>1</sup>, M. F. Smith<sup>2</sup>,</b> <sup>1</sup>Department of Animal Science, South Dakota State University, Brookings, <sup>2</sup>Division of Animal Science, University of Missouri, Columbia.</p>
1:15	O008	<p><b>Utilization of an estrogen antagonist to develop a nonsurgical model for delayed implantation in rats.</b> <b>B. E. Abramovitz*, J. A. Green, K. G. Pohler, R. D. Geisert,</b> University of Missouri, Columbia.</p>
1:30	O009	<p><b>Blood glucose concentrations during the peripartum in insulin resistant dairy cattle at prepartum period.</b> <b>F. Da Rosa<sup>1,2,3,*</sup>, E. Schwegler<sup>3,4</sup>, E. Schmitt<sup>5</sup>, A. Schneider<sup>3,6</sup>, P. Montagner<sup>3,4</sup>, M. Weschenfelder<sup>3,4</sup>, A. R. Krause<sup>2,3</sup>, F. Del Pino<sup>3,7</sup>, C. Brauner<sup>2,3</sup>, M. N Corrêa<sup>3,4</sup>,</b> <sup>1</sup>Animal Sciences, University of Illinois, Urbana., <sup>2</sup>Animal Sciences, <sup>3</sup>Núcleo de Pesquisa, Ensino e Extensão em Pecuária (NUPEEC), <sup>4</sup>Department of Veterinary Clinics, Federal University of Pelotas, Pelotas, <sup>5</sup>Brazilian Agricultural Research Corporation, EMBRAPA - CPAFR0, Porto Velho, <sup>6</sup>Nutrition College, <sup>7</sup>Department of Biochemistry, Federal University of Pelotas, Pelotas, Brazil.</p>

1:45	O010	<p><b>Effect of organic zinc supplementation on metallothionein and zinc transporter -1 mRNA expression in duodenum of grow-finish pigs.</b>  <b>J. Feldpausch<sup>1*</sup>, P. S. D Weber<sup>2</sup>, G. M. Hill<sup>1</sup>, J. Link<sup>2</sup>, D. C. Mahan<sup>3</sup>,</b> <sup>1</sup>Animal Science, <sup>2</sup>Michigan State University, East Lansing, <sup>3</sup>Animal Sciences, The Ohio State University, Columbus.</p>
2:00	O011	<p><b>Differential gene expression of skeletal muscle tissue due to association with intramuscular fat in beef cattle.</b>  <b>C. Bayliff*, P. Lancaster, G. Horn,</b> Animal Science, Oklahoma State University, Stillwater.</p>
2:15		<b>BREAK</b>
2:30	O012	<p><b>Effects of late-gestation coproduct supplementation and time of weaning on cow performance and reproduction.</b>  <b>A. C. Kloth*, L. M. Shoup, D. W. Shike,</b> Animal Sciences, University of Illinois, Urbana.</p>
2:45	O013	<p><b>Effects of varying palmitic to stearic acid ratio in supplemental fat on dry matter intake, milk yield and milk composition of heat stressed primiparous cows.</b>  <b>K. A. Froehlich*, J. Spahn, N. B. Litherland,</b> Animal Science, University of Minnesota, St Paul.</p>
3:00	O014	<p><b>Effects of dietary sulfur source on hydrogen sulfide gas concentrations in feedlot lambs.</b>  <b>C. J. Long<sup>1*</sup>, T. L. Felix<sup>2</sup>, K. M. Daniels<sup>1</sup>, S. C. Loerch<sup>1</sup>,</b> <sup>1</sup>Animal Sciences, The Ohio State University, Wooster, <sup>2</sup>Animal Science, University of Illinois, Urbana.</p>
3:15	O015	<p><b>Effects of grazing novel endophyte-infected fescue following grazing endophyte-infected fescue on steer performance.</b>  <b>M. R. Milnamow*, T. B. Wilson, D. B. Faulkner, F. A. Ireland, D. W. Shike,</b> Animal Sciences, University of Illinois, Urbana-Champaign.</p>
3:30	O016	<p><b>Effects of feed delivery methods (automated feeding, salt limiting, or hand-feeding) for stocker calves grazing bermudagrass on growth performance, behavior, and labor inputs.</b>  <b>E. M. Mashie<sup>1*</sup>, A. K. Sexten<sup>1</sup>, E. B. Kegley<sup>2</sup>, J. L. Reynolds<sup>2</sup>, J. A. Hornsby<sup>2</sup>, S. Gadberry<sup>3</sup>,</b> <sup>1</sup>Animal Science, Kansas State University, Manhattan, <sup>2</sup>Division of Agriculture, University of Arkansas, Fayetteville, <sup>3</sup>Cooperative Extension Service, University of Arkansas, Little Rock.</p>

3:45	O017	<p><b>A comparison of mixing milk replacer by weight vs. volume.</b></p> <p><b>S. M. Koch<sup>1,*</sup>, L. Baumann<sup>2</sup>, S. McGuirk<sup>3</sup>, N. Cook<sup>3</sup>, D. Ruff<sup>4</sup>,</b> <sup>1</sup>School of Veterinary Medicine, UW-Madison School of Veterinary Medicine, Madison, <sup>2</sup>Animal and Food Science, University of Wisconsin, River Falls, <sup>3</sup>Department of Medical Sciences, UW-Madison School of Veterinary Medicine, Madison, <sup>4</sup>Mayville Animal Clinic, Mayville.</p>
4:00	O018	<p><b>Assessment of non-penetrating captive bolt stunning followed by electrical induction of cardiac arrest in veal calves. Part I: Maintenance of insensibility and electrocardiographic activity.</b></p> <p><b>B. Bartz<sup>*</sup>, M. Collins, R. Livingood, H. Sobczynski, K. D. Vogel,</b> Animal and Food Science, University of Wisconsin, River Falls.</p>
4:15	O019	<p><b>Assessment of non-penetrating captive bolt stunning followed by electrical induction of cardiac arrest in veal calves. Part II: Veal quality and blood yield.</b></p> <p><b>M. Collins<sup>*</sup>, B. Bartz, R. Livingood, H. Sobczynski, K. D. Vogel,</b> Animal and Food Science, University of Wisconsin, River Falls.</p>
4:30	O020	<p><b>Effects of pyrethroid insecticides on reproductive parameters of beef bulls.</b></p> <p><b>T. P. DelValle<sup>1,*</sup>, C. F. Shipley<sup>2</sup>, F. A. Ireland<sup>1</sup>, H. M. French<sup>2</sup>, V. L. Jarrell<sup>1</sup>, D. B. Faulkner<sup>1</sup>, J. Fuselier<sup>2</sup>, D. W. Shike<sup>1</sup>,</b> <sup>1</sup>Department of Animal Sciences, <sup>2</sup>College of Veterinary Medicine, University of Illinois at Urbana/Champaign, Urbana.</p>
4:45	O021	<p><b>Choosing appropriate temperature-humidity indices to predict the incidence of heat stress in lactating dairy cattle using local weather data in Iowa.</b></p> <p><b>E. Hodges<sup>1,*</sup>, P. J. Berger<sup>2</sup>, G. Takle<sup>3</sup>,</b> <sup>1</sup>Dairy Science, Iowa State University, <sup>2</sup>Animal Science, Iowa State University, <sup>3</sup>Geological and Atmospheric Sciences, Iowa State University, Ames.</p>

**GRADUATE STUDENT COMPETITION**  
**MS ORAL**  
**Chair: Gary Cromwell, University of Kentucky**  
**312/313**

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1:00	O022	<b>Effects of feeding high- and low-fibre fractions of air-classified canola meal on diet nutrient digestibility and growth performance of weaned pigs.</b> <b>X. Zhou<sup>1,*</sup>, M. A. Oryschak<sup>2</sup>, R. T. Zijlstra<sup>1</sup>, E. Beltranena<sup>2</sup>,</b> <sup>1</sup> Department of Agricultural, Food & Nutritional Science, University of Alberta, <sup>2</sup> Alberta Agriculture and Rural Development, Edmonton, Canada.
1:15	O023	<b>Bioavailability of lysine in Rhizopus microsporus for nursery pigs as determined by slope-ratio bioassay.</b> <b>D. M. van Sambeek<sup>1,*</sup>, A. Rahkshendah<sup>1</sup>, B. J. Kerr<sup>2</sup>, J. (H.) van Leeuwen<sup>3</sup>, N. K. Gabler<sup>1</sup>,</b> <sup>1</sup> Animal Science, Iowa State University, <sup>2</sup> USDA-ARS, <sup>3</sup> Civil and Construction Engineering, Iowa State University, Ames.
1:30	O024	<b>Evaluation of chocolate candy feed as an alternative carbohydrate source to lactose for weanling pigs.</b> <b>J. Guo<sup>1,*</sup>, C. Phillips<sup>2</sup>, M. T. Coffey<sup>2</sup>, S. W. Kim<sup>1</sup>,</b> <sup>1</sup> Animal Science, North Carolina State University, Raleigh, <sup>2</sup> Murphy Brown LLC, Rose Hill.
1:45	O025	<b>Effect of cranberry on salmonella colonization and performance of nursery pigs.</b> <b>M. Stanley<sup>*</sup>, M. Rostagno, B. Richert, S. Eicher,</b> Purdue University, West Lafayette, IN.
2:00		<b>BREAK</b>
	O026	<b>Please see page 46 for presentation.</b>
2:15	O027	<b>Divergent selection for residual feed intake impacts carcass composition of pigs on high or low energy diets.</b> <b>E. K. Arkfeld<sup>1,*</sup>, E. R. Benedict<sup>1</sup>, R. C. Johnson<sup>2</sup>, J. M. Young<sup>1</sup>, J. F. Patience<sup>1</sup>, J. C. M. Dekkers<sup>1</sup>, N. K. Gabler<sup>1</sup>, S. M. Lonergan<sup>1</sup>, E. Huff-Lonergan<sup>1</sup>,</b> <sup>1</sup> Animal Science, Iowa State University, Ames, <sup>2</sup> Farmland Foods, Denison.

2:30	O028	<p><b>Response of swine divergently selected for feed efficiency to an exogenous adrenocorticotropin hormone (ACTH) challenge.</b></p> <p><b>J. D. Jenkins<sup>1,*</sup>, A. K. Johnson<sup>1</sup>, L. L. Anderson<sup>1</sup>, J. C. M. Dekkers<sup>1</sup>, N. K. Gabler<sup>1</sup>, F. R. Dunshea<sup>2</sup>,</b> <sup>1</sup>Iowa State University, Ames., <sup>2</sup>The University of Melbourne, Parksville, Australia.</p>
2:45	O029	<p><b>The effect of heat stress on inflammatory signaling in porcine skeletal muscle.</b></p> <p><b>S. I. Rosado Montilla<sup>1,7</sup>, S. C. Pearce<sup>1</sup>, D. Gardan-Salmon<sup>1</sup>, N. K. Gabler<sup>1</sup>, J. W. Ross<sup>1</sup>, R. P. Rhoads<sup>2</sup>, L. H. Baumgard<sup>1</sup>, S. M. Lonergan<sup>1</sup>, J. T. Selsby<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Animal Science, Virginia Technical Institute, Blacksburg.</p>
3:00		<b>BREAK</b>
3:15	O030	<p><b>Impact of maternal exercise on ovarian development in the pig.</b></p> <p><b>S. Kaminski<sup>*</sup>, A. Grazul-Bilska, E. Berg, K. Vonnahme,</b> Animal Science, North Dakota State University, Fargo.</p>
3:30	O031	<p><b>Effects of continuous or rotational grazing schemes on available forage, performance, parasite burden, and reproductive measurements by yearling Katahdin ewes grazing tall fescue.</b></p> <p><b>E. A. Backes<sup>1,2,*</sup>, J. D. Caldwell<sup>2</sup>, B. C. Shanks<sup>2</sup>, K. R. Ness<sup>2</sup>, A. N. V. Stewart<sup>2</sup>, L. S. Wilbers<sup>2</sup>, C. A. Clifford-Rathert<sup>2</sup>, A. Wurst<sup>2</sup>, H. A. Swartz<sup>2</sup>, D. L. Kreider<sup>1</sup>, M. L. Loooper<sup>1</sup>,</b> <sup>1</sup>Department of Animal Science, University of Arkansas, Fayetteville, <sup>2</sup>Department of Agriculture and Environmental Sciences, Lincoln University, Jefferson City.</p>
3:45	O032	<p><b>Effect of winter supplementation level on yearling system profitability</b></p> <p><b>K. L. Gillespie<sup>*</sup>, T. J. Klopfenstein, B. L. Nuttelman, C. J. Schneider, G. E. Erickson,</b> Animal Science, University of Nebraska, Lincoln.</p>
4:00	O033	<p><b>Performance characteristics of beef cows limit-fed by-products from corn ethanol production.</b></p> <p><b>M. Faulkner<sup>1,*</sup>, P. Walker<sup>1</sup>, R. Atkinson<sup>2</sup>, L. Forster<sup>3</sup>,</b> <sup>1</sup>Department of Agriculture, Illinois State University, Bloomington, <sup>2</sup>Department of Animal Science, Food &amp; Nutrition, Southern Illinois University, Carbondale, <sup>3</sup>Archer Daniel's Midland Co., Decatur.</p>

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4:15	O034	<p><b>Dietary inclusion of dried distillers grains with solubles modifies milk composition and production in lactating dairy cows.</b>  <b>E. D. Testroet<sup>1,*</sup>, G. Li<sup>1</sup>, D. C. Beitz<sup>2</sup>, S. Clark<sup>1</sup>, <sup>1</sup>Food Science &amp; Human Nutrition, <sup>2</sup>Animal Science, Iowa State University, Ames.</b></p>
4:30	O035	<p><b>Effects of feeding CaO treated WDGS or treated corn stover to cattle on performance, carcass characteristics, and ruminal metabolism.</b>  <b>M. J. Duckworth<sup>*</sup>, A. R. Schroeder, D. B. Faulkner, D. W. Shike, T. L. Felix,</b> Animal Sciences, University of Illinois, Urbana, <sup>2</sup>Animal Sciences, The University of Arizona, Tuscon.</p>
4:45	O036	<p><b>Effects of modified distillers grains plus solubles and condensed distillers solubles with and without oil extraction on finishing performance.</b>  <b>M. L. Jolly<sup>*</sup>, B. L. Nuttelman, D. B. Burken, C. J. Schneider, G. E. Erickson, T. J. Klopfenstein,</b> Animal Science, University of Nebraska, Lincoln.</p>

**GRADUATE STUDENT COMPETITION  
PHD ORAL**

**Chair: Matt Wilson, West Virginia University**

**Sponsor: Akey**

**314/315**

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1:00		<p><b>Detrimental effects of oxidized lipids in nursery diets.</b>  <b>D. Rosero<sup>1,*</sup>, J. Odle<sup>1</sup>, A. Moeser<sup>2</sup>, R. D. Boyd<sup>3</sup>, E. van Heugten<sup>1</sup>,</b> <sup>1</sup>Department of Animal Sciences, <sup>2</sup>Department of Population Health and Pathobiology, NCSU, Raleigh, NC, <sup>3</sup>Hanor Company, Inc., Franklin, KY.</p>
1:15		<p><b>Efficacy of plasma protein to mitigate the negative effects on performance of pigs fed mycotoxin contaminated corn.</b>  <b>A. C. Weaver<sup>1,*</sup>, J. Campbell<sup>2</sup>, J. D. Crenshaw<sup>2</sup>, J. Polo<sup>2</sup>, S. W. Kim<sup>1</sup>,</b> <sup>1</sup>Animal Science, North Carolina State University, Raleigh, <sup>2</sup>APC, Inc., Ankeny.</p>
1:30		<p><b>Relative bioavailability of L-Methionine to DL-Methionine for nursery pigs.</b>  <b>Y. B. Shen<sup>*</sup>, S. W. Kim,</b> Animal Science, North Carolina State University, Raleigh.</p>

1:45	O040	<p><b>Effect of different feed enzyme combinations on metabolizable energy (me) and nitrogen digestibility (nd) of corn and DDGS for growing pigs.</b></p> <p>A. A. Passos<sup>*</sup>, S. W. Kim, Animal Science, North Carolina State University, Raleigh.</p>
2:00	O041	<p><b>Effects of feeding ractopamine (paylean) to physical and immunological castrates (improvest) in a commercial setting on carcass characteristics.</b></p> <p>B. K. Lowe<sup>1,*</sup>, G. D. Gerlemann<sup>2</sup>, S. N. Carr<sup>3</sup>, P. J. Rincker<sup>3</sup>, A. L. Schroeder<sup>4</sup>, D. B. Petry<sup>5</sup>, G. L. Allee<sup>2</sup>, F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, <sup>2</sup>Animal Sciences, University of Missouri, Columbia, <sup>3</sup>Elanco Animal Health, Greenfield, IN, <sup>4</sup>Pfizer Animal Health, Kalamazoo, MI, <sup>5</sup>Newsham Choice Genetics, West Des Moines, IA.</p>
2:15	O042	<p><b>Fate and biological activity of antibiotics used in fuel ethanol production.</b></p> <p>D. M. P. Compart<sup>1,*</sup>, A. M. Carlson<sup>2</sup>, G. I. Crawford<sup>1</sup>, R. C. Fink<sup>3</sup>, F. Diez-Gonzalez<sup>3</sup>, A. DiCostanzo<sup>1</sup>, G. C. Shurson<sup>1</sup>, <sup>1</sup>Animal Science, University of Minnesota, Twin Cities, Saint Paul, <sup>2</sup>SGS North America, Inc, Brookings, <sup>3</sup>Food Science, University of Minnesota, Twin Cities, Saint Paul.</p>
2:30	O043	<p><b>Evaluation of energy digestibility of canola co-products using in vitro analyses and digestion discrepancies using spectroscopy.</b></p> <p>L. Wang<sup>1,*</sup>, M.-L. Swift<sup>1,2</sup>, R. Zijlstra<sup>1</sup>, <sup>1</sup>University of Alberta, Edmonton, <sup>2</sup>Alberta Agriculture and Rural Development, Lacombe, Canada.</p>
2:45	O044	<p><b>Impact of replacing corn with corn silage in diets containing distillers grains on feedlot performance.</b></p> <p>D. B. Burken<sup>*</sup>, B. L. Nuttelman, T. J. Klopfenstein, G. E. Erickson, Animal Science, University of Nebraska, Lincoln.</p>

## DAVID H. BAKER AMINO ACID SYMPOSIUM

Chair: Nathan Augspurger, JBS United

Sponsor: David H. Baker Appreciation Club, ASAS Foundation

316/317

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1:00	O045	<p><b>(Invited) Modelling the response of growing pigs to amino acid intake – beyond NRC (2012).</b> C.F.M. De Lange*, Animal and Poultry Science, University of Guelph, Guelph, Canada.</p>
1:40	O046	<p><b>(Invited) Determination of tryptophan requirements for grow-finish pigs raised under commercial conditions.</b> M. Young<sup>1,*</sup>, V. Zamora<sup>1</sup>, N. Campbell<sup>1</sup>, R. T. Zijlstra<sup>2</sup>, J. Usry<sup>3</sup>, M. Stevenson<sup>4</sup>, <sup>1</sup>Gowans Feed Consulting, Wainwright, AB, <sup>2</sup>University of Alberta, Edmonton, AB, Canada, <sup>3</sup>Ajinomoto Heartland LLC, Chicago, IL., <sup>4</sup>Halchemix, Port Perry, ON, Canada.</p>
1:55	O047	<p><b>(Invited ASAS Animal Science Young Scholar) Improvement of growth and stress response of nursery pigs: functional application of tryptophan.</b> Y. B. Shen*, S. W. Kim, Animal Science, North Carolina State University, Raleigh.</p>
2:25	O048	<p><b>(Invited) Dietary amino acid balance in gestating and lactating sows: from theory to practice.</b> N. L. Trottier*, Animal Science, Michigan State University, East Lansing.</p>
3:05	O049	<p><b>(Invited) Evaluation of tryptophan to lysine ratio in sow lactation diets.</b> L. Greiner<sup>1,*</sup>, Z. Jiang<sup>2</sup>, C. Neill<sup>3</sup>, J. Connor<sup>1</sup>, G. Allee<sup>4</sup>, <sup>1</sup>Innovative Swine Solutions, LLC, Carthage, <sup>2</sup>Ajinomoto Heartland, Chicago, <sup>3</sup>PIC, Hendersonville, <sup>4</sup>Porktech, LLC, Columbia.</p>
3:20	O050	<p><b>(Invited) Utilization of the pig in biomedical research: a realization of the pig genome sequencing project.</b> L. B. Schook*, Department of Animal Sciences, University of Illinois, Urbana.</p>



**Monday, March 11**  
**POSTER PRESENTATIONS**

**EXTENSION - SWINE**

- P014**    **Backfat thickness at farrowing affects litter size in the subsequent litter.**  
**P. Ramaekers\***, **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\***, **A. Schinckel**, **B. Richert**, Animal Science, Purdue University, West Lafayette, IN
- P017**    **Industry productivity analysis - Seasonality in sow farm traits.**  
**M. R. Bryan**<sup>1\*</sup>, **C. E. Hostetler**<sup>2</sup>, **M. T. Knauer**<sup>1</sup>, <sup>1</sup>North Carolina State University, Raleigh, <sup>2</sup>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\***, **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\***, **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\***, **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\***, **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. Frugé<sup>1,\*</sup>, E. L. Hansen<sup>1</sup>, S. A. Hansen<sup>1</sup>, K. A. Frerichs<sup>1</sup>, C. W. Hastad<sup>2</sup>,** <sup>1</sup>Hubbard Feeds, Mankato, <sup>2</sup>New Fashion Pork, Jackson, MN.
- P072**     **Effects of increasing dietary bakery meal on growing-finishing pig growth performance and carcass quality.**  
**C. Paulk<sup>1,\*</sup>, S. Nitikanchana<sup>2</sup>, S. Dritz<sup>2</sup>, M. Tokach<sup>1</sup>, J. Nelssen<sup>1</sup>, J. DeRouche<sup>1</sup>, R. Goodband<sup>1</sup>, K. Prusa<sup>3</sup>,** <sup>1</sup>Animal Science and Industry, <sup>2</sup>Diagnostic Medicine Pathobiology, Kansas State University, Manhattan, KS, <sup>3</sup>Animal 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. Goehring<sup>1</sup>, J. M. DeRouche<sup>1</sup>, S. S. Dritz<sup>1</sup>, M. D. Tokach<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>,** Kansas State University, Manhattan, KS.
- P074**     **Effect of replacing soybean meal with low oligosaccharide soybean meal in the diets of early weaned pigs.**  
**D. Pangeni<sup>1,\*</sup>, J. A. Jendza<sup>2</sup>, L. Anil<sup>2</sup>, S. K. Baidoo<sup>2</sup>,** <sup>1</sup>Department of Animal Science, University of Minnesota, Saint Paul, MN, <sup>2</sup>Southern 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. Goehring<sup>1,\*</sup>, J. M. DeRouche<sup>1</sup>, M. D. Tokach<sup>1</sup>, S. S. Dritz<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>, B. W. James<sup>2</sup>,** <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kalmbach Feeds, Inc., Upper Sandusky, OH.
- P076**     **Energy value of a low oligosaccharide soybean meal in pigs.**  
**V. Perez<sup>1,\*</sup>, N. Bajjalieh<sup>2</sup>, T. Radke<sup>1</sup>, D. Holzgraefe<sup>1</sup>,** <sup>1</sup>ADM Alliance Nutrition, Quincy, IL, <sup>2</sup>Integrative Nutrition, Inc., Decatur, IL.
- P077**     **Grain distillers dry yeast on nursery pig performance.**  
**V. Perez<sup>1,\*</sup>, J. Less<sup>2</sup>, T. Radke<sup>1</sup>, D. Holzgraefe<sup>1</sup>,** <sup>1</sup>ADM Alliance Nutrition, Quincy, IL, <sup>2</sup>ADM, 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. Martinez<sup>1</sup>, H. H. Stein<sup>1</sup>,** 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. Li<sup>1</sup>, G. C. Shurson<sup>1</sup>, S. K. Baidoo<sup>2</sup>, D. D. Gallaher<sup>3</sup>, J. E. Anderson<sup>4</sup>, L. J. Johnston<sup>5,\*</sup>,** <sup>1</sup>Department of Animal Science, University of Minnesota, Saint Paul, MN, <sup>2</sup>Southern Research and Outreach Center, University of Minnesota, Waseca, MN, <sup>3</sup>Department of Food Science and Nutrition, University of Minnesota, Saint Paul, MN, <sup>4</sup>Division of Science and Math, <sup>5</sup>West 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. Rambo<sup>1,\*</sup>, A. Jones<sup>1</sup>, A. Schinckel<sup>1</sup>, D. Kelly<sup>1</sup>, B. Richert<sup>1</sup>, M. Latour<sup>2</sup>,** <sup>1</sup>Animal Science, Purdue University, West Lafayette, IN, <sup>2</sup>Animal 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. Hansen<sup>1,\*</sup>, E. D. Frugé<sup>1</sup>, S. A. Hansen<sup>1</sup>, K. A. Frerichs<sup>1</sup>, C. W. Hastad<sup>2</sup>,** <sup>1</sup>Hubbard Feeds, Mankato, MN, <sup>2</sup>New 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-Vega<sup>\*</sup>, 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. Kim<sup>\*</sup>,** 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. Jaworski<sup>1,\*</sup>, A. Owusu-Asiedu<sup>2</sup>, D. Petri<sup>3</sup>, H. H. Stein<sup>1</sup>,** <sup>1</sup>Animal Science, University of Illinois, Urbana, IL, <sup>2</sup>Danisco Animal Nutrition, DuPont Industrial Biosciences, <sup>3</sup>Animal 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. Kim<sup>\*</sup>,** 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. Tran<sup>\*</sup>, 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. Nitikanchana<sup>\*</sup>, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouchey, 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. Tran<sup>\*</sup>, 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. Moeser<sup>1</sup>, J. Campbell<sup>2,\*</sup>, J. Crenshaw<sup>2</sup>, J. Polo<sup>2</sup>,** <sup>1</sup>North Carolina State University, Raleigh, <sup>2</sup>APC, Inc., Ankeny, IA.

## Nonruminant Nutrition VITAMINS AND MINERALS

- P093**    **The effects of fat soluble vitamin administration by oral gavage or injection on plasma vitamin status of newborn pigs.**  
Y. D. Jang<sup>1,\*</sup>, M. D. Lindemann<sup>1</sup>, H. J. Monegue<sup>1</sup>, R. Stuart<sup>2</sup>, <sup>1</sup>Animal and Food Sciences, University of Kentucky, Lexington KY, <sup>2</sup>Stuart 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. Walk<sup>1,\*</sup>, T. Santos<sup>1</sup>, J. Chewning<sup>2</sup>, P. Wilcock<sup>1</sup>, <sup>1</sup>AB Vista, Marlborough, United Kingdom, <sup>2</sup>SRS, 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-Montminy<sup>1,\*</sup>, A. Narcy<sup>2</sup>, <sup>1</sup>Agriculture and Agri-Food Canada, Sherbrooke, Canada, <sup>2</sup>INRA, Nouzilly, France.

## PHYSIOLOGY

- 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. Flowers<sup>1,\*</sup>, M. E. Johnston<sup>2</sup>, S. K. Webel<sup>2</sup>, M. E. Swanson<sup>2</sup>,  
<sup>1</sup>Animal Science, North Carolina State University, Raleigh, NC, <sup>2</sup>JBS 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. Miles<sup>1,\*</sup>, J. A. Noel<sup>2</sup>, L. A. Rempel<sup>1</sup>, J. L. Vallet<sup>1</sup>, B. A. Freking<sup>1</sup>,  
<sup>1</sup>Reproduction Research Unit, USDA, ARS, USMARC, Clay Center, NE,  
<sup>2</sup>Animal 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 Eifert<sup>1,\*</sup>, M. E Wilson<sup>1</sup>, K. A Vonnahme<sup>2</sup>, P. P. Borowicz<sup>2,3</sup>, D. A Redmer<sup>2,3</sup>, S. Dorsam<sup>2</sup>, J. Haring<sup>2</sup>, C. O Lemley<sup>4</sup>, <sup>1</sup>Animal and Nutritional Sciences, West Virginia University, Morgantown, <sup>2</sup>Animal Science, <sup>3</sup>Advanced Imaging and Microscopy Core Lab, North Dakota State University, Fargo, ND, <sup>4</sup>Animal 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.**  
B. R. Mordhorst\*, L. E. Camacho, M. L. Bauer, K. A. Vonnahme, Animal Sciences, NDSU, Fargo, ND.
- 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. Ramirez<sup>1</sup>\*, P. J. Kononoff<sup>1</sup>, K. Karges<sup>2</sup>, <sup>1</sup>University of Nebraska-Lincoln, NE, <sup>2</sup>Dakota Gold Research Association, Sioux Falls, SD.
- P118 Finishing beef cattle on totally mixed and self-fed rations.**  
C. L. Engel<sup>1</sup>\*, V. L. Anderson<sup>1</sup>, B. R. Ilse<sup>2</sup>, <sup>1</sup>Carrington Research Extension Center, North Dakota State University, NE., Carrington, <sup>2</sup>Big Horn County, Montana State University, Hardin, MT.
- P119 Effect of soybean hull and enzyme inclusion on corn-based diet digestibility.**  
J. R. Russell\*, 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. Masiero\*, 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. Shee\*, 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 Emon**<sup>1,\*</sup>, **C. Schauer**<sup>2</sup>, **A. Meyer**<sup>3</sup>, **K. Maddock-Carlin**<sup>1</sup>,  
**K. Vonnahme**<sup>1</sup>, <sup>1</sup>Department of Animal Sciences, North Dakota State University, Fargo, ND, <sup>2</sup>Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, <sup>3</sup>Department 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. Prezotto**<sup>1,\*</sup>, **F. E. Doscher**<sup>1</sup>, **S. I. Paisley**<sup>2</sup>, **K. C. Swanson**<sup>1</sup>, **A. M. Meyer**<sup>2</sup>, <sup>1</sup>Animal Science, North Dakota State University, Fargo, ND, <sup>2</sup>Animal 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. Meyer**<sup>1,\*</sup>, **S. I. Klein**<sup>2</sup>, **M. Kappahn**<sup>2</sup>, **D. V. Dhuyvetter**<sup>3</sup>, **R. E. Musser**<sup>4</sup>, **J. S. Caton**<sup>2</sup>, <sup>1</sup>Department of Animal Science, University of Wyoming, Laramie, WY, <sup>2</sup>Department of Animal Sciences, North Dakota State University, Fargo, ND, <sup>3</sup>Ridley Block Operations, <sup>4</sup>SODA Feed Ingredients, LLC, Mankato, MN.
- P125**     **Chemical composition and in vitro intestinal digestibility of isolated rumen microbial fractions.**  
**A. J. Carpenter**<sup>1,\*</sup>, **S. W. Fessenden**<sup>2</sup>, **M. D. Stern**<sup>2</sup>, <sup>1</sup>Animal Sciences and Industry, Kansas State University, Manhattan, KS, <sup>2</sup>Department 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 Rosa**<sup>1,2,3,\*</sup>, **P. Montagner**<sup>3,4</sup>, **E. Schmitt**<sup>5</sup>, **A. Schneider**<sup>3,6</sup>, **C. C. Brauner**<sup>2,3</sup>, **E. Schwegler**<sup>3,4</sup>, **M. Weschenfelder**<sup>3,4</sup>, **A. R. Krause**<sup>2,3</sup>, **F. Del Pino**<sup>3,7</sup>, **M. N. Corrêa**<sup>3,4</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>Animal Sciences, <sup>3</sup>Núcleo de Pesquisa, Ensino e Extensão em Pecuária (NUPEEC), <sup>4</sup>Department of Veterinary Clinics, Federal University of Pelotas, Pelotas, <sup>5</sup>Brazilian Agricultural Research Corporation, EMBRAPA - CPAFRO, Porto Velho, <sup>6</sup>Nutrition College, <sup>7</sup>Department of Biochemistry, Federal University of Pelotas, Pelotas, Brazil.
- P127**     **Loin quality of Brazilian native lambs fed with different levels of crude glycerin.**  
**H. A. Ricardo**<sup>\*</sup>, **C. M. Cunha**, **A. R. Mendes Fernandes**, **J. C. Silveira Osorio**, **F. M. Vargas Junior**, **M. A. Previdelli Orrico Junior**, **L. Oliveira Seno**, Grande Dourados Federal University, Dourados-MS, Brazil.

- 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. Anderson**<sup>1\*</sup>, **B. Ilse**<sup>2</sup>, <sup>1</sup>Carrington Research Extension Center, North Dakota State University, Carrington, ND, <sup>2</sup>Big Horn County Extension, Montana State University, Hardin, MT.
- P130**     **Effect of treating corn stover with calcium hydroxide on nutrient digestibility.**  
**C. Kirby**<sup>1\*</sup>, **A. Wertz-Lutz**<sup>2</sup>, **D. Holzgraefe**<sup>2</sup>, **M. Kerley**<sup>1</sup>, <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>ADM 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. Doscher**<sup>1\*</sup>, **L. Prezotto**<sup>1</sup>, **S. Paisley**<sup>2</sup>, **A. Meyer**<sup>2</sup>, **K. Swanson**<sup>1</sup>, <sup>1</sup>Animal Science, North Dakota State University, Fargo, ND, <sup>2</sup>Animal Science, University of Wyoming, Laramie, WY.
- P133**     **Effects of corn processing methods on rumen digestion and microbial growth in no-roughage diets.**  
**R. M. Harvey\***, **N. F. Johnson**, **N. O. Minton**, **W. A. Moore**, **J. R. Russell**, **M. C. Westerhold**, **J. G. Yoder**, **J. Sexten**, **M. S. Kerley**, Animal Sciences, University of Missouri, Columbia, MO.
- 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. Ishlak**<sup>1\*</sup>, **M. Gunal**<sup>2</sup>, **A. AbuGhazaleh**<sup>1</sup>, <sup>1</sup>Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL, <sup>2</sup>Department 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. AbuGhazaleh<sup>1,\*</sup>, M. Gunal<sup>2</sup>, A. Ishlak<sup>1</sup>,** <sup>1</sup>Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL, <sup>2</sup>Department 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<sup>\*</sup>, 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  $\beta$ -cell morphology.**  
**F. Doscher<sup>1,\*</sup>, C. Lemley<sup>2</sup>, L. Camacho<sup>1</sup>, P. Borowicz<sup>1</sup>, J. Caton<sup>1</sup>, A. Meyer<sup>3</sup>, K. Vonnahme<sup>1</sup>, K. Swanson<sup>1</sup>,** <sup>1</sup>Animal Science, North Dakota State University, Fargo, ND, <sup>2</sup>Animal Science, Mississippi State University, MS, <sup>3</sup>Animal Science, University of Wyoming, Laramie, WY.
- P140**     **Prediction of barley silage dry matter by near infrared reflectance spectroscopy.**  
**C. F. O'Neill<sup>1,\*</sup>, A. R. Harding<sup>1</sup>, S. E. Murray<sup>1</sup>, M. L. May<sup>2</sup>, L. O. Burciaga-Robles<sup>2</sup>, O. R. Rasmussen<sup>3</sup>, C. R. Krehbiel<sup>1</sup>,** <sup>1</sup>Oklahoma State University, Stillwater, OK, <sup>2</sup>Feedlot Health Management Services Ltd., Okotoks, Canada, <sup>3</sup>FOSS North America, Eden Prairie, MN.

## TEACHING

- P144**     **Illustrating the effects of fetal crowding on brain development in teaching laboratories.**  
**J. Morton<sup>\*</sup>, 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**

<b>8:00</b>	<b>O051</b>	<p><b>Effect of core body temperature or time of day on lying behavior of lactating dairy cows.</b>  <b>J. Allen<sup>1,2*</sup>, L. Hall<sup>1</sup>, R. Collier<sup>1</sup>, J. Smith<sup>1</sup>,</b> <sup>1</sup>Animal Sciences, University of Arizona, Tucson, <sup>2</sup>Agriculture Sciences, Northwest Missouri State University, Maryville.</p>
<b>8:15</b>	<b>O052</b>	<p><b>Effects of nursery floor-space allowance on growth, physiology, and immunology in replacement gilts.</b>  <b>S. R. Callahan<sup>1,*</sup>, M. J. Estienne<sup>1</sup>, A. E. DeDecker<sup>2</sup>,</b>  <b>A. J. Cross<sup>3</sup>,</b> <sup>1</sup>Animal and Poultry Sciences, Virginia Tech, Blacksburg, <sup>2</sup>Murphy-Brown, LLC, Rose Hill, NC, <sup>3</sup>North Carolina State University, Raleigh.</p>
<b>8:30</b>	<b>O053</b>	<p><b>(Invited ASAS Animal Science Young Scholar) Social stress and space allowance in gestational group housing influences sow and piglet welfare.</b>  <b>L. A. Mack<sup>1,*</sup>, S. D. Eicher<sup>2</sup>, A. K. Johnson<sup>3</sup>, D. C. Lay Jr.<sup>2</sup>,</b>  <b>B. T. Richert<sup>1</sup>, E. A. Pajor<sup>4</sup>,</b> <sup>1</sup>Animal Sciences, Purdue University, <sup>2</sup>LBRU, USDA-ARS, West Lafayette, <sup>3</sup>Animal Science, Iowa State University, Ames., <sup>4</sup>Production Animal Health, University of Calgary, Calgary, Canada.</p>
<b>9:00</b>	<b>O054</b>	<p><b>Performance and well-being of pregnant sows housed in pens retrofitted from stalls.</b>  <b>I. Johnston<sup>*</sup>, Y. Li, A. Hilbrands,</b> West Central Research and Outreach Center, University of Minnesota, Morris.</p>
<b>9:15</b>		<b>BREAK</b>
<b>9:30</b>	<b>O055</b>	<p><b>Is analgesic transfer to piglets via the sow's milk an option for pain mediation at castration?</b>  <b>J. A. Brown<sup>1,*</sup>, Y. M. Seddon<sup>1</sup>, J. Stookey<sup>2</sup>, J. Alcorn<sup>3</sup>,</b>  <sup>1</sup>Ethology, Prairie Swine Centre, <sup>2</sup>Western College of Veterinary Medicine, <sup>3</sup>Department of Pharmacy, University of Saskatchewan, Saskatoon, Canada.</p>

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9:45	<b>O056</b>	<p><b>Effect of mannan oligosaccharide (Bio-Mos®) and outdoor access housing on pig growth, feed efficiency, ultrasound carcass composition and health.</b>  <b>B. A. Wenner<sup>1,*</sup>, H. N. Zerby<sup>1</sup>, W. A. Gebreyes<sup>2</sup>, D. D. Boler<sup>1</sup>, S. J. Moeller<sup>1</sup>,</b> <sup>1</sup>Animal Sciences, <sup>2</sup>Veterinary Preventative Medicine, The Ohio State University, Columbus.</p>
10:00	<b>O057</b>	<p><b>Effects of management options on performance of gestating sows housed in an electronic sow feeder system.</b>  <b>Y. Li<sup>*</sup>, H. Gonyou<sup>2</sup>,</b> <sup>1</sup>West Central Research and Outreach Center, University of Minnesota, Morris., <sup>2</sup>Prairie Swine Center, Saskatoon, SK, Canada.</p>

**BILLY DAY SYMPOSIUM  
 CONSIDERING SOW HOUSING**

**Chair: Timothy J. Safranski, University of Missouri  
 Sponsor: Billy Day Appreciation Club, ASAS Foundation  
 316/317**

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8:00		<b>Welcome and Introduction</b>
8:10	<b>O058</b>	<p><b>(Invited) The history of gestation sow housing in the United States.</b>  <b>S. Niekamp<sup>*</sup>,</b> Swine Welfare, Clive.</p>
8:50	<b>O059</b>	<p><b>(Invited) Sow housing from the perspective of the pig.</b>  <b>E. Pajor<sup>*</sup>,</b> Veterinary Medicine, Production Animal Health, University of Calgary, Calgary, Canada.</p>
9:30	<b>O060</b>	<p><b>(Invited) Sow housing from the perspective of the consumer</b>  <b>G. Tonsor<sup>*</sup>,</b> Agricultural Economics, Kansas State University, Manhattan.</p>
10:10		<b>BREAK</b>
10:25	<b>O061</b>	<p><b>(Invited) Sow housing from the perspective of Dutch producers.</b>  <b>H. Feitsma<sup>*</sup>, E. F. Knol,</b> Research and Development, TOPIGS Research Center IPG, Beuningen, Netherlands</p>
11:05	<b>O062</b>	<p><b>(Invited) Sow housing: summary and perspectives from Australia.</b>  <b>P. H. Hemsworth<sup>1,2,*</sup>,</b> <sup>1</sup>Department of Agriculture and Food Systems, University of Melbourne, Parkville, Australia, <sup>2</sup>Department of Animal Science, The Ohio State University, Columbus.</p>

**BREEDING & GENETICS SYMPOSIUM**  
**GENOTYPING TECHNOLOGIES AND THEIR APPLICATION IN**  
**BREEDING PROGRAMS**

**Chair: Richard Tait, Jr., USDA-ARS, US MARC**  
**318/319**

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<b>8:00</b>	<b>O063</b>	<p><b>(Invited) Development and applications of low-cost, high-throughput genotyping.</b> <b>R. M. Thallman<sup>1,*</sup>, A. K. Lindholm-Perry<sup>1</sup>, J. D. Curry<sup>2</sup>, V. Y. Fofanov<sup>3</sup>, H. Koshinsky<sup>2</sup>,</b> <sup>1</sup>USDA, Agricultural Research Service, U.S. Meat Animal Research Center, Clay Center, NE, <sup>2</sup>Eureka Genomics, Hercules, CA, <sup>3</sup>Eureka Genomics, Sugarland, TX.</p>
<b>8:30</b>	<b>O064</b>	<p><b>(Invited) Comparison of genomic predictions in hereford using actual or imputed 50K genotypes.</b> <b>M. Saatchi<sup>1</sup>, E. Marques<sup>2,*</sup>, S. Bauck<sup>2</sup>, D. J. Garrick<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>GeneSeek, Lincoln.</p>
<b>9:00</b>	<b>O065</b>	<p><b>Influence of accuracy of phasing on accuracy of imputation from 7K to 50K genotypes in Cattle.</b> <b>Z. Weng<sup>1,*</sup>, M. Saatchi<sup>1</sup>, R. Schnabel<sup>2</sup>, J. Taylor<sup>2</sup>, D. J. Garrick<sup>1,3</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Division of Animal Science, University of Missouri, Columbia., <sup>3</sup>Institute of Veterinary, Animal and Biomedical Sciences, Massey University, Palmerston North, New Zealand</p>
<b>9:15</b>	<b>O066</b>	<p><b>(Invited) Incorporation of genomic predictions into the American Hereford Association (AHA) national cattle evaluation.</b> <b>J. Ward<sup>1,*</sup>, D. Garrick<sup>2</sup>, M. Saatchi<sup>2</sup>, D. Johnston<sup>3</sup>, B. Crook<sup>3</sup>,</b> <sup>1</sup>AHA, Kansas City, <sup>2</sup>NBCEC and Iowa State University, Ames., <sup>3</sup>AGBU, Abri, Australia</p>
<b>9:45</b>	<b>O067</b>	<p><b>(Invited) Genomic-enhanced EPDs in the American Angus Association National Cattle Evaluation.</b> <b>S. L. Northcutt<sup>1,*</sup>, T. S. Amen<sup>1</sup>, B. W. Brigham<sup>2</sup>, D. Nkrumah<sup>3</sup>, S. Bauck<sup>4</sup>,</b> <sup>1</sup>Angus Genetics Inc., St Joseph, <sup>2</sup>Colorado State University, Fort Collins, <sup>3</sup>Pfizer Animal Genetics, Kalamazoo, <sup>4</sup>Igenity, Lincoln.</p>
<b>10:15</b>	<b>O068</b>	<p><b>Genomic prediction in Red Angus beef cattle is improved by using a multi-breed reference population.</b> <b>M. Saatchi<sup>1</sup>, D. J. Garrick,</b> Animal Science, Iowa State University, Ames.</p>

10:30		<b>BREAK</b>
10:45	O069	<b>(Invited) Application of genomics to genetic improvement at PIC.</b> M. Cleveland*, S. Forni, N. Deeb, Genus plc, Hendersonville.
11:15	O070	<b>Costs of implementing genome-enabled selection in swine.</b> C. Abell*, J. Dekkers, M. Rothschild, J. Mabry, K. Stalder, Iowa State University, Ames.
11:30	O071	<b>(Invited) Genomic selection in layer chickens outperforms pedigree-based selection.</b> A. Wolc <sup>1, 2, 3, *</sup> , J. Arango <sup>1</sup> , P. Settari <sup>1</sup> , J. E. Fulton <sup>1</sup> , N. P. O'Sullivan <sup>1</sup> , R. Preisinger <sup>4</sup> , D. Habier <sup>2</sup> , R. L. Fernando <sup>2</sup> , D. J. Garrick <sup>2</sup> , S. J. Lamont <sup>2</sup> , J. C.M. Dekkers <sup>2</sup> , <sup>1</sup> Hy-Line Int., Dallas Center, <sup>2</sup> Department of Animal Science, Iowa State University, Ames., <sup>3</sup> Department of Genetics and Animal Breeding, Poznan University of Life Sciences, Poznan, Poland, <sup>4</sup> Lohmann Tierzucht GmbH, Cuxhaven, Germany

**NONRUMINANT NUTRITION  
CO-PRODUCT FEEDSTUFFS**

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

8:00	O072	<b>Carbohydrate composition and in vitro digestibility of dry matter and non-starch polysaccharides in grains and grain co-products.</b> N. W. Jaworski <sup>1,*</sup> , H. N. Lærke <sup>2</sup> , K. E. B. Knudsen <sup>2</sup> , H. H. Stein <sup>1</sup> , <sup>1</sup> Animal Science, University of Illinois, Urbana, <sup>2</sup> Animal Science, Aarhus University, Tjele, Denmark.
8:15	O073	<b>Energy concentration and amino acid digestibility in corn and corn co-products fed to growing pigs.</b> M. Song <sup>1</sup> , J. K. Mathai <sup>2,*</sup> , F. N. Almeida <sup>2</sup> , O. J. Rojas <sup>2</sup> , S. L. Tilton <sup>3</sup> , M. J. Cecava <sup>3</sup> , H. H. Stein <sup>2</sup> , <sup>1</sup> Animal Sciences, Chungnam National University, Daejeon, Korea, Republic Of, <sup>2</sup> Animal Sciences, University of Illinois, Urbana, <sup>3</sup> Archer Daniels Midland Company, Decatur.

8:30	O074	<p><b>Effects of diet form and fiber level before marketing on growth performance, carcass yield, and iodine value of finishing pigs.</b>  <b>J. Nemecek<sup>*</sup>, M. Tokach, J. DeRouche, S. Dritz, R. Goodband, J. Nelssen,</b> Animal Science and Industry, Kansas State University, Manhattan.</p>
8:45	O075	<p><b>The effects of medium-oil dried distillers grains with solubles on growth performance and carcass traits in finishing pigs.</b>  <b>A. B. Graham<sup>*</sup>, R. D. Goodband, J. M. DeRouche, M. D. Tokach, S. S. Dritz, J. L. Nelssen, S. Nitikanchana,</b> Kansas State University, Manhattan.</p>
9:00	O076	<p><b>Empiric narrowing of the net energy value of low-oil corn DDGS on pig growth performance and carcass characteristics.</b>  <b>V. Zamora<sup>1</sup>, M. Young<sup>1,*</sup>, N. Campbell<sup>1</sup>, B. Uttaro<sup>2</sup>, E. Beltranena<sup>3</sup>,</b> <sup>1</sup>Gowans Feed Consulting, Wainwright, AB, <sup>2</sup>Agriculture and Agri-Food Canada, Lacombe, AB, <sup>3</sup>Alberta Agriculture and Rural Development, Edmonton, AB, Canada.</p>
9:15	O077	<p><b>Evaluation of various inclusion rates of dried distillers grain with solubles in sow lactation diets.</b>  <b>L. Greiner<sup>1,*</sup>, Z. Jiang<sup>2</sup>, C. Neill<sup>3</sup>, J. Connor<sup>1</sup>, G. Allee<sup>4</sup>,</b> <sup>1</sup>Innovative Swine Solutions, LLC, Carthage, <sup>2</sup>Ajinomoto Heartland, Chicago, <sup>3</sup>PIC, Hendersonville, <sup>4</sup>Porktech, LLC, Columbia.</p>
9:30	O078	<p><b>The effects of soybean hulls in corn-soybean meal and corn-soybean meal-DDGS diets on nursery pig performance.</b>  <b>D. Goehring<sup>1,*</sup>, J. M. DeRouche<sup>1</sup>, M. D. Tokach<sup>1</sup>, S. S. Dritz<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>, B. W. James<sup>2</sup>,</b> <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Kalmbach Feeds, Inc., Upper Sandusky.</p>
9:45	O079	<p><b>The effects of soybean hulls on nursery pig growth performance.</b>  <b>D. Goehring<sup>*</sup>, J. M. DeRouche, M. D. Tokach, S. S. Dritz, R. D. Goodband, J. L. Nelssen,</b> Kansas State University, Manhattan.</p>
10:00	O080	<p><b>Nutritional value of lentil and micronized full-fat soybean fed to growing pigs.</b>  <b>T. A. Woyengo<sup>1,*</sup>, R. Jha<sup>1,2</sup>, E. Beltranena<sup>1,3</sup>, A. Pharazyn<sup>4</sup>, R. T. Zijlstra<sup>1</sup>,</b> <sup>1</sup>University of Alberta, Edmonton, Canada, <sup>2</sup>University of Hawaii at Manoa, Honolulu., <sup>3</sup>Alberta Agriculture and Rural Development, Edmonton, <sup>4</sup>Nutreco Canada Inc, Guelph, Canada.</p>

10:15	O081	<p><b>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.</b></p> <p>O. J. R. Martinez*, H. H. Stein, Animal Sciences, University of Illinois, Urbana.</p>
10:30	O082	<p><b>Amino acid digestibility in canola meal, 00-rapeseed meal, and 00-rapeseed expellers fed to growing pigs.</b></p> <p>T. Maison*, H. H. Stein Animal Science, University of Illinois, Urbana.</p>
10:45	O083	<p><b>The effect of feeding solvent-extracted juncea canola meal on growth performance and diet nutrient digestibility of weaned pigs.</b></p> <p>J. L. Landero<sup>1*</sup>, E. Beltranena<sup>1,2</sup>, R. T. Zijlstra<sup>1</sup>, <sup>1</sup>University of Alberta, <sup>2</sup>Alberta Agriculture and Rural Development, Edmonton, Canada.</p>
11:00	O084	<p><b>(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.</b></p> <p>F. N. Almeida<sup>1*</sup>, J. K. Htoo<sup>2</sup>, J. Thomson<sup>3</sup>, H. H. Stein<sup>1</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana., <sup>2</sup>Evonik Industries AG, Hanau, Germany, <sup>3</sup>Evonik Degussa Corporation, Kennesaw.</p>
11:30	O085	<p><b>Performance, organ weights and blood parameters in growing pigs fed diets containing expeller extracted canola meal.</b></p> <p>J. S Sands<sup>1*</sup>, K. Schuh<sup>1</sup>, T. A. Woyengo<sup>2</sup>, C. M. Nyachoti<sup>1</sup>, <sup>1</sup>Animal Science, University of Manitoba, Winnipeg, <sup>2</sup>Animal Science, University of Alberta, Edmonton, Canada.</p>
11:45	O086	<p><b>Feeding value of green canola seed fed to growing-finishing pigs.</b></p> <p>T. A. Woyengo<sup>1*</sup>, J. Yáñez<sup>1</sup>, M. Young<sup>2</sup>, G. Lanz<sup>2</sup>, E. Beltranena<sup>1,3</sup>, R. T. Zijlstra<sup>1</sup>, <sup>1</sup>University of Alberta, Edmonton, <sup>2</sup>Gowans Feed Consulting, Wainwright, <sup>3</sup>Alberta Agriculture and Rural Development, Edmonton, Canada.</p>
12:00	O087	<p><b>Effect of levan supplementation on the growth performance, nutrient digestibility, fecal microflora, and fecal noxious gas content in weaning pigs.</b></p> <p>J. Li*, B. R. Lee, I. H. Kim, Department of Animal Resource &amp; Science, Dankook University, Cheonan, Republic of Korea.</p>

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12:15	O088	<p><b>The effects of wheat and crystalline amino acids on nursery and finishing pig growth performance and carcass characteristics.</b>  <b>D. Goehring*</b>, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. L. Nelssen, Kansas State University, Manhattan.</p>
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**NONRUMINANT NUTRITION  
NURSERY PIG NUTRITION AND MANAGEMENT**

**Chair: Jason Frank, Diamond V**

**306/307**

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8:00	O089	<p><b>Effects of increasing wheat middlings (midds) and ne formulation on nursery pig growth performance.</b>  <b>J. A. De Jong*</b>, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, S. S. Dritz, J. L. Nelssen, Animal Science, Kansas State University, Manhattan.</p>
8:15	O090	<p><b>(Invited ASAS Animal Science Young Scholar) Effects of dietary oxidized lipid on the growth performance and metabolic oxidative status of nursery pigs.</b>  <b>A. R. Hanson<sup>1,*</sup></b>, L. J. Johnston<sup>2</sup>, S. K. Baidoo<sup>3</sup>, J. L. Torrison<sup>4</sup>, C. Chen<sup>5</sup>, G. C. Shurson<sup>1</sup>, <sup>1</sup>Animal Science, University of Minnesota, St Paul, <sup>2</sup>West Central Research and Outreach Center, University of Minnesota, Morris, <sup>3</sup>Southern Research and Outreach Center, University of Minnesota, Waseca, <sup>4</sup>Veterinary Diagnostic Laboratory, <sup>5</sup>Department of Food Science and Nutrition, University of Minnesota, St Paul.</p>
8:45	O092	<p><b>Feed preference of nursery pigs fed diets with soybean meal, napus canola meal or juncea canola meal.</b>  <b>J. L. Landero<sup>1,*</sup></b>, E. Beltranena<sup>1,2</sup>, R. T. Zijlstra<sup>1</sup>, <sup>1</sup>University of Alberta, <sup>2</sup>Alberta Agriculture and Rural Development, Edmonton, Canada.</p>
9:00	O093	<p><b>Simple assessment of piglet robustness in relation to nursery diet quality and feeding antibiotics.</b>  <b>C. Levesque*</b>, E. Miller, J. Zhu, K. de Lange, Animal and Poultry Science, University of Guelph, Guelph, Canada</p>
9:15	O091	<p><b>Effect of pellet quality and feeder adjustment on growth performance of nursery pigs.</b>  <b>J. Nemecek<sup>1,*</sup></b>, M. Tokach<sup>1</sup>, E. Frugé<sup>2</sup>, E. Hansen<sup>2</sup>, S. Dritz<sup>1</sup>, R. Goodband<sup>1</sup>, J. DeRouchey<sup>1</sup>, J. Nelssen<sup>1</sup>, <sup>1</sup>Animal Science and Industry, Kansas State University, Manhattan, <sup>2</sup>Hubbard Feeds, Inc., Mankato.</p>



9:30		<b>BREAK</b>
9:45	O094	<b>Effect of dietary lysine and sanitary condition on performance of weaned pigs fed antibiotic-free diets.</b> R. K. Kahindi <sup>1*</sup> , J. Sands <sup>1</sup> , J. Htoo <sup>2</sup> , M. Nyachoti <sup>1</sup> , <sup>1</sup> Animal Science, University of Manitoba, Winnipeg, Canada, <sup>2</sup> Evonik Industries, Hanau, Germany
10:00	O095	<b>Soybean meal level in diets for pigs challenged with porcine reproductive and respiratory syndrome (PRRS) virus.</b> G. C. Rocha <sup>1</sup> , R. D. Boy <sup>2</sup> , J. A. S. Almeida <sup>1*</sup> , Y. Liu <sup>1</sup> , T. M. Che <sup>1</sup> , R. Dilger <sup>1</sup> , J. E. Pettigrew <sup>1</sup> <sup>1</sup> Animal Sciences, University of Illinois, Urbana, <sup>2</sup> Hanor, Franklin, KY.
10:15	O096	<b>Effects of spray-dried porcine plasma on growth performance, immune responses, total antioxidant capacity, and gut integrity of nursery pigs.</b> H. Tran <sup>*</sup> , J. W. Bundy, Y. S. Li, E. E. Hinkle, T. E. Burkey, P. S. Miller, Animal Science, University of Nebraska, Lincoln.
10:30	O097	<b>Spray-dried animal plasma mitigates the negative impact of deoxynivalenol (DON) in nursery pigs.</b> L. Eastwood <sup>*</sup> , J. Shea, D. Gillis, D. Beaulieu, Prairie Swine Centre Inc., Saskatoon, Canada.
10:45	O098	<b>Growth performance, fecal consistency and intestinal function in weaned pigs fed diets containing spray dried porcine plasma or egg yolk antibodies.</b> J. S. Sands <sup>*</sup> , J. M. Heo, C. M. Nyachoti, Animal Science, University of Manitoba, Winnipeg, Canada.
11:00	O099	<b>Mucosal bacteria associated with periods of reduced and compensatory growth in pigs.</b> C. Levesque <sup>1*</sup> , K. Swanson <sup>2</sup> , K. de Lange <sup>1</sup> , <sup>1</sup> Animal and Poultry Science, University of Guelph, Guelph, Canada, <sup>2</sup> Animal Science and Division of Nutritional Science, University of Illinois, Urbana.
11:15	O100	<b>Rate of starch digestion influences glucose and short chain fatty acid signaling pathway mRNA abundance in the porcine intestine.</b> A. D. Woodward <sup>1*</sup> , P. R. Regmi <sup>1</sup> , M. G. Ganzle <sup>1</sup> , T. A. T. G. van Kempen <sup>2</sup> , R. T. Zijlstra <sup>1</sup> , <sup>1</sup> Agricultural, Food, and Nutritional Science, University of Alberta, Edmonton, Canada, <sup>2</sup> North 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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| <b>8:00</b>  | <b>O101</b> | <b>(Invited) Maximizing forage resources in feedlot diets to offset expensive grains.</b><br><b>G. E. Erickson*</b> , T. J. Klopfenstein, J. C. MacDonald, A. L. Shreck, J. M. Johnson, B. L. Nuttelman, C. J. Schneider, D. B. Burken, Animal Science, University of Nebraska-Lincoln, Lincoln. |
| <b>8:45</b>  | <b>O102</b> | <b>(Invited) Environmental impact of new feeding choices in the feedlot industry.</b><br><b>K. E. Hales*</b> , Nutrition Research Unit, USDA, ARS, US Meat Animal Research Center, Clay Center.  |
| <b>9:30</b>  | <b>O103</b> | <b>(Invited) Maintaining competitiveness with increasingly volatile markets.</b><br><b>L. Schulz*</b> , Economics, Iowa State University, Ames.  |
| <b>10:15</b> | <b>O177</b> | <b>(Invited) The application of feed efficiency in Dairy Cattle.</b><br><b>D. P. Casper*</b> , Dairy Science, South Dakota State University, Brookings.  |

**RUMINANT NUTRITION**  
**DAIRY NUTRITION**  
**Chair: Daryl Kleinschmit, AgriKing**  
**314/315**

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| <b>8:00</b> | <b>O104</b> | <b>Effects of diet energy levels fed during the dry period on performance parameters of dairy cows.</b><br><b>A. Pineda*</b> , F. Cardoso, J. K. Drackley, Animal Sciences, University of Illinois, Urbana.  |
| <b>8:15</b> | <b>O105</b> | <b>(Invited ADSA Young Dairy Scholar) Provision of non-immunoglobulin protein and rate of passage effects efficiency of Immunoglobulin G absorption in neonatal calves.</b><br><b>R. Cabral<sup>1,*</sup>, P. Erickson<sup>2</sup></b> , <sup>1</sup> Molecular, cellular and biomedical sciences, University of New Hampshire, Durham, <sup>2</sup> Biological Sciences, University of New Hampshire, Durham. |

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8:45	O106	<p><b>(Invited ADSA Young Dairy Scholar) Butyrate supplementation effects on metabolism and production in lactating dairy cows.</b>  <b>K. Herrick*</b>, K. Kalscheur, South Dakota State University, Brookings.</p>
9:15	O107	<p><b>(Invited ADSA Young Dairy Scholar) Effects of feeding fat from distillers grains on growth, metabolic profile, and long-term performance of dairy heifers.</b>  <b>J. L. Anderson*</b>, K. F. Kalscheur, Dairy Science Department, South Dakota State University, Brookings.</p>
9:45	O108	<p><b>(Invited ADSA Young Dairy Scholar) Expression of mRNA for ureagenesis in early-lactation dairy cows is responsive to post-ruminal protein supply.</b>  <b>H. Tucker*</b>, S. Donkin, Animal Science, Purdue University, West Lafayette.</p>
10:15	O109	<p><b>Influence of the direct-fed microbial Bovamine on feed efficiency and milk production of lactating Holstein cows.</b>  <b>M. O'Neil<sup>1,*</sup></b>, E. Testroet<sup>2</sup>, M. Osman<sup>1</sup>, W. Kreikemeier<sup>3</sup>, D. Ware<sup>3</sup>, D. C. Beitz<sup>4</sup>, <sup>1</sup>Department of Animal Science, <sup>2</sup>Department of Food Science and Human Nutrition, Iowa State University, Ames, <sup>3</sup>Nutrition Physiology Company, Guymon, OK, <sup>4</sup>Department of Biochemistry, Biophysics, and Molecular Biology, Iowa State University, Ames.</p>

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

**320**

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9:00	O178	<p><b>(Invited) Developing scholars and future employees: building a sustainable undergraduate research program in agriculture.</b>  <b>T. Nichols*</b>, South Dakota State University, Brookings.</p>
9:20	O110	<p><b>(Invited) Industry perspective: Engaging students in research in order to obtain skills and knowledge to make them more successful in the job market.</b>  <b>J. M. Rumph*</b>, Pfizer Animal Genetics, Kalamazoo, MI.</p>
9:40	O111	<p><b>(Invited) Best practices and benefits of involving students in animal sciences research - early career faculty perspective.</b>  <b>S. Hansen*</b>, Animal Science, Iowa State University, Ames.</p>

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10:00	O112	<p><b>(Invited) Department initiatives to engage undergraduate students in animal sciences research.</b>  <b>E. Karcher*</b>, Animal Science, Michigan State University, East Lansing.</p>
10:20		<p><b>Panel Discussion</b></p>

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

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1:00		<p><b>(Invited) Effects of feeding various fat sources on milk fat production in lactating dairy cattle.</b>  <b>A. Lock*</b>, Michigan State University, East Lansing.</p>
1:45		<p><b>(Invited) Manipulating lipid metabolism in fresh cows.</b>  <b>N. Litherland*</b>, University of Minnesota, St. Paul.</p>
2:15	O113	<p><b>(Invited) Applied principles of feeding fat to lactating dairy cows, with emphasis on byproducts as the primary source.</b>  <b>P. Kononoff<sup>1,*</sup>, K. F. Kalscheur<sup>2</sup>, H. A. Ramirez<sup>1</sup>, S. D. Ranathunga<sup>2</sup></b>, <sup>1</sup>Animal Science, University of Nebraska-Lincoln, Lincoln, <sup>2</sup>Dairy Science, South Dakota State University, Brookings.</p>
3:00		<p><b>BREAK</b></p>
3:15		<p><b>(Invited) Rumen protected fat sources – learning lessons from industry.</b>  <b>C. Soderholm*</b>, Milk Specialties Global Animal Nutrition, Eden Prairie, MN.</p>
3:35		<p><b>(Invited) Rumen protected fat sources – learning lessons from industry.</b>  <b>J. Davidson*</b>, Land O'Lakes Purina Feeds, Gray Summit, MO.</p>
3:55		<p><b>Industry Panel and Discussion</b></p>

**GROWTH, DEVELOPMENT, MUSCLE BIOLOGY, MEAT SCIENCE  
MATERNAL NUTRITION SYMPOSIUM  
Chair: Ryan Cox, University of Minnesota  
302/303**

1:00	O114	<p><b>(Invited) Exposure to heat stress during pregnancy impairs metabolism in the ruminant fetus.</b> S. W. Limesand*, Animal Sciences, University of Arizona, Tucson.</p>
1:45	O115	<p><b>(Invited) Impacts of fetal programming on cattle performance, carcass composition, and meat quality.</b> A. R. Taylor*, K. Underwood, D. Mohrhauser, A. Weaver, Animal Science, South Dakota State University, Brookings.</p>
2:30	O116	<p><b>(Invited) Implications of maternal nutrition on developmental programming of economically relevant traits in livestock production.</b> A. E. Radunz*, University of Wisconsin, River Falls.</p>
3:15		<b>BREAK</b>
3:30	O209	<p><b>Impact of ractopamine hydrochloride on finishing pigs in a three phase marketing scheme.</b> G. D. Gerlemann<sup>1</sup>, G. L. Allee<sup>1</sup>, P. J. Rincker<sup>2</sup>, D. D. Boler<sup>3,*</sup>, S. N. Carr<sup>2</sup>, <sup>1</sup>Animal Sciences, University of Missouri, Columbia, <sup>2</sup>Elanco Animal Health, Greenfield, <sup>3</sup>Animal Sciences, Ohio State University, Columbus.</p>
3:45	O210	<p><b>Effect of growth rate during the stocker period on satellite cell-mediated preadipocyte differentiation in beef cattle.</b> M. A. Vaughn<sup>1,*</sup>, J. D. Starkey<sup>1</sup>, K. C. Hutton<sup>1</sup>, P.A. Lancaster<sup>2</sup>, U. DeSilva<sup>2</sup>, G. W. Horn<sup>2</sup>, C.R. Krehbiel<sup>2</sup>, <sup>1</sup>Animal and Food Sciences, Texas Tech University, Lubbock, <sup>2</sup>Animal Science, Oklahoma State University, Stillwater.</p>
4:00	O211	<p><b>Effects of increasing hydrolysable tannin levels in diets of boars on growth, carcass traits, boar taint, and cytochrome P450 gene expression.</b> A. L. Wealleans<sup>1</sup>, J. C. Litten-Brown<sup>1</sup>, I. Mueller-Harvey<sup>1</sup>, I. Givens<sup>2</sup>, P. Silacci<sup>3</sup>, G. Bee<sup>3,*</sup>, <sup>1</sup>School of Agriculture, Policy and Development,, University of Reading,, <sup>2</sup>School of Agriculture, Policy and Development, University of Reading,, Reading, United Kingdom, <sup>3</sup>Agroscope, Posieux, Switzerland</p>

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4:15	O212	<p><b>Effect of skeletal muscle fiber heterogeneity on development of intramuscular fat in growing beef cattle.</b>  <b>S. L. Roberts*</b>, P. A. Lancaster, U. DeSilva, G. W. Horn  <b>C. R. Krehbiel</b>, Animal Science, Oklahoma State University, Stillwater.</p>
4:30	O213	<p><b>Effect of timing of mixing during the grow-finish period on the growth performance and carcass characteristics of barrows and gilts under commercial conditions.</b>  <b>L. Ochoa<sup>1*</sup></b>, M. Ellis<sup>1</sup>, B. Isaacson<sup>2</sup>, B. A. Peterson<sup>2</sup>,  <sup>1</sup>Animal Sciences, University of Illinois, Urbana, <sup>2</sup>The Maschhoffs, Carlyle, IL.</p>
4:45	O214	<p><b>Prenatal and postnatal nutritional effects on postnatal growth and carcass characteristics of steers.</b>  <b>K. J. McLean*</b>, B. H. Boehmer, C. L. Maxwell, G. W. Horn, R. P. Wettemann, Oklahoma Agricultural Experiment Station, Oklahoma State University, Stillwater.</p>

### HARLAN RITCHIE BEEF SYMPOSIUM

**Chair: Larry Corah, Certified Angus Beef Program**

**Sponsor: Harlan Ritchie Appreciation Club, ASAS Foundation**

**316/317**

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1:00	O117	<p><b>(Invited) The future of genomic selection in animal agriculture.</b>  <b>J. Taylor*</b>, University of Missouri, Columbia.</p>
1:45	O118	<p><b>(Invited) Industry issue or opportunity – increasing carcass weights?</b>  <b>J. Stika*</b>, C. E. Walenciak, Certified Angus Beef LLC, Wooster, OH.</p>
2:30	O119	<p><b>(Invited) Creating customer-centric beef production systems.</b>  <b>N. Speer*</b>, Western Kentucky University, Bowling Green.</p>
3:15	O120	<p><b>(Invited) Economic rewards of hitting consumer targets for beef</b>  <b>S. Brown*</b>, Department of Agricultural and Applied Economics, University of Missouri, Columbia.</p>

**NONRUMINANT NUTRITION  
FEED INGREDIENTS AND ADDITIVES**  
Chair: Ryan Dilger, University of Illinois  
304/305

1:00	O121	<p><b>Effect of <math>\beta</math>-mannanase and <math>\beta</math>-glucanase on pig performance, active glucose absorption, and intestinal microbial population in the early nursery period.</b>  <b>Z. Rambo<sup>1</sup>, M. Rostagno<sup>2</sup>, J. Radcliffe<sup>1</sup>, J. Ferrel<sup>3</sup>, A. Jones<sup>1</sup>, D. Kelly<sup>1</sup>, B. Richert<sup>1,*</sup>, <sup>1</sup>Animal Sciences, Purdue University, West Lafayette, IN <sup>2</sup>USDA-ARS, Livestock Behavior Research Unit, West Lafayette, IN, <sup>3</sup>ChemGen Corp, Gaithersburg, MD.</b></p>
1:15	O122	<p><b>The effects of cereal type and xylanase supplementation on growing pig growth performance and nutrient and energy digestibility.</b>  <b>A. J. Myers*, J. Patience, Animal Science, Iowa State University, Ames.</b></p>
1:30	O123	<p><b>Effects of phytase and xylanase supplementation on energy and nutrient digestibilities in growing pigs fed wheat and wheat co-products-based diets.</b>  <b>A. Kofi Agyekum<sup>1,*</sup>, A. Owusu-Asiedu<sup>2</sup>, J. Min Heo<sup>1</sup>, M. Nyachoti<sup>1</sup>, <sup>1</sup>Department of Animal Science, University of Manitoba, Winnipeg, Canada, <sup>2</sup>DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom</b></p>
1:45	O124	<p><b>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.</b>  <b>E. G. Kiarie<sup>1,*</sup>, L. Romero<sup>1</sup>, S. Baidoo<sup>2</sup>, <sup>1</sup>Research, Dupont Industrial Biosciences-Danisco Animal Science, Marlborough, United Kingdom, <sup>2</sup>Animal Science, University of Minnesota, Waseca.</b></p>
2:00	O125	<p><b>Effect of supplementing of protease, phytase, and carbohydrase enzymes on nutrient digestibility of canola meal in growing pigs.</b>  <b>Z. Nasir<sup>1,*</sup>, J. Broz<sup>2</sup>, R. T. Zijlstra<sup>1</sup>, <sup>1</sup>Dept. of Agriculture, Food and Nutritional Science, University of Alberta, Edmonton, Canada, <sup>2</sup>DSM Nutritional Products, Basel, Switzerland</b></p>

2:15	O126	<p><b>Protease and carbohydrase supplementation increased carcass weight and yield in finishing pigs eating an alternative diet.</b>  <b>J. Escobar*</b>, Y. Ma, N. Odetallah, M. Vazquez-Añón,  Novus International, St. Charles, MO.</p>
2:30	O127	<p><b>(Invited ASAS Animal Science Young Scholar) Oral hen egg antibodies for the control of hyperphosphatemia during chronic kidney disease.</b>  <b>E. A. Bobeck<sup>1,2,*</sup></b>, M. E. Cook<sup>2</sup>, <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Animal Science, University of Wisconsin-Madison, Madison.</p>
3:00	O128	<p><b>Effect of glycan infusion on net fluid absorption in piglet jejunal segments challenged with enterotoxigenic Escherichia coli.</b>  <b>A. D. Woodward*</b>, X. Chen, M. G. Ganzle, R. T. Zijlstra,  Agricultural, Food, and Nutritional Science, University of Alberta, Edmonton, Canada.</p>
3:15	O129	<p><b>Effects of grow-finish diets supplemented with CALSPORIN® (Bacillus subtilis C-3102 spores) or Stafac® on pig performance.</b>  <b>T. A. Meyer<sup>1</sup></b>, S. Crowder<sup>1,*</sup>, T. Weeden<sup>1</sup>, N. Otomo<sup>2</sup>, T. Lohrmann<sup>3</sup>, <sup>1</sup>Purina Animal Nutrition LLC, Shoreview, MN, <sup>2</sup>Calpis USA, Inc., Mt. Prospect, IL, <sup>3</sup>Quality Technology International (QTI), Inc., Elgin, IL.</p>
3:30	O130	<p><b>The effects of feeding narasin or virginiamycin on the performance of grow-finish pigs.</b>  <b>R. A. Arentson<sup>1,*</sup></b>, D. Mowrey<sup>1</sup>, E. McMillan<sup>2</sup>, <sup>1</sup>Elanco, Greenfield., <sup>2</sup>Nutreco, Burford, Canada.</p>
3:45	O026	<p><b>Increasing dietary levels of extruded and expeller-pressed canola juncea meal on pig growth performance and carcass traits.</b>  <b>X. Zhou<sup>1,*</sup></b>, M. Young<sup>2</sup>, V. Zamora<sup>2</sup>, R. T. Zijlstra<sup>1</sup>, E. Beltranena<sup>3</sup>, <sup>1</sup>Department of Agricultural, Food &amp; Nutritional Science, University of Alberta, Edmonton, <sup>2</sup>Gowans Feed Consulting Ltd, Wainwright, <sup>3</sup>Alberta Agriculture and Rural Development, Edmonton, Canada.</p>



**NONRUMINANT NUTRITION  
SOW NUTRITION AND MANAGEMENT**

**Chair: Buddy Hinson, JBS United**

**304/305**

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<b>4:00</b>	<b>O131</b>	<b>Variability in daily urinary nitrogen excretion in gestating gilts at 2 levels of energy intake.</b> <b>E. G. Miller*</b> , D. Wey, C. F. M. de Lange, C. Levesque, Animal and Poultry Science, University of Guelph, Guelph, Canada.
<b>4:15</b>	<b>O132</b>	<b>The effects of added vitamin D3 in maternal diets on sow and pig performance.</b> <b>J. Flohr<sup>1,*</sup></b> , M. D. Tokach <sup>1</sup> , J. L. Nelssen <sup>1</sup> , S. S. Dritz <sup>1</sup> , <b>J. M. DeRouchey<sup>1</sup></b> , R. D. Goodband <sup>1</sup> , J. R. Bergstrom <sup>2</sup> , <sup>1</sup> Kansas State University, Manhattan, <sup>2</sup> DSM Nutritional Products Inc., Parsippany.
<b>4:30</b>	<b>O133</b>	<b>Development of a prediction equation to estimate post-partum sow body weight from pre-partum weight.</b> <b>D. Rosero<sup>1,*</sup></b> , C. Arellano <sup>2</sup> , E. van Heugten <sup>1</sup> , M. E. <b>Johnston<sup>3</sup></b> , R. D. Boyd <sup>4</sup> , <sup>1</sup> Department of Animal Sciences, <sup>2</sup> Department of Statistics, NCSU, Raleigh, NC, <sup>3</sup> JBS United, Sheridan, IN, <sup>4</sup> Hanor Company, Inc., Franklin, KY.
<b>4:45</b>	<b>O134</b>	<b>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> <b>B. K. Knudson<sup>1,*</sup></b> , N. Otomo <sup>2</sup> , T. Hamaoka <sup>2</sup> , B. Lee <sup>2</sup> , S. <b>C. Johnson<sup>3</sup></b> , <sup>1</sup> Nutrition Services – Livestock Management Company (LiManCo), Waverly, IA, <sup>2</sup> Calpis USA, Inc., Mt. Prospect, IL, <sup>3</sup> Quality Technology International (QTI), Inc., Elgin, IL .
<b>5:00</b>	<b>O135</b>	<b>Sow and nursery pig performance are improved when diets are supplemented with a Saccharomyces cerevisiae fermentation product.</b> <b>J. W. Frank*</b> , K. L. Dorton, Diamond V, Cedar Rapids, IA.

## PHYSIOLOGY

Chair: Lea Rempel, USDA-ARS

318/319

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1:00	O136	<p><b>(Invited ASAS Animal Science Young Scholar) Bovine females with thecal cell androgen excess result in altered oocyte maternal effect gene abundance.</b> A. F. Summers<sup>1,*</sup>, W. E. Pohlmeier<sup>1</sup>, V. M. Brauer<sup>1</sup>, K. M. Sargent<sup>1</sup>, R. M. McFee<sup>1</sup>, R. A. Cushman<sup>2</sup>, J. R. Wood<sup>1</sup>, A. S. Cupp<sup>1</sup>, <sup>1</sup>Animal Science, University of Nebraska- Lincoln, Lincoln, <sup>2</sup>USDA-ARS U.S. Meat Animal Research Center, Clay Center.</p>
1:30	O137	<p><b>(Invited ADSA Young Dairy Scholar) Inflammation in the transition dairy cow: Hormesis to homeorhesis.</b> J. Farney<sup>*</sup>, B. Bradford, Animal Science, Kansas State University, Manhattan.</p>
2:00	O138	<p><b>The effects of porcine reproductive syndrome virus (PRRSV) on immune biomarkers.</b> G. Mastromano<sup>1</sup>, T. E. Burkey<sup>1,*</sup>, A. Rakhshandeh<sup>2</sup>, G. Gourley<sup>3</sup>, T. E. Weber<sup>2</sup>, M. Fitzsimmons<sup>3</sup>, K. Schwartz<sup>2</sup>, J. C. M. Dekkers<sup>2</sup>, C. Sparks<sup>4</sup>, J. Odle<sup>5</sup>, N. K. Gabler<sup>2</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>Iowa State University, Ames, <sup>3</sup>Swine Graphics Enterprises, Webster City, IA, <sup>4</sup>Newsham Choice Genetics, Des Moines, IA, <sup>5</sup>North Carolina State University, Raleigh.</p>
2:15	O139	<p><b>Measures of immune function as biomarkers in serum of pigs infected with porcine reproductive and respiratory syndrome virus.</b> A. Rakhshandeh<sup>1,*</sup>, T. E. Burkey<sup>2</sup>, T. E. Weber<sup>1</sup>, M. Fitzsimmons<sup>3</sup>, K. Schwartz<sup>1</sup>, J. C. M. Dekkers<sup>1</sup>, C. Sparks<sup>4</sup>, J. Odle<sup>5</sup>, N. K. Gabler<sup>1</sup>, G. Gourley<sup>3</sup>, <sup>1</sup>Iowa State University, Ames, <sup>2</sup>University of Nebraska, Lincoln, <sup>3</sup>Swine Graphics Enterprises, Webster City, <sup>4</sup>Newsham Choice Genetics, Des Moines, <sup>5</sup>North Carolina State University, Raleigh.</p>
2:30	O140	<p><b>Effects of zinc amino acid complex on gut integrity and metabolism in acutely heat-stressed pigs.</b> S. C. Pearce<sup>1,*</sup>, M. V. Sanz-Fernandez<sup>1</sup>, J. Torrison<sup>2</sup>, M. E. Wilson<sup>2</sup>, N. K. Gabler<sup>1</sup>, L. H. Baumgard<sup>1</sup>, <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Zinpro Corporation, Eden Prairie, MN.</p>

2:45		<b>BREAK</b>
3:00	O141	<b>The effect of post-thaw motility of frozen-thawed boar sperm on pregnancy rate and litter size in mature gilts.</b> <b>K. McNamara*</b> , R. V. Knox, Animal Sciences, University of Illinois, Urbana.
3:15	O142	<b>Timed insemination following OvuGel administration in weaned sows.</b> <b>M. E. Johnston*</b> , M. E. Swanson, S. K. Webel, R&D, JBS United, Inc., Sheridan, IN.
3:30	O143	<b>Effects of metabolizable protein during gestation on vasoreactivity in response to angiotensin II and mRNA expression of angiotensin receptors in cotyledonary arteries.</b> <b>L. A. Lekatz<sup>1*</sup>, A. Reyaz<sup>1</sup>, M. S. Sane<sup>2</sup>, F. Yao<sup>2</sup>, S. T. O'Rourke<sup>2</sup>, C. Schwartz<sup>1</sup>, M. L. V. Emon<sup>3</sup>, C. S. Schauer<sup>3</sup>, K. R. Maddock-Carlin<sup>1</sup>, C. O. Lemley<sup>1</sup>, J. S. Haring<sup>4</sup>, K. A. Vonnahme<sup>1</sup>,</b> <sup>1</sup> Center for Nutrition and Pregnancy, Animal Sciences, North Dakota State University, <sup>2</sup> Pharmaceutical Sciences, North Dakota State University, Fargo, ND, <sup>3</sup> Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, <sup>4</sup> Animal and Dairy Sciences, Mississippi State University, Mississippi State, MS.
3:45	O144	<b>(Invited ADSA Young Dairy Scholar) Novel mechanisms involved with lipid metabolism in adipose tissue of dairy cows.</b> <b>D. Koltes*</b> , D. Spurlock, Animal Science, Iowa State University, Ames.
4:15	O145	<b>Reduction in the risk of peripartum transmission of mycobacterium avium subsp. Paratuberculosis in holstein calves born in individual calving pens.</b> <b>P. Pithua<sup>1*</sup>, L. Espejo<sup>2</sup>, S. M. Godden<sup>3</sup>, S. J. Wells<sup>2</sup>,</b> <sup>1</sup> University of Missouri, Columbia, <sup>2</sup> University of Minnesota, <sup>3</sup> University of Minnesota, St. Paul.

**RUMINANT NUTRITION  
CO-PRODUCTS**

**Chair: John Schoonmaker, Purdue University**

**312/313**

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<b>1:00</b>	<b>O146</b>	<b>Supplementing modified distillers grains plus solubles mixed with low quality forage to replace grazed intake of cow-calf pairs.</b> <b>J. M. Warner*, A. J. Doerr, C. J. Schneider, G. E. Erickson, R. J. Rasby, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</b>
<b>1:15</b>	<b>O147</b>	<b>Influence of corn processing and distiller's grains inclusion for finishing cattle on feeding behavior, gain efficiency, and carcass quality.</b> <b>A. Islas*, T. C. Gilbery, M. L. Bauer, K. Swanson, Animal Science, North Dakota State University, Fargo.</b>
<b>1:30</b>	<b>O148</b>	<b>Effect of feeding increasing levels of wet distillers grains plus solubles with and without oil extraction on finishing performance.</b> <b>M. L. Jolly*, B. L. Nuttelman, D. B. Burken, C. J. Schneider, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</b>
<b>1:45</b>	<b>O149</b>	<b>Effect of varying doses of vitamin C growth and carcass characteristics of cattle consuming a high sulfur diet.</b> <b>D. Pogge*, S. Hansen, Animal Science, Iowa State University, Ames.</b>
<b>2:00</b>	<b>O150</b>	<b>Effects of feeding condensed distillers solubles with and without oil extraction on growing cattle performance.</b> <b>M. L. Jolly*, C. J. Schneider, D. B. Burken, B. L. Nuttelman, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</b>
<b>2:15</b>	<b>O151</b>	<b>Effect of feeding distillers dried grains with solubles during lactation on feedlot performance and carcass characteristics of steer progeny.</b> <b>C. N. Shee*, R. P. Lemenager, M. C. Claeys, J. P. Schoonmaker, Animal Science, Purdue University, West Lafayette.</b>

2:30	O152	<p><b>Replacement of grazed forage and animal performance when distillers grains are fed in a bunk or on the ground.</b>  <b>K. L. Gillespie<sup>*</sup>, T. J. Klopfenstein, J. D. Volesky, L. A. Stalker, J. A. Musgrave, B. L. Nuttelman, C. J. Schneider, G. E. Erickson,</b> Animal Science, University of Nebraska, Lincoln.</p>
2:45		<b>BREAK</b>
3:00	O159	<p><b>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.</b>  <b>A. J. C. Nunez<sup>1</sup>, T. L. Felix<sup>2</sup>, S. C. Loerch<sup>3</sup>, R. P. Lemenager<sup>4</sup>, J. P. Schoonmaker<sup>4*</sup>,</b> <sup>1</sup>Animal Sciences, University of Sao Paulo, Pirassununga, Brazil, <sup>2</sup>Animal Sciences, University of Illinois, Champaign, <sup>3</sup>Animal Sciences, The Ohio State University, Wooster, <sup>4</sup>Animal Sciences, Purdue University, West Lafayette.</p>
3:15	O153	<p><b>Effect of calcium oxide inclusion in beef feedlot diets containing 60% dried distillers grains with solubles on performance and carcass characteristics.</b>  <b>A. J. C. Nunez<sup>2</sup>, T. L. Felix<sup>1</sup>, S. C. Loerch<sup>3</sup>, R. P. Lemenager<sup>4</sup>, J. P. Schoonmaker<sup>4*</sup>,</b> <sup>1</sup>Animal Sciences, University of Illinois, Champaign., <sup>2</sup>Animal Sciences, University of Sao Paulo, Pirassununga, Brazil, <sup>3</sup>Animal Sciences, The Ohio State University, Wooster, <sup>4</sup>Animal Sciences, Purdue University, West Lafayette.</p>
3:30	O154	<p><b>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.</b>  <b>J. Jaderborg<sup>1*</sup>, G. I. Crawford<sup>1</sup>, A. DiCostanzo<sup>1</sup>, M. J. Spiels<sup>2</sup>, K. E. Hales<sup>3</sup>,</b> <sup>1</sup>Animal Science, University of Minnesota, Saint Paul, <sup>2</sup>Environmental Management Unit, USDA-ARS U.S. Meat Animal Research Center, <sup>3</sup>Nutrition Research Unit, USDA-ARS Meat Animal Research Center, Clay Center, NE.</p>
3:45	O155	<p><b>Distillers grains supplementation in a forage system with spayed heifers.</b>  <b>K. L. Gillespie<sup>*</sup>, T. J. Klopfenstein, B. L. Nuttelman, J. D. Volesky, G. E. Erickson, C. J. Schneider,</b> Animal Science, University of Nebraska, Lincoln.</p>
4:00	O156	<p><b>Effects of abruptly transitioning cattle from RAMP to a finishing diet on feedlot performance and carcass traits.</b>  <b>C. J. Schneider<sup>1*</sup>, B. L. Nuttelman<sup>1</sup>, D. B. Burken<sup>1</sup>, T. J. Klopfenstein<sup>1</sup>, G. E. Erickson<sup>1</sup>, R. A. Stock<sup>2</sup>,</b> <sup>1</sup>Animal Science, University of Nebraska, Lincoln, <sup>2</sup>Cargill Inc., Blair, NE.</p>

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4:15	O157	<p><b>Comparing condensed distillers soluble concentration in steam-flaked corn finishing diets on cattle performance and carcass characteristics.</b>  <b>M. E. Harris<sup>1,*</sup>, G. E. Erickson<sup>1</sup>, K. H. Jenkins<sup>2</sup>, M. K. Luebke<sup>2</sup>,</b> <sup>1</sup>Animal Science, University of Nebraska, Lincoln, <sup>2</sup>Animal Science, University of Nebraska, Scottsbluff.</p>
4:30	O158	<p><b>Effects of increasing soybean hulls in finishing diets with distiller's grains on performance and carcass characteristics.</b>  <b>C. J. Bittner<sup>1,*</sup>, B. L. Nuttelman<sup>1</sup>, C. J. Schneider<sup>1</sup>, D. B. Burken<sup>1</sup>, L. Johnson<sup>2</sup>, T. L. Mader<sup>2</sup>, T. J. Klopfenstein<sup>1</sup>, G. E. Erickson<sup>1</sup>,</b> <sup>1</sup>Animal Science, University of Nebraska, Lincoln, <sup>2</sup>Animal Science, University of Nebraska, Concord.</p>

**RUMINANT NUTRITION**  
**GENERAL RUMINANT NUTRITION I**  
**Chair: Daryl Kleinschmit, AgriKing**  
**314/315**

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1:00	O160	<p><b>Effects of crude glycerin on ruminal fermentation parameters of Nellore steers.</b>  <b>E. H. C. B. Van Cleef<sup>1,*</sup>, J. M. B. Ezequiel<sup>2</sup>, F. B. de Oliveira Scarpino<sup>2</sup>, D. A. Vey Silva<sup>3</sup>, A. P. D` Aurea<sup>2</sup>, J. B. D. Sancanari<sup>2</sup>,</b> <sup>1</sup>Animal Science and Industry, Kansas State University, Manhattan., <sup>2</sup>Animal Science, <sup>3</sup>Veterinary Medicine, Sao Paulo State University, Jaboticabal, Brazil.</p>
1:15	O161	<p><b>(Invited ADSA Young Dairy Scholar) Methods to study the contribution of rumen microorganisms to metabolizable protein.</b>  <b>E. C. Lopez<sup>*</sup>, T. Klopfenstein, S. Fernando, P. Kononoff,</b> Animal Science Department, University of Nebraska, Lincoln.</p>
1:45	O162	<p><b>Feeding Next Enhance<sup>®</sup> 300 improved growth performance and carcass measurements of beef steers.</b>  <b>M. Westerhold<sup>1,*</sup>, M. S. Kerley<sup>1</sup>, W. J. Sexten<sup>1</sup>, B. R. Wiegand<sup>1</sup>, T. J. Wistuba<sup>2</sup>,</b> <sup>1</sup>Division of Animal Sciences, University of Missouri, Columbia, <sup>2</sup>Novus International, Inc., St. Charles.</p>

2:00	O164	<p><b>Effects of a terminal sorting system with Zilpaterol hydrochloride on feedlot performance and carcass characteristics of yearling steers.</b></p> <p><b>F. H. Hilscher<sup>1*</sup>, B. L. Nuttelman<sup>1</sup>, D. B. Burken<sup>1</sup>, G. E. Erickson<sup>1</sup>, K. J. Vander PoP<sup>1</sup></b>, <sup>1</sup>Animal Science, University of Nebraska-Lincoln, <sup>2</sup>Technical Services Specialist, Merck Animal Health, Lincoln.</p>
2:15	O163	<p><b>Effect of source and concentration of copper on cattle growth and copper status.</b></p> <p><b>M. Drewnoski<sup>1*</sup>, S. Hansen<sup>2</sup></b>, <sup>1</sup>Animal and Vet Sci, University of Idaho, Moscow, <sup>2</sup>Animal Science, Iowa State University, Ames.</p>
2:30	O165	<p><b>Changes in steer performance throughout the feeding period.</b></p> <p><b>J. C. MacDonald<sup>*</sup>, C. J. Schneider, K. M. Rolfe, G. E. Erickson, T. J. Klopfenstein</b>, Animal Science, University of Nebraska, Lincoln.</p>
2:45		<b>BREAK</b>
3:00	O166	<p><b>Effects of dietary change on viral-bacterial interactions in the rumen of cattle.</b></p> <p><b>C. Anderson<sup>*</sup>, M. Jolly, G. E. Erickson, T. Klopfenstein, S. Fernando</b>, Animal Science, University of Nebraska, Lincoln.</p>
3:15	O167	<p><b>(Invited ASAS Animal Science Young Scholar) Small intestinal digestion of raw cornstarch in cattle is rapidly increased by duodenal infusion of casein.</b></p> <p><b>D. Brake<sup>1*</sup>, E. Titgemeyer<sup>1</sup>, D. E. Anderson<sup>2</sup></b>, <sup>1</sup>Animal Sciences and Industry, <sup>2</sup>Department of Clinical Sciences, Kansas State University, Manhattan.</p>
3:45	O168	<p><b>(Invited ADSA Young Dairy Scholar) Peripartur immunometabolic indices and hepatic transcriptomics in transition dairy cows in response to methionine supplementation.</b></p> <p><b>J. S. Osorio<sup>1*</sup>, E. Trevisi<sup>2</sup>, P. Ji<sup>3</sup>, D. Luchini<sup>4</sup>, S. Rodriguez-Zas<sup>1</sup>, R. E. Everts<sup>1</sup>, H. A. Lewin<sup>1</sup>, J. K. Drackley<sup>1</sup>, G. Bertoni<sup>2</sup>, J. J. Looor<sup>1</sup></b>, <sup>1</sup>University of Illinois, Urbana, IL., <sup>2</sup>Institute of Zootechnic, Università Cattolica del Sacro Cuore, Piacenza, Italy, <sup>3</sup>The William H. Miner Agricultural Research Institute, Chazy, NY, <sup>4</sup>ADISSEO, Alpharetta, GA.</p>

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4:15	<b>O169</b>	<p><b>Effects of two dietary concentrations of Levucell SC in growing or finishing feedlot diets.</b>  <b>G. Huber*</b>, <b>A. DiCostanzo</b>, <b>G. I. Crawford</b>, Animal Sciences, University of Minnesota, Saint Paul.</p>
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**TEACHING**

**Chair: Karol Fike, Kansas State University**

**320**

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1:00	<b>O170</b>	<p><b>Factors impacting undergraduate student success in genetics.</b>  <b>J. M. Bormann*</b>, <b>D. Moser</b>, <b>K. Bates</b>, Animal Sciences and Industry, Kansas State University, Manhattan.</p>
1:15	<b>O171</b>	<p><b>Teaching the fundamentals of swine nutrition using guided discovery.</b>  <b>B. D. Whitaker*</b>, Animal Science, University of Findlay, Findlay.</p>
1:30	<b>O173</b>	<p><b>Development and use of an extensive swine production system in interdisciplinary education.</b>  <b>D. Rozeboom*</b>, <b>L. Thorp</b>, <b>J. Biernbaum</b>, <b>J. Moghtader</b>  <b>D. Fillius</b>, <b>A. Snedegar</b>, <b>K. Turner</b>, <b>L. Goralnik</b>, Michigan State University, East Lansing.</p>
1:45	<b>O172</b>	<p><b>Student leadership skills development after experiences in both intensive and extensive swine production systems.</b>  <b>L. Thorp*</b>, <b>L. Goralnik</b>, <b>K. P. Whyte</b>, <b>D. Rozeboom</b>, Michigan State University, East Lansing.</p>
2:00	<b>O174</b>	<p><b>Development of a teamwork/leadership activity across two animal science courses.</b>  <b>K. J. Stalder*</b>, <b>T. J. Baas</b>, <b>J. A Sterle</b>, Animal Science, Iowa State University, Ames.</p>
2:15	<b>O175</b>	<p><b>Student evaluations of a teamwork/leadership activity across two swine courses in animal science at Iowa State University.</b>  <b>T. J. Baas*</b>, <b>K. Stalder</b>, <b>J. Sterle</b>, Animal Science, Iowa State University, Ames.</p>
2:30	<b>O176</b>	<p><b>Swine-specific career night for animal science students at Iowa State University.</b>  <b>B. McNeil*</b>, <b>K. Stalder</b>, <b>J. Sterle</b>, <b>T. Baas</b>, Animal Science, Iowa State University, Ames.</p>



**OPPORTUNITIES OF SOYBEAN MEAL CHARACTERISTICS  
SYMPOSIUM**

**Chair: Greg Engelke, Cornerstone Resources LLC**

**Sponsor: US Soybean**

**306/307**

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

**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. Bohrer<sup>1,\*</sup>, M. A. Tavarez<sup>2</sup>, A. L. Schroeder<sup>3</sup>, D. D. Boler<sup>1</sup>,**  
<sup>1</sup>Animal Sciences, the Ohio State University, Columbus, OH,  
<sup>2</sup>Animal Sciences, University of Illinois at Urbana-Champaign, Urbana, IL, <sup>3</sup>Pfizer Animal Health, Kalamazoo, MI.
- P020 (ES)**      **Pork Quality: 2012 National Retail Benchmarking Study.**  
**B. T. Klinkner<sup>1,\*</sup>, D. S. Buchanan<sup>1</sup>, C. C. Carr<sup>2</sup>, R. B. A. Dahlen<sup>1</sup>,**  
**R. J. Delmore<sup>3</sup>, K. Grimshaw<sup>4</sup>, W. R. Henning<sup>5</sup>, R. K. Miller<sup>4</sup>,**  
**S. J. Moeller<sup>6</sup>, H. N. Zerby<sup>6</sup>, D. J. Newman<sup>1</sup>,** <sup>1</sup>Animal Sciences, North Dakota State University, Fargo, ND, <sup>2</sup>Animal Sciences, University of Florida, Gainesville, FL, <sup>3</sup>Animal Sciences, California Polytechnic State University, San Luis Obispo, CA, <sup>4</sup>Animal Sciences, Texas A&M University, College Station, TX, <sup>5</sup>Dairy and Animal Sciences, the Pennsylvania State University, University Park, PA, <sup>6</sup>Animal 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. Hollenbeck<sup>\*</sup>, 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. Pegg<sup>1,\*</sup>, P. M. Walker<sup>1</sup>, R. L. Atkinson<sup>2</sup>, B. G. Harmon<sup>3</sup>, P. J. Lammers<sup>1</sup>,** <sup>1</sup>Agriculture, Illinois State University, Normal, IL, <sup>2</sup>Animal Science, Food and Nutrition, Southern Illinois University, Carbondale, IL, <sup>3</sup>Railsplitter 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. Cunningham<sup>1,\*</sup>, R. D. Yunusova<sup>2</sup>, M. Du<sup>1</sup>, B. W. Hess<sup>1</sup>,**  
**J. S. Caton<sup>2</sup>, A. M. Meyer<sup>1</sup>,** <sup>1</sup>Department of Animal Science, University of Wyoming, Laramie, WY, <sup>2</sup>Department of Animal Sciences, North Dakota State University, Fargo, ND.

- P112 (PHY) Nutrient restriction during early and mid-gestation followed by realimentation alters caruncular arterial vasoreactivity in response to bradykinin in beef cows.**  
**A. Reyaz<sup>1,\*</sup>, M. S. Sane<sup>2</sup>, F. Yao<sup>2</sup>, L. E. Camacho<sup>1</sup>, C. O. Lemley<sup>3</sup>, J. S. Haring<sup>1</sup>, K. C. Swanson<sup>1</sup>, S. T. O'Rourke<sup>2</sup>, K. A. Vonnahme<sup>1</sup>,**  
<sup>1</sup>Department of Animal Sciences, <sup>2</sup>Department of Pharmaceutical Sciences, North Dakota State University, Fargo, ND, <sup>3</sup>Department 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<sup>\*</sup>, 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. Varnold<sup>1,2</sup>, C. Calkins<sup>1</sup>, R. Miller<sup>2</sup>, G. E. Erickson<sup>1</sup>,** <sup>1</sup>Animal Science, University of Nebraska, Lincoln, NE, <sup>2</sup>Animal Science, Texas A & M University, College Station TX.
- P039 (GDMM) Investigation of protease activity in early postmortem muscle subjected to alternative chilling conditions.**  
**D. Mohrhauser<sup>1,\*</sup>, S. Lonergan<sup>2</sup>, E. Huff-Lonergan<sup>2</sup>, K. Underwood<sup>1</sup>, A. Weaver<sup>1</sup>,** <sup>1</sup>Department of Animal Science, South Dakota State University, Brookings, SD, <sup>2</sup>Department 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. Almeida<sup>1,\*</sup>, J. K. Htoo<sup>2</sup>, J. Thomson<sup>3</sup>, H. H. Stein<sup>1</sup>,** <sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>Evonik Industries AG, Hanau, Germany, <sup>3</sup>Evonik 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. Horn<sup>1,\*</sup>, F. Ruch<sup>2</sup>, K. Ajuwon<sup>1</sup>, G. Miller<sup>3</sup>, O. Adeola<sup>1</sup>,** <sup>1</sup>Animal Sciences, Purdue University, West Lafayette, IN, <sup>2</sup>Enzyvia, LLC, Sheridan, IN, <sup>3</sup>Biomatrix, 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. Camacho<sup>1,\*</sup>, C. O. Lemley<sup>2</sup>, K. C. Swanson<sup>1</sup>, K. A. Vonnahme<sup>1</sup>,** <sup>1</sup>Department of Animal Sciences, North Dakota State University, Fargo, ND, <sup>2</sup>Department 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. Kloth<sup>1,\*</sup>, C. F. Shipley<sup>2</sup>, H. M. French<sup>2</sup>, V. L. Jarrell<sup>1</sup>, D. B. Faulkner<sup>1</sup>, D. W. Shike<sup>1</sup>, <sup>1</sup>Animal Sciences, <sup>2</sup>College of Veterinary Medicine, University of Illinois, Urbana, IL.
- P019 (ES)**      **The effects of immunological castration in mature boars.**  
C. Metzger<sup>1,2,\*</sup>, M. Brubaker<sup>2</sup>, M. Barker<sup>2</sup>, W. Singleton<sup>3</sup>, R. O. Bates<sup>1</sup>, <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>Whiteshire Hamroc, Albion IN, <sup>3</sup>Purdue University, W. Lafayette, IN.
- P142 (RN)**      **Effects of microbial fermentation products on milk production in dairy cows during heat stress.**  
R. M. Wagner<sup>1,\*</sup>, S. I. Kehoe<sup>1</sup>, D. DuBourdieu<sup>2</sup>, <sup>1</sup>Animal and Food Science, University of Wisconsin-River Falls, River Falls, WI, <sup>2</sup>R&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. Swanson<sup>1,2,\*</sup>, Y. He<sup>1,3</sup>, L. J. Johnston<sup>1</sup>, Y. Li<sup>1</sup>, <sup>1</sup>West Central Research and Outreach Center, University of Minnesota, MN, <sup>2</sup>Dept. of Biology and Psychology, University of Minnesota-Morris, Morris, MN, <sup>3</sup>Dept. 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. Kephart<sup>1,\*</sup>, A. Johnson<sup>1</sup>, J. J. McGlone<sup>2</sup>, A. Sapkota<sup>2</sup>, K. J. Stalder<sup>1</sup>, <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Animal 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. Li<sup>1</sup>, G. C. Shurson<sup>1</sup>, S. K. Baidoo<sup>2</sup>, Y. Li<sup>3</sup>, L. J. Johnston<sup>3,\*</sup>,**  
<sup>1</sup>Department of Animal Science, University of Minnesota, Saint Paul, MN, <sup>2</sup>Southern Research and Outreach Center, University of Minnesota, Waseca, MN, <sup>3</sup>West 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<sup>\*</sup>, 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. Allen<sup>1,2,\*</sup>, L. Hall<sup>2</sup>, J. Smith<sup>2</sup>,** <sup>1</sup>Agriculture Sciences, Northwest Missouri State University, Maryville, MO, <sup>2</sup>Animal Sciences, University of Arizona, Tucson, AZ.
- P006**      **Impact of providing shade on grazing dairy heifer performance.**  
**T. Dennis<sup>\*</sup>, 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<sup>\*</sup>, 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<sup>\*</sup>, D. Loy,** Animal Science, Iowa State University, Ames.
- P010**      **Prevalence of caprine paratuberculosis in boar goat herds in missouri.**  
**P. Patrick<sup>\*</sup>, N. S. Kollias,** University of Missouri-Columbia, Columbia, MO.
- P011**      **Cow Herd Appraisal Performance Software (CHAPS): Improving beef production from conception to carcass.**  
**J. Ramsay<sup>\*</sup>, 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 Ricardo<sup>1,\*</sup>**, **R. Oliveira Roça<sup>2</sup>**, **S. Aparecida Tavares<sup>2</sup>**,  
**C. Augusto Surge<sup>2</sup>**, **A. Rodrigo Mendes Fernandes<sup>1</sup>**,  
<sup>1</sup>Grande Dourados Federal University, Dourados-MS, <sup>2</sup>Sao 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. Taylor<sup>1,\*</sup>**, **T. Jennings<sup>1</sup>**, **J. Koltes<sup>2</sup>**, **M. Gonda<sup>1</sup>**, **K. Underwood<sup>1</sup>**,  
**J. Reecy<sup>2</sup>**, **A. Wertz-Lutz<sup>1</sup>**, **A. Weaver<sup>1</sup>**, <sup>1</sup>Animal Science, South Dakota State University, Brookings, SD, <sup>2</sup>Animal Science, Iowa State University, Ames.
- P027**            **Effects of amino acid supplementation of Reduced Crude Protein (RCP) diets on Im quality of growing-finishing swine.**  
**A. N. Young<sup>1,\*</sup>**, **J. K. Apple<sup>1</sup>**, **J. W. S. Yancey<sup>1</sup>**, **J. J. Hollenbeck<sup>1</sup>**,  
**T. M. Johnson<sup>1</sup>**, **B. E. Bass<sup>1</sup>**, **T. C. Tsai<sup>1</sup>**, **C. V. Maxwell<sup>1</sup>**, **M. D. Hanigan<sup>2</sup>**,  
**J. S. Radcliffe<sup>3</sup>**, **B. T. Richert<sup>3</sup>**, **J. S. Popp<sup>4</sup>**, **R. Ulrich<sup>5</sup>**, **G. Thoma<sup>5</sup>**,  
<sup>1</sup>Animal Science, University of Arkansas Division of

Agriculture, Fayetteville, AR, <sup>2</sup>Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg, VA, <sup>3</sup>Animal Science, Purdue University, West Lafayette, IN, <sup>4</sup>Agricultural Economics & Agribusiness, University of Arkansas Division of Agriculture, <sup>5</sup>Chemical Engineering, University of Arkansas, Fayetteville, AR.

- P028**      **Proteomic analysis of fetal ovine skeletal muscle as influenced by maternal metabolizable protein supplementation in isocaloric diets during late pregnancy.**  
C. A. Schwartz<sup>1,\*</sup>, K. A. Vonnahme<sup>1</sup>, C. S. Schauer<sup>2</sup>, S. M. Lonergan<sup>3</sup>, K. J. Grubbs<sup>3</sup>, J. B. Shabb<sup>4</sup>, W. W. Muhonen<sup>4</sup>, W. L. Keller<sup>1</sup>, K. R. Maddock-Carlin<sup>1</sup>, <sup>1</sup>Department of Animal Sciences, North Dakota State University, Fargo, ND, <sup>2</sup>Hettinger Research Extension Center, North Dakota State University, Hettinger, ND, <sup>3</sup>Department of Animal Science, Iowa State University, Ames, <sup>4</sup>Department 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. Shull<sup>1,\*</sup>, M. Ellis<sup>1</sup>, B. A. Peterson<sup>2</sup>, B. F. Wolter<sup>2</sup>, B. W. Isaacson<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>The Maschhoffs, Carlyle, IL.
- P030**      **Development of growth curves for pigs reared to heavy weights in a commercial wean-to-finish facility.**  
C. M. Shull<sup>1,\*</sup>, M. Ellis<sup>1</sup>, B. A. Peterson<sup>2</sup>, B. F. Wolter<sup>2</sup>, C. M. Peterson<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>The Maschhoffs, Carlyle, IL.
- P031**      **Growth performance and carcass characteristics of pigs reared to heavy weights in a commercial facility.**  
C. M. Shull<sup>1,\*</sup>, M. Ellis<sup>1</sup>, B. A. Peterson<sup>2</sup>, B. F. Wolter<sup>2</sup>, C. M. Peterson<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>The Maschhoffs, Carlyle, IL.
- P032**      **Relationship between birth order and piglet pre-weaning mortality and other factors under commercial conditions.**  
L. M. Gesing<sup>1,\*</sup>, H. M. Rothe<sup>1</sup>, M. Ellis<sup>1</sup>, B. A. Peterson<sup>2</sup>, A. M. Gaines<sup>2</sup>, B. F. Wolter<sup>2</sup>, C. M. Peterson<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, <sup>2</sup>The Maschhoffs, Carlyle, IL.
- P033**      **Carcass characteristics and beef tenderness differences in cattle qualified as kosher and non-kosher.**  
K. Sorensen<sup>1,\*</sup>, K. Maddock-Carlin<sup>1</sup>, N. Hayes<sup>1</sup>, W. Keller<sup>1</sup>, K. Phelps<sup>2</sup>, C. Schwartz<sup>1</sup>, R. Maddock<sup>1</sup>, <sup>1</sup>North Dakota State University, Fargo, ND, <sup>2</sup>Kansas State University, Manhattan, KS.

- P034**      **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.
- P035**      **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. Hoffman<sup>1,\*</sup>**, D. Kohls<sup>2</sup>, H. Doering-Resch<sup>2</sup>, G. Crawford<sup>2</sup>,  
 S. Scramlin<sup>1</sup>, A. Weaver<sup>1</sup>, K. Underwood<sup>1</sup>, <sup>1</sup>South Dakota State University, Brookings, SD, <sup>2</sup>Form-A-Feed, Steward, MN.
- P036**      **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. Ochoa<sup>1,\*</sup>**, M. Ellis<sup>1</sup>, B. Isaacson<sup>2</sup>, B. A. Peterson<sup>2</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>The Maschhoffs, Carlyle, IL.
- P037**      **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. Ochoa<sup>1,\*</sup>**, C. Shull<sup>1</sup>, M. Ellis<sup>1</sup>, B. Isaacson<sup>2</sup>, B. A. Peterson<sup>2</sup>,  
<sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>The Maschhoffs, Carlyle, IL.

## Nonruminant Nutrition

### AMINO ACIDS

- P041**      **Effect of feeding reduced crude protein diets on nursery pig performance and feed costs.**  
**G. Hosotani\***, E. Kobashigawa, R. A. Murarolli, L. M. Gomes,  
 M. C. Shannon, Animal Sciences, University of Missouri,  
 Columbia, MO.
- P042**      **Maximum replacement of CP with synthetic amino acids in nursery pigs.**  
**B. E. Bass<sup>1</sup>**, T. Tsai<sup>1,\*</sup>, M. D. Hanigan<sup>2</sup>, J. K. Apple<sup>1</sup>, R. Ulrich<sup>3</sup>,  
 J. S. Radcliffe<sup>4</sup>, B. T. Richert<sup>4</sup>, G. Thoma<sup>3</sup>, J. S. Popp<sup>5</sup>, C. V.  
 Maxwell<sup>1</sup>, <sup>1</sup>Animal Science, University of Arkansas, Fayetteville,  
 AR, <sup>2</sup>Dairy Science, Virginia Polytechnic Institute and State  
 University, Blacksburg, VA, <sup>3</sup>Chemical Engineering, University of  
 Arkansas, Fayetteville, AR, <sup>4</sup>Animal Science, Purdue University,  
 West Lafayette, IN, <sup>5</sup>Agriculture Economics & Agribusiness,  
 University of Arkansas, Fayetteville, AR.



- P043**      **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.
- P044**      **Amino acid and organic matter digestibility in six distillers dried grains with solubles samples fed to growing pigs.**  
 K. de Ridder<sup>1,\*</sup>, P. McEwen<sup>1</sup>, C. F. M. de Lange<sup>1</sup>, I. Mandell<sup>1</sup>, R. Lackey<sup>2</sup>, <sup>1</sup>Animal and Poultry Science, University of Guelph, Guelph, Canada, <sup>2</sup>Ontario Ministry of Agriculture Food and Rural Affairs, Stratford, Canada.
- P045**      **Predicting standardized ileal digestibility of dietary amino acids in pigs: A meta-analysis.**  
 F. Messad <sup>1,\*</sup>, E. Charbonneau<sup>1</sup>, M. Létourneau-Montminy<sup>2</sup>, F. Guay<sup>1</sup>, <sup>1</sup>Department of Animal Science, Laval University, Quebec, Canada, <sup>2</sup>Agriculture and Agri-Food Canada, Dairy and Swine Research and Development Centre, Sherbrooke, Canada.
- P046**      **Evaluation of three models of digestible lysine requirements applied to two genetic populations of pigs.**  
 M. S. S. Ferreira<sup>1,2,\*</sup>, A. P. Schinckel<sup>3</sup>, <sup>1</sup>CAPES Foundation scholar process n° 8944-11-3, Brazilia, <sup>2</sup>Veterinary Medicine, Federal University of Lavras, Lavras, Brazil, <sup>3</sup>Animal Science, Purdue University, West Lafayette, IN.

## Nonruminant Nutrition

### INGREDIENTS AND FEED ADDITIVES

- P047**      **The effects of phytochemicals 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. Li<sup>2</sup>, S. E. Kian<sup>1</sup>, I. H. Kim<sup>2,\*</sup>, <sup>1</sup>Delacon Biotechnik Ges.m.b.H., Steyregg, Austria, <sup>2</sup>Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.
- P048**      **The effect of phytochemicals 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. Baek<sup>1</sup>, S. E. Kian<sup>2</sup>, I. H. Kim<sup>1,\*</sup>, <sup>1</sup>Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, <sup>2</sup>Delacon 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. Park<sup>1</sup>, Sze Eng Kian<sup>2</sup>, I. H. Kim<sup>1\*</sup>**, <sup>1</sup>Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, <sup>2</sup>Delacon 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. Lee<sup>1</sup>, Sze Eng Kian<sup>2</sup>, I. H. Kim<sup>1\*</sup>**, <sup>1</sup>Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea, <sup>2</sup>Delacon 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<sup>\*</sup>, 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<sup>1\*</sup>, J. J. Lee<sup>1</sup>, M. Song<sup>1</sup>, T. M. Che<sup>1</sup>, J. A. S. Almeida<sup>1</sup>, D. Bravo<sup>2</sup>, W. G. Van Alstine<sup>3</sup>, J. E. Pettigrew<sup>1</sup>**, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>Pancosma SA, Geneva, Switzerland, <sup>3</sup>Purdue University, West Lafayette, IN.
- P053**      **Effects of plant extracts on gene expression profiles of alveolar macrophages of weaned pigs.**  
**Y. Liu<sup>1\*</sup>, J. J. Lee<sup>1</sup>, M. Song<sup>1</sup>, T. M. Che<sup>1</sup>, J. A. S. Almeida<sup>1</sup>, D. Bravo<sup>2</sup>, W. G. Van Alstine<sup>3</sup>, J. E. Pettigrew<sup>1</sup>**, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, IL, <sup>2</sup>Pancosma SA., Geneva, Switzerland, <sup>3</sup>Purdue 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.**  
**J. H. Jung, S. M. Hong, I. H. Kim<sup>\*</sup>**, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.
- P055**      **The effects of a novel *Lactobacillus acidophilus* fermentation product on growth performance and fecal bacteria in 5 to 14 kg pigs.**  
**E. D. Frugé<sup>1\*</sup>, E. L. Hansen<sup>1</sup>, S. A. Hansen<sup>1</sup>, K. A. Frerichs<sup>1</sup>, C. W. Hastad<sup>2</sup>, M. Scott<sup>3</sup>, J. W. Frank<sup>3</sup>**, <sup>1</sup>Hubbard Feeds, Mankato, MN, <sup>2</sup>New Fashion Pork, Jackson, MN, <sup>3</sup>Diamond 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. Graham\***, **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. Jang<sup>1,\*</sup>**, **M. D Lindemann<sup>1</sup>**, **R. A. Cabrera<sup>2</sup>**, <sup>1</sup>Animal and Food Sciences, University of Kentucky, Lexington, KY, <sup>2</sup>Huvepharma, 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. Heo<sup>1,\*</sup>**, **E. Kiarie<sup>2</sup>**, **A. K. Agyekum<sup>1</sup>**, **M. Nyachoti<sup>1</sup>**, <sup>1</sup>Animal Science Department, University of Manitoba, Winnipeg, Canada, <sup>2</sup>DuPont Industrial Biosciences-Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom.
- P059**      **The effect of adding  $\beta$ -mannanase in corn-soybean meal based diets on individually housed nursery pig performance.**  
**Z. Rambo<sup>1</sup>**, **J. Ferrel<sup>2</sup>**, **D. Kelly<sup>1</sup>**, **B. Richert<sup>1,\*</sup>**, <sup>1</sup>Animal Sciences, Purdue University, West Lafayette, IN, <sup>2</sup>ChemGen Corp, Gaithersburg, MD.
- P060**      **Effects of added zinc on growth performance and carcass characteristics of finishing pigs fed Ractopamine HCl.**  
**C. Paulk<sup>1,\*</sup>**, **M. Tokach<sup>1</sup>**, **J. Nelssen<sup>1</sup>**, **J. Gonzalez<sup>1</sup>**, **J. DeRouchey<sup>1</sup>**, **R. Goodband<sup>1</sup>**, **S. Dritz<sup>1</sup>**, <sup>1</sup>Animal Science and Industry, <sup>2</sup>Diagnostic 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. Nitikanchana<sup>1,\*</sup>**, **S. S. Dritz<sup>1</sup>**, **M. D. Tokach<sup>1</sup>**, **R. D. Goodband<sup>1</sup>**, **J. M. DeRouchey<sup>1</sup>**, **J. L. Nelssen<sup>1</sup>**, **J. R. Bergstrom<sup>2</sup>**, <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>DSM, Nutritional Products, Parsippany, NJ.
- P062**      **Evaluating indicators of bone metabolism and turnover in geriatric, ovariectomized rats fed varied sources of conjugated linoleic acid.**  
**K. Kanosky<sup>1</sup>**, **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.**

**J. H. Cho, D. Jung, I. H. Kim\***, Department of Animal Resource & Science, Dankook University, Cheonan, Republic of Korea.

**P064**            **Disappearance of butyrate in the digestive tract of weanling and growing pigs fed diets containing different sources of butyrate.**

**K. Sotak<sup>1,\*</sup>, M. Song<sup>1</sup>, H. Stein<sup>1</sup>, S. Moreland<sup>2</sup>**, <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>Nutriad Inc., Elgin, IL.

## **Nonruminant Nutrition**

### **SOW NUTRITION AND MANAGEMENT**

**P090**            **Effects of Dietary L-Carnitine and Chromium Picolinate on sow reproductive performance.**

**N. W Shelton<sup>1,\*</sup>, J. L Nelssen<sup>1</sup>, M. D Tokach<sup>1</sup>, S. S Dritz<sup>1</sup>, R. D Goodband<sup>1</sup>, J. M DeRouchey<sup>1</sup>, L. L Greiner<sup>2</sup>, J. Connor<sup>2</sup>, J. C Woodworth<sup>3</sup>**, <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Innovative Swine Solutions, Carthage, IL, <sup>3</sup>Lonza, 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. Li<sup>1</sup>, G. C. Shurson<sup>1</sup>, S. K. Baidoo<sup>2</sup>, D. D. Gallaher<sup>3</sup>, J. E. Anderson<sup>4</sup>, L. J. Johnston<sup>5,\*</sup>**, <sup>1</sup>Department of Animal Science, University of Minnesota, Saint Paul, MN, <sup>2</sup>Southern Research and Outreach Center, University of Minnesota, Waseca, MN, <sup>3</sup>Department of Food Science and Nutrition, University of Minnesota, Saint Paul, MN, <sup>4</sup>Division of Science and Math, <sup>5</sup>West 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. Li<sup>1</sup>, G. C. Shurson<sup>1</sup>, S. K. Baidoo<sup>2</sup>, Y. Li<sup>3</sup>, L. J. Johnston<sup>3,\*</sup>**, <sup>1</sup>Department of Animal Science, University of Minnesota, Saint Paul, MN, <sup>2</sup>Southern Research and Outreach Center, University of Minnesota, Waseca, MN, <sup>3</sup>West Central Research and Outreach Center, University of Minnesota, Morris, MN.

**Wednesday, March 13**  
**SYMPOSIA AND ORAL SESSIONS**

**BREEDING & GENETICS**

**Chair: Michael Gonda, South Dakota State University**  
**318/319**

<b>9:00</b>	<b>O181</b>	<p><b>Accurate prediction of genomic breeding values across families combining linkage disequilibrium and co-segregation.</b>  <b>X. Sun*</b>, R. L. Fernando, D. J. Garrick, J. C. M. Dekkers, Animal Science, Iowa State University, Ames.</p>
<b>9:15</b>	<b>O182</b>	<p><b>Accuracy of genomic prediction when accounting for population structure and polygenic effects.</b>  <b>N. Piyasatian*</b>, J. C. M. Dekkers, Animal Science, Iowa State University, Ames.</p>
<b>9:30</b>	<b>O183</b>	<p><b>Improving the accuracy of genomic prediction of milk traits in the New Zealand holstein friesian population.</b>  <b>M. Hayr<sup>1,*</sup></b>, M. Saatchi<sup>1</sup>, D. Johnson<sup>2</sup>, D. Garrick<sup>1</sup>,  <sup>1</sup>Animal Science, Iowa State University, Ames., <sup>2</sup>LIC, Hamilton, New Zealand</p>
<b>9:45</b>	<b>O184</b>	<p><b>Comparison of actual 50K and imputed 770K genotypes for QTL mapping in hereford cattle using 1MB SNP windows and bayesian inference.</b>  <b>V. K. Katneni<sup>1</sup></b>, M. Saatchi<sup>2,*</sup>, D. Berry<sup>3</sup>, D. J. Garrick<sup>2</sup>,  <sup>1</sup>Central Institute of Brackishwater Aquaculture, Chennai, India, <sup>2</sup>Animal Science, Iowa State University, Ames.,  <sup>3</sup>Animal &amp; Grassland Research &amp; Innovation Center, Teagasc, Moorepark, Fermoy, Co. Cork, Ireland</p>
<b>10:00</b>	<b>O185</b>	<p><b>A genome-wide association study identified CYP2J2 As a major gene controlling serum vitamin D status in beef cattle.</b>  <b>E. Casas<sup>1,*</sup></b>, R. J. Leach<sup>2</sup>, T. A. Reinhardt<sup>1</sup>, R. M. Thallman<sup>2</sup>, J. D. Lippolis<sup>1</sup>, G. L. Bennett<sup>2</sup>, L. A. Kuehn<sup>2</sup>,  <sup>1</sup>National Animal Disease Center, ARS, USDA, Ames, IA,  <sup>2</sup>U. S. Meat Animal Research Center, ARS, USDA, Clay Center, NE.</p>

10:15	O186	<p><b>Estimation of genetic marker effects for Capn1, Cast, and GHR on carcass quality traits in angus cattle selected to increase minor marker frequencies.</b></p> <p><b>R. G. Tait, Jr.<sup>1,*</sup>, S. D. Shackelford<sup>1</sup>, T. L. Wheeler<sup>1</sup>, D. A. King<sup>1</sup>, E. Casas<sup>2</sup>, R. M. Thallman<sup>1</sup>, T. P. L. Smith<sup>1</sup>, G. L. Bennett<sup>1</sup>,</b> <sup>1</sup>U.S. Meat Animal Research Center, USDA, Agricultural Research Service, Clay Center, NE, <sup>2</sup>National Animal Disease Center, USDA, Agricultural Research Service, Ames, IA.</p>
10:30	O187	<p><b>(Invited ASAS Animal Science Young Scholar) Genetic basis of host response to PRRSV infection.</b></p> <p><b>N. J. Boddicker<sup>1,*</sup>, J. K. Lunney<sup>2</sup>, B. R. R. Rowland<sup>3</sup>, D. J. Garrick<sup>1</sup>, J. M. Reecy<sup>1</sup>, J. C. M. Dekkers<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>USDA, ARS, BARC, Beltsville, MD, <sup>3</sup>Kansas State University, Manhattan.</p>
11:00	O188	<p><b>Factors associated with neutralizing antibody response in piglets after experimental infection with the porcine reproductive and respiratory syndrome.</b></p> <p><b>A. Hess<sup>1,*</sup>, B. Triple<sup>2</sup>, N. Boddicker<sup>1</sup>, R. Rowland<sup>2</sup>, J. Lunney<sup>3</sup>, S. Carpenter<sup>1</sup>, J. Dekkers<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Department of Diagnostic Medicine &amp; Pathobiology, Kansas State University, Manhattan, KS, <sup>3</sup>USDA, ARS, BARC, APDL, Beltsville, MD.</p>
11:15	O189	<p><b>Identification of QTL affecting a piglet's ability to acquire and absorb <math>\Gamma</math>-Immunoglobulin from colostrum.</b></p> <p><b>G. A. Rohrer<sup>*</sup>, L. A. Rempel, J. R. Miles, J. W. Keele, J. L. Vallet,</b> USDA-ARS-USMARC, Clay Center, NE.</p>
11:30	O190	<p><b>Estimation of genetic parameters of sow body traits and litter size.</b></p> <p><b>D. Thekkoot<sup>1,*</sup>, B. Kemp<sup>2</sup>, M. F. Rothschild<sup>1</sup>, J. C. M. Dekkers<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Genesus Inc., Manitoba, Canada.</p>
11:45	O191	<p><b>Genome-wide association identifies candidate genes for ovulation rate in swine.</b></p> <p><b>D. Nonneman<sup>*</sup>, J. Schneider, R. Wiedmann, J. Vallet, G. Rohrer,</b> U.S. Meat Animal Research Center, USDA/ARS, Clay Center.</p>
12:00	O192	<p><b>The effect of feeding low energy high fiber diets on performance of pigs divergently selected for residual feed intake.</b></p> <p><b>J. Young<sup>*</sup>, J. Patience, N. Gabler, J. Dekkers,</b> Iowa State University, Ames.</p>

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12:15	O193	<p><b>Digital evaluation of structural phenotypes common among higher parity crossbred sows.</b>  <b>J. D. Stock<sup>1*</sup>, V. R. Amin<sup>2</sup>, D. E. Wilson<sup>2</sup>, C. E. Abell<sup>1</sup>, K. J. Stalder<sup>1</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, <sup>2</sup>Biotronics, Inc., Ames.</p>
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**DAVID SCHINGOETHE SYMPOSIUM**

**Chair: David Casper, South Dakota State University**

**Sponsor: David Schingoethe Appreciation Club, ASAS Foundation**

**316/317**

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9:00	O194	<p><b>(Invited) The use of co-products in dairy cattle diets.</b>  <b>D. Schingoethe*</b>, Dairy Science, South Dakota State University, Brookings.</p>
9:35	O195	<p><b>(Invited) The evaluation of the ever changing co-products.</b>  <b>K. Karges*</b>, Industry, AC Nutrition, Winters, TX.</p>
10:10	O196	<p><b>(Invited) Nutrient variability in co-products affecting ration cost and performance in lactating dairy cows.</b>  <b>D. Kleinschmit<sup>1,7</sup>, D. Casper<sup>2</sup>,</b> <sup>1</sup>Agri-King, Inc., Fulton, IL, <sup>2</sup>Dairy Science Dept., South Dakota State University, Brookings.</p>
10:45	O197	<p><b>(Invited) Co-Product availability and their value in dairy cattle diets.</b>  <b>M. Jerred*</b>, Cargill, Elk River, MN.</p>
11:20	O198	<p><b>(Invited) Ways to feed dairy cattle to get through current conditions.</b>  <b>L. Whitlock*</b>, Progressive Dairy Solutions, Merced, CA.</p>

**EXTENSION – BEEF/SMALL RUMINANT**

**Chair: Amy Radunz, University of Wisconsin–River Falls**

**320**

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

## EXTENSION – SWINE

Chair: Christopher M. Peter

302/303

9:00	O204	<p><b>Traits associated with gilt cyclicity in a heat stressed environment.</b>  <b>M. Knauer<sup>*</sup>, A. Terpening,</b> Department of Animal Science, North Carolina State University, Raleigh.</p>
9:15	O205	<p><b>Relationships between body condition and subsequent reproductive performance for sows housed in individual pens.</b>  <b>M. R. Bryan<sup>1,*</sup>, D. C. Kendall<sup>2</sup>, D. Baitinger<sup>3</sup>, M. T. Knauer<sup>1</sup>,</b> <sup>1</sup>North Carolina State University, Raleigh, <sup>2</sup>Prestage Farms, Clinton, NC, <sup>3</sup>Baitinger Engineering, Ankeny, IA.</p>



9:30	O206	<p><b>Effect of deviations from predicted lactation feed intake on reproductive performance.</b>  <b>C. Yoder<sup>1,*</sup>, J. S. Fix<sup>2</sup>, C. R. Schwab<sup>3</sup>, T. J. Baas<sup>1</sup>,</b> <sup>1</sup>Iowa State University, Ames, <sup>2</sup>National Swine Registry, West Lafayette, IN, <sup>3</sup>The Maschhoffs, Carlyle, IL.</p>
9:45	O207	<p><b>Feed efficiency of swine - A survey of current knowledge.</b>  <b>J. Flohr<sup>1,*</sup>, M. D. Tokach<sup>1</sup>, J. L. Nelssen<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. M. DeRouchey<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. F. Patience<sup>2</sup>,</b> <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Iowa State University, Ames.</p>
10:00	O208	<p><b>Production performance factor analysis of commercial swine operations.</b>  <b>C. Abell<sup>1,*</sup>, J. Mabry<sup>1</sup>, C. Hostetler<sup>2</sup>, K. Stalder<sup>1</sup>,</b> <sup>1</sup>Iowa State University, Ames, <sup>2</sup>National Pork Board, Clive, IA.</p>

**NONRUMINANT NUTRITION  
 GROWING-FINISHING NUTRITION AND MANAGEMENT  
 Chair: Steve Kitt, Pillen Family Farms  
 304/305**

9:00	O215	<p><b>Effects of pellet quality and feeder adjustment on growth performance of finishing pigs.</b>  <b>J. Nemecek<sup>1,*</sup>, M. Tokach<sup>1</sup>, E. Frugé<sup>2</sup>, E. Hansen<sup>2</sup>, S. Dritz<sup>1</sup>, R. Goodband<sup>1</sup>, J. DeRouchey<sup>1</sup>, J. Nelssen<sup>1</sup>,</b> <sup>1</sup>Animal Science and Industry, Kansas State University, Manhattan, <sup>2</sup>Hubbard Feeds, Inc, Mankato.</p>
9:15	O216	<p><b>Effects of corn particle size, complete diet grinding, and diet form on pig growth performance, caloric efficiency, and carcass characteristics.</b>  <b>J. A. De Jong<sup>1,*</sup>, J. M. DeRouchey<sup>1</sup>, M. D. Tokach<sup>1</sup>, R. D. Goodband<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. L. Nelssen<sup>1</sup>, C. Hastad<sup>2</sup>,</b> <sup>1</sup>Animal Science, Kansas State University, Manhattan, <sup>2</sup>New Fashion Pork, Jackson.</p>
9:30	O217	<p><b>Interaction between feeder space availability and corn DDGS on grow-finish pig performance and total tract digestibility in a commercial setting.</b>  <b>E. K. Weber<sup>*</sup>, K. J. Stalder, J. F. Patience,</b> Animal Science, Iowa State University, Ames.</p>

9:45	O218	<p><b>Effects of high-fiber diets and ractopamine HCL on finishing pig growth performance and carcass fat quality.</b>  <b>A. B. Graham*</b>, R. D. Goodband, J. M. DeRouche, T. A. Houser, M. D Tokach, S. S. Dritz, J. L. Nelssen          Kansas State University, Manhattan.</p>
10:00	O219	<p><b>Effects of ractopamine HCL on the efficiency of feed and nutrient utilization of finishing pigs.</b>  <b>K. Coble<sup>1,*</sup>, S. Carter<sup>1</sup>, M. Pierdon<sup>2</sup>, K. Haydon<sup>3</sup>, H. Kim<sup>1</sup>, M. Bible<sup>1</sup>,</b> <sup>1</sup>Animal Science, Oklahoma State University, Stillwater, <sup>2</sup>University of Pennsylvania School of Veterinary Medicine, Kennet Square, PA, <sup>3</sup>Elanco Animal Health, Greenfield, IN.</p>
10:15	O220	<p><b>Comparison of the performance of growing pigs offered feeding programs developed using either the ME or NE system.</b>  <b>J. A. Acosta<sup>1</sup>, Cate E. Zier-Rush<sup>2</sup>, M. McGrath<sup>2</sup>, R. Palan<sup>2</sup>, J. Steckel<sup>2</sup>, J. F. Patience<sup>1,*</sup>, R. D. Boyd<sup>2</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, IA, <sup>2</sup>The Hanor Company, Franklin, KY.</p>
10:30	O221	<p><b>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.</b>  <b>T. A. Kellner<sup>1,*</sup>, K. J. Prusa<sup>2</sup>, J. F. Patience<sup>1</sup>,</b> <sup>1</sup>Animal Science, <sup>2</sup>Food Science and Human Nutrition, Iowa State University, Ames.</p>
10:45	O222	<p><b>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.</b>  <b>Y. S. Li<sup>1,*</sup>, H. Tran<sup>1</sup>, J. W. Bundy<sup>1</sup>, T. E. Burkey<sup>1</sup>, M. K. Nielsen<sup>1</sup>, B. J. Kerr<sup>2</sup>, P. S. Miller,</b> <sup>1</sup>Animal Science, University of Nebraska, Lincoln, <sup>2</sup>Agroecosystems Management Research Unit, USDA, Ames, IA.</p>
11:00	O223	<p><b>Development and validation of a spectroscopic method to predict fat and fatty acids digestibility.</b>  <b>L. Wang<sup>1,*</sup>, M. Swift<sup>1,2</sup>, R. Zijlstra,</b> <sup>1</sup>University of Alberta, Edmonton, <sup>2</sup>Alberta Agriculture and Rural Development, Lacombe, Canada.</p>

11:15	O224	<p><b>Effects of amino acid supplementation of reduced crude protein (rcp) diets on performance and carcass composition of growing-finishing swine.</b></p> <p><b>J. K. Apple<sup>1,*</sup>, B. E. Bass<sup>1</sup>, T. C. Tsai<sup>1</sup>, C. V. Maxwell<sup>1</sup>, J. W. S. Yancey<sup>1</sup>, A. N. Young<sup>1</sup>, M. D. Hanigan<sup>2</sup>, R. Ulrich<sup>3</sup>, J. S. Radcliff<sup>4</sup>, B. T. Richert<sup>4</sup>, G. Thoma<sup>3</sup>, J. S. Popp<sup>5</sup>,</b> <sup>1</sup>Animal Science, University of Arkansas Division of Agriculture, Fayetteville, <sup>2</sup>Dairy Science, Virginia Polytechnic Institute and State University, Blacksburg, <sup>3</sup>Chemical Engineering, University of Arkansas, Fayetteville, <sup>4</sup>Animal Science, Purdue University, West Lafayette, <sup>5</sup>Agricultural Economics &amp; Agribusiness, University of Arkansas Division of Agriculture, Fayetteville.</p>
11:30	O225	<p><b>The effects of SID Trp: Lys Ratio and Trp source in diets containing DDGS on growth performance and carcass characteristics of finishing pigs.</b></p> <p><b>S. Nitikanchana<sup>1,*</sup>, M. D. Tokach<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. Usry<sup>2</sup>, R. D. Goodband<sup>1</sup>, J. M. DeRouchey<sup>1</sup>, J. L. Nelssen<sup>1</sup>,</b> <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Ajinomoto Heartland LLC, Chicago, IL.</p>
11:45	O226	<p><b>Effect of sampling method on the accuracy and precision of estimating the distribution of pig weights in a population.</b></p> <p><b>C. Paulk<sup>1,*</sup>, G. Highland<sup>2</sup>, M. Tokach<sup>1</sup>, J. Nelssen<sup>1</sup>, S. Dritz<sup>3</sup>, R. Goodband<sup>1</sup>, J. DeRouchey<sup>1</sup>, K. Haydon<sup>4</sup>,</b> <sup>1</sup>Animal Science and Industry, <sup>2</sup>Statistics, <sup>3</sup>Diagnostic Medicine Pathobiology, Kansas State University, Manhattan, <sup>4</sup>Elanco Animal Health, Greenfield.</p>

**NONRUMINANT NUTRITION  
MINERALS**

**Chair: Brent Ratliff, TechMix, LLC  
306/307**

9:00	O227	<p><b>The site of absorption of calcium from the intestinal tract of growing pigs.</b></p> <p><b>J. C. González-Vega<sup>1,*</sup>, C. L. Walk<sup>2</sup>, H. H. Stein<sup>1</sup>,</b> <sup>1</sup>Animal Sciences, University of Illinois, Urbana., <sup>2</sup>AB Vista feed ingredients, Marlborough, United Kingdom</p>
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9:15	O228	<p><b>Standardized total tract digestibility of phosphorus in brassica napus black and brassica juncea yellow in growing pigs.</b></p> <p><b>P. Adhikari<sup>1</sup>, J. M. Heo, M. Nyachoti,</b> Animal Science, University of Manitoba, Winnipeg, Canada.</p>
9:30	O229	<p><b>Inclusion of high levels of phytase (Quantum Blue) improves the performance of pigs between 20 and 55 kg live weight.</b></p> <p><b>C. Walk<sup>1,*</sup>, T. Santos<sup>1</sup>, J. Chewning<sup>2</sup>, P. Wilcock<sup>1</sup>,</b> <sup>1</sup>AB Vista, Marlborough, United Kingdom, <sup>2</sup>SRS, Fayetteville.</p>
9:45	O232	<p><b>The effect of the lysine:calorie ratio on the response to zinc supplementation in late finishing diets containing ractopamine hydrochloride.</b></p> <p><b>J. Patience<sup>1,*</sup>, A. Chipman<sup>1</sup>, M. Wilson<sup>2</sup>,</b> <sup>1</sup>Animal Science, Iowa State University, Ames, <sup>2</sup>Zinpro Corp, Eden Prairie.</p>
10:00	O231	<p><b>Effect of dietary zinc level and source and ractopamine level on performance and carcass traits of finishing pigs.</b></p> <p><b>S. Fry<sup>*</sup>, W. Hu, N. Paton, D. Cook,</b> Provimi North America, Brookville.</p>
10:15	O230	<p><b>High Cu supplementation improves growth performance in weaned pigs but the sudden removal of the high cu level may reduce pig performance.</b></p> <p><b>P. Bikker<sup>*</sup>, A. W. Jongbloed,</b> Wageningen UR Livestock Research, Lelystad, Netherlands</p>
10:30	O233	<p><b>Effect of supplementing Zn, Mn and Cu metal amino acid complexes for two reproductive cycles on performance of sows.</b></p> <p><b>M. E. Wilson<sup>1,*</sup>, C. Rapp<sup>2</sup>, J. Torrison<sup>1</sup>, T. L. Ward<sup>3</sup>,</b> <sup>1</sup>RNS, Zinpro Corporation, Eden Prairie., <sup>2</sup>RNS, Zinpro Corporation, Boxmeer, Netherlands, <sup>3</sup>Global RNS director, Zinpro Corporation, Eden Prairie.</p>
10:45	O234	<p><b>Effects of partial replacement of trace metal amino acid complexes during gestation and lactation on sow performance over three parities.</b></p> <p><b>M. E. Wilson<sup>1,*</sup>, J. L. Torrison<sup>1</sup>, T. L. Ward<sup>2</sup>,</b> <sup>1</sup>RNS, <sup>2</sup>Global RNS director, Zinpro Corporation, Eden Prairie.</p>

**PHYSIOLOGY SYMPOSIUM**  
**CHARACTERISTICS OF THE FOLLICLE AND OOCYTE THAT IMPACT**  
**FERTILIZATION, EMBRYONIC DEVELOPMENT, AND PREGNANCY**  
**SUCCESS**

**Chair: Allen Bridges, University of Minnesota**  
**312/313**

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9:00	O235	<b>(Invited) Molecular determinants of oocyte competence.</b> G. W. Smith*, Animal Science, Michigan State University, East Lansing.
9:35	O236	<b>(Invited) Small RNA expression and function during oocyte maturation and embryo development in the pig.</b> C. Yang, E. C. Wright, Z. Du, B. Hale, M. F. Rothschild, J. W. Ross*, Animal Science, Iowa State University, Ames.
10:10		<b>BREAK</b>
10:25	O237	<b>(Invited) How our basic understanding of the ovarian reserve is improving reproductive management in domestic farm animals.</b> R. A. Cushman*, A. McNeel, C. Chase, Jr., C. Lents, Reproduction Research Unit, USDA-ARS U.S. Meat Animal Research Center, Clay Center.
11:00	O238	<b>(Invited) Follicular determinants of pregnancy establishment and maintenance in beef cattle.</b> M. Smith <sup>1*</sup> , K. G. Pohler <sup>1</sup> , J. A. Atkins <sup>1</sup> , G. A. Perry <sup>2</sup> , E. M. Jinks <sup>1</sup> , M. D. MacNeil <sup>3</sup> , T. W. Geary <sup>3</sup> , <sup>1</sup> Animal Science, University of Missouri, Columbia, <sup>2</sup> Animal Science, South Dakota State University, Brookings, <sup>3</sup> Fort Keogh Livestock and Range Research Laboratory, USDA ARS, Miles City.
11:35	O239	<b>(Invited) Follicle development and insemination technology and its impact on fertility in swine.</b> R. Knox*, Animal Sciences, University of Illinois, Urbana.

**RUMINANT NUTRITION**  
**GENERAL RUMINANT NUTRITION II**  
**Chair: Stephanie Hansen, Iowa State University**  
**308/309**

<b>9:00</b>	<b>O240</b>	<p><b>The effect of commensal microbial communities on the fecal shedding of Shiga toxin-producing E. coli (STEC) in beef cattle.</b>  <b>N. D. Aluthge*</b>, Y. A. Wanniarachchi, G. E. Erickson, T. J. Klopfenstein, B. L. Nuttelman, C. J. Schneider, S. C. Fernando, Animal Science, University of Nebraska, Lincoln.</p>
<b>9:15</b>	<b>O241</b>	<p><b>Meta-analysis examining the effects of Saccharomyces cerevisiae fermentation product on feedlot performance and carcass traits.</b>  <b>J. J. Wagner<sup>1,*</sup></b>, T. E. Engle<sup>1</sup>, C. R. Belknap<sup>2</sup>, <sup>1</sup>Animal Sciences Department, Colorado State University, Fort Collins, <sup>2</sup>Diamond V, Cedar Rapids, IA.</p>
<b>9:30</b>	<b>O242</b>	<p><b>Effects of ractopamine hydrochloride on performance and carcass characteristics in finishing steers: 32-trial summary.</b>  <b>N. A. Pyatt*</b>, G. J. Vogel, J. W. Homm, R. L. Botts, C. D. Bokenkroger, Elanco Animal Health, Greenfield, IN.</p>
<b>9:45</b>	<b>O243</b>	<p><b>Effects of Monensin level during grain adaptation on animal performance and carcass traits.</b>  <b>C. J. Schneider*</b>, M. K. Luebbe, K. H. Jenkins, S. A. Furman, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.</p>
<b>10:00</b>	<b>O244</b>	<p><b>Intake and digestibility of heat-damaged hay by Katahdin ewes.</b>  <b>W. B. Smith<sup>1,*</sup></b>, K. Paul Coffey<sup>1</sup>, E. B. Kegley<sup>1</sup>, J. D. Caldwell<sup>2</sup>, A. N. Young<sup>1</sup>, E. A. Backes<sup>1,2</sup>, J. K<sup>1</sup>, D. Philipp<sup>1</sup>, <sup>1</sup>Department of Animal Science, University of Arkansas Division of Agriculture, Fayetteville, <sup>2</sup>Department of Agriculture and Environmental Sciences, Lincoln University, Jefferson City.</p>
<b>10:15</b>	<b>O245</b>	<p><b>Influence of dam residual feed intake (RFI) phenotype on milk production and progeny growth performance.</b>  <b>N. O. Minton<sup>1,*</sup></b>, R. L. Barnett<sup>2</sup>, R. L. Kallenbach<sup>2</sup>, M. S. Kerley<sup>1</sup>, <sup>1</sup>Animal Sciences, <sup>2</sup>Plant Sciences, University of Missouri, Columbia.</p>

10:30	O246	<b>The effect of trace mineral source and concentration on ruminal digestion and mineral solubility.</b> O. Genther <sup>†</sup> , S. Hansen, Animal Science, Iowa State University, Ames.
10:45	O247	<b>Relationship between heifer feed efficiency measures and intake of good-quality and poor-quality forage in mature beef cows.</b> C. Cassady <sup>†</sup> , T. B. Wilson, K. Retallick, D. B. Faulkner D. W. Shike, Animal Sciences, University of Illinois, Urbana.
11:00	O249	<b>Applying corn condensed distillers solubles to hay windrows prior to baling: I. Procedure, and effects on bale temperature and nutrient composition.</b> J. M. Warner <sup>*</sup> , G. E. Erickson, R. J. Rasby, Animal Science, University of Nebraska, Lincoln.
11:15	O248	<b>Applying corn condensed distillers solubles to hay windrows prior to baling: II. Effects on growing steer calf performance.</b> J. M. Warner <sup>*</sup> , C. J. Schneider, R. J. Rasby, G. E. Erickson, T. J. Klopfenstein, Animal Science, University of Nebraska, Lincoln.
11:30	O250	<b>Including NEXT ENHANCE essential oils in finishing diets on performance with or without monensin and tylosin.</b> C. J. Bittner <sup>*1</sup> , G. E. Erickson <sup>1</sup> , K. H. Jenkins <sup>2</sup> , M. K. Luebke <sup>2</sup> , T. Wistuba <sup>3</sup> , <sup>1</sup> Animal Science, University of Nebraska, Lincoln, <sup>2</sup> Animal Science, University of Nebraska, Scottsbluff, <sup>3</sup> Animal Science, Novus International, Inc., St. Charles, MO.
11:45	O251	<b>Preliminary efficacy of two colostrum replacement products for preventing bovine leukosis virus transmission in calves.</b> P. Patrick <sup>†</sup> , D. W. Nagy, University of Missouri, Columbia.

**POST-MEETING WORKSHOP**  
**TEMPORARY IMMUNOLOGICAL CASTRATION OF SWINE: IMPACT**  
**ON NUTRITION REQUIREMENTS, GROWTH AND MEAT QUALITY**

Chair: Aubrey Schroeder, Zoetis

Sponsor: Pfizer

Grand Ballroom

11:30		<b>Introduction</b> A. Schroeder, G. Allee
11:45	O252	<b>Use of anti-GnRF immunization for temporary castration of male pigs: mechanism of action and pork value chain implications.</b> M. A. Mellencamp*, A. Schroeder, J. R. Bradford, S. R. Webster, Pfizer Animal Health, Madison, NJ.
12:10	O253	<b>Nutritional management of entire male pigs and immunologically castrated barrows.</b> C. F. M. De Lange*, Animal and Poultry Science, University of Guelph, Guelph, Canada.
12:35	O254	<b>Comparison among gilts, physical castrates, entire males and immunologically castrated males in terms of growth performance and nitrogen metabolism.</b> A. J. Elsbernd*, J. F. Patience, Animal Science, Iowa State University, Ames.
12:50	O255	<b>Growth responses of immunologically-castrated barrows and gilts to varying intakes of fiber and energy.</b> N. Augspurger <sup>1,*</sup> , E. Parr <sup>1</sup> , A. Schroeder <sup>2</sup> , <sup>1</sup> JBS United, Inc., Sheridan, <sup>2</sup> Pfizer Animal Health, Madison.
1:05	O256	<b>Effects of immunocastration and dried distillers grains with solubles (DDGS) withdrawal on growth performance and carcass characteristics of grow–finish pigs.</b> M. Asmus <sup>1,*</sup> , A. L. Schroeder <sup>2</sup> , M. A. Tavarez <sup>3</sup> , M. D. Tokach <sup>1</sup> , J. L. Nelssen <sup>1</sup> , S. S. Dritz <sup>1</sup> , J. M. DeRouchey <sup>1</sup> , R. D. Goodband <sup>1</sup> , <sup>1</sup> Animal Science and Industry, Kansas State University, Manhattan, <sup>2</sup> Pfizer Animal Health, Kalamazoo, <sup>3</sup> University of Illinois, Urbana.
1:20	O257	<b>Combined effects of immunological castration and distillers dried grains with solubles (DDGS) on carcass yield of pigs slaughtered at two time points.</b> M. A. Tavárez <sup>1,*</sup> , A. L. Schroeder <sup>2</sup> , M. D. Asmus <sup>3</sup> , F. K. McKeith <sup>1</sup> , A. C. Dilger <sup>1</sup> , <sup>1</sup> Animal Science, University of Illinois, Urbana, <sup>2</sup> Pfizer Animal Health, Kalamazoo, MI, <sup>3</sup> Animal Science and Industry, Kansas State University, Manhattan.



1:35	O258	<p><b>Behavior of immunologically-castrated barrows in comparison to gilts, physically-castrated barrows, and intact males.</b></p> <p>C. L. Puls<sup>1,*</sup>, A. Rojo<sup>1</sup>, M. Ellis<sup>1</sup>, D. D. Boler<sup>1</sup>, F. K. McKeith<sup>1</sup>, J. Killefer<sup>1</sup>, P. D. Matzat<sup>2</sup>, A. L. Schroeder<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, <sup>2</sup>Pfizer Animal Health, Kalamazoo, MI.</p>
2:00	P019	<p><b>The effects of immunological castration in mature boars.</b></p> <p>C. Metzger<sup>1,2,*</sup>, M. Brubaker<sup>1</sup>, M. Barker<sup>1</sup>, W. Singleton<sup>3</sup>, R. O. Bates<sup>2</sup>, <sup>1</sup>Whiteshire Hamroc, Albion IN, <sup>2</sup>Michigan State University, East Lansing, <sup>3</sup>Purdue University, W. Lafayette, IN.</p>
2:20		<b>BREAK</b>
2:35	O260	<p><b>Effects of feeding ractopamine to immunologically- and physically-castrated barrows, and gilts on pig growth performance.</b></p> <p>C. L. Puls<sup>1,*</sup>, M. Ellis<sup>1</sup>, F. K. McKeith<sup>1</sup>, A. L. Schroeder<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana, <sup>2</sup>Pfizer Animal Health, Kalamazoo, MI.</p>
2:50	O261	<p><b>Effects of feeding ractopamine to gilts, physical castrates, and immunological castrates on carcass characteristics, yields, and meat quality.</b></p> <p>B. K. Lowe<sup>1,*</sup>, C. L. Puls<sup>1</sup>, A. L. Schroeder<sup>2</sup>, M. Ellis<sup>1</sup>, F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, <sup>2</sup>Pfizer Animal Health, Kalamazoo, MI.</p>
3:05	O262	<p><b>Effects of feeding Ractopamine (Paylean) to physical and immunological castrates (improvest) in a commercial setting on growth performance.</b></p> <p>B. K. Lowe<sup>1,*</sup>, G. D. Gerlemann<sup>2</sup>, A. L. Schroeder<sup>3</sup>, S. N. Carr<sup>4</sup>, P. J. Rincker<sup>4</sup>, F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>, G. L. Allee<sup>2</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, <sup>2</sup>Animal Sciences, University of Missouri, Columbia, <sup>3</sup>Pfizer Animal Health, Kalamazoo, MI, <sup>4</sup>Elanco Animal Health, Greenfield, IN.</p>
3:20	O041	<p><b>Effects of feeding Ractopamine (Paylean) to physical and immunological castrates (improvest) in a commercial setting on carcass characteristics.</b></p> <p>B. K. Lowe<sup>1,*</sup>, G. D. Gerlemann<sup>2</sup>, S. N. Carr<sup>3</sup>, P. J. Rincker<sup>3</sup>, A. L. Schroeder<sup>4</sup>, D. B. Petry<sup>5</sup>, G. L. Allee<sup>2</sup>, F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>, <sup>1</sup>Animal Sciences, University of Illinois, Urbana, <sup>2</sup>Animal Sciences, University of Missouri, Columbia, <sup>3</sup>Elanco Animal Health, Greenfield, IN, <sup>4</sup>Pfizer Animal Health, Kalamazoo, MI, <sup>5</sup>Newsham Choice Genetics, West Des Moines, IA.</p>

3:35	O263	<p><b>Changes in ultrasound carcass measures of immunologically-castrated barrows in comparison to physically-castrated barrows, intact males, and gilts.</b>  <b>C. L. Puls<sup>1,*</sup>, M. Ellis<sup>1</sup>, F. K. McKeith<sup>1</sup>, A. L. Schroeder<sup>2</sup>,</b>  <sup>1</sup>University of Illinois, Urbana, <sup>2</sup>Pfizer Animal Health, Kalamazoo, MI.</p>
3:50	O264	<p><b>Effect of immunocastration and time after second anti-GnRF (Improvest) injection on fatty acid profile of finishing pigs.</b>  <b>M. A. Tavarez<sup>1,*</sup>, A. L. Schroeder<sup>2</sup>, F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>,</b>  <sup>1</sup>Animal Science, University of Illinois, Urbana, <sup>2</sup>Pfizer Animal Health, Kalamazoo, MI.</p>
4:05	O265	<p><b>The effects of immunocastration and dried distillers grains with solubles (DDGS) withdrawal on carcass fat quality of grow-finish pigs.</b>  <b>M. Asmus<sup>1,*</sup>, A. L. Schroeder<sup>2</sup>, M. A. Tavarez<sup>3</sup>, M. D. Tokach<sup>1</sup>,</b>  <b>J. L. Nelssen<sup>1</sup>, S. S. Dritz<sup>1</sup>, J. M. DeRouchey<sup>1</sup>, R. D. Goodband<sup>1</sup>,</b>  <sup>1</sup>Animal Science and Industry, Kansas State University, Manhattan, <sup>2</sup>Pfizer Animal Health, Kalamazoo, <sup>3</sup>University of Illinois, Urbana.</p>
4:20	O266	<p><b>Sensory characteristics of loins from immunologically castrated barrows.</b>  <b>K. Jones-Hamlow<sup>1,*</sup>, D. D. Boler<sup>2</sup>, A. L. Schroeder<sup>3</sup>, K. J. Prusa<sup>4</sup>,</b>  <b>F. K. McKeith<sup>1</sup>, A. C. Dilger<sup>1</sup>,</b>  <sup>1</sup>Animal Science, University of Illinois, Urbana, <sup>2</sup>Animal Science, Ohio State University, Columbus, <sup>3</sup>Pfizer Animal Health, Kalamazoo, <sup>4</sup>Animal Science, Iowa State University, Ames.</p>
4:35	O267	<p><b>A comparison of fresh and frozen chops and roasts from gilts, physical castrates, entire males and immunologically castrated males.</b>  <b>A. J. Elsbernd<sup>1,*</sup>, J. F. Patience<sup>1</sup>, K. J. Prusa<sup>2</sup>,</b>  <sup>1</sup>Animal Science, <sup>2</sup>Food Science and Human Nutrition, Iowa State University, Ames.</p>
4:50	O268	<p><b>Effects of immunological castration (Improvest) on commercial bacon slicing yields of finishing pigs.</b>  <b>J. M. Kyle<sup>1,*</sup>, B. M. Bohrer<sup>1</sup>, A. L. Schroeder<sup>2</sup>, D. D. Boler<sup>1</sup>,</b>  <sup>1</sup>Animal Sciences, The Ohio State University, Columbus, <sup>2</sup>Pfizer Animal Health, Kalamazoo.</p>
5:05		Panel Discussion

# MIDWEST SECTION ADSA/ASAS

## Committee Assignment

### PROGRAM COMMITTEES

#### **Billy Day Symposium**

T.J. Safranski, Chair  
D. L. Davis  
S. L. Terlouw  
M. L. Day  
W. L. Flowers

#### **Animal Behavior, Housing and Well Being**

S. I. Kehoe, Chair  
L. N. Edwards  
B. R. Wiegand  
Y. Li  
J. L. Salak-Johnson

#### **Breeding and Genetics**

J. Tait, Chair  
M. G. Gonda  
A. Lindholm-Perry

#### **David H. Baker Symposium**

N. R. Augspurger, Chair  
H. H. Stein  
B. J. Kerr  
C. M. Peter

#### **Extension - Beef/Small Ruminant**

A. E. Radunz  
N. A. Pyatt  
J. W. Waggoner

#### **Extension - Dairy**

T. D. Nennich, Chair  
N. B. Litherland  
J. A. Salfer  
L. H Baumgard

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### **Extension - Equine**

R. C. Bott, Chair  
K. L. Martinson  
P. A. Auwerda  
J. A. Reynolds

### **Extension - Swine**

C. M. Peter, Chair  
D. J. Newman  
K.J. Stalder

### **Growth, Development, Muscle Biology, and Meat Science**

R. Cox, Chair  
S. N. Carr  
C. A. Stahl

## **GRADUATE STUDENT PROGRAM COMMITTEE**

W. J. Powers  
C. Pilcher  
K. McClellan  
L. Prezotto  
WI-A. E. Radunz  
B. R. Wiegand

### **Nonruminant Nutrition**

M. Kocher, Chair  
J. W. Frank  
R. N. Dilger

### **Odor and Nutrient Management**

M. J. Brouk, Chair  
S. Winterholler  
E. van Heugten

### **Ruminant Nutrition**

D. H. Kleinschmit, Chair  
S. L. Hansen  
J. P. Schoonmaker

### **Teaching and Undergraduate Education**

K. E. Fike, Chair  
R. C. Bott  
J. M. Siegford

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## **Physiology**

G. A. Bridges, Chair

L. A. Rempel

R. D. Geisert

## **Ad Hoc - Review Program Structure**

C. W. Ernst

J. E. Minton

K. F. Kalscheur

B. R. Wiegand

T. D. Crenshaw

J. Schroeder

## **SPECIAL COMMITTEES**

ADSA Nominations

H. Chester-Jones, Chair

D. P. Casper

K. K. Kalscheur

## **ASAS Nominations**

C. W. Ernst

J. S. Radcliffe

## **Academic Quadrathlon**

P. M. Walker

C. T. Jobsis

T. E. Burkey

M. E. Wilson

S. I. Kehoe

B. D. Banks

A. Cobb

A. J. Seykora

K. E. Fike

G. W. Onan

S. L. Hansen

K. Carlin

M. E. Persia

J. N. Tembei

B. D. Whitaker

A. Woodward

T. J. Safranski

P. S. Kuber

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## COMPETITIVE RESEARCH PAPER COMMITTEES

### ASAS Midwestern Section Graduate Student Paper Competition

M. E. Wilson  
K. A. Vonnahme

### ASAS Midwestern Section Undergrad Student Paper Competition

P. M. Walker

## AWARD COMMITTEES

### Ad Hoc Awards

C. W. Ernst  
J. E. Minton  
K. F. Kalscheur  
B. R. Wiegand  
T. D. Crenshaw  
J. Schroeder

### 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. Graunard  
K. F. Kalscheur

### Extension

C. L. Wright  
A. D. Garcia  
G. A. Perry  
P. C. Hoffman  
D. B. Carlson  
D. J. Illg

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## **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  
M. B. Hall  
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

## PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

### OUTSTANDING EXTENSION SPECIALIST AWARD

1971	G. E. Ricketts, University of Illinois
1972	V. B. Mayrose, Purdue University
1974	M. R. Geasler, Iowa State University
1976	R. J. Vathauer, University of Wisconsin
1977	R. J. Epley, University of Minnesota
1978	W. L. Singleton, Purdue University
1979	D. E. Schafer, Kansas State University
1980	L. R. Corah, Kansas State University
1981	M. G. Hogberg, Michigan State University
1982	C. W. Spaeth, Kansas State University
1983	L. H. Thompson, University of Illinois
1984	M. F. Hutjens, University of Illinois
1985	G. L. Kuhl, Kansas State University
1986	D. D. Simms, Kansas State University
1987	F. K. Brazle, Kansas State University
1988	S. B. Laudert, Kansas State University
1989	M. A. Russell, Purdue University
1990	D. F. Parrett, University of Illinois
1991	D. B. Faulkner, University of Illinois
1992	J. L. Nelssen, Kansas State University
1993	A. P. Schinckel, Purdue University
1994	D. A. Funk, University of Wisconsin, Madison
1995	G. C. Shurson, University of Minnesota
1996	R. D. Shaver, University of Wisconsin, Madison
1997	R. D. Goodband, Kansas State University
1998	Not given
1999	M. D. Tokach, Kansas State University
2000	J. F. Smith, Kansas State University
2001	W. O. Herring, University of Missouri
2002	M. J. Brouk, Kansas State University
2003	W. J. Powers, Iowa State University
2004	S. J. Moeller, The Ohio State University
2005	K. J. Stalder, Iowa State University
2006	P. M. Fricke, University of Wisconsin
2007	G. C. Lamb, University of Minnesota
2008	J. M. DeRouchey, Kansas State University
2009	P. S. Kuber, The Ohio State University
2010	C. L. Wright, South Dakota State University
2011	G. A. Perry, South Dakota State University
2012	W. J. Sexten, University of Missouri



## OUTSTANDING RESEARCHER AWARD

1971	D. H. Baker, University of Illinois
1972	C. E. Allen, University of Minnesota
1974	F. N. Owens, University of Illinois
1976	W. G. Bergen, Michigan State University
1977	D. E. Bauman, University of Illinois
1978	G. L. Allee, Kansas State University
1979	S. E. Curtis, University of Illinois
1980	T. L. Veum, University of Missouri
1981	R. L. Prior, Roman L. Hruska U.S. Meat Animal Research Center
1982	B. D. Schanbacher, Roman L. Hruska U.S. Meat Animal Research Center
1983	H. A. Garverick, University of Missouri
1984	G. C. Fahey, Jr., University of Illinois
1985	J. J. Ford, Roman L. Hruska U.S. Meat Animal Research Center
1986	C. L. Ferrell, Roman L. Hruska U.S. Meat Animal Research Center
1987	D. Gianola, University of Illinois
1988	S. P. Ford, Iowa State University
1989	L. L. Berger, University of Illinois
1990	M. F. Rothschild, Iowa State University
1991	M. F. Smith, University of Missouri
1992	D. L. Harmon, Kansas State University
1993	M. Koohmaraie, Roman L. Hruska, U.S. Meat Animal Research Center
1994	L. G. Sheffield, University of Wisconsin-Madison
1995	J. Odle, University of Illinois
1996	J. L. Nelssen, Kansas State University
1997	R. S. Prather, University of Missouri
1998	D. Pomp, University of Nebraska
1999	R. W. Johnson, University of Illinois
2000	M. C. Lucy, University of Missouri
2001	C. K. Tuggle, Iowa State University
2002	M. Morrison, Ohio State University
2003	T. P. L. Smith, USDA, NE
2004	C. W. Ernst, Michigan State University
2005	E. Huff-Lonergan, Iowa State University
2006	A. S. Cupp, University of Nebraska
2007	J. C. Matthews, University of Kentucky
2008	J. M. Reecy, Iowa State University
2009	G. E. Erickson, University of Nebraska
2010	J. DeRouche, Kansas State University
2011	K. A. Vonnahme, North Dakota State University
2012	G. A. Perry, South Dakota State University

## OUTSTANDING TEACHER AWARD

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

## OUTSTANDING EARLY CAREER AGRIBUSINESS AWARD

1995	P. L. Houghton, Heartland Cattle Co.
1996	J. A. Barmore, Vita Plus Corp.
1997	D. E. Dill, Dairy Strategies
1998	C. M. Luhman, Land O'lakes Research Farm
1999	Not Given
2000	D. L. Hancock, Elanco Animal Health
2001	J. M. Lynch, Heartland Cattle Co.
2002	Not Given
2003	J. M. Campbell, APC, Inc.
2004	D. M. Webel, United Feeds
2005	T. A. Rathje, Danbred North America
2006	T. E. Sauber, Pioneer, A Dupont Company
2007	M. J. Pettitt, Prairie Swine Centre, LLC, Canada
2008	J. C. Woodworth, Lonza Inc.
2009	Not given
2010	D. H. Kleinschmit, Agri-King, Inc.
2010	J. Spencer, JBS United Inc.
2011	A. M. Gaines, The Maschhoffs
2012	C. R. Schwab, National Swine Registry

## INNOVATION IN DAIRY RESEARCH AWARD

2007	D. B. Carlson, University of Illinois
2008	A. Bettgowda, Michigan State University
2009	R. A. Naticov, Iowa State University
2010	S. Fredin, University of Wisconsin – Madison
2011	D. E. Graugnard, University of Illinois
2012	Not given

## UNDERGRADUATE STUDENTS - ORAL

1987	R. E. Raw, University of Missouri
1988	J. A. Ragains, University of Missouri
1989	G. L. Ambrose, South Dakota State University
1990	C. N. Kemper, University of Missouri
1991	T. R. Eberle, North Dakota State University
1992	B. J. MacDonald, North Dakota State University
1993	B. L. Dunn, Kansas State University
1994	S. M. Nelson, University of Nebraska
1995	L. J. Trinity, Iowa State University
1996	M. E. Cunningham, Oklahoma State University
1997	C. E. Sorenson, South Dakota State University
1998	J. L. Strickland, University of Nebraska
1999	B. A. DeMontigny, North Dakota State University
2000	K. S. Freise, University of Illinois
2001	K. R. Nollette, University of Nebraska
2002	B. Meyer, University of Nebraska
2003	A. Harvey, South Dakota State University
2004	L. H. Bach, Michigan State University
2005	A. M. Meyer, Michigan State University
2006	L. D. Holmes, Southern Illinois University R. Schnobrich, University of Minnesota
2007	B. H. Godsey, Kansas State University
2008	B. L. Varnes, Michigan State University
2009	H. L. Frobose, Kansas State University
2010	S. I. Fry, North Dakota State University
2011	R. L. Wangler, Michigan State University
2012	E. A. Nore, North Dakota State University

## UNDERGRADUATE STUDENTS - POSTER

2009	E. I. Ince, University of Wisconsin
2010	D. P. Strassburg, University of Wisconsin
2011	S. J. Morine, Iowa State University
2012	E.J. Cretney, University Wisconsin

## GRADUATE STUDENTS - ORAL

1976	D. G. Haught, Iowa State University
1977	L. L. Berger, University of Nebraska
1978	G. F. Collings, Michigan State University
1979	R. D. Boyd, University of Nebraska

1980 D. G. Cieslak, University of Wisconsin  
 1981 W. F. Pope, University of Nebraska  
 1982 P. F. Saenger, Purdue University  
 1983 D. A. Redmer, University of Missouri  
 1984 W. F. Brown, University of Nebraska  
 1985 J. H. Brendemuhl, University of Nebraska  
 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  
 1991 M. D. Tokach, University of Minnesota  
 1992 G. F. Louis, University of Nebraska  
 1993 B. T. Larson, University of Missouri  
 1994 L. H. Anderson, The Ohio State University  
 1995 M. L. Augenstein, University of Minnesota  
 1996 D. D. Koehler, University of Minnesota  
 1997 R. A. Nold, South Dakota State University  
 1998 K. J. Rozeboom, University of Minnesota  
 1999 L. A. Averette, North Carolina State University  
 2000 T. A. Armstrong, North Carolina State University  
 2001 T. G. McDaneld, University of Nebraska\*  
 J. H. Hampton, University of Missouri\*\*  
 2002 K. M. Hargrave, University of Nebraska\*  
 M. J. Hersom, Oklahoma State University\*\*  
 2003 J. Luther, North Dakota State University\*  
 R. Main, Kansas State University\*\*  
 2004 R. C. Bott, University of Nebraska\*  
 M. M. Martinez, Michigan State University\*\*  
 2005 J. M. Koch, West Virginia University\*  
 N. D. Fastinger, The Ohio State University\*\*  
 2006 D. M. Larson, North Dakota State University\*  
 M. Gorocica-Buenfil, The Ohio State University\*\*  
 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\*\*

## GRADUATE STUDENTS - POSTER

- 2007 P. L. Nester, North Dakota State University\*  
N. DiLorenzo, University of Minnesota\*\*
- 2008 N. R. Bork, North Dakota State University\*  
B. A. Peterson, University of Illinois\*\*
- 2009 P. Gunn, Purdue University\*  
C. O. Lemley, West Virginia University\*\*
- 2010 N. S. Schmetz, Purdue University\*  
L. Senaratne, University of Nebraska\*\*
- 2011 K. E. Boesche, Purdue University\*  
P. J. Gunn, Purdue University\*
- 2012 M. Berg, University of Wisconsin-Madison\*  
X. J. Li, University of Minnesota\*\*

\*M.S. Division

\*\*Ph.D. Division

## PAST WINNERS OF UNDERGRADUATE CONTEMPORARY ISSUES COM

- 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

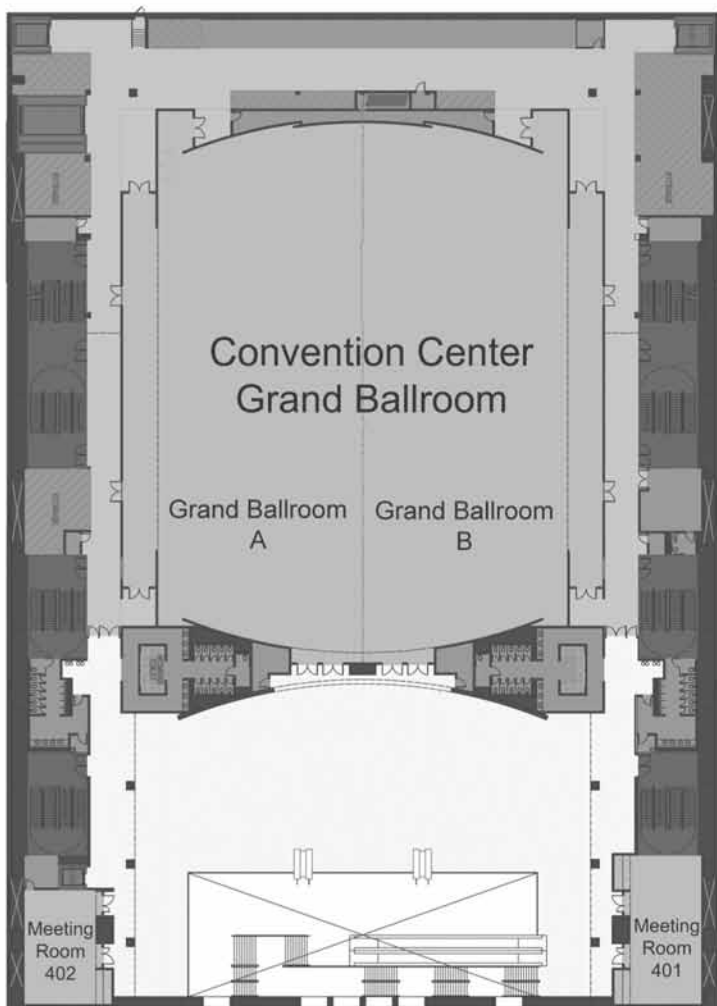
1963	O. G. Bentley, University of Illinois
1964-65	R. H. Grummer, University of Wisconsin
1966-67	G. R. Johnson, The Ohio State University
1968	R. J. Meade, University of Minnesota
1969	J. A. Hoefer, Michigan State University
1970-71	W. E. Dinusson, North Dakota State University
1972	J. F. Lasley, University 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



2000	J. R. Males, Oregon State University
2001	M. L. Day, The Ohio State University
2002	R. K. Johnson, University of Nebraska
2003	C. L. Ferrell, USDA, Clay Center
2004	G. C. Shurson, University of Minnesota
2005	A. L. Grant, Purdue University
2006	D. L. Hancock, Elanco Animal Health
2007	R. L. Moser, JBS United, Inc.
2008	M. K. Nielsen, University of Nebraska
2009	M. E. Spurlock, Iowa State University
2010	T. D. Crenshaw, University of Wisconsin
2011	J. S. Radcliffe, Purdue University
2012	J. F. Patience, Iowa State University

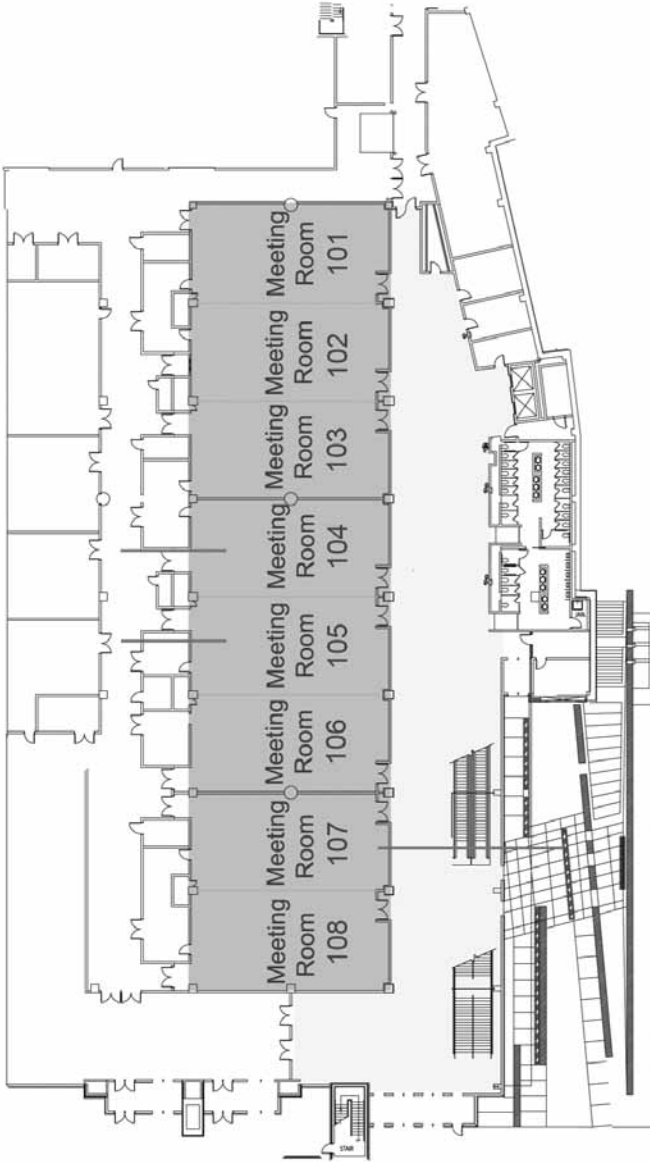
## ADSA MIDWEST BRANCH PRESIDENTS

1992	J. F. Keown, University of Nebraska
1993	J. G. Linn, University of Minnesota
1994	D. J. Schingoethe, South Dakota State University
1995	J. L. Morrill, Kansas State University
1996	M. F. Hutjens, University of Illinois
1997	M. A. Faust, Iowa State University
1998	J. K. Drackley, University of Illinois
1999	R. D. Shaver, University of Wisconsin
2000	R. J. Grant, University of Nebraska
2001	M. L. Eastridge, The Ohio State University
2002	J. D. Quigley III, APC, Inc.
2003	S. T. Franklin, University of Kentucky
2004	D. K. Combs, University of Wisconsin
2005	L. L. Timms, Iowa State University
2006	P. Hoffman, University of Wisconsin - Madison
2007	M. M. Schutz, Purdue University
2008	J. R. Pursley, Michigan State University
2009	C. M. Luhman, Long View Animal Nutrition
2010	H. Chester-Jones, University of Minnesota
2011	K. F. Kalscheur, South Dakota State University
2012	L. H. Baumgard, Iowa State University



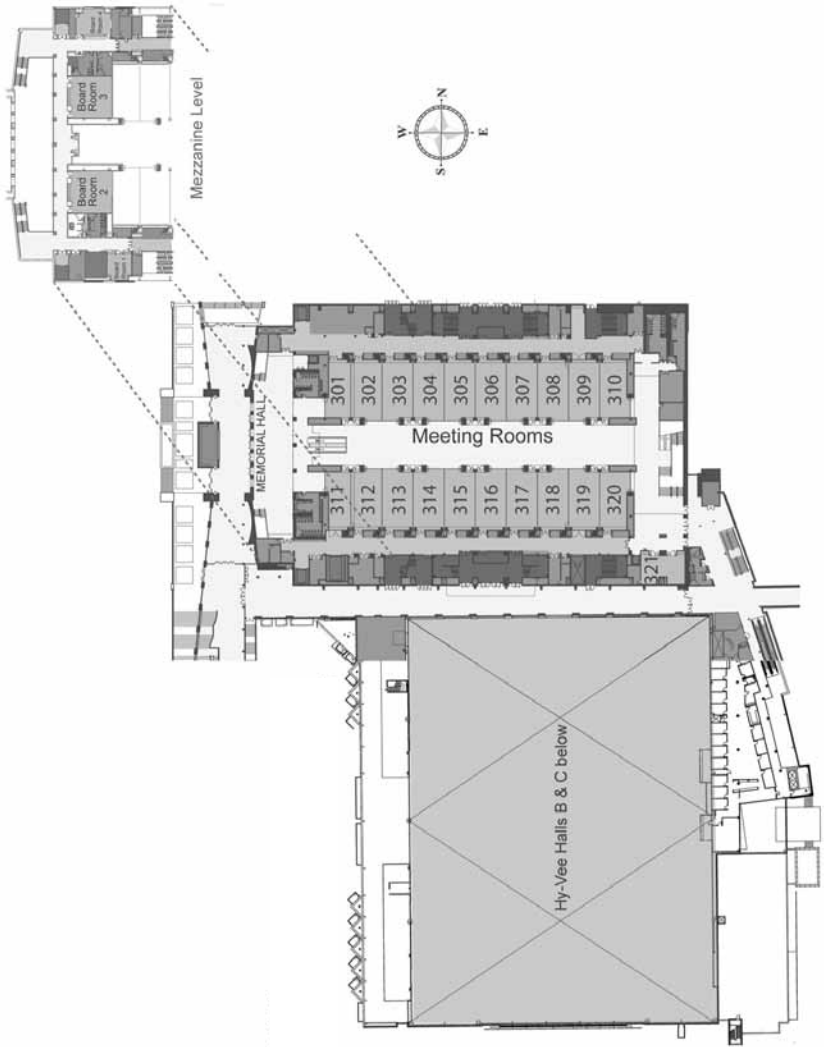
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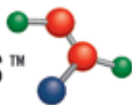
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