

**PSA and AAAP 2011  
Schedule at a Glance**

**Wednesday, July 13**

6:00 pm . . . . . PSA Finance Committee

**Thursday, July 14**

7:00 am – 5:00 pm . . . . . PSA Board of Directors  
Hyatt Mills 3, Hyatt Regency at the Arch

7:00 am – 5:00 pm . . . . . AAAP Board of Directors  
Sterling 1, Hyatt Regency at the Arch

Noon – 1:00 pm . . . . . PSA Board of Directors Luncheon  
Restaurant, Hyatt Regency at the Arch

**Friday, July 15**

7:00 am – 5:00 pm . . . . . PSA Board of Directors  
Mills 3, Hyatt Regency at the Arch

7:00 am – 5:00 pm . . . . . AAAP Board of Directors  
Sterling 1, Hyatt Regency at the Arch

7:00 am – 5:00 pm . . . . . Association of Veterinarians in Broiler Production  
Park View, Hyatt Regency at the Arch  
(Invitation only)

7:00 am – 8:00 pm . . . . . ACPV Exam  
Grand A&B, Hyatt Regency at the Arch

10:30 am – 5:00 pm . . . . . Association of Veterinarians in Turkey Production  
Gateway West, Hyatt Regency at the Arch  
(Invitation only)

Noon – 1:00 pm . . . . . PSA Board of Directors Luncheon\*  
Mills 4, Hyatt Regency at the Arch

1:00 pm – 4:00 pm . . . . . AAAP Committee, Histopathology/Case  
Report Interest Group  
Regency E, Hyatt Regency at the Arch

**Saturday, July 16**

6:30 am – 7:30 am . . . . . Georgia MAM Alumni Breakfast  
Park View, Hyatt Regency at the Arch  
(Invitation only)

7:00 am – 7:30 am . . . . . AAAP New Member Meet and Greet  
AAAP Booth, Convention Center

- 7:30 am – 12:30 pm . . . . . Joint Symposium:  
A Crystal Ball Look into the Future of.....  
The symposium is designed to take a look into the future of poultry production in the next 5 to 10 years. Topics will include genetics, nutrition, hatchery, immune modulation, and coccidiosis. The session will be capped by this year's keynote speaker addressing the issue of the Future of Antibiotics in Animal Agriculture.  
Rooms 220-221, 228-229, America's Center
- 11:30 am – 1:30 pm . . . . . Association of Primary Poultry Breeder Veterinarians  
Sterling 2, Hyatt Regency at the Arch  
(Invitation only)
- Noon – 1:00 pm . . . . . American Poultry Historical Society Luncheon\*  
Mills 4, Hyatt Regency at the Arch
- Noon – 5:00 pm . . . . . Exhibit and Poster Set up  
Rooms 230-231, 240-242, America's Center
- 1:00 pm – 5:00 pm . . . . . Informal Nutrition Symposium:  
Exploring Maximum Animal Responses  
Rooms 222, 227, America's Center
- 1:00 pm – 2:00 pm . . . . . AAAP Awards Committee  
Sterling 1, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Drugs and Therapeutics Committee  
Sterling 5, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Electronic Information Committee  
Sterling 7, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Food Safety Committee  
Sterling 8, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Avian Diseases Manual Editorial Board  
Sterling 9, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Diseases of Poultry Editorial Board  
Mills 9, Hyatt Regency at the Arch
- 1:00 pm – 2:00 pm . . . . . AAAP Membership Committee  
Mills 6, Hyatt Regency at the Arch
- 2:00 pm – 3:00 pm . . . . . AAAP Biologics Committee  
Mills 2, Hyatt Regency at the Arch
- 2:00 pm – 3:00 pm . . . . . AAAP Diseases of Public Health Significance Committee  
Mills 1, Hyatt Regency at the Arch
- 2:00 pm – 3:00 pm . . . . . AAAP Isolation, Identification Manual Editorial Board  
Mills 4, Hyatt Regency at the Arch

- 2:00 pm – 3:00 pm . . . . . AAAP Preceptorship Committee  
Mills 5, Hyatt Regency at the Arch
- 2:00 pm – 3:30 pm . . . . . AAAP Tumor Virus Committee  
Mills 7, Hyatt Regency at the Arch
- 2:00 pm – 4:00 pm . . . . . AAAP Animal Welfare Committee  
Mills 3, Hyatt Regency at the Arch
- 3:00 pm – 4:00 pm . . . . . AAAP Education Committee  
Mills 8, Hyatt Regency at the Arch
- 3:00 pm – 4:00 pm . . . . . AAAP Emergency Disease Management Committee  
Sterling 5, Hyatt Regency at the Arch
- 3:00 pm – 4:00 pm . . . . . AAAP Research Priorities Committee  
Sterling 4, Hyatt Regency at the Arch
- 3:00 pm – 5:00 pm . . . . . AAAP Respiratory Diseases Committee  
Regency B, Hyatt Regency at the Arch
- 4:00 pm – 5:00 pm . . . . . AAAP Enteric Diseases Committee  
Park View, Hyatt Regency at the Arch
- 4:00 pm – 5:00 pm . . . . . AAAP Epidemiology Committee  
Mills 1, Hyatt Regency at the Arch
- 4:00 pm – 5:00 pm . . . . . AAAP History Committee  
Mills 9, Hyatt Regency at the Arch
- 4:00 pm – 5:00 pm . . . . . AAAP TIME Committee  
Sterling 7, Hyatt Regency at the Arch
- 5:00 pm – 6:00 pm . . . . . University of Minnesota CAHFS  
Regency A, Hyatt Regency at the Arch  
(Invitation only)
- 6:00 pm – 7:00 pm . . . . . PSA and AAAP Opening Session  
Grand Ballroom ABCD, Hyatt Regency at the Arch
- 7:00 pm – 8:30 pm . . . . . PSA and AAAP Opening Reception\*  
Grand Ballroom EFGH, Hyatt Regency at the Arch

**Sunday, July 17**

- 6:00 am – 8:00 am . . . . . Association of Veterinarians in Egg Production  
Grand A, Hyatt Regency at the Arch  
(Invitation only)
- 6:30 am – 8:00 am . . . . . PSA Foundation Breakfast  
Mills I, Hyatt Regency at the Arch

6:30 am – 7:30 am . . . . .	AAAP Legislative Advisory Committee Sterling 8, Hyatt Regency at the Arch
7:00 am – 8:00 am . . . . .	AAAP Avian Diseases Editorial Board Grand B, Hyatt Regency at the Arch
7:00 am – 11:00 am . . . . .	ACPV Board of Governors Mills 6, Hyatt Regency at the Arch
8:00 am – 5:00 pm . . . . .	Poster Sessions Rooms 230-231, 240-242, America's Center
8:00 am – 5:00 pm . . . . .	Exhibits Rooms 230-231, 240-242, America's Center
8:00 am – 11:15 am . . . . .	Pathology Room 222, America's Center
8:00 am – 11:45 am . . . . .	Breeding and Genetics Room 223, America's Center
8:00 am – Noon. . . . .	Physiology, Endocrinology and Reproduction I Room 224, America's Center
8:00 am – Noon. . . . .	Metabolism and Nutrition: Probiotic and Prebiotic Room 225, America's Center
8:00 am – 11:45 am . . . . .	Metabolism and Nutrition: Enzymes Room 226, America's Center
8:00 am – 11:15 am . . . . .	Food Safety I Room 227, America's Center
8:00 am – 9:45 am . . . . .	Case Reports I Room 220,229, America's Center
8:30 am – 11:30 am . . . . .	Symposium: Current Regulatory Status and Use of Antibiotics in the Poultry Industry Room 228, America's Center
10:15 am – Noon. . . . .	Case Reports II Room 220,229, America's Center
Noon – 1:00 pm . . . . .	PSA Past-Presidents' Luncheon* Sterling 1, Hyatt Regency at the Arch
Noon – 1:00 pm . . . . .	PSA Student Luncheon and Meeting* Pre-function Area, America's Center
Noon – 1:00 pm . . . . .	USDA, ARS Meeting Restaurant, Hyatt Regency at the Arch

- 12:15 pm – 2:45 pm . . . . . AAAP Awards Luncheon  
Crystal Ballroom, Renaissance Hotel
- 1:00 pm – 5:00 pm . . . . . Environment and Management I  
Room 224, America’s Center
- 1:00 pm – 4:45 pm . . . . . Metabolism and Nutrition: Feed Additives  
Room 225, America’s Center
- 1:00 pm – 5:00 pm . . . . . Metabolism and Nutrition: Phytase and Minerals  
Room 226, America’s Center
- 1:00 pm – 4:45 pm . . . . . Food Safety Symposium: Awareness of New Salmonella Thresholds  
Room 227, America’s Center
- 1:00 pm – 4:45 pm . . . . . Symposium: Incubation and Effects Upon Embryo and Hatchling  
Performance  
Room 228, America’s Center
- 1:30 pm – 2:30 pm . . . . . Behavior and Well-Being  
Room 222, America’s Center
- 1:30 pm – 2:45pm . . . . . Extension and Instruction  
Room 223, America’s Center
- 1:30 pm – 3:30 pm . . . . . Student Symposium: How do I answer that?  
Room 220, 229, America’s Center
- 3:15 pm – 5:15 pm . . . . . Wealth of Knowledge I  
Room 222, America’s Center
- 3:15 pm – 5:30 pm . . . . . Marek’s Disease  
Room 223, America’s Center
- 5:00 pm – 6:00 pm . . . . . Organic Poultry  
Sterling 1, Hyatt Regency at the Arch
- 7:00 pm – 8:00 pm . . . . . Ice Cream Social\*  
Gateway East, Hyatt Regency at the Arch

**Monday, July 18**

- 6:30 am – 8:00 am . . . . . Quadrennial Poultry Extension Workshop\*  
Sterling 7, Hyatt Regency at the Arch
- 6:30 am – 8:00 am . . . . . Auburn University Breakfast\*  
Mills 1, Hyatt Regency at the Arch
- 7:00 am – 9:00 am . . . . . ACPV Reception/Annual Meeting  
Grand FG, Hyatt Regency at the Arch
- 8:00 am – 5:30 pm . . . . . Exhibits  
Room 230-231, 240-242, America’s Center

8:00 am – 5:30 pm . . . . .	Poster Sessions Room 230-231, 240-242, America's Center
8:00 am – 9:45 am . . . . .	Coccidiosis I Room 222, America's Center
8:00 am – 9:45 am . . . . .	Infectious Bursal Disease Room 223, America's Center
8:00 am – Noon. . . . .	Environment and Management II Room 224, America's Center
8:00 am – Noon. . . . .	Metabolism and Nutrition: Feed Ingredients Room 225, America's Center
8:00 am – 11:15 am . . . . .	Food Safety II Room 227, America's Center
8:30 am – Noon. . . . .	National Extension Workshop: The Impact of Major Policy Shifts on the U.S. Food Supply and Producers: Environmental Issues Room 226, America's Center
10:15 am – 11:45 am. . . . .	Coccidiosis II Room 222, America's Center
10:15 am – Noon. . . . .	Chicken Infectious Anemia Virus and Runting Stunting Syndrome Room 223, America's Center
10:30 am – Noon. . . . .	WPSA-USA Board Meeting Mills 2, Hyatt Regency at the Arch
11:30 am – 1:00 pm . . . . .	AAAP Past Presidents' Luncheon Benton, Renaissance Hotel
Noon – 1:00 pm . . . . .	WPSA-USA Luncheon* Mills 3, Hyatt Regency at the Arch
Noon – 1:00 pm . . . . .	National Extension Workshop Luncheon* Room 232, America's Center
1:00 pm – 2:00 pm. . . . .	Poultry Group Meeting Lunch Room, America's Center
1:15 pm – 2:15 pm. . . . .	Lasher-Eckroade History/WPSA Lecture Rooms 220-221, 228-229, America's Center
2:15 pm – 4:00 pm. . . . .	PSA Business Meeting Rooms 220-221, 228-229, America's Center
2:15 pm – 3:45 pm. . . . .	AAAP Business Meeting Room 223, America's Center

4:00 pm – 5:30 pm . . . . . Wine and Cheese Reception – Exhibit and Poster Viewing  
(Student competition judging will take place at this time. All  
presenting authors of posters are required to be present)  
Room 230-231, 240-242, America’s Center

6:30 pm – 8:00 pm . . . . . Texas A&M Aggies Reception\*  
Park View, Hyatt Regency at the Arch

7:30 pm – 11:00 pm . . . . . NC State University Poultry Health Management  
Gateway East, Hyatt Regency at the Arch  
(Invitation only)

8:00 pm . . . . .PSA/WPSA Student Mixer\*  
BB’s, 700 S. Broadway

**Tuesday, July 19**

6:30 am – 8:00 am . . . . . PS/JAPR Editors’ Breakfast  
Restaurant, Hyatt Regency at the Arch

6:30 am – 8:00 am . . . . . PSA Awards Committee Breakfast  
Mills 4, Hyatt Regency at the Arch

6:30 am – 8:00 am . . . . . Michigan State University Breakfast\*  
Mills 2, Hyatt Regency at the Arch

7:00 am – Noon. . . . . AAAP Board of Directors  
Sterling 1, Hyatt Regency at the Arch

7:45 am – 5:00 pm . . . . . Symposium: Coccidiosis  
Room 220, 229, America’s Center

8:30 am – 10:30 am . . . . .Poultry Germplasm Conservation Committee  
Mills 3, Hyatt Regency at the Arch

8:00 am – Noon. . . . . Exhibits  
Room 230-231, 240-242, America’s Center

8:00 am – Noon. . . . . Poster Sessions  
Room 230-231, 240-242, America’s Center

8:00 am – Noon. . . . . Immunology  
Room 221, America’s Center

8:00 am – 9:45 am . . . . . Bacteriology and Diagnostics  
Room 222, America’s Center

8:00 am – 9:45 am . . . . . Infectious Bronchitis  
Room 223, America’s Center

8:00 am – Noon. . . . . Environment and Management III  
Room 224, America’s Center

8:00 am – 11:45 am . . . . .	Metabolism and Nutrition: Minerals and Vitamins Room 225, America's Center
8:00 am – 11:30 am . . . . .	Metabolism and Nutrition: Amino Acids Room 226, America's Center
8:00 am – 11:45 am . . . . .	Processing and Products Room 227, America's Center
10:15 am – Noon . . . . .	Wealth of Knowledge II Room 222, America's Center
10:15 am – 11:45 am . . . . .	Laryngotracheitis and Newcastle Room 223, America's Center
Noon – 1:00 pm . . . . .	National Poultry Waste Management Luncheon* Mills 1, Hyatt Regency at the Arch
Noon – 1:00 pm . . . . .	New PSA Board Meeting Mills 3, Hyatt Regency at the Arch
1:00 pm – 3:00 pm . . . . .	Mycoplasma Room 222, America's Center
1:00 pm – 2:45 pm . . . . .	Avian Influenza I Room 223, America's Center
1:00 pm – 4:00 pm . . . . .	Physiology, Endocrinology and Reproduction II Room 224, America's Center
1:00 pm – 4:45 pm . . . . .	Metabolism and Nutrition: Production, Dietary Manipulation and Manufacturing Room 225, America's Center
3:15 pm – 5:00 pm . . . . .	Clostridium Room 222, America's Center
3:15 pm – 4:45 pm . . . . .	Avian Influenza II Room 223, America's Center
6:00 pm – 6:45 pm . . . . .	PSA Awards Reception Grand Ballroom Foyer
7:00 pm . . . . .	PSA Awards Banquet* Grand Ballroom ABCD, Hyatt Regency at the Arch

Please refer to the scientific program portion of this book for detailed information on oral and poster presentations. Please note that all rooms and times are subject to change. Be sure to check room signs and the daily newsletter for any last-minute room changes or cancellations. Any event noted with an asterisk (\*) will require a ticket for entrance.

## Program Grid

Saturday, July 16			
TIME	ROOM	SECTION	SESSION
7:30 am – 12:30 pm	220-221, 228-229	Joint Symposium	A Crystal Ball Look into the Future of ...
1 pm – 5 pm	222, 227	Informal Nutrition Symposium	Exploring Maximum Animal Reponses

## Program Grid

Sunday, July 17			
TIME	ROOM	SECTION	SESSION
8 am – 11:15 am	222	Pathology	
8 am – 11:45 am	223	Breeding and Genetics	
8 am – Noon	224	Physiology, Endocrinology and Reproduction I	
8 am – Noon	225	Metabolism and Nutrition	Probiotic and Prebiotic
8 am – 11:45 am	226	Metabolism and Nutrition	Enzymes
8 am – 11:15 am	227	Food Safety I	
8 am – 9:45 am	220, 229	Case Reports I	
8:30 am – 11:30 am	228	Symposium: Current Regulatory Status and Use of Antibiotics in the Poultry Industry	
10:15 am – Noon	220, 229	Case Reports II	
1 pm – 4:45 pm	225	Metabolism and Nutrition	Feed Additives
1 pm – 4:45 pm	227	Food Safety Symposium: Awareness of New Salmonella Thresholds	
1 pm – 4:45 pm	228	Symposium: Incubation and Effects upon Embryo and Hatchling Performance	
1 pm – 5 pm	224	Environment and Management I	
1 pm – 5 pm	226	Metabolism and Nutrition	Phytase and Minerals
1:30 pm – 2:30 pm	222	Behavior and Well-Being	
1:30 pm – 2:45 pm	223	Extension and Instruction	
1:30 pm – 3:30 pm	220, 229	Student Symposium: How do I answer that?	
3:15 pm – 5:15 pm	222	Wealth of Knowledge I	
3:15 pm – 5:30 pm	223	Marek's Disease	

## Program Grid

Monday, July 18			
TIME	ROOM	SECTION	SESSION
8 am – 9:45 am	222	Coccidiosis I	
8 am – 9:45 am	223	Infectious Bursal Disease	
8 am – Noon	224	Environment and Management II	
8 am – Noon	225	Metabolism and Nutrition	Feed Ingredients
8 am – 11:15 am	227	Food Safety II	
8:30 am – Noon	226	National Extension Workshop	The Impact of Major Policy Shifts on the U.S. Food Supply and Producers: Environmental Issues
10:15 am – 11:45 am	222	Coccidiosis II	
10:15 am – 11:45 am	223	Chicken Infectious Anemia Virus and Runting Stunting Syndrome	
1:15 pm – 2:15 pm	220-221, 228-229	Lasher-Eckroade History/ WPSA Lecture	The History of the Poultry Industry: Scientific Breakthroughs
2:15 pm – 4:00 pm	220-221, 228-229	PSA Business Meeting	
2:15 – 3:45 pm	223	AAAP Business Meeting	
4 pm – 5:30 pm	230-231, 240-242	Exhibit and Poster Viewing: Wine Reception	

## Program Grid

Tuesday, July 19			
TIME	ROOM	SECTION	SESSION
7:45 am – 5:00 pm	220, 229	Symposium: Coccidiosis	
8 am – Noon	221	Immunology	
8 am – 9:45 am	222	Bacteriology And Diagnostics	
8 am – 9:45 am	223	Infectious Bronchitis Virus	
8 am – Noon	224	Environment and Management III	
8 am – 11:45 am	225	Metabolism and Nutrition	Minerals and Vitamins
8 am – 11:45 am	226	Metabolism and Nutrition	Amino Acids
8 am – 11:45 am	227	Processing and Products	
10:15 am – Noon	222	Wealth of Knowledge II	
10:15 am – 11:45 am	223	Laryngotracheitis and Newcastle	
1 pm – 2:45 pm	223	Avian Influenza I	
1 pm – 3:00 pm	222	Mycoplasma	
1 pm – 4 pm	224	Physiology, Endocrinology and Reproduction II	
1 pm – 4:45 pm	225	Metabolism and Nutrition	Production, Dietary Manipulation and Manufacturing
3:15 pm – 5 pm	222	Clostridium	
3:15 pm – 4:45 pm	223	Avian Influenza II	

# SYMPOSIA AND ORAL SESSIONS

SATURDAY

## Saturday, July 16

**Joint Symposium: A Crystal Ball Look Into the Future of...**

**Chair: Bob Owen/Gerry Huff, Pfizer Animal Health, USDA/  
ARS**

**Rooms 220-221, 228-229**

- 7:30 AM **Introduction**  
M. Lilburn and S. Ritchie, *The Ohio State University* and  
*Canadian Poultry Consultants Ltd.*
- 7:45 AM **Genetics and the future of poultry production.**  
J. McKay, *EW Group, Newbridge, Midlothian, United Kingdom.*
- 8:30 AM **Future considerations in poultry nutrition.**  
S. Leeson, *University of Guelph, Guelph, ON, Canada.*
- 9:15 AM **A crystal ball look into the future of hatcheries and hatching  
eggs in the poultry industry over the next 5 to 10 years.**  
M. Wineland, *North Carolina State University, Raleigh.*
- 10:00 AM **Break**
- 10:15 AM **Vaccination and immune modulation in poultry to mitigate  
infectious diseases and antibiotic use.**  
H. Lillehoj, *APDL, ANRI, USDA, Agricultural Research Service,  
Beltsville, MD.*
- 11:00 AM **Coccidiosis control: Today and in the future.**  
G. Mathis, *Southern Poultry Research Inc., Athens, GA.*
- 11:45 AM **Antibiotic use in farm animal agriculture.**  
W. Flynn, *USDA, FDA, CVM.*

### **Informal Nutrition Symposium:**

### **Exploring Maximum Animal Responses**

**Chair: Mamduh Sifri, Archer Daniels Midland Alliance Nutrition  
Room 222-227**

- 1:00 PM **Welcome and introductions to exploring maximum animal  
responses.**  
M. Sifri, *Archer Daniels Midland Alliance Nutrition, Quincy, IL.*

- 1:10 PM **Biological limits to productivity.**  
S. Leeson, *University of Guelph, ON, Canada.*
- 1:45 PM **Optimizing broiler performance using different Amino Acid Density Diets: What are the Limits?**  
S. Vieira and R. Angel, *UFRRGS, Porto Alegre, Brazil,* and *University of Maryland, College Park.*
- 2:30 PM **Poultry response to high levels of dietary fiber sources varying in physical and chemical characteristics.**  
G. Mateos, *UPM, Spain.*
- 3:10 PM **Break**
- 3:20 PM **Nutritional limits to responses during the poultry embryonic development.**  
Z. Uni, *Hebrew University of Jerusalem, Rehovot, Israel.*
- 4:00 PM **Maximum immunity effectors: Mechanisms and animal performance limitations.**  
R. Selvaraj, *The Ohio State University, Wooster.*
- 4:40 PM **Review and discussion.**  
W. Saylor, B. D. Humphrey, and D. Korver; *University of Delaware, Cargill Inc., and University of Alberta.*

## Sunday, July 17

### Pathology

Chair: **Lisa R. Bielke, University of Arkansas**  
**Room 222**

- 8:00 AM 1 **A novel approach in developing in vivo experimental model to discriminate antigenic variations in infectious bursal disease viruses.**  
V. Durairaj\*, H. S. Sellers, and E. Mundt, *University of Georgia, Athens.*
- 8:15 AM 2 **Comparison of a rapid immuno-migration based commercial kit and real time PCR for detection of avian influenza viruses in hunter-killed ducks.**  
T. V. Dormitorio\*, L.J. Donahue, and J. J. Giambrone, *Auburn University, Auburn, AL.*

- 8:30 AM 3 **High-throughput proteomic analysis in chicken lung with avian influenza virus infection by mass spectrometry.**  
Y. Wang\*<sup>1</sup>, Y. Shi<sup>1</sup>, Y. Song<sup>2</sup>, Y. Zhang<sup>2</sup>, J. Yuan<sup>2</sup>, S. Y. Dai<sup>2</sup>, V. Brahmakshatriya<sup>3</sup>, B. Lupiani<sup>3</sup>, S. M. Reddy<sup>3</sup>, S. J. Lamont<sup>4</sup>, and H. Zhou<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, Texas A & M University, College Station*, <sup>2</sup>*Department of Plant Pathology and Microbiology, Texas A&M University, College Station*, <sup>3</sup>*Department of Veterinary Pathobiology, Texas A&M University, College Station*, <sup>4</sup>*Department of Animal Science, Iowa State University, Ames.*
- 8:45 AM 4 **The importance of thrombocytes for the pathogenesis of H5N1 avian influenza.**  
K. A. Schat\*<sup>1</sup>, J. Bingham<sup>2</sup>, J. Buttler<sup>2</sup>, L.-M. Chen<sup>3</sup>, S. Lowther<sup>2</sup>, T. Crowley<sup>2</sup>, R. J. Moore<sup>2</sup>, R. Donis<sup>3</sup>, and J. W. Lowenthal<sup>2</sup>, <sup>1</sup>*Cornell University, Ithaca, NY*, <sup>2</sup>*CSIRO, Livestock Industries, Australian Animal Health Laboratory, Geelong, Australia*, <sup>3</sup>*Influenza Branch, Centers for Disease Control and Prevention, Atlanta, GA.*
- 9:00 AM 5 **Fecal shedding and internal organ colonization following exposure of laying hens to different oral doses of *Salmonella* Enteritidis.**  
R. K. Gast\*, R. Guraya, J. Guard, and P. S. Holt, *Egg Safety and Quality Research Unit, USDA Agricultural Research Service, Athens, GA.*
- 9:15 AM 6 **Effect of live attenuated F-strain derived *Mycoplasma gallisepticum* vaccine dosages on in vivo *M. gallisepticum* populations in layers.**  
R. Jacob\*<sup>1</sup>, E. D. Peebles<sup>1</sup>, S. A. Leigh<sup>2</sup>, S. L. Branton<sup>2</sup>, and J. D. Evans<sup>2</sup>, <sup>1</sup>*Mississippi State University, Mississippi State, MS*, <sup>2</sup>*USDA/ARS Poultry Research Unit, Mississippi State, MS.*
- 9:30 AM 7 ***Bacillus licheniformis* significantly improves broiler production parameters under sub-clinical necrotic enteritis conditions when added to a standard diet containing virginiamycin.**  
G. F. Mathis\*<sup>1</sup>, B. S. Lumpkins<sup>1</sup>, I. Knap<sup>2</sup>, and A. Kehlet<sup>2</sup>, <sup>1</sup>*Southern Poultry Research Inc., Athens, GA*, <sup>2</sup>*Chr. Hansen, Hørsholm, Denmark.*
- 9:45 AM **Break**
- 10:15 AM 8 **Molecular characterization of histomoniasis.**  
B. Lynn, L. Lollis, L. R. McDougald, and R. B. Beckstead\*, *University of Georgia, Athens.*

- 10:30 AM 9 **Development of deoxynivalenol-induced morphological changes in relation to broiler performance during chronic exposure to the toxin.**  
A. W. Yunus\*<sup>1</sup>, M. Z. Khan<sup>2</sup>, H. Zaneb<sup>3</sup>, H. Rehman<sup>3</sup>, B. K. Anna<sup>4</sup>, K. Robert<sup>4</sup>, K. Ghareeb<sup>1</sup>, A. A. M. Abd-El-Fattah<sup>1</sup>, M. Twaruzek<sup>4</sup>, G. Jan<sup>4</sup>, and J. Böhm<sup>1</sup>, <sup>1</sup>*University of Veterinary Medicine Vienna, Vienna, Austria*, <sup>2</sup>*University of Agriculture, Faisalabad, Punjab, Pakistan*, <sup>3</sup>*University of Veterinary and Animal Sciences, Lahore, Punjab, Pakistan*, <sup>4</sup>*Kazimierza Wielkiego University, Bydgoszcz, Poland*.
- 10:45 AM 10 **Impact of different levels of silver-nanoparticles (Ag-NPs) added to the diet on performance, oxidative enzymes, and blood parameters in broiler chicks.**  
F. Ahmadi\* and F. Rahimi, *Islamic Azad University, Sanandaj Branch, Kurdistan, Iran*.
- 11:00 AM 11 **Genetic characterization of a vaccine strain of Fowlpox virus.**  
D. Tripathy\*, B. Fadl-Alla, and F. Robles, *University of Illinois*.

## Genetics

### Breeding and Genetics

Chair: **Nicholas Anthony, University of Arkansas**  
**Room 223**

- 8:00 AM 12 **In vivo estimation of breast muscle depth in the turkey (*Meleagris gallopavo*) using ultrasound technology and its correlation to breast meat yield.**  
L. A. Case\*<sup>1,2</sup>, B. J. Wood<sup>2,1</sup>, and S. P. Miller<sup>1</sup>, <sup>1</sup>*University of Guelph, Guelph, Ontario, Canada*, <sup>2</sup>*Hybrid Turkeys, Kitchener, Ontario, Canada*.
- 8:15 AM 13 **Genetic factors contributing to fat deposition in chicken.**  
M. K. Nassar\* and G. A. Brockmann, *Humboldt-Universität zu Berlin, Germany*.
- 8:30 AM 14 **Validation of microsatellites linked to a candidate gene, as markers for ascites and economically important traits in broilers.**  
S. Krishnamoorthy\*, R. F. Wideman, D. D. Rhoads, G. F. Erf, and N. B. Anthony, *University of Arkansas, Fayetteville*.

- 8:45 AM 15 **Novel use of an in vivo reagent to transfect germ line stem cells in chicken.**  
B. J. Jordan\*<sup>1</sup>, R. B. Beckstead<sup>1</sup>, and M. Stark<sup>2</sup>, <sup>1</sup>University of Georgia, Athens, <sup>2</sup>Brigham Young University.
- 9:00 AM 16 **Gene expression profiles of ceca in different broiler lines infected with wild-type and mutant *Campylobacter jejuni*.**  
A. Nazmi\*<sup>1</sup>, J. Zhang<sup>1</sup>, X. Li<sup>1</sup>, C. L. Swaggerty<sup>2</sup>, M. H. Kogut<sup>2</sup>, H. Chiang<sup>1</sup>, Y. Wang<sup>1</sup>, K. Genovese<sup>2</sup>, H. He<sup>2</sup>, V. J. Dirita<sup>3</sup>, I. Pevzner<sup>4</sup>, and H. Zhou<sup>1</sup>, <sup>1</sup>Texas A&M University, College Station, <sup>2</sup>United States Department of Agriculture, College Station, Texas, <sup>3</sup>University of Michigan, Ann Arbor, <sup>4</sup>Cobb-Vantress Inc., Siloam Spring, AR.
- 9:15 AM 17 **Blood leukocyte transcriptomics of broiler chicks infected with avian pathogenic *Escherichia coli*.**  
E. Sandford<sup>1</sup>, M. Orr<sup>1</sup>, X. Li<sup>2</sup>, H. Zhou<sup>2</sup>, T. Johnson<sup>3</sup>, S. Kariyawasam<sup>4</sup>, P. Liu<sup>1</sup>, L. K. Nolan<sup>1</sup>, and S. J. Lamont\*<sup>1</sup>, <sup>1</sup>Iowa State University, Ames, <sup>2</sup>Texas A&M University, College Station, <sup>3</sup>University of Minnesota, St. Paul, <sup>4</sup>Pennsylvania State University, University Park.
- 9:30 AM 18 **Genetic characterization of Red junglefowl (*Gallus gallus*) in India.**  
M. Thakur\*<sup>1,4</sup>, M. Fernandes<sup>1</sup>, R. Kalsi<sup>2</sup>, R. Kaul<sup>3</sup>, and S. Sambandham<sup>1</sup>, <sup>1</sup>Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand, India, <sup>2</sup>Mukandlal National College, Yamuna Nagar, Haryana, India, <sup>3</sup>Wildlife Trust of India, Sector-Noida, India, <sup>4</sup>Kurukshetra University, Kurukshetra, Haryana, India.
- 9:45 AM **Break**
- 10:15 AM 19 **Interspecies heterologous chicken microsatellites with their wide spectrum of applicability in different bird taxon.**  
M. Thakur\*<sup>1,2</sup>, R. Javed<sup>2,3</sup>, and S. Sambandham<sup>1</sup>, <sup>1</sup>Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand, India, <sup>2</sup>Kurukshetra University, Kurukshetra, Haryana, India, <sup>3</sup>National Dairy Research Institute, Karnal, Haryana, India.
- 10:30 AM 20 **Study of phylogenetic relationship of three Indian chicken populations based on mitochondrial D-loop region.**  
R. Javed\*<sup>1,2</sup>, B. Mishra<sup>3</sup>, M. S. Tantia<sup>1</sup>, and R. K. Vijh<sup>1</sup>, <sup>1</sup>National Bureau of Animal Genetic Resources, Karnal, Haryana, India, <sup>2</sup>Kurukshetra University, Kurukshetra, Haryana, India, <sup>3</sup>Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India.

- 10:45 AM 21 **Genome screening of native Egyptian chickens selected for increased body weights using microsatellite markers.**  
E. A. El-Gendy<sup>1</sup>, E. M. El-Komy\*<sup>2</sup>, A. A. El-Far<sup>1</sup>, and A. A. El-Gamry<sup>2</sup>, <sup>1</sup>*Department of Animal Production, Faculty of Agriculture, Cairo University, Giza, Egypt*, <sup>2</sup>*Department of Animal Production, National Research Center, Giza, Egypt.*
- 11:00 AM 22 **An approach to marker-assisted selection for increased body weights in local chickens in Egypt.**  
E. A. El-Gendy and M. A. Helal\*, *Department of Animal Production, Faculty of Agriculture, Cairo University, Giza, Egypt.*
- 11:15 AM 23 **Productive performance and immunocompetence parameters of naked necks and normally feathered chicken genotypes issued from different maternal lines.**  
A. Galal\* and M. Mahrous, *Poultry Production Dept., Faculty of Agriculture, Ain Shams University, Cairo, Egypt.*
- 11:30 AM 24 **Eggshell ultrastructure of naked neck, frizzle and normally feathered genotype chickens.**  
M. Mahrous\* and A. Galal, *Poultry Production Dept., Faculty of Agric., Ain Shams University, Cairo, Egypt.*

## Physiology, Endocrinology, and Reproduction I

### Chair: Wallace Berry, Auburn University

### Room 224

- 8:00 AM 25 **A comparative study on lipid profile in Egyptian local breed Fayoumi and commercial hybrid ISA-Brown.**  
A. Abbas\*, A.-R. Atta, and M. Sabry, *Cairo University, Giza, Cairo, Egypt.*
- 8:15 AM 26 **Effects of in ovo injection of 25-hydroxycholecalciferol on post-hatch broiler performance.**  
A. Bello\*, W. Zhai, S. K. Womack, and E. D. Peebles, *Mississippi State University, Mississippi State, MS.*
- 8:30 AM 27 **Sequencing and expression of trefoil factor 2 cDNA in chicken.**  
Z. Jiang\*, A. C. Lossie, and T. J. Applegate, *Purdue University, West Lafayette IN.*
- 8:45 AM 28 **Cell bioenergetics in early and late passage chicken embryo fibroblasts (CEF) and immortalized CEF (DF-1) cells in response to 4-hydroxynonenal-induced oxidative stress.**  
K. Lassiter\*, J. Y. Lee, A. Piekarski, B.-W. Kong, B. M. Hargis, and W. G. Bottje, *Dept. of Poultry Science, Center of Excellence for Poultry Science, University of Arkansas, Fayetteville.*

- 9:00 AM 29 **Molecular cloning and characterization of chicken serotonin receptor subtypes 2a and 2c.**  
M. T. Wong\*<sup>1</sup>, A. H. Y. Kwok<sup>1</sup>, J. C. W. Ho<sup>1</sup>, Y. Wang<sup>2</sup>, and F. C. Leung<sup>1</sup>, <sup>1</sup>*The University of Hong Kong, Hong Kong, PR China*, <sup>2</sup>*Sichuan University, Chengdu, PR China*.
- 9:15 AM 30 **Effects of turning frequency during higher incubation temperature on broiler embryonic development.**  
Y. M. Lin\*<sup>1</sup>, J. Brake<sup>1</sup>, S. Yahav<sup>2</sup>, and O. Elibol<sup>3</sup>, <sup>1</sup>*North Carolina State University, Dept. of Poultry Science, Raleigh*, <sup>2</sup>*Institute of Animal Science, ARO, The Volcani Center, Bet Dagan, Israel*, <sup>3</sup>*Department of Animal Science, Faculty of Agriculture, University of Ankara, Ankara, Turkey*.
- 9:30 AM 31 **Baseline hematology and serum biochemistry values for farmed emus (*Dromaius novaehollandiae*).**  
D. G. Menon\*<sup>1</sup>, D. C. Bennett<sup>1</sup>, A. L. Schaefer<sup>2</sup>, and K. M. Cheng<sup>1</sup>, <sup>1</sup>*University of British Columbia, Vancouver, British Columbia, Canada*, <sup>2</sup>*Lacombe Research Centre, Agriculture and AgriFood Canada, Alberta, Canada*.
- 9:45 AM **Break**
- 10:15 AM 32 **Elevated testosterone stimulates female birds to produce more sons.**  
S. E. Pinson\*, J. L. Wilson, and K. J. Navara, *University of Georgia, Athens*.
- 10:30 AM 33 **Validation of a polyclonal antibody against chicken arginine vasotocin receptor (VT4R) and distribution of VT4R in the brain of sexually mature chickens.**  
R. Selvam\*<sup>1</sup>, A. Jurkevich<sup>2</sup>, Y. Du<sup>1</sup>, M. Mikhailova<sup>3</sup>, L. E. Cornett<sup>3</sup>, and W. J. Kuenzel<sup>1</sup>, <sup>1</sup>*University of Arkansas, Fayetteville*, <sup>2</sup>*University of Missouri, Columbia*, <sup>3</sup>*University of Arkansas for Medical Sciences, Little Rock*.
- 10:45 AM 34 **Use of differential detergent fractionation methodology in the detailed proteomic analysis of pipping muscle tissue.**  
A. O. Sokale\*, E. D. Peebles, R. Pulikanti, W. Zhai, S. Burgess, and T. Pechan, *Mississippi State University, Mississippi State, MS*.
- 11:00 AM 35 **Use of FOS immunohistochemistry for morphological identification of neuronal activation by acute and chronic stress in broilers.**  
B. Tessaro\*, S. W. Kang, and W. J. Kuenzel, *University of Arkansas, Fayetteville*.

- 11:15 AM 36 **Differential expression of arginine vasotocin and corticotrophin-releasing hormone receptor subtypes by acute and repetitive restraint stress in the anterior pituitary of male broilers.**  
S. W. Kang\*, B. Tessaro, G. Nagarajan, and W. J. Kuenzel,  
*University of Arkansas, Fayetteville.*
- 11:30 AM 37 **Enhancement of the semen quality of the fowl by 655-nm diode laser irradiation.**  
E. A. El-Gendy<sup>1</sup>, M. M. A. Mohamed<sup>2</sup>, M. M. Abdel-Fattah\*<sup>2</sup>,  
and M. S. Salama<sup>3</sup>, <sup>1</sup>*Department of Animal Production, Faculty of Agriculture, Cairo University, Giza, Egypt,* <sup>2</sup>*Department of Laser Applications in Metrology, Photochemistry and Agriculture, National Institute of Laser Enhanced Sciences, Cairo University, Giza, Egypt,* <sup>3</sup>*Department of Entomology, Faculty of Sciences, Ain Shams University, Cairo, Egypt.*
- 11:45 AM 38 **The use of peGFP *E. coli* to establish that yolk sac infection occurs via the broiler chick navel.**  
A. Ulmer-Franco\*, L. M. McMullen, and G. M. Fassenko,  
*Department of Agricultural, Food and Nutritional Science, Poultry Research Centre, University of Alberta, Edmonton, AB, Canada.*

**Metabolism and Nutrition: Probiotic and Prebiotic**  
**Chair: Audrey McElroy, Virginia Tech**  
**Room 225**

- 8:00 AM 39 **The effect of canthaxanthin and hen age on chick innate immunity.**  
M. L. Johnson\*, J. L. Saunders-Blades, and D. R. Korver,  
*University of Alberta, Edmonton, AB Canada.*
- 8:15 AM 40 **Effects of feeding functional oils on performance and jejunum morphology in turkey poults.**  
R. D. Malheiros\*<sup>1</sup>, P. R. Ferket<sup>1</sup>, J. L. Grimes<sup>1</sup>, V. M. B. Moraes<sup>2</sup>, I. B. Barasch<sup>1</sup>, and J. Torrent<sup>3</sup>, <sup>1</sup>*North Carolina State University, Raleigh,* <sup>2</sup>*Sao Paulo State University, Jaboticabal, Brazil,* <sup>3</sup>*Oligo Basics, Wilmington, DE.*
- 8:30 AM 41 **Feeding plant extract to chickens reared on previously used litter: Effects on growth performance, metabolizable energy and nutrient digestibility.**  
V. Pirgozliev\*<sup>1</sup> and D. Bravo<sup>2</sup>, <sup>1</sup>*SAC, Ayr, Scotland, UK,* <sup>2</sup>*Pancosma S.A., Geneva, Switzerland.*

- 8:45 AM 42 **The effects of whole or large particle grains, Grobiotic-P, and lactose on *Eimeria acervulina* infection, growth performance, nutrient digestibility, and microbial populations in young chicks.**  
C. M. Jacobs\*<sup>1</sup>, E. Jimenez-Moreno<sup>2</sup>, M. C. Jenkins<sup>3</sup>, P. L. Utterback<sup>1</sup>, and C. M. Parsons<sup>1</sup>, <sup>1</sup>*University of Illinois, Urbana*, <sup>2</sup>*Universidad Politecnica de Madrid, Spain*, <sup>3</sup>*USDA, Beltsville, MD*.
- 9:00 AM 43 **Water plantain (*Alisma canaliculatum*) probiotics as an alternative feed additive for broiler.**  
M. E. Hossain\*<sup>1</sup>, S. Y. Ko<sup>1</sup>, G. M. Kim<sup>1</sup>, J. D. Firman<sup>2</sup>, and C. J. Yang<sup>1</sup>, <sup>1</sup>*Department of Animal Science and Technology, Suncheon National University, Suncheon, Jeonnam, Korea*, <sup>2</sup>*Department of Animal Sciences, University of Missouri, Columbia*.
- 9:15 AM 44 **Effect of *Bacillus subtilis* C-3102 on morphological characteristics and microbial status of 14-d-old chicks in conventional and germ-free environments.**  
T. Hamaoka\*<sup>1</sup>, N. Otomo<sup>1</sup>, B. Y. Lee<sup>1</sup>, Y. Tadano<sup>2</sup>, T. Marubashi<sup>2</sup>, J. Marshall<sup>3</sup>, and A. Van Kessel<sup>3</sup>, <sup>1</sup>*Calpis U.S.A. Inc., Mt. Prospect, IL*, <sup>2</sup>*Calpis Co. Ltd., Tokyo, Japan*, <sup>3</sup>*University of Saskatchewan, Saskatoon, Saskatchewan, Canada*.
- 9:30 AM 45 **Evaluation of Tasco-supplemented broiler diets as a candidate prebiotic.**  
M. Arata\*<sup>1</sup>, D. Anderson<sup>1</sup>, B. Rathgeber<sup>1</sup>, and F. Evans<sup>2</sup>, <sup>1</sup>*Nova Scotia Agricultural College, Truro, NS, Canada*, <sup>2</sup>*Acadian Seaplants Ltd., Dartmouth, NS, Canada*.
- 9:45 AM **Break**
- 10:15 AM 46 **Improving the production economics of broiler production by using *Bacillus* based growth promoter either on top of diet or by use of matrix value.**  
I. Knap, A. B. Kehlet\*, and A. M. Michelsen, *Chr. Hansen, Hørsholm, Denmark*.
- 10:30 AM 47 **Effect of feeding diets containing a probiotic or antibiotic on broiler performance and litter water-soluble phosphorus.**  
A. M. Amerah\*<sup>1</sup>, C. Jansen van Rensburg<sup>2</sup>, and P. W. Plumstead<sup>1</sup>, <sup>1</sup>*Danisco Animal Nutrition, Marlborough, UK*, <sup>2</sup>*University of Pretoria, South Africa*.
- 10:45 AM 48 **Potential of multispecies probiotic to reduce Necrotic enteritis and Gangrenous dermatitis in broilers.**  
A. Jordan\*<sup>1</sup>, M. Mohnl<sup>2</sup>, and G. Schatzmayr<sup>3</sup>, <sup>1</sup>*Biomim USA, San Antonio, TX*, <sup>2</sup>*Biomim Holding GmbH, Herzogenburg, Austria*, <sup>3</sup>*Biomim Research Center, Tulln, Austria*.

- 11:00 AM 49 **Effect of conditioning temperature and probiotic supplementation on growth performance of broilers fed corn/soy-based diets.**  
A. Amerah<sup>1</sup>, P. Medel\*<sup>2</sup>, C. Millán<sup>2</sup>, and M. I. Gracia<sup>2</sup>, <sup>1</sup>*Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom*, <sup>2</sup>*Imasde Agroalimentaria, S.L., Madrid, Spain*.
- 11:15 AM 50 **Performance of layers fed Original XPC for 24 weeks.**  
K. E. Anderson<sup>1</sup>, J. N. Broomhead\*<sup>2</sup>, and W. Michael<sup>2</sup>, <sup>1</sup>*North Carolina State University, Raleigh*, <sup>2</sup>*Diamond V, Cedar Rapids, IA*.
- 11:30 AM 51 **Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of oregano essential oil for common livestock and poultry pathogens.**  
M. A. Mellencamp\*, J. Koppien-Fox, R. Lamb, and R. Dvorak, *Ralco Animal Health, Marshall, MN*.
- 11:45 AM 52 **Carcass quality of broiler chicks under high stocking density fed  $\alpha$ -tocopherol supplemented diet.**  
O. A. Adebisi\*<sup>1</sup>, M. D. Olumide<sup>1</sup>, O. A. Ogunwole<sup>1</sup>, and O. A. Adu<sup>2</sup>, <sup>1</sup>*University of Ibadan, Ibadan, Ibadan, Oyo State, Nigeria*, <sup>2</sup>*Federal University of Technology, Akure, Akure, Ondo State, Nigeria*.

## **Metabolism and Nutrition: Enzymes**

### **Chair: Carrie Walk, AB Vista**

### **Room 226**

- 8:00 AM 53 **Influence of NSP enzyme (Rovabio) on energy sparing and growth performance of broilers fed corn-based diets containing corn distillers dried grain with solubles.**  
B. S. Lumpkins\*<sup>1</sup>, G. F. Mathis<sup>1</sup>, S. K. Rao<sup>2</sup>, and D. R. McIntyre<sup>3</sup>, <sup>1</sup>*Southern Poultry Research Inc., Athens, GA*, <sup>2</sup>*Foster Farms, Delhi, CA*, <sup>3</sup>*Adisseo, Alpharetta, GA*.
- 8:15 AM 54 **Effects of low oligosaccharide soybean meal and  $\alpha$ -galactosidase supplementation on growth and meat yield responses of broilers during a 40-day production period.**  
K. R. Perryman\* and W. A. Dozier, *Auburn University, Auburn, AL*.
- 8:30 AM 55 **Evaluation of feeding distillers dried grains with solubles and the effects of dietary enzymes on broiler performance and carcass characteristics.**  
B. Jung\*<sup>1</sup>, M. Hoerler<sup>1</sup>, A. B. Batal<sup>1</sup>, and R. Mitchell<sup>2</sup>, <sup>1</sup>*University of Georgia, Athens*, <sup>2</sup>*Perdue Farms Inc., Salisbury, MD*.

- 8:45 AM 56 **Influence of exogenous celluloses, hemicelluloses, protease and  $\alpha$ -amylase enzymes preparation at ensiling (ZADO-complex) in the diets on broiler performance and slaughter traits from 1 to 42 days of age.**  
H. M. Safaa\*, *Animal Production Department, Faculty of Agriculture, Cairo University, Giza, Egypt.*
- 9:00 AM 57 **Effect of dietary protein and protease supplementation on performance and gut health of broiler chicks.**  
F. Yan\*, J. Dibner, C. D. Knight, M. Vazquez-Anon, N. Odetallah, and S. Carter, *Novus International Inc., St. Charles, MO.*
- 9:15 AM 58 **New model for examining the energy release of exogenous enzymes in laying hen rations.**  
G. R. Murugesan\* and M. E. Persia, *Iowa State University, Ames.*
- 9:30 AM 59 **Effect of feeding several feed enzymes activities combinations and feed formulation matrix values on broiler growth performance.**  
E. Avila-Gonzalez<sup>1</sup>, J. Arce-Menocal<sup>2</sup>, S. Chárraga<sup>3</sup>, E. Rosales<sup>3</sup>, and S. R. Fernández\*<sup>3</sup>, <sup>1</sup>*Universidad Nacional Autónoma de México, Mexico City, México,* <sup>2</sup>*Universidad Michoacana de San Nicolás de Hidalgo, Morelia, Mich. México,* <sup>3</sup>*DSM Nutritional Products México S.A. de C.V., Guadalajara, Jal, México.*
- 9:45 AM **Break**
- 10:15 AM 60 **Effect of xylanase on performance of starter broilers fed diets containing maize harvested in different regions.**  
H. V. Masey O'Neill\*<sup>1</sup> and N. Liu<sup>2</sup>, <sup>1</sup>*AB Vista Feed Ingredients, Marlborough, Wiltshire, UK,* <sup>2</sup>*Henan University of Science and Technology, Luoyang, China.*
- 10:30 AM 61 **Interaction of heat-resistant  $\beta$ -mannanase feed enzymes with broiler chickens infected with Eimerian parasites.**  
D. M. Anderson\*<sup>1</sup>, H.-Y. Hsiao<sup>1</sup>, K. Schuster<sup>1</sup>, T. Holder<sup>3</sup>, J. Engel<sup>1</sup>, S. Fitz-Coy<sup>2</sup>, and L. Liu<sup>1</sup>, <sup>1</sup>*ChemGen Corp., Gaithersburg, MD,* <sup>2</sup>*Intervet/Schering Plough, Millsboro, DE,* <sup>3</sup>*Allen Family Foods, Seaford, DE.*
- 10:45 AM 62 **Energy contribution of digestible starch, fat, and protein in response to combinations of exogenous xylanase, amylase, and protease in corn-based broiler diets.**  
L. F. Romero\*<sup>1</sup>, P. W. Plumstead<sup>1</sup>, and V. Ravindran<sup>2</sup>, <sup>1</sup>*Danisco Animal Nutrition, Marlborough, UK,* <sup>2</sup>*Massey University, Palmerston North, New Zealand.*

- 11:00 AM 63 **Evaluating the efficacy of enzymes under varying levels of dietary fat inclusion in broiler diets.**  
J. D. Hamburg\* and A. B. Batal, *University of Georgia, Athens.*
- 11:15 AM 64 **Effect of a protease on the digestibility of amino acids and the energy value of canola meal in starter broilers.**  
S. Gómez\*<sup>1,2</sup>, M. L. Angeles<sup>1</sup>, E. Ramírez<sup>1,2</sup>, and S. Fernández<sup>3</sup>,  
<sup>1</sup>CENIDFyMA-INIFAP, Ajuchitlán, Querétaro, México., <sup>2</sup>FESC-UNAM, Ajuchitlán, Querétaro, México., <sup>3</sup>DSM Nutritional Products México SA de CV, El Salto, Jalisco, México.
- 11:30 AM 65 **Effect of a protease on the digestibility of amino acids and the energy value of distillers dried grains with solubles in starter broilers.**  
S. Gómez\*<sup>1,2</sup>, M. L. Angeles<sup>1</sup>, E. Ramírez<sup>1,2</sup>, and S. Fernández<sup>3</sup>,  
<sup>1</sup>CENIDFyMA-INIFAP, Ajuchitlán, Querétaro, México., <sup>2</sup>FESC-UNAM, Ajuchitlán, Querétaro, México., <sup>3</sup>DSM Nutritional Products México SA de CV, El Salto, Jalisco, México.

## Food Safety I

Chair: **Dan Donoghue, University of Arkansas**

**Room 227**

- 8:00 AM 66 **Effect of pH of alkaline salts of fatty acids on the inhibition of bacteria associated with poultry processing.**  
A. Hinton\* and K. D. Ingram, *Russell Research Center, Athens, GA.*
- 8:15 AM 67 **Microbiological quality of water-immersion and air-chilled broilers.**  
K. Janardhanan\*, L. Zhang, J. Y. Jeong, E. T. Ryser, and I. Kang, *Michigan State University, East Lansing.*
- 8:30 AM 68 **Effects of modified atmospheric packaging (MAP) on safety and quality of breast fillets and drumsticks.**  
T. Yalamanchili\*<sup>1</sup>, V. K. Sunkara<sup>2</sup>, L. D. Thmopson<sup>2</sup>, and C. Z. Alvarado<sup>1</sup>, <sup>1</sup>Texas A&M University, College Station, <sup>2</sup>Texas Tech University, Lubbock.
- 8:45 AM 69 **Characterization of a commercial poultry chiller.**  
J. C. Butler\* and P. A. Curtis, *Auburn University, Auburn, AL.*
- 9:00 AM 70 **The microbial differences between male vs. female broiler litter environments.**  
D. L. Everett\*, C. D. McDaniel, and A. S. Kiess, *Mississippi State University, Mississippi State, MS.*

- 9:15 AM 71 **Caprylic acid reduces *Salmonella* Enteritidis invasion of avian abdominal epithelial cells in vitro and down-regulates virulence gene expression.**  
A. Kollanoor-Johny\*<sup>1</sup>, M. J. Darre<sup>1</sup>, D. J. Donoghue<sup>2</sup>, A. M. Donoghue<sup>3</sup>, and K. Venkitanarayanan<sup>1</sup>, <sup>1</sup>University of Connecticut, Storrs, <sup>2</sup>University of Arkansas, Fayetteville, <sup>3</sup>USDA-ARS, Fayetteville, AR.
- 9:30 AM 72 **Effect of food-grade carvacrol on cecal *Salmonella* Enteritidis colonization and cloacal shedding in 19-day-old commercial broiler chicks.**  
A. Kollanoor-Johny\*<sup>1</sup>, T. E. Mattson<sup>1</sup>, S. A. Baskaran<sup>1</sup>, M. A. R. Amalaradjou<sup>1</sup>, M. J. Darre<sup>1</sup>, M. I. Khan<sup>1</sup>, D. J. Donoghue<sup>2</sup>, A. M. Donoghue<sup>3</sup>, and K. Venkitanarayanan<sup>1</sup>, <sup>1</sup>University of Connecticut, Storrs, <sup>2</sup>University of Arkansas, Fayetteville, <sup>3</sup>USDA-ARS, Fayetteville, AR.
- 9:45 AM **Break**
- 10:15 AM 73 **Hypothesis: A role for the mouse as an amplifier of *Salmonella enterica* on-farm.**  
J. Guard\*<sup>1</sup>, R. Sanchez-Ingunza<sup>1</sup>, B. Ahmer<sup>2</sup>, M. McClelland<sup>3</sup>, and D. Henzler<sup>4</sup>, <sup>1</sup>United States Department of Agriculture, Athens, GA, <sup>2</sup>The Ohio State University, Columbus, <sup>3</sup>The Vaccine Research Institute of San Diego, San Diego, CA, <sup>4</sup>Private practice, Fairmont, WV.
- 10:30 AM 74 **Impact of litter *Salmonella* on the recovered *Salmonella* from broiler crop and ceca following feed withdrawal.**  
R. J. Buhr\*<sup>1</sup>, A. Hinton, J. A. Cason, N. A. Cox, D. V. Bourassa, and L. L. Rigsby, *USDA-ARS Russell Research Center, Athens, GA.*
- 10:45 AM 75 **Prevalence of pathogens associated with eggs and the environment of conventional cage and free range egg production.**  
D. R. Jones\*<sup>1</sup>, K. E. Anderson<sup>2</sup>, and J. Y. Guard<sup>1</sup>, <sup>1</sup>USDA Agricultural Research Service, Egg Safety and Quality Research Unit, Athens, GA, <sup>2</sup>Department of Poultry Science, North Carolina State University, Raleigh.
- 11:00 AM 76 **Nicarbazin residues in commercially raised broilers.**  
K. Bafundo\*<sup>1</sup>, P. Stayer<sup>2</sup>, A. MacDonald<sup>3</sup>, and R. Lee<sup>1</sup>, <sup>1</sup>Phibro Animal Health Corp., Ridgefield Park, NJ, <sup>2</sup>Sanderson Farms Inc., Laurel, MS, <sup>3</sup>Pharma Science Inc., North Caldwell, NJ.

## Case Reports I

Chair: **Joel Cline, Alabama State Diagnostic Lab  
Rooms 220-229**

- 8:00 AM 77 **The toxicity effects of feeding 1-alpha hydroxy D<sub>3</sub> to broiler breeding hens.**  
B. Rings\*, F. Hoerr, S. Gustin, and J. Halley, *Cobb-Vantress*.
- 8:15 AM 78 **A natural outbreak of toxoplasmosis in a backyard flock of guinea fowl in Mississippi.**  
K. Holloway Jones\*, F. D. Wilson, S. D. Fitzgerald, and M. Kiupel, *Poultry Research and Diagnostic Laboratory, College of Veterinary Medicine, Mississippi State University, Pearl*.
- 8:30 AM 79 **Increased mortality and lameness in male broiler breeders prior to peak production associated with *Staphylococcus aureus*.**  
M. P. Martin\*, A. McRee, K. M. Robbins, L. B. Borst, K. L. Anderson, P. Jay, and H. J. Barnes, *North Carolina State University, College of Veterinary Medicine, Raleigh*.
- 8:45 AM 80 **Diagnosis: MG/MS in a backyard flock. Is control possible?**  
P. S. Wakenell\* and D. Wilson, *Purdue University Animal Disease Diagnostic Laboratory*.
- 9:00 AM 81 **Necrotizing hepatitis in pigeons due to *Toxoplasma gondii*.**  
R. Fulton\* and M. Kiupel, *Michigan State University*.
- 9:15 AM 82 **A good case for insomnia: Bedbug infestation in broiler breeders.**  
S. A. Hubbard\*, J. Cater, and D. L. Magee, *Mississippi State University Poultry Research & Diagnostic Laboratory*.
- 9:30 AM 83 **Hemorrhagic proventriculitis and ventriculitis in layer pullet chicks.**  
C. G. Senties-Cué\*, J. Kelly, and B. R. Charlton, *California Animal Health and Food Safety Laboratory System, Turlock, CA, School of Veterinary Medicine, University of California, Davis*.

# Symposium: Current Regulatory Status and Use of Antibiotics in the Poultry Industry

Chair: **Brian Fairchild, University of Georgia**  
**Room 228**

- 8:30 AM                    **Discussion of guidance #209 and VFD.**  
*W. Flynn\*, Center for Veterinary Medicine, Food and Drug Administration, Rockville, MD.*
- 8:50 AM            84    **Consumer costs in relation to alternative production systems.**  
*H. Thesmar\*, National Turkey Federation, Washington, DC.*
- 9:10 AM            85    **Used responsibly, roxarsone poses no threat.**  
*P. Twining\*, Paul Twining Associates Inc.*
- 9:30 AM            86    **Benefits of antibiotic use in animal agriculture.**  
*H. M. Cervantes\*, Phibro Animal Health, Watkinsville, GA.*
- 9:55 AM                    **Break**
- 10:15 AM                    **Specifics regarding the strict regulation of antibiotics.**  
*R. Phillips\*, Animal Health Institute, Washington, DC.*
- 10:35 AM            87    **Global interventions on antimicrobial use in animal feeds.**  
*T. R. Shryock\*, Elanco Animal Health, Greenfield, IN.*
- 10:55 AM            88    **The results of Denmark's restriction on antibiotics.**  
*S. R. Clark\*, Pfizer Inc.*
- 11:15 AM            89    **Concerns regarding antibiotics and antibiotic resistant bacteria in the environment.**  
*R. S. Singer\*, University of Minnesota, St. Paul.*

## Case Reports II

Chair: **Scott Gustin, Cobb-Vantress**  
**Rooms 220-229**

- 10:15 AM            90    **Case report: Avian encephalomyelitis in pen-raised Bobwhite Quail.**  
*D. Anderson\*, Georgia Poultry Laboratory Network, Oakwood.*
- 10:30 AM            91    **Infectious coryza in a commercial broiler breeder flock.**  
*G. D. Ritter\*, Mountaire Farms Inc., Millsboro, DE.*

- 10:45 AM 92 **Ulcerative enteritis-like disease associated with *Clostridium sordellii* in quail.**  
H. L. Shivaprasad\*, M. Franca, and R. Crespo, *CAHFS-Tulare, Tulare, CA.*
- 11:00 AM 93 **”Silent” histomoniasis on a brooder farm.**  
M. E. Blakley\*, *Butterball.*
- 11:15 AM 94 **Otitis externa in chickens due to *Staphylococcus hyicus*?**  
R. Fulton\* and J. G. Hunchar, *Michigan State University.*
- 11:30 AM 95 **Management procedures used to control ILT on commercial broiler farms.**  
J. Giambrone\*, S.-C. Ou, and K. S. Macklin, *Auburn University.*
- 11:45 AM 96 **Detailed analysis of 2009-2011 ELISA serological data from the Georgia poultry industry.**  
L. Dufour-Zavala\*, L. Chappell, and B. Glidewell, *Ga Poultry Lab Network.*

## **Environment and Management I**

Chair: **Craig Coufal, Texas A&M University**

**Room 224**

- 1:00 PM 97 **Effect of diatomaceous earth on bone mineralization in free-range organic laying hens.**  
D. C. Bennett\*<sup>1</sup>, Y.-J. Rhee<sup>1</sup>, D. R. Korver<sup>2</sup>, and K. M. Cheng<sup>1</sup>,  
<sup>1</sup>*University of British Columbia, Vancouver, BC, Canada,*  
<sup>2</sup>*University of Alberta, Edmonton, AB, Canada.*
- 1:15 PM 98 **A meta-analysis of the effects of feeder space on broiler breeder performance.**  
J. Brake\* and N. Leksrisompong, *North Carolina State University, Dept. of Poultry Science, Raleigh.*
- 1:30 PM 99 **Evaluation of size variation in commercial turkeys from a single breeder flock. II: Bacterial and viral profile.**  
D. Karunakaran\*, D. V. Rives, J. Benson, G. Siragusa, and J. M. Day, *Danisco Animal Nutrition.*
- 1:45 PM 100 **Broiler breeder composition restriction: 2. Does altering dietary protein and energy to limit muscling affect egg production traits?**  
E. T. Mba\*, A. Pishnamazi, T. G. Moraes, M. J. Zuidhof, and R. A. Renema, *University of Alberta, Edmonton, AB, Canada.*

- 2:00 PM 101 **Broiler breeder composition restriction: 3. Can carcass traits at the end of lay be used to judge the effectiveness of modifying dietary protein and energy levels during the rearing and breeding phases?**  
R. A. Renema\*, A. Pishnamazi, E. T. Mba, and M. J. Zuidhof, *University of Alberta, Edmonton, AB, Canada.*
- 2:15 PM 102 **Effects of broiler strain and antibiotics on innate immunity.**  
K. Ton\*, J. L. Saunders-Blades, D. R. Korver, and M. J. Zuidhof, *University of Alberta, Edmonton, AB, Canada.*
- 2:30 PM 103 **In vitro selection of aptamers against subtype H7 of avian influenza virus.**  
J. Lum\*, R. Wang, T. Jiang, and Y. Li, *University of Arkansas, Fayetteville.*
- 2:45 PM **Break**
- 3:15 PM 104 **Relative performance in rural Uganda of two breeds of scavenging backyard chickens.**  
J. Sharma\*, H. R. Mwesigye, D. K. N. Semambo, E. Galunkande, D. Musinga, T. Aliro, and S. L. Sharma, *Arizona State University.*
- 3:30 PM 105 **Evaluation of size variation in commercial turkeys from a single breeder flock. Part I.**  
D. Rives\*, *Prestage Farms Inc., Clinton, NC.*
- 3:45 PM 106 **Effects of whole house brooding on broiler performance and footpad dermatitis prevalence.**  
E. O. Oviedo-Rondan\*, M. J. Wineland, M. R. Dalmagro, J. Ruiz, D. Ruiz, D. G. Valencia, and M. P. Serrano, *Department of Poultry Science, North Carolina State University, Raleigh.*
- 4:00 PM 107 **Development of a biosecurity training program for poultry catch crews and drivers.**  
E. Wallner-Pendleton\*, L. Harlow, R. M. Hulet, G. Martin, P. Patterson, and C. Wood, *Animal Diagnostic Laboratory, Pennsylvania State University, University Park.*
- 4:15 PM 108 **Influence of incubation temperature on turkey poult intestinal development and susceptibility to poult enteritis.**  
J. R. Sottosanti\*, J. S. Guy, F. W. Pierson, R. A. Dalloul, and A. P. McElroy, *Department of Animal and Poultry Sciences, Virginia Tech, Blacksburg.*
- 109 **Withdrawn**

- 4:30 PM 110 **Introduction and dissemination of a “new” *Salmonella* serotype throughout a commercial turkey company.**  
R. Lippert\* and D. C. Lauer, *Willmar Poultry Company*.

## **Metabolism and Nutrition: Feed Additives**

**Chair: Brett Lumpkins, Southern Poultry Research Inc.  
Room 225**

- 1:00 PM 111 **The evaluation of Topmax (ractopamine hydrochloride) in tom finishing turkeys administered at 4.6 g/ton at three different age periods: 15–17, 17–19, and 19–21 weeks of age.**  
S. L. Noll<sup>1</sup>, J. D. Trites\*<sup>2</sup>, J. Brannon<sup>1</sup>, and W. Weber<sup>1</sup>,  
<sup>1</sup>*University of Minnesota, St. Paul*, <sup>2</sup>*Elanco Animal Health, Greenfield, IN*.
- 1:15 PM 112 **The evaluation of Topmax (ractopamine HCl) administered at 8.2 g/ton to finishing hen turkeys for the last 14 days prior to slaughter at 17 weeks of age.**  
E. A. Heskett\*<sup>1</sup> and K. K. Krueger<sup>2</sup>, <sup>1</sup>*Elanco, A Division of Eli Lilly and Company, Greenfield, IN*, <sup>2</sup>*Diamond K Research, Marshville, NC*.
- 1:30 PM 113 **Evaluation of the use of various feed additives administered in the withdrawal feed of broiler chickens vaccinated with a commercial coccidiosis vaccine at day of age.**  
E. A. Heskett\*<sup>1</sup> and K. K. Krueger<sup>2</sup>, <sup>1</sup>*Elanco, A Division of Eli Lilly and Company, Greenfield, IN*, <sup>2</sup>*Diamond K Research, Greenfield, IN*.
- 1:45 PM 114 **Changes in the heat stress response of laying hens following antioxidant supplementation.**  
J. N. Felver-Gant\*<sup>1</sup>, S. D. Eicher<sup>2</sup>, and H. W. Cheng<sup>2</sup>, <sup>1</sup>*Purdue University, West Lafayette, IN*, <sup>2</sup>*Livestock Behavior Research Unit USDA-ARS, West Lafayette, IN*.
- 2:00 PM 115 **Live performance and energy uplift of 0.5% Azomite Feed-Grit (versus 0%) were evaluated in broiler feeds in two series with increasing levels of metabolizable energy under disease stresses in floor pens.**  
J. L. McNaughton<sup>1</sup>, D. Fodge<sup>2</sup>, W. W. Emerson<sup>3</sup>, and D. M. Hooge\*<sup>4</sup>, <sup>1</sup>*AHPharma Research Inc., Salisbury, MD*, <sup>2</sup>*DF International Inc., Rockville, MD*, <sup>3</sup>*Azomite Mineral Products Inc., Kansas City, MO*, <sup>4</sup>*Hooge Consulting Service Inc., Eagle Mountain, UT*.

- 2:15 PM 116 **Growth response of broiler chickens to inclusion of hydrolyzed porcine mucosa (Palbio) in diets varying in total lysine content.**  
M. Mohiti-Asli<sup>1</sup>, M. Frikha<sup>1</sup>, C. Jabbour<sup>1</sup>, E. Borda<sup>2</sup>, L. Cámara<sup>1</sup>, and G. G. Mateos<sup>\*1</sup>, <sup>1</sup>*Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain,* <sup>2</sup>*I+D Nutrition and Health Care, Bioibérica S.A., Palafolls, Barcelona, Spain.*
- 2:30 PM 117 **Impact of replacing canola meal with distillery yeast sludge on growth performance, hematology, histopathology and growth performance of broilers.**  
J. I. Sultan\*, I. Haider, A. Javaid, and M. Yaqoob, *University of Agriculture, Faisalabad, Faisalabad, Punjab, Pakistan.*
- 2:45 PM 118 **Real-time antibiotic use in broiler production.**  
T. Cummings\*, *Mississippi State University.*
- 3:00 PM **Break**
- 3:30 PM 119 **Maximizing desired outcomes for therapeutic antimicrobials.**  
H. Cervantes\*, *Phibro Animal Health Corp.*
- 3:45 PM 120 **Justifying longer duration uses of tetracyclines, penicillins and sulfonamides in feeds and water: A summary of US usage and resistance patterns.**  
S. R. Clark\* and J. J. Mathers, *Alpharma LLC, Bridgewater, NJ.*
- 4:00 PM 121 **Analysis of changes in chicken gut microbial communities and metabolic potential in response to growth promoters.**  
T. J. Johnson\*, J. L. Thorsness-Danzeisen, H. Bum Kim, and R. E. Issacson, *University of Minnesota.*
- 4:15 PM 122 **Assessment of egg quality characteristics of laying hen fed raw and enzyme treated cocoa bean shell based diet.**  
M. D. Olumide<sup>\*1</sup>, O. A. Adebisi<sup>1</sup>, O. Abiola-Olagunju<sup>1</sup>, and A. A. Mako<sup>2</sup>, <sup>1</sup>*University of Ibadan, Ibadan, Ibadan, Oyo State, Nigeria,* <sup>2</sup>*Tai Solanrin University of Education, Ijebu Ode, Ogun State, Nigeria.*
- 4:30 PM 123 **Performance, serum biochemistry and hematological characteristics of layers treated feed, differently cocoa bean shell based.**  
A. O. Abkinsoyinu, M. D. Olumde\*, O. A. Adebisi, and A. D. Ologhobo, *University of Ibadan, Ibadan, Ibadan, Oyo State, Nigeria.*

**Metabolism and Nutrition: Phytase and Minerals**  
**Chair: Scott Virden, Buffalo-Warren Company**  
**Room 226**

- 1:00 PM      124      **Effects of temperature, pH, and pepsin on the stability of intrinsic phytase of rye, wheat, and barley.**  
O. Esmaeilipour\*<sup>3,1</sup>, M. M. Van Krimpen<sup>2</sup>, A. W. Jongbloed<sup>2</sup>, L. H. De Jonge<sup>1</sup>, and P. Bikker<sup>2</sup>, <sup>1</sup>*Wageningen University, Wageningen, the Netherlands*, <sup>2</sup>*Wageningen UR, Livestock Research, Lelystad, the Netherlands*, <sup>3</sup>*University of Tehran, Karaj, Iran.*
- 1:15 PM      125      **Effect of NSP-enzymes and phytase combination on growth performance and bone mineralization in turkey fed wheat-corn-based diet.**  
A. Preynat\*<sup>1</sup>, D. McIntyre<sup>2</sup>, G. Uzu<sup>1</sup>, and P. Dalibard<sup>1</sup>, <sup>1</sup>*Adisseo France SAS, Antony, France*, <sup>2</sup>*Adisseo USA Inc., Alpharetta, GA.*
- 1:30 PM      126      **Effects of phytase and xylanase supplementation of diets fed to male broilers on nutrient digestion from 28 to 32 days of age.**  
C. K. Gehring\*<sup>1</sup>, M. R. Bedford<sup>2</sup>, and W. A. Dozier<sup>1</sup>, <sup>1</sup>*Auburn University, Auburn, AL*, <sup>2</sup>*AB Vista Feed Ingredients, Marlborough, UK.*
- 1:45 PM      127      **Phytase affects the optimum calcium:phosphorus ratio in broilers.**  
B. M. Nusairat\*<sup>1</sup>, P. W. Plumstead<sup>2</sup>, P. Kwanyuen<sup>3</sup>, A. B. Leytem<sup>4</sup>, and J. Brake<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, North Carolina State University, Raleigh*, <sup>2</sup>*Danisco Animal Nutrition, Marlborough, UK*, <sup>3</sup>*USDA, Agricultural Research Service, Soybean and Nitrogen Fixation Research Unit, Raleigh, NC*, <sup>4</sup>*USDA, Agricultural Research Service, Northwest Irrigation and Soils Research Laboratory, Kimberly, ID.*
- 2:00 PM      128      **Influence of a highly soluble source of calcium and phytase on performance and bone ash of 21-day-old broiler chickens.**  
C. L. Walk\*<sup>1</sup>, E. K. Addo-Chidie<sup>2</sup>, M. R. Bedford<sup>1</sup>, and O. Adeola<sup>2</sup>, <sup>1</sup>*AB Vista Feed Ingredients, Marlborough, Wiltshire, United Kingdom*, <sup>2</sup>*Purdue University, West Lafayette, IN.*
- 2:15 PM      129      **The effects of feeding high concentrations of cholecalciferol and/or phytase on broiler chicks fed various concentrations of nonphytate phosphorus.**  
J. Green\* and M. E. Persia, *Iowa State University, Ames.*

- 2:30 PM 130 **Effect of phytase supplementation on growth performance, tibia characteristics, and phosphorus excretion in broilers.**  
F. Yan\*, M. Vazquez-Anon, N. Odetallah, and S. Carter, *Novus International Inc., St. Charles, MO.*
- 2:45 PM **Break**
- 3:15 PM 131 **Effect of microbial phytase supplementation on phosphorus utilization, tibia bone-ash and performance in broilers fed corn-cowpea-soybean meal based diets.**  
E. A. Iyayi\*<sup>1</sup> and P. C. Aguihe<sup>2</sup>, <sup>1</sup>*University of Ibadan, Ibadan, Oyo State, Nigeria,* <sup>2</sup>*Federal College of Wildlife and Management, New Busa, Niger State, Nigeria.*
- 3:30 PM 132 **Effects of calcium and phosphorus levels during the finisher phase on Heritage broilers: I. Performance and mineral retention.**  
M. R. Dalmagro\*<sup>1</sup>, E. O. Oviedo-Rondón<sup>1</sup>, P. L. Mentel<sup>1</sup>, A. Mitchell<sup>2</sup>, H. Engster<sup>3</sup>, and R. Mitchell<sup>3</sup>, <sup>1</sup>*North Carolina State University, Raleigh,* <sup>2</sup>*USDA-ARS, Beltsville, MD,* <sup>3</sup>*Perdue Farms Inc., Salisbury, MD.*
- 3:45 PM 133 **The influence of dietary calcium from limestone on broiler performance, bone ash, and crude protein digestibility.**  
C. L. Walk\*<sup>1</sup>, A. P. McElroy<sup>2</sup>, and M. R. Bedford<sup>1</sup>, <sup>1</sup>*AB Vista Feed Ingredients, Marlborough, Wiltshire, United Kingdom,* <sup>2</sup>*Virginia Tech, Blacksburg.*
- 4:00 PM 134 **Productive performance of laying hens fed different Ca and available P levels.**  
E. Avila-Gonzalez<sup>1</sup>, C. Ramírez-Peña<sup>2</sup>, S. Chárraga<sup>3</sup>, E. Rosales<sup>3</sup>, and S. R. Fernández\*<sup>3</sup>, <sup>1</sup>*Universidad Nacional Autónoma de México, Mexico City, Mexico,* <sup>2</sup>*GENA Agropecuaria, Acatic, Jalisco, Mexico,* <sup>3</sup>*DSM Nutritional Products México S.A. de C.V., Guadalajara, Jal, México.*
- 4:15 PM 135 **The dynamics of trace elements (Cu, Zn, Mn and Fe) metabolism in the molted layers supplemented with protein, symbiotic and probiotic.**  
H. Anwar\* and Z. U. Rahman, *Department of Physiology and Pharmacology, University of Agriculture, Faisalabad, Pakistan.*
- 4:30 PM 136 **Low inclusion of a blend of organic trace mineral (Zn, Cu, Fe, and Mn) to broiler chickens diet is able to regulate oxidative stress.**  
H. Echeverry\*, A. Yitbarek, P. Munyaka, M. A. Alizadeh, P. Wang, O. Karmin, J. C. Rodriguez-Lecompte, and G. Camelo-Jaimes, *University of Manitoba.*

- 4:45 PM 137 **Effect of in ovo selenium injection of broiler breeder eggs at 10 days of incubation on tissue selenium concentration and embryo viability.**  
L. M. Macalintal\*, A. H. Cantor, A. J. Pescatore, K. A. Dawson, J. L. Pierce, M. J. Ford, T. Ao, H. D. Gillespie, and A. N. Meredith, *Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*

## **Food Safety Symposium: Awareness of New *Salmonella* Thresholds**

**Chair: Michael Hume, USDA-ARS  
Room 227**

- 1:00 PM 138 **Salmonella Risk Assessment on the Farm and in the Processing Plant.**  
R. H. Bailey\*<sup>1</sup>, R. W. Wills<sup>1</sup>, M. L. Rybolt<sup>2</sup>, V. V. Volkova<sup>3</sup>, J. A. Byrd<sup>4</sup>, K. Dazo-Galarneau<sup>1</sup>, A. K. Daniel<sup>1</sup>, K. L. Hataway<sup>1</sup>, T. P. Doler<sup>1</sup>, S. A. Hubbard<sup>1</sup>, and D. L. Magee<sup>1</sup>, <sup>1</sup>Mississippi State University, Mississippi State, <sup>2</sup>Perdue Farms, Salisbury, MD, <sup>3</sup>Cornell University, Ithaca, NY, <sup>4</sup>Southern Plains Area Research Center, College Station, TX.
- 1:40 PM 139 **Campylobacter risk assessment on the farm and in the processing plant.**  
J. A. Byrd\*<sup>1</sup>, R. H. Bailey<sup>2</sup>, R. W. Wills<sup>2</sup>, M. L. Rybolt<sup>3</sup>, V. V. Volkova<sup>4</sup>, K. L. Hataway<sup>2</sup>, T. P. Doler<sup>2</sup>, S. A. Hubbard<sup>2</sup>, and D. L. Magee<sup>2</sup>, <sup>1</sup>USDA-ARS-Food and Feed Safety Research Unit, College Station, TX, <sup>2</sup>Mississippi State University, Mississippi State, <sup>3</sup>Perdue Farms, Salisbury, MD, <sup>4</sup>Cornell University, Ithaca, NY.
- 2:20 PM 140 **FSIS perspective on the public-health basis for new broiler and turkey carcass *Salmonella* and *Campylobacter* performance standards.**  
D. L. Engeljohn\*, *FSIS, USDA, Washington, DC.*
- 3:00 PM **Break**
- 3:15 PM 141 ***Campylobacter* numbers from the processing lines.**  
J. A. Marcy\*, *University of Arkansas, Fayetteville, AR.*
- 3:55 PM 142 **New and traditional *Salmonella* and *Campylobacter* detection technology and surveillance techniques or, how do we protect the public health and make money for the poultry industry?**  
N. Stern\*, *American Academy of Microbiologists, Athens, GA.*

## Symposium: Incubation and Effects Upon Embryo and Hatchling Performance

Chair: Mike Wineland, North Carolina State University  
Room 228

- 1:00 PM 143 **Egg alterations common to the breeder flock and emerging chick after incubation.**  
E. T. Moran\*, *Auburn University, Auburn, AL.*
- 1:40 PM 144 **The synthesis and storage of glucose in the yolk sac as compared to the liver during chick embryonic development.**  
L. Yadgary\*, A. Cahaner, and Z. Uni, *Hebrew university, Rehovot, Israel.*
- 2:20 PM 145 **Effect of applying short periods of incubation temperature during pre-incubation egg storage on the hatchability of broiler eggs.**  
N. A. French\*<sup>1</sup>, D. Nicholson<sup>1</sup>, V. Kretzschmar<sup>2</sup>, D. Goyne<sup>2</sup>, and J. Veal<sup>2</sup>, <sup>1</sup>*Aviagen Ltd., Newbridge, Midlothian, UK*, <sup>2</sup>*Aviagen Inc., Huntsville, AL.*
- 3:00 PM **Break**
- 3:30 PM 146 **The influence of incubation on chick quality and broiler performance.**  
R. Meijerhof\*, *Poultry Performance Plus, Voorst, the Netherlands.*
- 4:10 PM 147 **Embryological development and diagnostic review of hatch residue.**  
R. M. Hulet\*, *The Pennsylvania State University, University Park.*

## Student Symposium: How do I answer that?

Chair: Jessica Butler, Auburn University  
Rooms 220-229

- 1:30 PM **Industry perspective.**  
R. S. Sellers, *American Feed Industry Association, Arlington, VA.*
- 2:00 PM **Media perspective.**  
H. Mitchell, *CMA Consulting, Columbus, OH.*
- 2:30 PM **Academia perspective.**  
T. K. Lavergne, *Louisiana State University, Baton Rouge.*
- 3:00 PM **Review and discussion.**

## Behavior and Well-Being

Chair: **Bruce Webster, University of Georgia**  
**Room 222**

- 1:30 PM 148 **Review of the Animal Welfare Judging and Assessment Competition (AWJAC) through 2010.**  
C. Heleski<sup>1</sup>, G. Golab<sup>2</sup>, S. Millman<sup>3</sup>, R. Reynnells\*<sup>4</sup>, J. Siegford<sup>3</sup>, and J. Swanson<sup>3</sup>, <sup>1</sup>*Michigan State University, East Lansing, MI*, <sup>2</sup>*American Veterinary Medical Association, Schaumburg, IL*, <sup>3</sup>*Iowa State University, Ames*, <sup>4</sup>*United States Department of Agriculture, Washington, DC*.
- 1:45 PM 149 **Subjective welfare assessments in the hatchery.**  
J. Barton\*, *The Poultry Federation Lab*.
- 2:00 PM 150 **The effect of perches installed in conventional cages on White Leghorn pullets.**  
S. A. Enneking\*<sup>1</sup>, H. W. Cheng<sup>2</sup>, J. P. Garner<sup>1</sup>, P. S. Wakenell<sup>1</sup>, D. A. Rubin<sup>3</sup>, K. Y. Jefferson-Moore<sup>4</sup>, and P. Y. Hester<sup>1</sup>, <sup>1</sup>*Purdue University, West Lafayette, IN*, <sup>2</sup>*USDA Agricultural Research Service, West Lafayette, IN*, <sup>3</sup>*Illinois State University, Normal*, <sup>4</sup>*North Carolina A&T State University, Greensboro*.
- 2:15 PM 151 **Neuroanatomical characterization of the lower spinal cord and its possible influence on gait in chickens, *Gallus gallus*.**  
G. Nagarajan\*, S. W. Kang, R. F. Wideman, and W. J. Kuenzel, *University of Arkansas, Fayetteville*.

## Extension and Instruction

Chair: **Phelue Anderson, Texas A&M University**  
**Room 223**

- 1:30 PM 152 **Development of a comprehensive and integrated educational program for beginning farmers and ranchers.**  
I. Reyes-Herrera\*<sup>1</sup>, A. M. Donoghue<sup>2</sup>, J. R. Moyle<sup>2</sup>, H. L. Goodwin<sup>1</sup>, J. M. Burke<sup>3</sup>, D. M. Burner<sup>3</sup>, R. L. Raper<sup>3</sup>, A. C. Fanatico<sup>4</sup>, O. J. Gekara<sup>5</sup>, G. Kuepper<sup>6</sup>, A. Wells<sup>6</sup>, T. Spencer<sup>7</sup>, M. Hale<sup>7</sup>, and D. J. Donoghue<sup>1</sup>, <sup>1</sup>*Dept. Poultry Science, University of Arkansas, Fayetteville*, <sup>2</sup>*Poultry Production and Product Safety Research Unit, USDA-ARS, Fayetteville, AR*, <sup>3</sup>*Dale Bumpers Small Farms Research Center, USDA-ARS, Booneville, AR*, <sup>4</sup>*The Goodnight Family Sustainable Development Program, Appalachian State University, Boone, NC*, <sup>5</sup>*Dept. Agriculture, University of Arkansas at Pine Bluff, Pine Bluff*, <sup>6</sup>*The Kerr Center for Sustainable Agriculture, Poteau, OK*, <sup>7</sup>*National Center for Appropriate Technology, NCAT, Fayetteville, AR*.

- 1:45 PM 153 **Carbon footprint of poultry production farms in south Georgia.**  
C. Dunkley\*<sup>1</sup>, B. Fairchild<sup>2</sup>, C. Ritz<sup>2</sup>, B. Kiepper<sup>2</sup>, and M. Lacy<sup>2</sup>,  
<sup>1</sup>University of Georgia, Tifton, <sup>2</sup>University of Georgia, Athens.
- 2:00 PM 154 **Climate change and poultry production: Training and research options.**  
J. A. Olupona\*, O. A. Owosibo, and O. O. Adejinmi, *Federal College of Animal Health and Production Technology, Ibadan, Oyo, Nigeria.*
- 2:15 PM 155 **Poultry farm management programs for new and existing growers.**  
J. R. Timmons\*<sup>1</sup>, J. L. Rhodes<sup>2</sup>, and J. R. Nottingham<sup>3</sup>,  
<sup>1</sup>University of Maryland, Salisbury, <sup>2</sup>University of Maryland, Centreville, <sup>3</sup>University of Maryland, Princess Anne.
- 2:30 PM 156 **Performance characteristics and cost benefits of village chicken fed compounded ration under intensive and semi-intensive system of management.**  
J. A. Olupona\*, O. A. Owosibo, O. O. Adejinmi, and A. M. Raji, *Federal College of Animal Health and Production Technology, Ibadan, Oyo Nigeria.*

## Wealth of Knowledge I

Chair: Francine VanSambeek, Elanco Animal Health  
Room 222

- 3:15 PM 157 **Transforming bird health and managerial considerations into caloric costs in the production environment.**  
R. Teeter\*, L. Newman, A. Beker, and C. Broussard, *Department of Animal Science, Oklahoma State University, Stillwater.*
- 3:30 PM 158 **Pathology associated with a chicken astrovirus isolated from broiler chickens with runting and stunting syndrome.**  
G. Zavala\*, S. Cheng, C. Brown, and J. Zhang, *Department Of Population Health, University of Georgia, Athens.*
- 3:45 PM 159 **Comparative pathology of diseases of tendons in broilers and broiler breeders.**  
F. Hoerr\*, *Thompson-Bishop-Sparks State Diagnostic Laboratory, Auburn, AL.*
- 4:00 PM 160 **Histopathological changes associated with white striping in broiler breast muscles.**  
V. A. Kuttappan\*<sup>1</sup>, H. L. Shivaprasad<sup>2</sup>, B. M. Hargis<sup>1</sup>, F. D. Clark<sup>1</sup>, S. R. McKee<sup>3</sup>, and C. M. Owens<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>University of California, Davis, <sup>3</sup>Auburn University, Auburn, AL.

- 4:15 PM 161 **The efficacy of two *Mycoplasma gallisepticum* vaccines in laying hens.**  
N. Ferguson-Noel\*, S. Williams, and V. Laibinis, *University of Georgia, Athens.*
- 4:30 PM 162 **Tracking infectious laryngotracheitis CEO vaccine: Field to processing.**  
D. L. Brinson\*, M. Garcia, G. Zavala, S. Riblet, L. Chappell, L. Dufour-Zavala, A. Vagnozzi, P. O’Kane, and R. Espinosa, *Poultry Diagnostic And Research Center, Department of Population Health, College of Veterinary Medicine, The University of Georgia, Athens.*
- 4:45 PM 163 **The effect of vectored HVT+IBD (Vaxxitek HVT + IBD) vaccination on body weights, uniformity and virus shedding in commercial broilers.**  
A. T. Garritty\*, *Merial Select Inc., Gainesville, GA.*
- 5:00 PM 164 **Protection and virus shedding after challenge with various infectious bursal disease virus isolates in commercial broilers vaccinated with a vector HVT + IBD vaccine.**  
E. Montiel\*, N. Pritchard, and D. Smith, *Merial Select Inc.*

## Marek’s Disease

Chair: **Aly Fadly, USDA-ARS ADOL**  
**Room 223**

- 3:15 PM 165 **Use of CVI988 in optimizing revaccination protocols against Marek’s disease.**  
A. K. Pandiri\*, A. L. Cortes, and I. M. Gimeno, *Experimental Pathology Laboratories Inc., Research Triangle Park, NC.*
- 3:30 PM 166 **Alteration of a single amino acid in the basic domain of Marek’s disease virus Meq oncoprotein plays an important role in T-cell transformation.**  
S. Reddy\*, A. Sun, O. Khan, L. F. Lee, and B. Lupiani, *Texas A&M University, College Station.*
- 3:45 PM 167 **Correlation between Marek’s disease virus replication rates and pathotype based on fifteen virus strains.**  
J. Dunn\*, *USDA-ARS-ADOL.*
- 4:00 PM 168 **Attenuation of Marek’s disease virus lacking the meq oncogene in cell culture.**  
L. Lee\*, *USDA, Avian Disease and Oncology Lab.*

- 4:15 PM 169 **Marek's disease virus induced transient paralysis—A closer look.**  
M. Heidari\*, M. Xu, H. Zhang, and L. Lee, *USDA-ARS-Avian Disease and Oncology Laboratory.*
- 4:30 PM 170 **Appraisal of experimental and commercial Marek's disease vaccines to induce bursal and thymic atrophy.**  
R. Silva\* and J. R. Dunn, *USDA/Agricultural Research Service, Avian Disease and Oncology Laboratory, East Lansing, MI.*
- 4:45 PM 171 **Chronological study of the pathogenesis of oncogenic and attenuated Marek's disease virus strains in the lung.**  
I. Gimeno\*, A. L. Cortes, O. J. Fletcher, and A. R. Pandiri, *Department of Population Health and Pathobiology, College of Veterinary Medicine, North Carolina State University, Raleigh.*
- 5:00 PM 172 **Measurement of CD4, CD8, class II, and macrophage antigen expression in chicken lungs.**  
O. J. Fletcher\*, X. Tan, L. Cortes, and I. Gimeno, *College of Veterinary Medicine, North Carolina State University, Raleigh.*
- 5:15 PM 173 **Replication of recombinant herpesvirus of turkey expressing genes of infectious laryngotracheitis virus (LT-rHVT) following in ovo and subcutaneous vaccination.**  
A. L. Cortes\*, E. Turpin, C. Williams, and I. M. Gimeno, *Population Health and Pathobiology Department, College of Veterinary Medicine, North Carolina State University, Raleigh.*

## Monday, July 18

### Coccidiosis I

Chair: **Linnea Newman, Intervet/Schering Plough  
Room 222**

- 8:00 AM 174 **A new species of *Eimeria* (Apicomplexa: Eimeriidae) of turkeys (*Meleagris gallopavo*).**  
S. Fitz-Coy\*, *Merck And Co., Salisbury, MD.*
- 8:15 AM 175 **Nicarbazin: Field experiences improving intestinal health.**  
J. Ruiz\*, H. Cervantes, and K. Bafundo, *Phibro Animal Health, Fayetteville, AR.*
- 8:30 AM 176 **Economic consequences of weather and coccidiosis in one U.S. broiler integration.**  
L. J. Newman\* and R. Teeter, *Intervet/Schering-Plough Animal Health.*

- 8:45 AM 177 **Working with Coccivac D in a dry climate.**  
J. Fricke\* and T. E. Inglis, *Poultry Health Services Ltd., Airdrie, Alberta, Canada.*
- 9:00 AM 178 **An alternative method of delivering *Eimeria* oocyst vaccines to protect against avian coccidiosis.**  
M. Jenkins\*, S. Klopp, D. Ritter, R. Fetterer, and K. Miska, *Agricultural Research Service, USDA, Beltsville, MD.*
- 9:15 AM 179 **Attenuation of development of *Eimeria maxima* following gamma irradiation.**  
R. Fetterer\*, M. C. Jenkins, and R. C. Barfield, *Animal Parasitic Diseases Laboratory, Agricultural Research Service, USDA, Beltsville, MD.*
- 9:30 AM 180 **Oocyst shedding patterns and immune response of turkeys following coccidiosis vaccination.**  
M. Behl\*<sup>1,2</sup>, D. Caldwell<sup>2</sup>, H. He<sup>3</sup>, M. Kogut<sup>3</sup>, R. Spasojevic<sup>1</sup>, and M. Farnell<sup>2</sup>, <sup>1</sup>*Willmar Poultry Company d.b.a. Ag Forte, Willmar, MN*, <sup>2</sup>*Texas AgriLife Research and Extension, College Station*, <sup>3</sup>*USDA-ARS, College Station, TX.*

## Infectious Bursal Disease

Chair: **Peter Woolcock, University of California**  
**Room 223**

- 8:00 AM 181 **Immunopathogenesis of infectious bursal disease virus in chickens.**  
A. Rauf\*, M. Khatri, M. V. Murgia, and Y. M. Saif, *The Ohio State University.*
- 8:15 AM 182 **Detection and differentiation of high and low pathogenic strains and reassortant infectious bursal disease viruses by a multiplex RT-PCR/RFLP assay that simultaneously analyze both genomic segments.**  
A. Banda\*, M. Hernandez, G. Tomas, D. Hernandez, P. Villegas, L. Maya, Y. Panzera, and R. Perez, *Poultry Research and Diag. Lab., College of Veterinary Medicine, Mississippi State University, Pearl.*
- 8:30 AM 183 **Massively parallel cDNA sequencing (RNA-seq) analysis of immune tissues from IBDV-infected birds.**  
C. L. Keeler\*, C. Boettger, M. N. Maughan, J. K. Rosenberger, and C. Schmidt, *Department of Animal and Food Sciences, University of Delaware, Newark.*

- 8:45 AM 184 **Natural reassortants of very virulent infectious bursal disease virus (vvIBDV) containing genetic elements from both serotype 1 and 2 viruses.**  
D. Jackwood\*, S. E. Sommer-Wagner, B. M. Crossley, S. T. Stoute, P. R. Woolcock, and B. R. Charlton, *Food Animal Health Research Program, The Ohio State University/OARDC, Wooster.*
- 9:00 AM 185 **Combining FTA card with reverse genetics allows characterization of the antigenicity of infectious bursal disease viruses on a global scale.**  
V. Durairaj\*, H. S. Sellers, and E. Mundt, *Poultry Diagnostic and Research Center, Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens.*
- 9:15 AM 186 **A prime-boost approach for DNA-mediated vaccination against infectious bursal disease in broiler chickens with maternal antibody.**  
C. C. Wu\*, M. Hsieh, and T. L. Lin, *Department of Comparative Pathobiology, Purdue University, West Lafayette, IN.*
- 9:30 AM 187 **Biological monitoring of vaccine take and productive parameters in broilers vaccinated with immune complex and recombinant vector vaccines against infectious bursal disease (IBD).**  
L. Sesti\*, C. Kneipp, Y. Gardin, and B. Alva, *Ceva Saúde Animal Ltda., Rua Moanoel Joaquim Filho, Paulínia, Brazil.*

## Environment and Management II

Chair: **Theresia Lavergne, Louisiana State University  
Room 224**

- 8:00 AM 188 **Choice feeding of organic meat chickens.**  
A. C. Fanatico\*<sup>1</sup>, V. B. Brewer<sup>2</sup>, C. M. Owens<sup>2</sup>, and A. M. Donoghue<sup>3</sup>, <sup>1</sup>*Appalachian State University, Boone, NC,* <sup>2</sup>*University of Arkansas, Fayetteville,* <sup>3</sup>*USDA Agricultural Research Service, Fayetteville, AR.*
- 8:15 AM 189 **Cage design and management effects on ammonia levels in laying hen houses.**  
J. A. Mench\*<sup>1</sup>, A. S. Keiss<sup>2</sup>, P. Y. Hester<sup>3</sup>, R. C. Newberry<sup>4</sup>, and J. P. Garner<sup>3</sup>, <sup>1</sup>*University of California, Davis, CA,* <sup>2</sup>*Mississippi State University, Mississippi State, MS,* <sup>3</sup>*Purdue University, West Lafayette, IN,* <sup>4</sup>*Washington State University, Pullman.*
- 8:30 AM 190 **Bacterial community dynamics in poultry litter treated with LitterGuard studied by DGGE and 454 pyrosequencing.**  
A. K. Kaushik\*, A. Nalian, J. Bray, and A. M. Van-Kley, *Stephen F. Austin State University, Nacogdoches, TX.*

- 8:45 AM 191 **Development of a novel polymer plenum floor for broilers to replace litter and reduce house/environmental ammonia.**  
M. Dekich\* and J. Harter-Dennis, *Avihome LLC, Salisbury, MD.*
- 9:00 AM 192 **Alternative fuel for brooding turkey poult: Bird and environmental impacts.**  
A. J. Bardella\*, P. H. Patterson, R. M. Hulet, and T. L. Cravener, *Penn State University, University Park.*
- 9:15 AM 193 **The effects of GalliPro Max on broiler live performance, footpad lesions, and litter quality.**  
M. A. Bailey\*, Z. T. Williams, J. B. Hess, and K. S. Macklin, *Auburn University, Auburn, AL.*
- 9:30 AM 194 **Evaluation of air and litter quality with microbiological fluctuations in commercial broiler facilities using a biological and a chemical litter treatment.**  
D. B. Gholap\*, K. S. Macklin, J. P. Blake, and S. F. Bilgili, *Department of Poultry Science, Auburn University, Auburn, AL.*
- 9:45 AM **Break**
- 10:15 AM 195 **Evaluation of a compressed air foam system for euthanasia of caged layer chickens.**  
K. Stringfellow\*<sup>1</sup>, D. Caldwell<sup>1</sup>, J. Byrd<sup>2</sup>, D. Abi-Ghanem<sup>1</sup>, L. Berghman<sup>1</sup>, J. Hoffman<sup>1</sup>, J. Lee<sup>1</sup>, and M. Farnell<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, Texas AgriLife Research and Extension, College Station, <sup>2</sup>USDA-ARS-SPARC, College Station, TX.*
- 10:30 AM 196 **Evaluation of compressed air foam to clean and disinfect poultry rearing facilities.**  
M. Ross\*<sup>1</sup>, D. Caldwell<sup>1</sup>, J. Byrd<sup>2</sup>, J. Lee<sup>1</sup>, K. Stringfellow<sup>1</sup>, S. Anderson<sup>1</sup>, and M. Farnell<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, Texas AgriLife Research and Extension, College Station, <sup>2</sup>USDA, Agricultural Research Service, Southern Plains Agricultural Research Center, College Station, TX.*
- 10:45 AM 197 **Evaluation of foaming agents for improved cleaning and disinfection within poultry premises.**  
M. Ross\*<sup>1</sup>, D. Caldwell<sup>1</sup>, J. Byrd<sup>2</sup>, S. Anderson<sup>1</sup>, K. Stringfellow<sup>1</sup>, J. Lee<sup>1</sup>, and M. Farnell<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, Texas AgriLife Research and Extension, College Station, <sup>2</sup>USDA, Agricultural Research Service, Southern Plains Agricultural Research Center, College Station, TX.*
- 11:00 AM 198 **Reducing litter ammonia emission and Salmonella concentration using two Bacillus subtilis strains.**  
Z. Williams\*, M. Bailey, M. Liles, and K. Macklin, *Auburn University, Auburn, AL.*

- 11:15 AM 199 **Histology of early footpad dermatitis lesions in broilers.**  
E. M. Shepherd, S. M. Williams, and B. D. Fairchild\*,  
*University of Georgia, Athens.*
- 11:30 AM 200 **Evaluation of three commercial drinker systems for hen turkeys to 98 days of age.**  
R. M. Hulet\* and T. L. Cravener, *Pennsylvania State University, University Park.*
- 11:45 AM 201 **Distillers dried grains with solubles (DDGS) and its effects on necrotic enteritis development in broiler chickens.**  
K. S. Macklin\*, L. N. Rose, and W. A. Dozier, *Auburn University, Auburn, AL.*

## Metabolism and Nutrition: Feed Ingredients

Chair: **Bob Loar, POET**

**Room 225**

- 8:00 AM 202 **Performance and oxidative stability effects of synthetic antioxidant in broilers fed diets containing either oxidized or non-oxidized fat.**  
M. K. Manangi\*<sup>1</sup>, M. Vazquez-Anon<sup>1</sup>, T. Wineman<sup>1</sup>, M. Wehmeyer<sup>1</sup>, J. D. Richards<sup>1</sup>, S. Carter<sup>1</sup>, and C. Owens<sup>2</sup>, <sup>1</sup>*Novus International Inc., St. Charles, MO*, <sup>2</sup>*University of Arkansas, Fayetteville.*
- 8:15 AM 203 **Differences among origins on nutritional and quality parameters of soybean meal.**  
G. G. Mateos\*<sup>1</sup>, M. González<sup>2</sup>, S. Sueiro<sup>2</sup>, M. Hermida<sup>2</sup>, J. Fickler<sup>3</sup>, P. G. Rebollar<sup>1</sup>, M. P. Serrano<sup>1</sup>, and R. P. Lázaro<sup>1</sup>, <sup>1</sup>*Universidad Politécnica de Madrid, Madrid, Spain*, <sup>2</sup>*Laboratorio Mouriscade, lalín, Pontevedra, Spain*, <sup>3</sup>*Evonik, Hanau, Germany.*
- 8:30 AM 204 **Effects of the main cereal and type of fat of the diet on productive performance and egg quality of brown egg-laying hens from twenty-two to fifty-four weeks of age.**  
A. Pérez-Bonilla<sup>1</sup>, M. Frikha<sup>2</sup>, C. Jabbour<sup>2</sup>, S. Mirzaie<sup>2</sup>, H. Irandoust<sup>2</sup>, J. García<sup>1</sup>, and G. G. Mateos\*<sup>2</sup>, <sup>1</sup>*Camar Agroalimentaria S.L., Toledo, Spain*, <sup>2</sup>*Universidad Politécnica de Madrid, Madrid, Spain.*
- 8:45 AM 205 **Evaluation of feeding various sources of distillers dried grains with solubles (DDGS) in non-feed withdrawal molt programs for laying hens.**  
K. A. Bland\*, C. M. Parsons, S. A. dePersio, P. L. Utterback, and K. W. Koelkebeck, *University of Illinois at Urbana-Champaign, Urbana.*

- 9:00 AM 206 **The effect of distillers dried grains with solubles (DDGS) and yeast-derived products on growth performance and gut morphology of broiler chickens fed corn/soybean meal-based diets.**  
M. Alizadeh\*, A. Rogiewicz, H. Echeverry, J. C. Rodriguez-Lacompte, and B. A. Slominski, *University of Manitoba, Winnipeg, MB, Canada.*
- 9:15 AM 207 **Effects of ingredient composition on rate of passage in broiler chicks.**  
S. J. Rochell\*<sup>1</sup>, T. J. Applegate<sup>2</sup>, E. J. Kim<sup>3</sup>, and W. A. Dozier<sup>1</sup>, <sup>1</sup>*Auburn University, Auburn, AL,* <sup>2</sup>*Purdue University, West Lafayette, IN,* <sup>3</sup>*USDA-ARS Poultry Research Unit, Mississippi State, MS.*
- 9:30 AM 208 **A comparison of nutrient digestibility in wheat distillers dried grains with solubles (DDGS) and 3 wheat DDGS fractions produced using a 2-step dry fractionation process for broilers.**  
M. Oryschak\*<sup>1</sup>, D. Korver<sup>2</sup>, and E. Beltranena<sup>1,2</sup>, <sup>1</sup>*Alberta Agriculture and Rural Development, Edmonton, AB, Canada,* <sup>2</sup>*University of Alberta, Edmonton, AB, Canada.*
- 9:45 AM **Break**
- 10:15 AM 209 **Bioassay of diverse feed ingredients for AME, TME, TMEN and their evaluation in broiler chicks.**  
J. I. Sultan\*, S. Minhas, A. Javaid, and H. Nawaz, *University of Agriculture, Faisalabad, Faisalabad, Punjab, Pakistan.*
- 10:30 AM 210 **Prediction of nitrogen-corrected apparent metabolizable energy values of different wheat samples in broiler chicks by an in vitro digestibility technique.**  
M. Yegani\*<sup>1</sup>, M. Swift<sup>2</sup>, and D. R. Korver<sup>1</sup>, <sup>1</sup>*University of Alberta, Edmonton, AB Canada,* <sup>2</sup>*Alberta Agriculture & Rural Development, Lacombe, AB Canada.*
- 10:45 AM 211 **Nutrient digestibility in canola meal for broilers: Effects of oil extraction method and fractionation by air classification.**  
M. Oryschak\*<sup>1</sup>, D. Korver<sup>2</sup>, and E. Beltranena<sup>1,2</sup>, <sup>1</sup>*Alberta Agriculture and Rural Development, Edmonton, AB, Canada,* <sup>2</sup>*University of Alberta, Edmonton, AB, Canada.*
- 11:00 AM 212 **Nutrient digestibility of 4 varieties of triticale compared to that of Canadian Prairie Spring wheat for broilers.**  
M. Oryschak\*<sup>1</sup>, D. Korver<sup>2</sup>, and E. Beltranena<sup>1,2</sup>, <sup>1</sup>*Alberta Agriculture and Rural Development, Edmonton, AB, Canada,* <sup>2</sup>*University of Alberta, Edmonton, AB, Canada.*

- 11:15 AM 213 **Preliminary assessment of *Garcinia kola* seed meal on performance, serum enzymes and hematology of broilers.**  
O. A. Ogunwole\*, E. A. Iyayi, O. O. Arinola, M. D. Olumide, A. O. Akinsoyinu, O. A. Adebisi, and O. Abiola-Olagunju, *University of Ibadan, Ibadan, Oyo State, Nigeria.*
- 11:30 AM 214 **Growth and performance of broiler starters fed rations supplemented with *Telfaria occidentalis* leaf meal (TOLM) (Ugu leaves).**  
A. H. Ekeocha\*, *University of Ibadan, Ibadan, Oyo, Nigeria.*
- 11:45 AM 215 **Response of broiler finishers fed rations supplemented with *Vernonia amygdalina* leaf meal (VALM) (Bitter leaf).**  
A. H. Ekeocha\*, *University of Ibadan, Ibadan, Oyo, Nigeria.*

## Food Safety II

Chair: **Christine Alvarado, Texas A&M University**  
**Room 227**

- 8:00 AM 216 **Osteomyelitis in tom turkeys with green discolored livers.**  
A. Hoffman\*, M. Slater, D. Rives, M. P. Martin, and H. Barnes, *North Carolina State University, Poultry Health Management.*
- 8:15 AM 217 **This turkey is not a Sept/Tox; this turkey is not a cadaver; this turkey does not have TOC.**  
E. Gonder\*, *Butterball LLC.*
- 8:30 AM 218 **Sampling unhatched embryos as a method of salmonella detection in a turkey hatchery.**  
D. Fernandez\* and D. C. Mills, *Agforte.*
- 8:45 AM 219 **Relationship between *Salmonella* culture findings from poultry and their environment.**  
D. Waltman\*, *Georgia Poultry Lab Network.*
- 9:00 AM 220 **Rapid and cost-effective molecular *Salmonella* serotyping assay utilizing Luminex multiplexing technology.**  
G. Rana\*, B. Mire, D. Waltman, and M. R. Hoffmeyer, *Luminex Corp.*
- 9:15 AM 221 **Monitoring on *Salmonella* infections in turkey flocks in Germany and European Union control measures.**  
H. M. Hafez\*, *Institute of Poultry Diseases, Free University Berlin.*
- 9:30 AM 222 **Implementation of MSRV methodology for *Salmonella* monitoring—Customer service and economic effects.**  
K. Smith\*, *Georgia Poultry Laboratory Network.*

- 9:45 AM **Break**
- 10:15 AM 223 **Effects of *Salmonella* Enteritidis bacterins vaccination on layers' protection and immune response.**  
M. Boulianne\*, T. Q. L. Tran, S. Quessy, A. Letellier, A. Desrosiers, and A. Thibodeau, *Department of Clinical Sciences, Faculty of Veterinary Medicine, Montreal University, Quebec, Canada.*
- 224 **Withdrawn**
- 10:30 AM 225 **Method validation for the rapid detection of *Salmonella* Enteritidis from poultry houses and eggs.**  
R. Crespo\* and D. Shah, *AHFSL-WADDL, Washington State University.*
- 10:45 AM 226 **Detection of natural campylobacter colonization in experimentally reared broiler chickens from a- positive commercial breeder flocks.**  
P. O'Kane\*, S. G. Thayer, D. L. Brinson, R. A. Espinosa, N. A. Cox, R. Berghaus, M. D. Lee, and C. L. Hofacre, *University of Georgia, Athens.*

**National Extension Workshop**  
**The Impact of Major Policy Shifts on the U.S. Food Supply and Producers: Environmental Issues**  
 Chair: **Brigid McCrea, Delaware State University**  
**Room 226**

- 8:30 AM 227 **Washington update.**  
R. Reynnells\*, *United States Department of Agriculture.*
- 8:45 AM **A systematic approach to environmental protection.**  
J. Lally, *Iowa State University, Ames.*
- 9:15 AM **Carbon credit 101.**  
J. Funk, *USDA, Environmental Defense Fund.*
- 9:45 AM **Break**
- 10:15 AM 228 **Antibiotic residue avoidance in watersheds.**  
E. C. Gonder\*, *Butterball LLC, Goldsboro, NC.*

- 10:45 AM 229 **Developing effective risk and crisis communication approaches in the food industry.**  
R. R. Ulmer\*, *University of Arkansas at Little Rock, Little Rock.*
- 11:15 AM **Emerging social issues.**  
G. Gregory, *United Egg Producers, Alpharetta, GA.*
- 11:45 AM **General discussion**

## Coccidiosis II

Chair: **Charlie Broussard, Intervet/Schering Plough  
Room 222**

- 10:15 AM 230 **Effect of Montanide ISA 71 VG on recombinant coccidia antigen vaccination.**  
S. Deville\*, L. Dupuis, F. Bertrand, E. P. Lillehoj, S. H. Lee, K. W. Lee, M. S. Park, S. I. Jang, and H. S. Lillehoj, *Seppic, Puteaux, France.*
- 10:30 AM 231 **The synergistic effects of plant-derived nutritional mixtures on recombinant antigen vaccination against avian coccidiosis.**  
H. Lillehoj\*<sup>1</sup>, S. H. Lee<sup>1</sup>, S. I. Jang<sup>1</sup>, K. W. Lee<sup>1</sup>, M. S. Park<sup>1</sup>, and D. Bravo<sup>2</sup>, <sup>1</sup>*Animal Parasitic Diseases Laboratory, Animal and Natural Resources Institute, Agricultural Research Service-U.S. Department of Agriculture, Beltsville, MD,* <sup>2</sup>*Pancosma S.A., Geneva, Switzerland.*
- 10:45 AM 232 **Cellular immune responses, chemokine, and cytokine profiles in turkey poults following infection with the intestinal parasite *Eimeria adenoeides*.**  
U. Gadde\*, H. D. Chapman, T. Rathinam, and G. F. Erf, *University of Arkansas, Fayetteville.*
- 11:00 AM 233 **Probiotic strains alleviating coccidiosis.**  
K. Teichmann\*<sup>1</sup>, S. Henikl<sup>1</sup>, I. Giannenas<sup>2</sup>, and G. Schatzmayr<sup>1</sup>, <sup>1</sup>*BiomIn Research Center, Tulln, Austria,* <sup>2</sup>*University of Thessaly, Karditsa, Greece.*
- 11:15 AM 234 **Effects of direct fed microbials supplementation on broiler performance under simulated coccidial infection.**  
G. R. Murugesan\* and M. E. Persia, *Iowa State University, Ames.*
- 11:30 AM 235 **Statistical handling of ordered categorical data (coccidial lesion scores).**  
L. P. Taylor\* and C. D. Smothers, *Pfizer Animal Health, Kalamazoo, MI.*

- 11:45 AM 236 **Effect of probiotic administration on avian beta-defensin expression in coccidiosis vaccinated broilers.**  
 K. Stringfellow\*<sup>1</sup>, Y. Wang<sup>1</sup>, H. Zhou<sup>1</sup>, Y. Farnell<sup>2</sup>, D. Caldwell<sup>1</sup>, J. Lee<sup>1</sup>, S. Anderson<sup>1</sup>, M. Mohnl<sup>3</sup>, R. Beltran<sup>3</sup>, G. Schatzmayr<sup>3</sup>, S. Fitz-Coy<sup>4</sup>, C. Broussard<sup>4</sup>, and M. Farnell<sup>1</sup>, <sup>1</sup>*Department of Poultry Science, Texas AgriLife Research and Extension, College Station*, <sup>2</sup>*Department of Neuroscience and Experimental Therapeutics, Texas A&M University Health Science Center, College Station*, <sup>3</sup>*Biomim GmbH, Herzogenburg, Austria*, <sup>4</sup>*Intervet/Schering-Plough Animal Health, Summit, NJ*.

## **Chicken Infectious Anemia Virus and Runting Stunting Syndrome**

**Chair: Marshall Putnam, CEVA Biomune  
Room 223**

- 10:15 AM 237 **Pathogenicity and molecular detection of chicken anaemia virus in commercial broiler farms in Venezuela.**  
 L. Garcia\*, A. E. Valera, V Bermudez, M. Salem, and M. Brett, *Agroservices Luzvill*.
- 10:30 AM 238 **Detection of chicken infectious anemia virus (CIAV) infection in broiler breeder pullets by non-conventional methods.**  
 R. Espinosa\*, S. Cheng, G. Zavala, D. Brinson, and P. O’Kane, *Department of Population Health, Poultry Diagnostic and Research Center, The University of Georgia, Athens*.
- 10:45 AM 239 **Quantitative analytical technique applied to histopathology of birds infected experimentally by chicken anemia virus.**  
 L. Garcia\*, A. E. Valera, M. Brett, L. Peroza, K. C. Garcia, and J. Fragozo, *Agroservices Luzvill*.
- 11:00 AM 240 **Investigations about the etiology of runting stunting syndrome affected chickens by in situ hybridization.**  
 K.-I. Kang\*, H. S. Sellers, E. Linneman, T. Kim, and E. Mundt, *Poultry Diagnostic and Research Center, Department of Population Health, The University of Georgia, Athens*.
- 11:15 AM 241 **Characterization of a novel chicken astrovirus isolated from intestinal homogenates of RSS-affected chickens.**  
 E. Mundt\*, T. Kim, K.-I. Kang, E. Linnemann, and H. S. Sellers, *Poultry Diagnostic and Research Center, Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens*.

- 11:30 AM      242      **Role of maternal antibodies in protection against chicken parvovirus-induced runting-stunting syndrome.**  
L. Zsak\*, R. M. Cha, and J. M. Day, *Southeast Poultry Research Laboratory, USDA, ARS, SAA, Athens, GA.*

## **Lasher-Eckroade History/WPSA Lecture**

**Chair: John Smith, Fieldale Farms**

**Rooms 220-221, 228-229**

- 1:15 PM      **The history of the poultry industry: Scientific breakthroughs.**  
G. Mathis, *Southern Poultry Research Inc., Athens, GA.*

# **Tuesday, July 19**

## **SYMPOSIA AND ORAL SESSIONS**

### **Symposium: Coccidiosis**

**Chair: Greg Mathis/Mark Jenkins, Southern Poultry Research Inc./USDA, ARS, Animal Parasitic Disease Lab**

**Rooms 220-229**

- 7:45 AM      **Introduction**  
G. Mathis, *Southern Poultry Research Inc., Athens, GA.*
- 8:00 AM      243      **Anticoccidial drugs successes.**  
H. M. Cervantes\*, *Phibro Animal Health, Watkinsville, GA.*
- 8:30 AM      244      **Anticoccidial drugs and vaccines used in prevention of coccidiosis in poultry: A worldwide perspective.**  
M. S. De Gussem\*, *Vetworks, Poeke, Flanders, Belgium.*
- 9:00 AM      245      **Coccidiosis mediated effects on energy cost at 5 age intervals throughout the broiler growth curve to 48 days.**  
R. G. Teeter\*<sup>1</sup>, A. Beker<sup>1</sup>, C. Brown<sup>1</sup>, C. Broussard<sup>2</sup>, S. Fitz-Coy<sup>2</sup>, J. Radu<sup>2</sup>, and L. Newman<sup>2</sup>, <sup>1</sup>*Oklahoma State University, Stillwater*, <sup>2</sup>*Intervet Schering Plough Animal Health, Union, NJ.*
- 9:30 AM      246      **Practical aspects and field experiences in coccidiosis.**  
L. J. Newman\*<sup>1</sup>, C. T. Broussard<sup>1</sup>, A. Smykot<sup>2</sup>, and D. Detzler<sup>3</sup>, <sup>1</sup>*Intervet/Schering-Plough Animal Health, DeSoto, KS*, <sup>2</sup>*Intervet/Schering-Plough Animal Health, Pointe Claire, QC, Canada*, <sup>3</sup>*Fischer Feeds Inc., Listowel, ON, Canada.*

10:00 AM		<b>Break</b>
10:30 AM	247	<b>The role of nutrition in maintaining gut health in the presence of coccidial cycling.</b> J. J. Dibner*, F. Yan, and C. D. Knight, <i>Novus International Inc., St. Charles, MO.</i>
11:00 AM	248	<b>Immune responses to coccidiosis in poultry: An update.</b> R. A. Dalloul*, <i>Virginia Tech, Blacksburg.</i>
11:30 AM	249	<b>Oocyst vaccine delivery and tracking.</b> M. Jenkins*, <i>Agricultural Research Service, Beltsville, MD.</i>
12:00 PM		<b>Lunch</b>
1:00 PM	250	<b>Precocious lines and attenuated coccidia.</b> R. H. Fetterer*, <i>Animal Parasitic Diseases Lab, USDA/ARS, Beltsville, MD.</i>
1:30 PM	251	<b>Using immunology and genomics as tools to investigate innate immunity to <i>Eimeria</i> with the goal of developing antibiotic-free, disease control strategies against avian coccidiosis.</b> H. Lillehoj*, <i>Animal and Natural Resources Institute, US Department of Agriculture, Agricultural Research Service, Beltsville, MD.</i>
2:00 PM	252	<b>Coccidiosis control programs: Effects on gastrointestinal microbiota and incidence of clostridial infections in broiler chickens.</b> G. D. Ritter* <sup>1</sup> and A. P. Neumann <sup>2</sup> , <sup>1</sup> <i>Mountaire Farms Inc., Millsboro, DE</i> , <sup>2</sup> <i>Danisco USA Inc., Waukesha, WI.</i>
2:30 PM	253	<b>Prevalence of <i>Eimeria</i> spp. in European broiler farms.</b> M. Pages* <sup>1</sup> , M. Dardi <sup>1</sup> , J. Rubio-Perez <sup>1</sup> , D. Blake <sup>2</sup> , and E. Del Cacho <sup>3</sup> , <sup>1</sup> <i>HIPRA, Amer, Spain</i> , <sup>2</sup> <i>Institute of Animal Health, IAH, Compton, England</i> , <sup>3</sup> <i>Faculty of veterinary Medecine, Zaragoza, Spain.</i>
3:00 PM		<b>Break</b>
3:30 PM	254	<b>Pathogenicity and prevalence of the lesser species of chicken <i>Eimeria</i>.</b> S. H. Fitz-Coy*, <i>Intervet/Schering-Plough, Millsboro, DE.</i>
4:00 PM	255	<b><i>Eimeria</i> in gamebirds: Development of PCR-based diagnosis and tests of immunity and drug efficacy.</b> L. R. McDougald*, R. Gerhold, and R. B. Beckstead, <i>University of Georgia, Athens.</i>

- 4:30 PM 256 **Tom Jeffers: Pioneer of coccidiosis research.**  
H. D. Chapman\*, *University of Arkansas.*

## Immunology

Chair: **Ramesh K. Selvaraj/Olivia B. Faulkner, The Ohio State University/USDA-ARS-SEPRL  
Room 221**

- 8:00 AM 257 **Complement and natural antibody in pre-market commercial ducks and turkeys.**  
P. Cotter\*<sup>1</sup>, T. Applegate<sup>2</sup>, R. Murdoch<sup>3</sup>, K. Daughtery<sup>3</sup>, and L. Tusing<sup>3</sup>, <sup>1</sup>*Cotter Laboratory, Arlington, MA*, <sup>2</sup>*Purdue University, West Lafayette, IN*, <sup>3</sup>*Maple Leaf Farms, Milford, IN.*
- 8:15 AM 258 **Innate immune function in autoimmune vitiligo-prone Smyth line and control chickens.**  
K. A. Byrne\*, L. Dong, N. Stepicheva, F. Shi, and G. F. Erf, *University of Arkansas, Division of Agriculture, Department of Poultry Science, Fayetteville.*
- 8:30 AM 259 **An essential role of avian Nod1 in host innate immunity.**  
S. Kim\*, C. L. Keeler, E. A. Wong, C. M. Cox, L. H. Summers, and R. A. Dalloul, *Avian Immunobiology Laboratory, Animal & Poultry Sciences, Virginia Tech, Blacksburg.*
- 8:45 AM 260 **Supplementation of broiler diets with functional yeast-derivate macromolecules on local and systemic toll-like receptors and cytokines profiles.**  
A. Yitbarek\*<sup>1</sup>, H. M. Echeverry<sup>1</sup>, P. Munyaka<sup>1</sup>, G. Carmelo-Jaimes<sup>1</sup>, S. Sharif<sup>2</sup>, W. Guenter<sup>1</sup>, J. D. House<sup>1</sup>, and J. C. Rodriguez-Lecompte<sup>1</sup>, <sup>1</sup>*University of Manitoba, Winnipeg, MB, Canada*, <sup>2</sup>*University of Guelph, Guelph, ON, Canada.*
- 9:00 AM 261 **Performance and innate immune system responses of chickens fed with yeast-derivate carbohydrates.**  
P. Munyaka\*<sup>1</sup>, H. M. Echeverry<sup>1</sup>, A. Yitbarek<sup>1</sup>, G. Carmelo-Jaimes<sup>1</sup>, S. Sharif<sup>2</sup>, W. Guenter<sup>1</sup>, J. D. House<sup>1</sup>, and J. C. Rodriguez-Lecompte<sup>1</sup>, <sup>1</sup>*University of Manitoba, Winnipeg, MB, Canada*, <sup>2</sup>*University of Guelph, Guelph, ON, Canada.*
- 9:15 AM 262 **Effects of dietary folic acid supplementation and lipopolysaccharide on systemic acute immune response of young laying hens.**  
P. Munyaka\*<sup>1</sup>, G. Tactaman<sup>1</sup>, K. O<sup>1,2</sup>, J. D. House<sup>1,3</sup>, and J. C. Rodriguez-Lecompte<sup>1</sup>, <sup>1</sup>*Departments of Animal Science*, <sup>2</sup>*Physiology*, <sup>3</sup>*and Human Nutritional Sciences, University of Manitoba, Winnipeg, MB, Canada.*

- 9:30 AM 263 **Modulation of embryonic bursal gene expression after exposing high and low antibody response lines to testosterone.**  
R. L. Taylor\*<sup>1</sup>, T. A. Burks<sup>1</sup>, P. B. Siegel<sup>2</sup>, and C. M. Ashwell<sup>3</sup>,  
<sup>1</sup>University of New Hampshire, Durham, <sup>2</sup>Virginia Tech, Blacksburg, <sup>3</sup>NC State University, Raleigh.
- 9:45 AM **Break**
- 10:00 AM 264 **A single immunization with a monoclonal anti-CD40-conjugated C. perfringens  $\alpha$ -toxin-derived peptide elicits fast and strong IgG responses in chickens.**  
C.-H. Chen\*<sup>1</sup>, D. Abi-Ghanem<sup>1</sup>, J. Bray<sup>2</sup>, W. Mwangi<sup>2</sup>, S. Waghela<sup>2</sup>, and L. Berghman<sup>1,2</sup>, <sup>1</sup>Department of Poultry Science, Texas A&M University, College Station, <sup>2</sup>Department of Veterinary Pathobiology, Texas A&M University, College Station.
- 10:15 AM 265 **In vivo regulatory T cell depletion using anti-chicken CD25 monoclonal antibody.**  
R. Shanmugasundaram and R. K. Selvaraj\*, *Ohio Agricultural Research and Development Center, Wooster.*
- 10:30 AM 266 **Identification and characterization of pheasant and quail avian beta defensin 2.**  
N. C. Rath\*<sup>1</sup>, L. Kannan<sup>1,2</sup>, R. Liyanage<sup>2</sup>, J. O. Lay<sup>2</sup>, and N. B. Anthony<sup>2</sup>, <sup>1</sup>USDA/ARS, Fayetteville, AR, <sup>2</sup>University of Arkansas, Fayetteville.
- 10:45 AM 267 **Development and characterization of novel monoclonal antibodies against chicken monocyte-derived cells.**  
W. K. Chou\*, C. H. Chen, D. Abi-Ghanem, and L. R. Berghman, *Texas A&M University, College Station.*
- 11:00 AM 268 **Production and characterization of an agonistic single-chain antibody against chicken CD40.**  
D. Abi-Ghanem\*, C.-H. Chen, J. Bray, W. Mwangi, S. D. Waghela, and L. R. Berghman, *Texas A&M University, College Station.*
- 11:15 AM 269 **Development of a transfer plasmid for expression of foreign genes in meleagrid herpesvirus type 1.**  
S. Spatz\* and L. Zsak, *Southeast Poultry Laboratory, Athens, GA.*
- 11:30 AM 270 **Development of the immune system in broiler breeder pullets receiving various vaccination programs and feeding systems in controlled and field conditions.**  
E. Montiel\*, J. Buhr, N. Cox, B. Wills, C. Hofacre, and J. Wilson, *Merial Select Inc.*

- 11:45 AM 271 **Suppression of cellular immune activity of chickens following in vivo and in vitro heat stress.**  
A. M. Atta\*, A. Abbas, and A. Desoky, *Cairo University, Giza, Cairo, Egypt.*

## **Bacteriology and Diagnostics**

Chair: **Timothy Johnson, University of Minnesota**  
**Room 222**

- 8:00 AM 272 **Development of a molecular typing method for *Enterococcus cecorum*.**  
D. S. Wijetunge\*, J. Blair, P. Dunn, E. Wallner-Pendleton, V. Lintner, and S. Kariyawasam, *Pennsylvania State University, University Park.*
- 8:15 AM 273 **Genotypic and phenotypic comparison of field isolates of *Enterococcus cecorum* in outbreaks of spondylitis.**  
K. M. Robbins\*, M. P. Martin, P. C. Jay, M. M. Suyemoto, H. J. Barnes, and L. B. Borst, *Department of Population Health and Pathobiology, North Carolina State University College of Veterinary Medicine, Raleigh.*
- 8:30 AM 274 **Multiplexed microsphere-based diagnostic assay for simultaneous detection of avian influenza, *Mycoplasma gallisepticum*, and *Mycoplasma synoviae* infection.**  
M. Hoffmeyer\*, J. L. Hale, and M. M. Bush, *Luminex Corporation, Austin, TX.*
- 8:45 AM 275 **An evaluation of optimal methods for avian influenza virus sample collection.**  
E. Spackman\* and E. T. McKinley, *Southeast Poultry Research Laboratory, USDA, ARS.*
- 9:00 AM 276 **New approaches to develop improved molecular diagnostic assays for infectious diseases (assay design).**  
H. Abbassi\*, *University of Minnesota, Department of Animal Science, St. Paul.*
- 9:15 AM 277 **New approaches to develop improved molecular diagnostic assays for infectious diseases (optimization and validation).**  
H. Abbassi\*, *University of Minnesota, Department of Animal Science, St. Paul.*
- 9:30 AM 278 **Fowl cholera vaccination of pen-raised ring-necked pheasants with commercially available vaccines.**  
D. A. Anderson\*, *Georgia Poultry Laboratory Network, Oakwood.*

## Infectious Bronchitis

Chair: **Holly Sellers, University of Georgia**  
**Room 223**

- 8:00 AM 279 **Infectious bronchitis virus in California 2003–2010: A review.**  
P. R. Woolcock\*, *University of California, Davis.*
- 8:15 AM 280 **Characterization of infectious bronchitis virus isolates from backyard flocks.**  
A. Kulkarni\*, D. A. Hilt, and M. W. Jackwood, *Georgia Poultry Laboratory Network, Oakwood.*
- 8:30 AM 281 **Recombination in avian gamma-coronavirus infectious bronchitis virus (IBV).**  
S. W. Thor\*, J. E. Phillips, D. A. Hilt, J. Kissinger, A. Paterson, and M. W. Jackwood, *The University of Georgia, Poultry Diagnostic and Research Center.*
- 8:45 AM 282 **Evaluation of possible interference between Arkansas and Massachusetts vaccine serotypes.**  
E. Ndegwa\*, S. Bartlett, and V. L. van Santen, *Auburn University.*
- 9:00 AM 283 **Interactions between multivalent attenuated live infectious bronchitis virus (IBV) vaccines in one-day-old chickens.**  
H.-J. Roh\*, D. A. Hilt, and M. W. Jackwood, *Department of Population Health, Poultry Diagnostic and Research Center, The University of Georgia, Athens.*
- 9:15 AM 284 **The pathogenicity of avian metapneumovirus subtype C (aMPV/C) isolates from wild birds in domestic turkeys.**  
R. M. Cha\*, Q. Yu, and L. Zsak, *Southeast Poultry Research Laboratory, United States Department of Agriculture, Agricultural Research Service, Athens, GA.*
- 9:30 AM 285 **Reverse genetic studies of avian paramyxovirus type-3.**  
S. Kumar\*, B. Nayak, P. L. Collins, and S. K. Samal, *Virginia-Maryland Regional College of Veterinary Medicine, University of Maryland, College Park.*

**Environment and Management III**  
**Chair: Jennifer Timmons, University of Maryland**  
**Room 224**

- 8:00 AM      286      **Impact of environmental temperature on core body temperature and performance of broiler breeder hens.**  
D. C. Paul\*, M. J. Zuidhof, R. A. Renema, and A. Pishnamazi,  
*University of Alberta, Edmonton, AB, Canada.*
- 8:15 AM      287      **Efficacy of feed additives to reduce the biological effect of naturally occurring mycotoxins fed to turkey poults reared to 20 weeks of age.**  
J. E. Nixon\*<sup>1</sup>, J. L. Grimes<sup>1</sup>, M. D. Koci<sup>1</sup>, P. Nighot<sup>1</sup>, C. Stark<sup>1</sup>,  
and T. Middleton<sup>2</sup>, <sup>1</sup>*North Carolina State University, Raleigh,*  
<sup>2</sup>*Ag ProVIsion, LLC, Kenansville, NC.*
- 8:30 AM      288      **Evaluation of a fermented rice/soy product on volatilization of odor compounds from fresh fecal material and growth parameters when included in broiler diets.**  
M. P. Williams\*<sup>1</sup>, C. Coufal<sup>1</sup>, E. Caraway<sup>2</sup>, R. Carpenter<sup>3</sup>, I. Smith<sup>3</sup>,  
and J. T. Lee<sup>1</sup>, <sup>1</sup>*Poultry Science Department, AgriLife Research, Texas A&M System, College Station,* <sup>2</sup>*Olfactory Laboratory, West Texas A&M University, Canyon,* <sup>3</sup>*BiOWiSH Technologies, Chicago, IL.*
- 8:45 AM      289      **Reduction of *Salmonella* Typhimurium on eggshell surfaces using ultraviolet light and hydrogen peroxide.**  
S. Gottselig\*, T. Duong, S. Horrocks, K. Woodring, and C. Coufal,  
*Texas A&M University, College Station.*
- 9:00 AM      290      **Effect of range, cage-free, and cage environments on egg production and quality in two brown egg layer strains.**  
M. M. Evans\* and K. E. Anderson, *North Carolina State University, Raleigh.*
- 9:15 AM      291      **Effect of maternal energy and protein and egg storage on egg quality, broiler embryonic development, residual yolk sac and early growth.**  
P. O. Elaho\*, R. A. Renema, A. Pishnamazi, and M. Z. Zuidhof,  
*University of Alberta, Edmonton, Alberta, Canada.*
- 9:30 AM      292      **Quantification of *Eimeria* species in coccidia challenged broilers with real-time PCR.**  
R. F. Khamadaliev\*, A. Nalian, J. L. Bray, and A. M. Van-Kley,  
*Stephen F. Austin State University, Nacogdoches, TX.*
- 9:45 AM      **Break**

- 10:15 AM 293 **No evidence for temperature-dependent sex determination in chickens.**  
K. Collins\*, S. Pinson, K. Navara, and J. Wilson, *The University of Georgia, Athens.*
- 10:30 AM 294 **Effect of environmental enrichment strategies on behavior and physiology of broiler breeders reared under thermoneutral and heat stress condition.**  
O. B. Adeniji\*, M. O. Smith, and H. G. Kattesh, *University of Tennessee, Knoxville.*
- 10:45 AM 295 **New perspective in egg storage: Cellular and molecular implications on embryo quality.**  
J. A. Hamidu\*, D. R. Barreda, and L. L. Guan, *University of Alberta, Edmonton, Alberta, Canada.*
- 11:00 AM 296 **Effect of egg storage temperature, storage period, and flock age on hatchability of broiler hatching eggs.**  
M. Güçbilmez<sup>2</sup>, S. Özlü<sup>2</sup>, O. Elibol<sup>2</sup>, and J. Brake\*<sup>1</sup>, <sup>1</sup>*North Carolina State University, Dept. of Poultry Science, Raleigh,* <sup>2</sup>*Ankara University, Faculty of Agriculture, Department of Animal Science, Ankara, Turkey.*
- 11:15 AM 297 **Impact of beak trimming versus no beak trimming on range and cage free brown egg layers 17 to 53 wks of age.**  
K. E. Anderson\*, *North Carolina State University, Raleigh.*
- 11:30 AM 298 **The effect of litter versus raised plastic flooring on environmental and well-being traits in commercial Pekin ducks.**  
M. S. Lilburn\*<sup>1</sup>, G. S. Fraley<sup>2</sup>, D. Karcher<sup>3</sup>, M. Makagon<sup>3</sup>, and R. Sommers<sup>4</sup>, <sup>1</sup>*Ohio State University/OARDC, Wooster,* <sup>2</sup>*Hope College, Holland, MI,* <sup>3</sup>*Michigan State University, East Lansing,* <sup>4</sup>*Maple Leaf Farms, Milford, IN.*
- 11:45 AM 299 **Effects of removable chicken house on growth performance in broilers and excreta yield and fertility.**  
A. G. Chen\*, J. Feng, F. Y. Deng, C. M. Yang, and Q. H. Hong, *Zhejiang University, Hangzhou, Zhejiang, China.*

## Metabolism and Nutrition: Minerals and Vitamins

Chair: Michael Elliot, A & E Nutrition Services

Room 225

- 8:00 AM 300 **Implications of dietary potassium and potassium salts on production performance, carcass characteristics and serum mineral chemistry of broiler chickens reared under phase feeding system.**  
M. M. H. Mushtaq\*, *University of Agriculture, Faisalab, Punjab, Pakistan.*
- 8:15 AM 301 **Evaluation of stabilized gelatin cholecalciferol beadlets on broiler performance.**  
J. Fowler\*, R. Kakani, A. Haq, and C. A. Bailey, *Department of Poultry Science, Texas A&M University System, College Station.*
- 8:30 AM 302 **Iron bioavailability in lentil based diets: Studies in poultry and in vitro digestion/Caco-2 model.**  
E. Tako\*<sup>1</sup>, A. Vandenberg<sup>2</sup>, D. Thavarajah<sup>2</sup>, P. Thavarajah<sup>2</sup>, and R. Glahn<sup>1</sup>, <sup>1</sup>*USDA/ARS, Robert W. Holley Center for Agriculture and Health, Cornell University, Ithaca, NY,* <sup>2</sup>*University of Saskatchewan, Saskatoon, Saskatchewan, Canada.*
- 8:45 AM 303 **Intra amniotic administration and dietary inulin affect the iron status and intestinal functionality of iron-deficient broiler chickens.**  
E. Tako\* and R. Glahn, *USDA/ARS, Robert W. Holley Center for Agriculture and Health, Cornell University, Ithaca, NY.*
- 9:00 AM 304 **Mineral nutrition and bone development of broiler embryos: Effect of in ovo enrichment.**  
R. Yair\*, R. Shahar, and Z. Uni, *The Hebrew University of Jerusalem, Rehovot, Israel.*
- 9:15 AM 305 **Effect of dietary 25-OH-D<sub>3</sub> on commercial turkeys. 1: Production, innate immunity and bone quality to 12 weeks of age.**  
J. L. Saunders-Blades\*, K. L. Nadeau, and D. R. Korver, *University of Alberta, Edmonton, AB, Canada.*
- 9:30 AM 306 **Effect of dietary 25-OH-D<sub>3</sub> on commercial turkeys. 2: Production, carcass yield and bone quality from 14 to 22 weeks of age.**  
J. L. Saunders-Blades, K. L. Nadeau, and D. R. Korver\*, *University of Alberta, Edmonton, AB, Canada.*
- 9:45 AM **Break**

- 10:15 AM 307 **Evaluation of five proprietary vitamin-mineral premixes in Ibadan, Nigeria for broiler production.**  
O. A. Ogunwole\*<sup>1</sup>, E. O. Kolade<sup>1</sup>, M. O. Olumide<sup>1</sup>, A. O. Akinsoyinu<sup>1</sup>, A. A. Mako<sup>2</sup>, O. Abiola-Olagunju<sup>1</sup>, and O. A. Adebisi<sup>1</sup>, <sup>1</sup>*Department of Animal Science, University of Ibadan, Ibadan, Nigeria*, <sup>2</sup>*Tai Solarin University of Education, Ijebu-Ode, Nigeria*.
- 10:30 AM 308 **Relative bioavailability of tribasic manganese chloride for broiler chickens.**  
R. Poureslami\*<sup>1</sup>, L. Koutsos<sup>2</sup>, and A. B. Batal<sup>1</sup>, <sup>1</sup>*University of Georgia, Athens*, <sup>2</sup>*Micronutrients, Indianapolis, IN*.
- 10:45 AM 309 **Maternal broiler breeder flock age and dietary Cu, Zn and Mn form affect embryonic bone development.**  
C. A. Torres\* and D. R. Korver, *University of Alberta, Edmonton, AB, Canada*.
- 11:00 AM 310 **Effects of calcium and phosphorus levels during the finisher phase on Heritage broilers: II. Leg health and bone characteristics.**  
M. R. Dalmagro\*<sup>1</sup>, E. O. Oviedo-Rondón<sup>1</sup>, P. L. Menté<sup>1</sup>, A. Mitchell<sup>2</sup>, H. Engster<sup>3</sup>, and R. Mitchell<sup>3</sup>, <sup>1</sup>*North Carolina State University, Raleigh*, <sup>2</sup>*USDA-ARS, Beltsville, MD*, <sup>3</sup>*Perdue Farms Inc., Salisbury, MD*.
- 11:15 AM 311 **Zinc's impact on growth and barrier function during coccidial challenge.**  
C. Troche\* and T. A. Applegate, *Purdue University, West Lafayette, IN*.
- 11:30 AM 312 **Mutual antagonism of feeding organic zinc and organic copper in broiler chickens.**  
S. D. Bun\* and Y. M. Guo, *China Agricultural University, Beijing, China*.

**Metabolism and Nutrition: Amino Acids**  
**Chair: Omar Gutierrez, Novus International**  
**Room 226**

- 8:00 AM 313 **Ileal digestibility of amino acids in fish meal-based diets for broiler starters using regression technique.**  
A. F. Agboola\* and E. A. Iyayi, *Department of Animal Science, University of Ibadan, Ibadan, Nigeria*.

- 8:15 AM 314 **Determination of Ileal digestibility of amino acids from feed ingredients for laying hens and broilers.**  
S. A. Adedokun\*<sup>1</sup>, P. Jaynes<sup>1</sup>, R. L. Payne<sup>2</sup>, and T. J. Applegate<sup>1</sup>,  
<sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Evonik Degussa Corp.,  
Kennesaw, GA.
- 8:30 AM 315 **Determination of standardized amino acid digestibility in soybean meal (SBM), distillers dried grains with solubles (DDGS), and meat and bone meal (MBM) using different methods.**  
W. A. Walbaum\*, P. L. Utterback, and C. M. Parsons, *University of Illinois at Urbana-Champaign, Urbana.*
- 8:45 AM 316 **Evaluation of the pepsin digestibility assay for predicting amino acid digestibility of meat and bone meals.**  
T. M. Davis\*<sup>1</sup>, C. M. Parsons<sup>1</sup>, P. L. Utterback<sup>1</sup>, and D. Kirstein<sup>2</sup>,  
<sup>1</sup>University of Illinois at Urbana-Champaign, Urbana, <sup>2</sup>Darling International Inc., Irving, TX.
- 9:00 AM 317 **Amino acid digestibility of different soy products.**  
T. Loeffler\* and A. B. Batal, *University of Georgia, Athens.*
- 9:15 AM 318 **Effect of crude protein and fat content of diets with similar indispensable amino acid profile on productive performance and egg quality of brown egg laying hens differing in initial body weight.**  
C. Jabbour<sup>1</sup>, A. Perez-Bonilla<sup>2</sup>, M. Frikha<sup>1</sup>, S. Mirzaie<sup>1</sup>, J. Berrococo<sup>1</sup>, J. Garcia<sup>2</sup>, and G. G. Mateos\*<sup>1</sup>, <sup>1</sup>Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain, <sup>2</sup>Camar Agroalimentaria S.L, Cedillo del Condado, Toledo, Spain.
- 9:30 AM 319 **Effect of dietary amino acid density on the global gene expression profile of the chicken intestine.**  
R. Poureslami\*, R. Beckstead, and A. B. Batal, *University of Georgia, Athens.*
- 9:45 AM **Break**
- 10:15 AM 320 **Lysine stable isotope partitioning in broiler breeders as affected by protein and energy intake.**  
R. D. Ekmay\*, C. Salas, S. Cerrate, J. England, and C. N. Coon,  
*University of Arkansas, Fayetteville.*
- 10:30 AM 321 **The effects of early feed amino acid and late feed non-phytate phosphorus levels on large tom performance, yield, and litter composition.**  
L. K. Shires\*, B. N. Swiger, K. G. S. Lilly, and J. S. Moritz,  
*West Virginia University.*

- 10:45 AM 322 **Digestible Lys requirements of female broilers from 1 to 15 days of age.**  
W. A. Dozier\*<sup>1</sup> and R. L. Payne<sup>2</sup>, <sup>1</sup>*Auburn University, Auburn, AL*, <sup>2</sup>*Evonik-Degussa Corp., Kennesaw, GA.*
- 11:00 AM 323 **Effect of dietary methionine sources on broilers oxidative status in heat stress condition.**  
H. Willemsen<sup>1</sup>, Q. Swennen<sup>1</sup>, N. Everaert<sup>1</sup>, P. A. Geraert<sup>2</sup>, Y. Mercier\*<sup>2</sup>, A. Stinckens<sup>1</sup>, E. Decuyper<sup>1</sup>, and J. Buyse<sup>1</sup>, <sup>1</sup>*Laboratory for Livestock Physiology, K.U. Leuven., Belgium*, <sup>2</sup>*Adisseo France S.A.S., France.*
- 11:15 AM 324 **Ileal endogenous amino acid losses determined using the regression method in 26-d-old broiler chickens fed two levels of fiber with or without mild coccidial vaccine challenge.**  
S. A. Adedokun\*<sup>1</sup>, K. M. Ajuwon<sup>1</sup>, L. F. Romero<sup>2</sup>, and O. Adeola<sup>1</sup>, <sup>1</sup>*Purdue University, West Lafayette, IN*, <sup>2</sup>*Danisco Animal Nutrition, Marlborough, Wiltshire, UK.*

## **Processing and Products**

**Chair: Casey Owens, University of Arkansas**

### **Room 227**

- 8:00 AM 325 **Effect of various processing techniques and antioxidant levels on the storage stability of hatchery waste meal.**  
A. Mahmud\*, Saima, T. N. Pasha, M. Nasir, M. A. Jabbar, A. W. Sahota, and Z. Nasir, *University of Veterinary & Animal Sciences, Lahore, Punjab, Pakistan.*
- 8:15 AM 326 **Effects of physical form of ration on performance of broiler chickens.**  
J. H. Vilar Da Silva\*<sup>1</sup>, P. B. Lacerda<sup>1</sup>, F. G. P. Costa<sup>1</sup>, F. H. G. Oliveira<sup>1</sup>, R. A. Santos<sup>1</sup>, E. L. Silva<sup>1</sup>, P. H. Watanabe<sup>1</sup>, S. R. R. Ferreira<sup>2</sup>, and M. R. Lima<sup>1</sup>, <sup>1</sup>*Universidade Federal da Paraiba, Bananeiras, Paraiba, Brazil*, <sup>2</sup>*Guaraves - Foods, Guarabira, Paraiba, Brazil.*
- 8:30 AM 327 **Impact of feeder and water placement on broiler meat yield.**  
R. K. Gilcrease\*, G. Casco, T. Yalamanchili, C. Ruiz, and C. Z. Alvarado, *Texas A&M University, College Station.*

- 8:45 AM 328 **Lipid oxidation stability of cooked chicken meat using dietary supplemented and meat-added antioxidants.**  
F. Avila-Ramos\*<sup>1</sup>, C. Narciso-Gaytán<sup>2</sup>, A. Pró-Martínez<sup>1</sup>, E. Sosa-Montes<sup>3</sup>, J. M. Cuca-García<sup>1</sup>, C. M. Becerril-Pérez<sup>2</sup>, and J. L. Figueroa-Velasco<sup>1</sup>, <sup>1</sup>*Campus Montecillo, Colegio de Postgraduados, Mexico*, <sup>2</sup>*Campus Cordoba, Colegio de Postgraduados, Mexico*, <sup>3</sup>*Departamento de Zootecnia, Universidad Autonoma Chapingo, Mexico*.
- 9:00 AM 329 **Meat quality evaluation of a commercial and a heritage broiler strain.**  
D. P. Smith\*<sup>1</sup>, J. K. Northcutt<sup>2</sup>, and E. L. Steinberg<sup>2</sup>, <sup>1</sup>*Department of Poultry Science, Raleigh, NC*, <sup>2</sup>*Department of Food, Nutrition, and Packaging Science, Clemson, SC*.
- 9:15 AM 330 **Quality of chicken meat as influenced by heat stress and post slaughter chilling.**  
G. A. Veluz\*<sup>1</sup>, C. M. Owens<sup>2</sup>, and C. Z. Alvarado<sup>1</sup>, <sup>1</sup>*Poultry Science Department, Texas A&M University, College Station*, <sup>2</sup>*Poultry Science Department, University of Arkansas, Fayetteville*.
- 9:30 AM 331 **Postmortem aging can significantly enhance water-holding capacity of broiler pectoralis major muscle measured by the salt-induced swelling/centrifuge method.**  
H. Zhuang\* and E. Savage, *USDA-ARS, Athens, GA*.
- 9:45 AM **Break**
- 10:15 AM 332 **Quality and sensory attributes of shell eggs sanitized with a combination of hydrogen peroxide and ultraviolet light.**  
K. Woodring\*, S. M. Gottselig, C. Alvarado, L. Hirschler, J. T. Lee, and C. D. Coufal, *Texas A&M University, College Station*.
- 10:30 AM 333 **The impact of marination on the quality of frozen broiler breast fillets.**  
A. G. Sanchez Pena\* and C. Z. Alvarado, *Texas A&M University, College Station*.
- 10:45 AM 334 **Yield improvements in water and oil based marinades with a natural non-phosphate blend.**  
G. Casco\* and C. Z. Alvarado, *Texas A&M University, College Station*.
- 11:00 AM 335 **Impact of water-flume transport of feather and viscera offal on poultry processing wastewater.**  
H. S. Plumber\*, B. H. Kiepper, E. Abboah-Afari, and C. W. Ritz, *University of Georgia, Athens*.

- 11:15 AM 336 **Market profile of the duck and quail egg products in Vancouver Canada: Chinese-Canadian buyers and non-buyers.**  
J. A. Arthur\*, K. Wiseman, and K. M. Cheng, *University of British Columbia, Vancouver, BC, Canada.*
- 11:30 AM 337 **Egg shells and cracked eggs of six pure lines compared to commercial white- and brown-egg layers.**  
F. G. Silversides\* and M. C. Robertson, *Agriculture and Agri-Food Canada, Agassiz, British Columbia, Canada.*
- 11:45 AM 338 **The effect of marine and flaxseed oil inclusion in diets for pastured laying flocks on EPA, DHA, and consumer acceptability of eggs.**  
L. K. Shires\*, K. G. S. Lilly, and B. N. Swiger, *West Virginia University.*

## **Wealth of Knowledge II**

**Chair: Brett Rings, Cobb-Vantress Inc.**

**Room 222**

- 10:15 AM 339 **Retrospective study of novel picornavirus associated with turkey viral hepatitis.**  
H. L. Shivaprasad\*, K. H. Honkavuori, T. Brieese, and W. I. Lipkin, *CAHFS-Tulare, Tulare, CA.*
- 10:30 AM 340 **Detection of lymphoid leukosis tumors in white leghorn chickens of line alv6 that is resistant to subgroups A and E avian leukosis virus and maintained under specific pathogen free conditions.**  
A. Fadly\*, J. K. Mays, and R. Kulkarni, *USDA-ARS Avian Disease and Oncology Laboratory, East Lansing, MI.*
- 10:45 AM 341 **Current status of the National Poultry Improvement Plan.**  
C. S. Roney\*, *NPIP, Conyers, GA.*
- 11:00 AM 342 **Significant poultry disease notifications in Arkansas, Missouri, and Oklahoma: A model voluntary system.**  
J. Barton\*, *The Poultry Federation Lab.*
- 11:15 AM 343 **The Council for Agricultural Science and Technology: A vital poultry industry partner.**  
N. Tablante\*, *University of Maryland, College Park.*
- 11:30 AM 344 **New insights into plasmid-associated phenotypes and genotypes of APEC strain chi7122 (O78:K80:H9).**  
M. Mellata\*, J. Maddux, T. Nam, and R. Curtiss, *The Biodesign Institute, Arizona State University, Tempe.*

- 11:45 AM 345 **Characterization of APEC isolates from broilers in Latin America.**  
T. M. Barbosa\*, E. Turpin, and L. K. Nolan, *Pfizer Poultry Health, Research Triangle Park, NC.*

**Laryngotracheitis and Newcastle**  
**Chair: Chip Garrity, Merial Select**  
**Room 223**

- 10:15 AM 346 **Field experiences of the hatchery subcutaneous HVT + ILT recombinant (INNOVAX) vaccine in table egg layers.**  
H. A. Medina\*, *Sparboa Farms Inc.*
- 10:30 AM 347 **Genome analysis of infectious laryngotracheitis virus (ILTV) live-attenuated vaccines and virulent isolates.**  
M. Garcia\*, S. Spatz, S. Riblet, E. S. Mundt, and J. S. Guy, *Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens.*
- 10:45 AM 348 **Compatibility of vectored LT vaccines and Vectormune HVT NDV.**  
A. Godoy\*, M. Esaki, P. Flegg, J. K. Rosenberger, S. Rosenberger, K. M. Dorsey, and Y. Gardin, *Ceva Biomune, Lenexa, KS.*
- 11:00 AM 349 **Construction of recombinant Newcastle Disease Viruses, LaSota strain, expressing the G protein of avian metapneumovirus, subtype A or B, for use as bivalent vaccines.**  
J. P. Roth\*, H. Hu, C. Estevez, L. Zsak, and Q. Yu, *USDA-ARS, Southeast Poultry Research Laboratory, Athens, GA.*
- 11:15 AM 350 **Generation and evaluation of a LaSota strain-based recombinant Newcastle disease virus (NDV) expressing the glycoprotein (G) of avian metapneumovirus subgroup C (aMPV-C) as a bivalent vaccine.**  
Q. Yu\*, H. Hu, J. P. Roth, C. N. Estevez, and L. Zsak, *USDA-ARS, Southeast Poultry Research Lab.*
- 11:30 AM 351 **vvNDV in south MS?**  
P. A. Stayer\*, F. D. Wilson, and J. L. McReynolds, *Sanderson Farms.*

# Mycoplasma

Chair: **Bruce Charlton, University of California  
Room 222**

- 1:00 PM 352 **Molecular characterization of *Mycoplasma gallisepticum* isolated from chicken and turkey.**  
A. Metwally\*, S. I. Eissa, A. E.-W. M. Hassan, Y. M. Hashem, and E. A. A. El-Aziz, *Animal Health Research Institute, Dokki, Giza, Egypt.*
- 1:15 PM 353 **Pathogenicity of *Mycoplasma gallisepticum* strains using ELD50 in embryonated chicken eggs.**  
M. Farrar\*, R. Wooten, V. Laibinis, and N. Ferguson-Noel, *Department of Population Health, Poultry Diagnostic and Research Center, University of Georgia, Athens.*
- 1:30 PM 354 **Evaluation of three DNA extraction methods for the detection of *Mycoplasma* spp. with an MG/MS multiplex real-time PCR method.**  
B. Lungu\* and N. Ferguson-Noel, *Poultry Diagnostic Research Center, University of Georgia, Athens.*
- 1:45 PM 355 **Experiences in the use of a live MG vaccine in northeast Georgia.**  
L. Chappell\*, *Georgia Poultry Laboratory Network.*
- 2:00 PM 356 **Use of MG/MS serology and PCR to determine flock status.**  
B. Glidewell\*, *Georgia Poultry Laboratory Network.*
- 2:15 PM 357 **Expanded sequencing of *Mycoplasma synoviae* vlhA gene as a complementary genotyping tool.**  
M. M. El-Gazzar\*, A. N. Wetzel, and Z. Raviv, *The Ohio State University, Columbus.*
- 2:30 PM 358 **A Survey of recent *Mycoplasma synoviae* vlhA sequence types in the southeastern United States.**  
V. Laibinis\* and N. Ferguson-Noel, *Department of Population Health, Poultry Diagnostic and Research Center, University of Georgia, Athens.*
- 2:45 PM 359 **Amplified fragment length polymorphism (AFLP) analysis of historic and recent *Mycoplasma iowae* isolates.**  
Z. Raviv\* and A. Wetzel, *The Ohio State University.*

## Avian Influenza I

Chair: Erica Spackman, USDA-ARS SEPRL

Room 223

- 1:00 PM 360 **Multiyear surveillance of avian influenza in wild waterfowl on the Texas Coast.**  
B. Lupiani\*, P. J. Ferro, O. Khan, C. M. Budke, M. J. Peterson, D. Willems, E. Roltsch, T. Merendino, and M. Nelson, *Department of Veterinary Pathobiology, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University, College Station.*
- 1:15 PM 361 **Surveillance of avian influenza virus in Grenada, West Indies.**  
R. N. Sharma\*, D. S. Arathy, K. P. Tiwari, S. Kumthekar, and G. P. Sabarinath, *School of Veterinary Medicine, St. George's University, Grenada, West Indies.*
- 1:30 PM 362 **Evaluation of primer and probe mismatches in sensitivity of select RRT-PCR tests for avian influenza.**  
D. L. Suarez\*, *Southeast Poultry Research Laboratory.*
- 1:45 PM 363 **Evaluation of neuraminidase (NA) subtypes 1 and 2 ELISAs for detection of avian influenza vaccinated/infected poultry using an NA heterologous vaccination strategy.**  
A. R. Reis\*, A. Mundt, O. Bowen, D. L. Suarez, E. S. Mundt, and M. García, *Poultry Diagnostic and Research Center, Department of Population Health, College of Veterinary Medicine, The University of Georgia, Athens.*
- 2:00 PM 364 **Clinical, pathological and virological investigations of H6 low pathogenic avian influenza virus field infection in turkeys.**  
L. Corrand\*, M. N. Lucas, M. Delverdier, G. Croville, and J. L. Guerin, *Ecole Nationale Veterinaire De Toulouse.*
- 2:15 PM 365 **Pathogenicity of reassortant H5N1 highly pathogenic avian influenza viruses in domestic ducks.**  
M. Pantin-Jackwood\*, J. Wasilenko, and C. Cagle, *Southeast Poultry Research Laboratory, Agricultural Research Service, USDA, Athens, GA.*
- 2:30 PM 366 **Expression and distribution of sialic acid receptors in tissues of wild birds.**  
M. Franca\*, D. E. Stallknecht, and E. W. Howerth, *University of Georgia, Department of Pathology, Athens.*

## Physiology, Endocrinology, and Reproduction II

Chair: Roger Lien, Auburn University

Room 224

- 1:00 PM 367 **Histological description of Snail Kite (*Rostrhamus sociabilis*) testicles.**  
S. K. Cunha<sup>1</sup>, J. M. Silva<sup>1</sup>, A. L. S. Valente<sup>1</sup>, A. S. Varela Junior<sup>2</sup>, S. M. L. C. Costa<sup>1</sup>, M. A. A. Coimbra<sup>1</sup>, C. D. Corcini<sup>1</sup>, and D. C. Bongalhardo\*<sup>1</sup>, <sup>1</sup>*Federal University of Pelotas, RS, Brazil*, <sup>2</sup>*Federal University of Rio Grande, RS, Brazil*.
- 1:15 PM 368 **The role of serotonergic axis in reproductive failure associated to aging in broiler breeder roosters.**  
N. Avital-Cohen\* and I. Rozenboim, *Hebrew University of Jerusalem, Rehovot, Israel*.
- 1:30 PM 369 **The use of reflectance spectroscopy for fertility detection in freshly laid egg and gender sorting in mid incubation period.**  
I. Rozenboim\*<sup>1</sup> and E. Ben Dor<sup>2</sup>, <sup>1</sup>*Hebrew University of Jerusalem, Rehovot, Israel*, <sup>2</sup>*Tel Aviv University, Tel Aviv, Israel*.
- 1:45 PM 370 **Fasting reduces luteinizing hormone secretion and central galanin-like peptide expression but stimulates gonadotropin inhibitory hormone expression in the hypothalamus of the Pekin drake.**  
E. Gerometta, S. Colton, E. Coombs, and G. S. Fraley\*, *Hope College, Holland, MI*.
- 2:00 PM 371 **The maintenance of reproductive status in Pekin drakes requires both red and blue wavelengths of light: Relationship to opsin-related proteins in the hypothalamus.**  
G. S. Fraley\*<sup>1</sup> and W. J. Kuenzel<sup>2,3</sup>, <sup>1</sup>*Hope College, Holland, MI*, <sup>2</sup>*University of Arkansas, Fayetteville*, <sup>3</sup>*Center of Excellence for Poultry Science, Fayetteville, AR*.
- 2:15 PM 372 **Genetic selection for parthenogenesis in virgin quail hens impact embryonic mortality and hatchability following mating.**  
H. M. Parker\*, A. S. Kiess, J. B. Wells, M. L. Robertson, and C. D. McDaniel, *Mississippi State University, Mississippi State, MS*.
- 2:30 PM 373 **Induced deep pectoral myopathy and broiler plasma creatine kinase.**  
R. J. Lien\*, S. F. Bilgili, and J. B. Hess, *Auburn University, Auburn, AL*.
- 2:45 PM **Break**

- 3:00 PM 374 **Effect of linseed oil on egg yolk cholesterol and performance of laying hens.**  
G. M. K. Mehaisen\*<sup>1</sup>, A. Abbas<sup>1</sup>, A. M. H. Ahmed<sup>2</sup>, and A. Galal<sup>2</sup>, <sup>1</sup>Cairo University, Giza, Egypt, <sup>2</sup>Ain Shams University, Cairo, Egypt.
- 3:15 PM 375 **The effect of breeder ages and egg sizes on yolk absorption and embryo development.**  
A. Nangsuay\*<sup>1</sup>, Y. Ruangpanit<sup>1,2</sup>, R. Meijerhof<sup>3</sup>, and S. Attamangkune<sup>1</sup>, <sup>1</sup>Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom, Thailand, <sup>2</sup>Poultry Research and Development Center, Suwanvajokkasikit Animal R&D Institute, Nakhon Pathom, Thailand, <sup>3</sup>Poultry Performance Plus, Voorst, the Netherlands.
- 3:30 PM 376 **Effects of in ovo injection of carbohydrates on somatic characteristics of broiler embryos and hatchlings.**  
W. Zhai\*<sup>1</sup>, P. D. Gerard<sup>2</sup>, and E. D. Peebles<sup>1</sup>, <sup>1</sup>Mississippi State University, Mississippi State, MS, <sup>2</sup>Clemson University, Clemson, SC.
- 3:45 PM 377 **Aflatoxins and reproductive performance of two broiler breeder genotypes.**  
A. Scher<sup>1</sup>, A. P. Rosa\*<sup>1</sup>, J. M. Santurio<sup>2</sup>, A. Londero<sup>1</sup>, and L. S. Boemo<sup>1</sup>, <sup>1</sup>Poultry Laboratory, Universidade Federal de Santa Maria, RS, Brazil, <sup>2</sup>Lapemi, Universidade Federal de Santa Maria, RS, Brazil.

## Metabolism and Nutrition: Production, Dietary Manipulation and Manufacturing

Chair: **Bill Dozier, Auburn University**

**Room 225**

- 1:00 PM 378 **Effects of Canthaxanthin and 25-hydroxycholecalciferol on the productive performance of broiler performance from broiler breeders from 25 to 52 weeks of age.**  
C. B. Santos<sup>1</sup>, A. P. Rosa\*<sup>1</sup>, A. Scher<sup>1</sup>, D. A. Alves<sup>1</sup>, A. Bridi<sup>1</sup>, and J. O. B. Sorbara<sup>2</sup>, <sup>1</sup>Universidade Federal de Santa Maria - Poultry Laboratory, Santa Maria, RS, Brazil, <sup>2</sup>DSM Nutritional Products, Sao Paulo, SP, Brazil.
- 1:15 PM 379 **Mathematical models to optimize profit and define nutritional strategies for broiler chickens.**  
D. E. Faria\*<sup>1</sup>, R. B. Araujo<sup>2</sup>, C. G. Lima<sup>1</sup>, W. F. Velloso Junior<sup>1</sup>, K. M. R. Souza<sup>1</sup>, and M. I. Sakamoto<sup>3</sup>, <sup>1</sup>Universidade de São Paulo (FZEA/USP), Pirassununga, SP, Brazil, <sup>2</sup>Novus do Brasil, Indaiatuba, SP, Brazil, <sup>3</sup>Universidade Anhanguera, Descalvado, SP, Brazil.

- 1:30 PM 380 **Effect of maternal energy and protein on broiler carcass yield.**  
T. G. V. Moraes\*, A. Pishnamazi, E. T. Mba, R. A. Renema, and M. J. Zuidhof, *University of Alberta, Edmonton, AB, Canada.*
- 1:45 PM 381 **Effect of feeding low-density diets to Hy-Line W-36 laying hens on long-term production performance.**  
S. A. dePersio\*<sup>1</sup>, K. A. Bland<sup>1</sup>, K. W. Koelkebeck<sup>1</sup>, C. M. Parsons<sup>1</sup>, P. L. Utterback<sup>1</sup>, C. W. Utterback<sup>1</sup>, N. O'Sullivan<sup>2</sup>, K. Bregendahl<sup>2</sup>, and J. Arango<sup>2</sup>, <sup>1</sup>*University of Illinois, Urbana, IL*, <sup>2</sup>*Hy-Line International, Dallas Center, IA.*
- 2:00 PM 382 **Evaluation of different levels of trypsin inhibitor and particle size of expeller-extracted SBM on broiler performance.**  
W. J. Pacheco\*, C. R. Stark, P. R. Ferket, and J. Brake, *North Carolina State University, Raleigh.*
- 2:15 PM 383 **Evaluation of the CYP1A1 and CYP2H1 gene expression in liver tissue of broilers fed with different concentrations of dietary aflatoxin.**  
R. Kakani\*, J. Fowler, S. Kallur, A. Haq, M. J. Bailey, and C. A. Bailey, *Department of Poultry Science, Texas A&M University System, College Station.*
- 2:30 PM 384 **Evaluation of roller mill ground corn inclusion on broiler performance and digestive tract development.**  
Y. Xu\*, C. R. Stark, and J. Brake, *NC State University, Raleigh.*
- 2:45 PM **Break**
- 3:15 PM 385 **Interactive effects of feed form and dietary lysine on growth responses of commercial broiler chicks.**  
L. Mejia\*<sup>1</sup>, C. D. McDaniel<sup>1</sup>, J. S. Moritz<sup>2</sup>, and A. Corzo<sup>1</sup>, <sup>1</sup>*Mississippi State University, Mississippi State, MS*, <sup>2</sup>*West Virginia University, Morgantown.*
- 3:30 PM 386 **Choice feeding under heat stress conditions in broilers from 15 to 35 days of age.**  
A. Helmbrecht\*<sup>1</sup>, T. G. Madsen<sup>2</sup>, S. Srinongkote<sup>3</sup>, and A. Lemme<sup>1</sup>, <sup>1</sup>*Evonik Degussa, Health & Nutrition, Hanau, Germany*, <sup>2</sup>*Evonik Degussa, Health & Nutrition, Singapore*, <sup>3</sup>*Bangkok Animal Research Centre, Bangkok, Thailand.*
- 3:45 PM 387 **Performance of female broilers fed different feeding programs.**  
D. E. Faria\*<sup>1</sup>, M. Pavesi<sup>1</sup>, D. E. Faria Filho<sup>2</sup>, C. G. Lima<sup>1</sup>, W. F. Velloso Junior<sup>1</sup>, V. S. Nakagi<sup>1</sup>, and B. L. U. Schmidt<sup>1</sup>, <sup>1</sup>*Universidade de São Paulo (FZEA/USP), Pirassununga, SP, Brazil*, <sup>2</sup>*Universidade Federal de Minas Gerais, Montes Claros, MG, Brazil.*

- 4:00 PM 388 **Resolving pellet quality issues and improving turkey poul performance with the manufacture of commercial turkey diet formulations.**  
K. G. S. Lilly\*, L. K. Shires, B. N. Swiger, A. M. Evans, K. J. Shipe, and J. S. Moritz, *West Virginia University, Morgantown.*
- 4:15 PM 389 **Effects of feed manufacture techniques that vary feed exposure to pellet die heat and pressure on pellet quality and subsequent broiler lysine utilization.**  
K. J. Shipe\*, A. M. Evans, K. G. S. Lilly, L. K. Shires, B. N. Swiger, and J. S. Moritz, *West Virginia University, Morgantown.*
- 4:30 PM 390 **Broiler breeder composition restriction. 1: Do attempts to shift body composition using dietary protein and energy affect early production traits?**  
A. Pishnamazi\*, E. T. Mba, T. G. V. Moraes, R. A. Renema, and M. J. Zuidhof, *University of Alberta, Edmonton, AB, Canada.*

## Clostridium

Chair: **Steve Davis, Colorado Quality Research  
Room 222**

- 3:15 PM 391 **The effect of probiotic and prebiotic in comparison with antibiotic on controlling necrotic enteritis in *Clostridium perfringens* challenged broilers.**  
H. Hoseinyan Bilandi<sup>1</sup>, S. Rahimi\*<sup>1</sup>, A. Jabari<sup>2</sup>, P. Khaki<sup>2</sup>, and A. Haghrosta<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Tehran, Iran,* <sup>2</sup>*Razi Vaccine and Serum Research Institute, Karaj, Alborz, Iran.*
- 3:30 PM 392 **Toll-like receptors and cytokines profile of chicken challenged with *Clostridium perfringens* and fed organic diets supplemented with MOS.**  
A. Yitbarek\*, J. Brady, H. Echeverry, S. Sharif, B. Guenter, J. D. House, and J. C. Rodriguez-Lecompte, *University of Manitoba.*
- 3:45 PM 393 **Histopathology, immunohistochemistry and cytokine responses in gangrene dermatitis-affected chickens.**  
H. Lillehoj\*, K. W. Lee, G. Li, S. I. Jang, S. H. Lee, D. Ritter, D. A. Bautista, A. P. Neumann, and G. R. Siragusa, *Agricultural Research Service, USDA.*
- 4:00 PM 394 **Characterization of *Clostridium septicum* isolates from cellulitis cases in turkeys.**  
A. J. Thachil\*, A. Ghosh, D. A. Halvorson, and K. V. Nagaraja, *University of Minnesota, College of Veterinary Medicine, Saint Paul.*

- 4:15 PM 395 **Dexamethasone model for cellulitis in turkeys.**  
K. V. Nagaraja\*, A. J. Thachil, A. Sasikala-Appukuttan, C. Heeder, and D. A. Halvorson, *University of Minnesota, College of Veterinary Medicine, Saint Paul.*
- 4:30 PM 396 **Effects of yeast extract and vitamin D on turkey mortality and cellulitis incidence in a transport stress model.**  
G. R. Huff\*, W. E. Huff, and N. C. Rath, *USDA, Agricultural Research Service, Poultry Science Center, University of Arkansas, Fayetteville.*
- 4:45 PM 397 **Use of a repeatable model creating significant clostridium dermatitis mortality in turkeys to determine management and other risk factors that affect the severity of the disease.**  
S. Davis\*, *Colorado Quality Research Inc.*

## Avian Influenza II

Chair: **Mary Pantin-Jackwood, USDA-ARS SEPRL  
Room 223**

- 3:15 PM 398 **Pretreatment of chickens with interferon alpha reduces morbidity and virus shedding following low pathogenic avian influenza infection.**  
D. R. Kapczynski\* and H. Jiang, *USDA-ARS-SEPRL, Athens, GA.*
- 3:30 PM 399 **Virus-specific antibodies interfere with avian influenza infection in peripheral blood mononuclear leukocytes from young or aged chickens.**  
O. T. Bowen\*, D. R. Kapczynski, M. J. Pantin-Jackwood, C. Cagle, and D. L. Suarez, *USDA-ARS-SEPRL.*
- 3:45 PM 400 **Aerosol vaccination of chickens with baculovirus expressed virus-like particles induced immune response in chickens.**  
J. Earnest\*, R. O. Donis, M. Papania, M. J. Hossain, J.-M. Song, S.-M. Kang, R. W. Compans, G. Smith, H. S. Sellers, and E. Mundt, *Department of Population Health, The University of Georgia, Athens.*
- 4:00 PM 401 **Towards the development of a virosome-based vaccine against avian influenza virus.**  
S. Sharif\*, R. Kulkarni, P. Parvizi, L. Read, E. Nagy, S. Behboudi, and A. I. Mallick, *University of Guelph, Guelph, ON, Canada.*

- 4:15 PM      402      **Determination of efficacious vaccine seed strains for use against Egyptian H5N1 highly pathogenic avian influenza viruses through antigenic cartography and in vivo challenge studies.**  
D. Eggert\*, E. Spackman, M. Kim, C. Rue, D. J. Smith, L. M. O. Farag, N. Ahmed, A. A. Mohamed, M. Aly, M. Hassan, R. Fouchier, D. L. Suarez, and D. E. Swayne, *Southeast Poultry Research Laboratory, Athens, GA.*
- 4:30 PM      403      **Virus versus vaccine: Variants of highly pathogenic avian influenza virus H5N1 from Egypt.**  
C. Grundt\*, E. M. Abdelwhab, A.-S. Arafa, M. Ziller, M. K. Hassan, M. M. Aly, H. M. Hafez, T. C. Harder, and M. Beer, *Friedrich Loeffler Institute.*

## POSTER PRESENTATIONS

### Avian Influenza Posters Rooms 230-231, 240-242

- 404      **The effects of interspecies adaptation to different poultry on a wild bird origin H5N1 low path avian influenza viral genome.**  
B. S. Ladman\*, J. Gelb, R. Slemmons, C. R. Pope, and E. Spackman, *Department of Animal and Food Sciences & Avian Biosciences Center, University of Delaware, Newark.*
- 405      **Evaluation of cytokine gene expression after avian influenza virus infection in avian cell lines and primary cell cultures.**  
C. Cagle\*, O. Bowen, J. Wasilenko, and M. Pantin-Jackwood, *Usda Southeast Poultry Research Laboratory.*
- 406      **Replication of swine-lineage influenza virus in juvenile and adult turkey hens.**  
C. W. Lee\*, A. Ali, H. Yassine, M. Khatri, and Y. M. Saif, *The Ohio State University.*
- 407      **Natural infection of H5N1 avian influenza in budgerigars and zebra finches.**  
G. S. Moussa\*, *Assiut University, Egypt.*
- 408      **Highly pathogenic avian influenza H5N1 natural infection in domestic and free living water fowls in Egypt.**  
G. S. Moussa\*, *Assiut University, Egypt.*
- 409      **Breaks of H5N1 avian influenza in previously vaccinated chicken flocks.**  
S. A.-A. Mousa\* and O. K. Amen, *Assiut Univ. Egypt.*

- 410 **Sequencing of H5N1 virus circulating in Egypt.**  
S. A.-A. Mousa\* and O. K. Amen, *Assiut University, Egypt.*

## **Bacterial Posters**

### **Rooms 230-231, 240-242**

- 411 **Withdrawn**
- 412 **Prevalence of *Salmonella*, *Campylobacter* and *E. coli* in wild game birds 2009–2010 season.**  
C. M. Logue\*, J. S. Sherwood, R. Bergquist, and C. Sletten, *North Dakota State University.*
- 413 **Evaluation and validation studies of real-time PCR assay for the detection of *Chlamydophila psittaci*.**  
H. Lu\*, S. Myers, R. Schneider, and L. Lin, *Penn State University.*
- 414 **Characterization and distribution of avian pathogenic *Escherichia coli* isolates from broilers in Peru.**  
C. Carranza\*, A. Neumann, C. Kromm, N. Falcon, and R. Leon, *Technical Department of Innova Andina S.a., Lima, Peru.*
- 415 **Serum survival in avian pathogenic *Escherichia coli*.**  
L. K. Nolan\* and G. Li, *Iowa State University, College of Veterinary Medicine.*
- 416 **Characterization of attaching and effacing *Escherichia coli* (AEEC) isolated from poultry.**  
T. Denagamage\*, J. Blair, and S. Kariyawasam, *Department of Veterinary and Biomedical Sciences, The Pennsylvania State University, University Park.*
- 417 **Efficacy of BMD versus probiotics in the feed for the control of necrotic enteritis by *Clostridium perfringens* in broiler chickens.**  
S. H. Miller\* and S. W. Davis, *Alpharma.*
- 418 **Experience of using inactivated *Salmonella* vaccines for chickens, Salenvac and Salenvac T, in Europe.**  
J. Schrader\*, C. A. Pugh, C. F. Crouch, and M. J. Francis, *Intervet Schering Plough Animal Health.*
- 419 **Rapid detection of *Campylobacter jejuni* using quantum dots and nanobeads based optical biosensor.**  
H. Wang\*, Y. Li, and M. F. Slavik, *University of Arkansas, Fayetteville.*
- 420 **Differences in pathogen colonization and mortality of genetically selected Japanese quail lines subjected to heat stress and *Escherichia coli* challenge.**  
W. E. Huff\*<sup>1</sup>, G. R. Huff<sup>1</sup>, I. V. Wesley<sup>2</sup>, N. B. Anthony<sup>3</sup>, N. C. Rath<sup>1</sup>, and D. G. Satterlee<sup>4</sup>, <sup>1</sup>*USDA/ARS/PPPSRU, Fayetteville, AR*, <sup>2</sup>*USDA/ARS/NADC, Ames, IA*, <sup>3</sup>*University of Arkansas, Fayetteville*, <sup>4</sup>*Louisiana State University, Baton Rouge.*

## Behavior and Well-Being Posters Rooms 230-231, 240-242

- 421 **Onion consumption and bone density in laying hens.**  
H. W. Cheng\* and R. L. Dennis, *Livestock Behavior Research Unit, USDA-ARS, West Lafayette, IN.*
- 422 **Evaluation of heterophil lymphocyte ratio and relative asymmetry as welfare parameters for broiler breeders.**  
M. J. Da Costa\*<sup>1</sup>, E. O. Oviedo-Rondón<sup>1</sup>, P. E. Eusebio-Balcazar<sup>1</sup>, V. Moraes<sup>2</sup>, N. A. Barbosa<sup>2</sup>, and K. Claassen<sup>1</sup>, <sup>1</sup>*North Carolina State University, Raleigh,* <sup>2</sup>*Universidade Estadual Paulista, Jaboticabal, SP, Brasil.*
- 423 **Effects of different housing environment on neural plasticity in the chicken.**  
H. Taira\*, M. M. Beck, S. C. Chapman, and P. A. Skewes, *Clemson University, Clemson, SC.*

## Case Report Posters Rooms 230-231, 240-242

- 424 **Occurrence of the cutaneous trematode *Collyriclum faba* in an American robin (*Turdus migratorius*) located in the Midwestern United States.**  
D. A. Wilson\*<sup>1</sup>, P. S. Wakeness<sup>1</sup>, and J. N. Caudell<sup>2</sup>, <sup>1</sup>*Purdue University, West Lafayette, IN,* <sup>2</sup>*USDA, APHIS Wildlife Services, Dubois, IN.*
- 425 ***Aspergillus fumigatus* in day-old broiler chicks: What does it mean?**  
D. Magee\*, S. A. Hubbard, and F. D. Wilson, *Poultry Research and Diagnostic Laboratory, College of Veterinary Medicine, Mississippi State University, Pearl.*
- 426 ***Macrorhabdus ornithogaster* (Megabacterium) infection in adult hobby chickens in the North Georgia Mountains, USA.**  
E. L. Behnke\* and O. J. Fletcher, *Georgia Poultry Laboratory Network.*
- 427 **A case of unilateral periorbital cellulitis and mandibular osteomyelitis in a turkey flock.**  
J.-L. Guerin\*, A. Cadec, O. Albaric, M.-N. Lucas, J.-Y. Douet, and L. Corrand, *Ecole Nationale Veterinaire De Toulouse, France.*
- 428 **Enteritis and elevated mortality in young guinea fowl.**  
S. Tilley\*, K. M. Robbins, J. M. Day, and H. J. Barnes, *Department of Population Health and Pathobiology, College of Veterinary Medicine, North Carolina State University, Raleigh.*

## Coccidiosis Posters

### Rooms 230-231, 240-242

- 429 **Global gene expression analysis to compare intestinal transcriptional responses against three major *Eimeria* species, *E. acervulina*, *E. maxima*, and *E. tenella*.**  
H. Lillehoj\*, D. K. Kim, and C. H. Kim, *Animal Parasitic Diseases Laboratory, Animal and Natural Resources Institute, USDA-ARS, Beltsville, MD.*
- 430 **Comparison of probiotic, prebiotic, vaccine and coccidiostat in prevention and control of coccidiosis in broilers.**  
H. Fayazi<sup>1</sup>, S. Rahimi\*<sup>1</sup>, and M. M. Kiaei<sup>2</sup>, <sup>1</sup>*Department of Poultry Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Tehran, Iran,* <sup>2</sup>*Department of Animal & Poultry Health & Nutrition, Faculty of Veterinary Medicine, University of Tehran, Tehran, Tehran, Iran.*
- 431 **Anethol enhances in vitro parameters of immunity and augments in vivo protection against avian coccidiosis.**  
S.-H. Lee\*<sup>1</sup>, H. Lillehoj<sup>1</sup>, S. Jang<sup>1</sup>, K.-W. Lee<sup>1</sup>, M.-S. Park<sup>1</sup>, D. Kim<sup>1</sup>, and D. Bravo<sup>2</sup>, <sup>1</sup>*Animal Parasitic Diseases Laboratory, Animal and Natural Resources Institute, Agricultural Research Service-USDA, Beltsville, MD,* <sup>2</sup>*Pancosma S.A., Geneva, Switzerland.*
- 432 **Effects of *Bacillus subtilis*-based direct-fed microbials on growth performance, immune characteristics and resistance against experimental coccidiosis in broiler chickens.**  
K. W. Lee\*<sup>1</sup>, H. S. Lillehoj<sup>1</sup>, S. H. Lee<sup>1</sup>, S. I. Jang<sup>1</sup>, U. S. Babu<sup>2</sup>, M. S. Park<sup>1</sup>, D. K. Kim<sup>1</sup>, A. P. Neumann<sup>3</sup>, and G. R. Siragusa<sup>3</sup>, <sup>1</sup>*Agricultural Research Service, Beltsville, MD,* <sup>2</sup>*US Food and Drug Administration, Laurel, MD,* <sup>3</sup>*Danisco, Waukesha, WI.*
- 433 **Illeal and cecal fungal communities in broilers given probiotics, specific essential oil blends, and *Eimeria* infection.**  
M. E. Hume\*<sup>1</sup>, C. A. Henandez<sup>1</sup>, N. A. Barbosa<sup>2,3</sup>, S. E. Dowd<sup>4</sup>, N. K. Sakomura<sup>2</sup>, and E. O. Oviedo-Rondon<sup>3</sup>, <sup>1</sup>*USDA, ARS, FFSRU, College Station, TX,* <sup>2</sup>*Universidade Estadual Paulista, UNESP-Jaboticabal, Brazil,* <sup>3</sup>*North Carolina State University, Department of Poultry Science, Raleigh,* <sup>4</sup>*Medical Biofilm Research Institute, Research and Testing Laboratories, Lubbock, TX.*
- 434 **Effects of novel nanoparticle adjuvant Montanide IMS 1313 N VG on mucosal vaccination of poultry against *Eimeria acervulina*.**  
H. S. Lillehoj\*<sup>1</sup>, S. I. Jang<sup>1</sup>, S. H. Lee<sup>1</sup>, K. W. Lee<sup>1</sup>, F. Bertrand<sup>2</sup>, L. Dupuis<sup>2</sup>, and S. Deville<sup>2</sup>, <sup>1</sup>*Animal Parasitic Diseases Laboratory, Agricultural Research Service-U.S. Department of Agriculture, Beltsville,* <sup>2</sup>*Seppic, Puteaux, France.*

- 435 **Immunoenhancing effects of Montanide ISA oil-based adjuvants on recombinant coccidia antigen vaccination against *Eimeria acervulina* infection.**  
S. I. Jang\*<sup>1</sup>, H. S. Lillehoj<sup>1</sup>, S. H. Lee<sup>1</sup>, K. W. Lee<sup>1</sup>, M. S. Park<sup>1</sup>, G. R. Bauchan<sup>2</sup>, E. P. Lillehoj<sup>3</sup>, F. Bertrand<sup>4</sup>, L. Dupuis<sup>4</sup>, and S. Deville<sup>4</sup>, <sup>1</sup>*Animal and Natural Resources Institute, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD*, <sup>2</sup>*Plant Science Institute, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD*, <sup>3</sup>*University of Maryland School of Medicine, Baltimore*, <sup>4</sup>*Seppic Inc., Puteaux, France*.

## **Environment and Management Posters**

### **Rooms 230-231, 240-242**

- 436 **The effect of cage design on feed efficiency and egg weight of white leghorn hens: An epidemiological study.**  
P. Y. Hester\*<sup>1</sup>, A. S. Kiess<sup>2</sup>, J. A. Mench<sup>3</sup>, R. C. Newberry<sup>4</sup>, and J. P. Garner<sup>1</sup>, <sup>1</sup>*Purdue University, W. Lafayette, IN*, <sup>2</sup>*Mississippi State University, Mississippi State, MS*, <sup>3</sup>*University of California at Davis, Davis*, <sup>4</sup>*Washington State University, Pullman*.
- 437 **The effect of cage design on egg production of white leghorn hens: An epidemiological study.**  
A. S. Kiess\*<sup>1</sup>, P. Y. Hester<sup>2</sup>, J. A. Mench<sup>3</sup>, R. C. Newberry<sup>4</sup>, and J. P. Garner<sup>2</sup>, <sup>1</sup>*Mississippi State University, Mississippi State, MS*, <sup>2</sup>*Purdue University, Lafayette, IN*, <sup>3</sup>*University of California at Davis, Davis*, <sup>4</sup>*Washington State University, Pullman*.
- 438 **Effect of daily and skipped organic acid oral regimens on final weight of Broiler chickens.**  
G. Guzman\*<sup>1,2</sup> and A. Garcia<sup>1</sup>, <sup>1</sup>*Viator, Guadalajara, Jal., Mexico*, <sup>2</sup>*Universidad de Guadalajara, Zapopan, Jal., Mexico*.
- 439 **Durability testing of incandescent, cold cathode, compact fluorescent and LED lamps under poultry conditions.**  
E. Benson\*, D. Hougentogler, J. McGurk, E. Herrman, and R. Alphin, *University of Delaware, Newark*.
- 440 **The impact of peat moss amendments on the microbial load in used pine shavings poultry litter.**  
D. L. Everett\*<sup>1</sup>, Y. Vizzier-Thaxton<sup>2</sup>, C. D. McDaniel<sup>1</sup>, and A. S. Kiess<sup>1</sup>, <sup>1</sup>*Mississippi State University, Mississippi State, MS*, <sup>2</sup>*University of Arkansas, Center for Animal Wellbeing, Fayetteville*.
- 441 **Hematology and serum metabolites profile of egg-type chickens in different intensive housing systems in humid tropics.**  
O. M. Alabi\*<sup>1</sup>, D. O. Adejumo<sup>2,1</sup>, and A. O. Ladokun<sup>3</sup>, <sup>1</sup>*Bowen University, Iwo, Osun state, Nigeria*, <sup>2</sup>*University of Ibadan, Ibadan, Oyo state, Nigeria*, <sup>3</sup>*University of Agriculture, Abeokuta, Ogun state, Nigeria*.

- 442      **Evaluation of feeding spray-dried bovine plasma protein on production performance of laying hens exposed to acute heat stress temperature.**  
S. A. dePersio\*<sup>1</sup>, K. W. Koelkebeck<sup>1</sup>, J.M. Campbell<sup>2</sup>, K. Lima<sup>1</sup>, P. C. Harrison<sup>1</sup>, C. W. Utterback<sup>1</sup>, P. L. Utterback<sup>1</sup>, A. Green<sup>1</sup>, and R. Gates<sup>1</sup>,  
<sup>1</sup>University of Illinois, Urbana, <sup>2</sup>APC Inc., Ankeny, IA.
- 443      **Variations in preenrichment pH of poultry feed and feed ingredients after incubation periods up to 48 hours.**  
N. A. Cox\*<sup>1</sup>, R. J. Buhr<sup>1</sup>, J. A. Cason<sup>1</sup>, K. E. Richardson<sup>2</sup>, L. J. Richardson<sup>3</sup>, L. L. Rigsby<sup>1</sup>, and P. J. Fedorka-Cray<sup>1</sup>, <sup>1</sup>USDA/ARS Russell Research Center, Athens, GA, <sup>2</sup>Anitox Corp., Atlanta, GA, <sup>3</sup>The Coca-Cola Company, Atlanta, GA.
- 444      **National Air Quality Site Assessment Tool for poultry and livestock producers.**  
C. W. Ritz\*<sup>1</sup>, D. M. Karcher<sup>2</sup>, C. R. Angel<sup>3</sup>, T. J. Applegate<sup>4</sup>, and B. D. Fairchild<sup>1</sup>, <sup>1</sup>University of Georgia, Athens, <sup>2</sup>Michigan State University, East Lansing, <sup>3</sup>University of Maryland, College Park, <sup>4</sup>Purdue University, West Lafayette, IN.
- 445      **Effect of environmental and drinking water sanitation on respiratory post-vaccine mortality of broiler chickens.**  
G. Guzman\*<sup>1,2</sup> and A. Garcia<sup>1</sup>, <sup>1</sup>Viator, Guadalajara, Jal., Mexico, <sup>2</sup>Universidad de Guadalajara, Zapopan, Jal., Mexico.
- 446      **The role of an early paratyphoid *Salmonella* infection in a necrotic enteritis challenge model in broilers.**  
S. Shivaramaiah\*<sup>1</sup>, J. R. Barta<sup>2</sup>, M. J. Morgan<sup>1</sup>, R. E. Wolfenden<sup>1</sup>, B. M. Hargis<sup>1</sup>, and G. Téllez<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>University of Guelph, Guelph, ON, Canada.
- 447      **Evaluation of a lignite-coal water additive designed to reduce ammonia emissions on broiler performance, carcass attributes, selected welfare measures and ammonia emissions.**  
C. Bench<sup>1</sup>, B. Chmilar<sup>1</sup>, M. Oryschak<sup>2</sup>, and D. Korver\*<sup>1</sup>, <sup>1</sup>University of Alberta, Edmonton, AB, Canada, <sup>2</sup>Alberta Agriculture and Rural Development, Edmonton, AB, Canada.
- 448      **Evaluation of a fermented rice/soy product on broiler performance, litter characteristics, ammonia and odorant volatilization when applied to used broiler litter.**  
M. P. Williams\*<sup>1</sup>, C. Coufal<sup>1</sup>, E. Caraway<sup>2</sup>, R. Carpenter<sup>3</sup>, I. Smith<sup>3</sup>, and J. T. Lee<sup>1</sup>, <sup>1</sup>Poultry Science Department, AgriLife Research, Texas A&M Systems, College Station, <sup>2</sup>Olfactory Laboratory, West Texas A&M University, Canyon, <sup>3</sup>BiOWiSH Technologies, Chicago, IL.
- 449      **Tomato pomace as an ingredient in diets of laying hens.**  
A. J. King\* and J. K. Griffin, University of California, Davis.

- 450 **Effects of mycotoxin contaminated diets on early performance in replacement layer pullets.**  
S. Iselt\*<sup>1</sup>, J. Lee<sup>1</sup>, M. Farnell<sup>1</sup>, M. Williams<sup>1</sup>, M. Ross<sup>1</sup>, K. Stringfellow<sup>1</sup>, S. Anderson<sup>1</sup>, U. Hofstetter<sup>2</sup>, R. Beltran<sup>2</sup>, G. Schatzmayr<sup>2</sup>, and D. Caldwell<sup>1</sup>, <sup>1</sup>*Poultry Science Department, Texas A&M University, College Station*, <sup>2</sup>*Biomim GmbH, Herzogenburg, Austria*.
- 451 **Initial life cycle assessment for conventional broiler production on the farm: Carbon footprint.**  
E. J. Van Loo\*<sup>1,3</sup>, E. G. Killeen<sup>2</sup>, S. C. Ricke<sup>1</sup>, and G. J. Thoma<sup>2</sup>, <sup>1</sup>*Department of Food Science and Center for Food Safety, University of Arkansas, Fayetteville*, <sup>2</sup>*Ralph E. Martin Department of Chemical Engineering, University of Arkansas, Fayetteville*, <sup>3</sup>*New Organic Solutions, Fayetteville, AR*.
- 452 **Microbiological effects of *Bacillus*-based DFM supplementation in broilers raised on used litter from commercial farms with different disease histories.**  
A. P. Neumann\*<sup>1</sup>, J. A. Benson<sup>1</sup>, K. W. Lee<sup>2</sup>, G. D. Ritter<sup>3</sup>, D. A. Bautista<sup>4</sup>, H. S. Lillehoj<sup>2</sup>, and G. R. Siragusa<sup>1</sup>, <sup>1</sup>*Danisco USA Inc., Waukesha, WI*, <sup>2</sup>*Animal Parasitic Diseases Laboratory, Animal and Natural Resources Institute, Agricultural Research Service, USDA, Beltsville, MD*, <sup>3</sup>*Mountaire Farms Inc., Millsboro, DE*, <sup>4</sup>*Lasher Poultry Diagnostic Laboratory, University of Delaware, Georgetown*.
- 453 **Testicular development of breeder males reared on accelerated growth schedules.**  
W. Berry\*<sup>1</sup>, S. Oates, L. Stevenson, and J. Hess, *Auburn University Poultry Science, Auburn, AL*.
- 454 **Expressed sequence tag profiling of the guinea fowl pancreatic functions.**  
C. Darris\*<sup>1</sup>, A. Tinnon, and S. Nahashon, *Department of Agricultural Sciences, Tennessee State University, Nashville*.
- 455 **South Carolina Ag-Watch Program—An awareness and response program for food & agriculture producers, processors and responders.**  
J. Helm\*<sup>1</sup>, C. A. Krugler, and C. F. Harden, *Clemson University Livestock-Poultry Health Division, Columbia, SC*.

## Extension and Instruction Posters Rooms 230-231, 240-242

- 456 **Growing the undergraduate poultry science program at North Carolina State University: Undergraduate recruitment strategies & program development.**  
J. B. Hoffman\*<sup>1</sup>, *North Carolina State University, Raleigh*.

- 457 **A field study to evaluate the efficiency of four types of incinerators on broiler breeder farms.**  
A. J. Pescatore\*<sup>1</sup>, J. Jacob<sup>1</sup>, and M. Miller<sup>2</sup>, <sup>1</sup>*University of Kentucky, Lexington*, <sup>2</sup>*Kentucky Poultry Federation, Winchester.*
- 458 **Pastured poultry in Georgia: Growers' and consumers' perspective.**  
E. J. Van Loo<sup>1,4</sup>, W. Alali\*<sup>2</sup>, S. Welander<sup>3</sup>, P. G. Crandall<sup>1</sup>, and S. C. Ricke<sup>1</sup>, <sup>1</sup>*Department of Food Science and Center for Food Safety, University of Arkansas, Fayetteville*, <sup>2</sup>*Center of Food Safety, University of Georgia, Griffin*, <sup>3</sup>*Georgia Organics, Atlanta, GA*, <sup>4</sup>*New Organic Solutions, Fayetteville, AR.*
- 459 **Opportunities for veterans in agriculture: Development of an integrated educational and training program for new and beginning farmers and ranchers.**  
J. R. Moyle\*<sup>1</sup>, A. M. Donoghue<sup>1</sup>, I. Reyes-Herrera<sup>2</sup>, H. L. Goodwin<sup>2</sup>, J. M. Burke<sup>3</sup>, D. M. Burner<sup>3</sup>, R. L. Raper<sup>3</sup>, A. C. Fanatico<sup>4</sup>, O. J. Gekara<sup>5</sup>, G. Kuepper<sup>6</sup>, A. Wells<sup>6</sup>, T. Spencer<sup>7</sup>, M. Hale<sup>7</sup>, and D. J. Donoghue<sup>2</sup>, <sup>1</sup>*Poultry Production and Product Safety Research Unit, USDA-ARS, Fayetteville, AR*, <sup>2</sup>*Dept. Poultry Science, University of Arkansas, Fayetteville*, <sup>3</sup>*Dale Bumpers Small Farms Research Center, USDA-ARS, Booneville, AR*, <sup>4</sup>*The Goodnight Family Sustainable Development Program, Appalachian State University, Boone, NC*, <sup>5</sup>*Dept. Agriculture, University of Arkansas at Pine Bluff, Pine Bluff*, <sup>6</sup>*The Kerr Center for Sustainable Agriculture, Poteau, OK*, <sup>7</sup>*National Center for Appropriate Technology, NCAT, Fayetteville, AR.*

## Genetics Posters

### Rooms 230-231, 240-242

- 460 **Using quantitative PCR to investigate three candidate genes related to pulmonary hypertension in the chicken.**  
A. A. K. Al-Rubaye\*, N. B. Anthony, G. F. Erf, R. F. Wideman, and D. D. Rhoads, *University of Arkansas, Fayetteville.*
- 461 **Microarray analysis in early and late passage of chicken embryo fibroblast cells.**  
B.-W. Kong\*, J. Y. Lee, W. G. Bottje, and K. Lassiter, *University of Arkansas, Fayetteville.*
- 462 **The protective efficacy of rMd5ΔMeq against challenge with a very virulent plus strain of MDV in relatively resistant lines of chickens.**  
S. Chang\*<sup>1,2</sup>, J. R. Dunn<sup>1</sup>, L. F. Lee<sup>1</sup>, M. Heidari<sup>1</sup>, J. Z. Song<sup>3</sup>, C. W. Ernst<sup>2</sup>, and H. M. Zhang<sup>1</sup>, <sup>1</sup>*Avian Disease and Oncology Laboratory, USDA-ARS, East Lansing, MI*, <sup>2</sup>*Michigan State University, East Lansing*, <sup>3</sup>*University of Maryland, College Park.*

- 463 **Variations in the proteome and metabolic profiles of broiler chickens during adipose tissue accretion.**  
G. Kelley\*, S. Nahashon, X. Wang, F. Chen, and A. Stewart-Bohannon, *Tennessee State University, Nashville.*
- 464 ***Brucella abortus* antigen challenge of chicken lines divergently selected for high and low antibody response.**  
C. D. Smith\*<sup>1</sup>, C. M. Ashwell<sup>1</sup>, S. J. Nolin<sup>1</sup>, Z. S. Lowman<sup>1</sup>, and R. L. Taylor<sup>2</sup>, <sup>1</sup>*North Carolina State University, Raleigh,* <sup>2</sup>*University of New Hampshire, Durham.*

## Immunology Posters Rooms 230-231, 240-242

- 465 **Kinetics of anti-cryptosporidia antibody response, oocyst shedding and bursa/body weight ratios in SPF white leghorn chickens infected with *Cryptosporidium baileyi* oocysts at different ages.**  
H. Abbassi\* and M. Naciri, *Department of Animal Science, University of Minnesota, St. Paul.*
- 466 **An essential role of avian interleukin (IL)-22 as immune mediator during inflammatory response.**  
R. Dalloul\*, S. Kim, L. L. Faris, R. H. Fetterer, K. B. Miska, and M. C. Jenkins, *Avian Immunobiology Laboratory, Animal & Poultry Sciences, Virginia Tech, Blacksburg.*
- 467 **US Veterinary Immune Reagents Network: Progress with poultry immune reagents development.**  
Y. H. Hong<sup>1,2</sup>, H. S. Lillehoj<sup>2</sup>, S. H. Lee\*<sup>2</sup>, C. Baldwin<sup>3</sup>, D. Tompkins<sup>3</sup>, J. LaBresh<sup>4</sup>, Y. Sullivan<sup>4</sup>, and B. Wagner<sup>5</sup>, <sup>1</sup>*Chung-Ang University, Anseong, Republic of Korea,* <sup>2</sup>*Animal and Natural Resources Institute, Agricultural Research Services, United States Department of Agriculture, Beltsville, MD,* <sup>3</sup>*University of Massachusetts, Amherst,* <sup>4</sup>*Kingfisher Biotech Inc., St. Paul, MN,* <sup>5</sup>*Cornell University, Ithaca, NY.*
- 468 **The effects of medicinal plants on carcass characteristics, serum lipids and immune system in broilers.**  
A. Golpour, S. Rahimi\*, M. Hatamzade, M. Mazaheri, M. Mirzade, M. Saeedi, and S. Yakhkeshi, *Tarbiat Modares University, Tehran, Tehran, Iran.*
- 469 **Global changes of transcriptional expression in broiler chickens with gangrenous dermatitis.**  
D. K. Kim\*<sup>1</sup>, H. Lillehoj<sup>1</sup>, K. W. Lee<sup>1</sup>, A. Neumann<sup>2</sup>, G. Siragusa<sup>2</sup>, and G. Ritter<sup>3</sup>, <sup>1</sup>*Animal Parasitic Diseases Laboratory, Animal and Natural Resources Institute, USDA-ARS, Beltsville, MD,* <sup>2</sup>*Danisco-Agtech Products Inc., Waukesha, WI,* <sup>3</sup>*Mountaire Farms, Millsboro, DE.*

- 470 **The effect of vitamin C and betaine on broiler chicks immune system in heat stress condition.**  
A. Zarei\*<sup>1</sup>, S. Taghilo<sup>1</sup>, H. Lotfollahian<sup>2</sup>, H. Neurozian<sup>1</sup>, and F. Vakili<sup>1</sup>, <sup>1</sup>*Islamic Azad University, Karaj Branch, Karaj-Alborz, Iran*, <sup>2</sup>*IRANIAN Animal Science Research Institute, Karaj-Alborz, Iran*.
- 471 **A time-course study of transcriptional responses in laying hen reproductive-tract tissues in response to *Salmonella* Enteritidis infection.**  
U. S. Babu and K. V. Balan\*, *Food & Drug Administration, Laurel, MD*.
- 472 **Immune response of laying hens fed diets containing cottonseed meal treated with sodium bentonite.**  
M. Azghadi, H. Kermanshahi, A. Golian\*, A. Tahmasbi, and A. Gilani, *Ferdowsi University of Mashhad, Mashhad, Khorasan Razavi, Iran*.
- 473 **Effect of yeast culture supplementation on carcass characteristics and humoral immune response of broiler chicks.**  
M. M. Fathi<sup>1</sup>, I. Al-Homidan<sup>1</sup>, A. Al-Khalaf<sup>1</sup>, and S. Al-Mansour\*<sup>1,2</sup>, <sup>1</sup>*College of Agriculture & Veterinary Medicine, Qassim University, Buraidah, Al-Qassim, Saudi Arabia*, <sup>2</sup>*Al-Watania Poultry*.
- 474 **Distinct lines of chickens express different splenic cytokine mRNA profiles in response to *Salmonella enteritidis* challenge.**  
D. J. Coble\*, S. B. Redmond, B. Hale, and S. J. Lamont, *Iowa State University, Ames*.
- 475 **A study on the effects of aloe vera gel on phagocytic ability of macrophages and blood parameters in broilers.**  
B. Darabi Ghane\*<sup>1</sup>, A. Zarei<sup>1</sup>, A. Zare Shahneh<sup>2</sup>, and A. Mahdavi<sup>3</sup>, <sup>1</sup>*Islamic Azad University-Karaj Branch, Karaj, Iran*, <sup>2</sup>*University of Tehran, Karaj, Iran*, <sup>3</sup>*University of Semnan, Semnan, Iran*.
- 476 **Impact of non-antibiotic alternatives on performance, gut inflammation and integrity in broiler chickens.**  
H. Lu\*, O. Adeola, and K. M. Ajuwon, *Purdue University, West Lafayette, IN*.

## Infectious Bronchitis Posters

### Rooms 230-231, 240-242

- 477 **Pathogenicity of Colombian infectious bronchitis virus isolates.**  
A. Rodriguez-Avila\*, G. Quiñones-Chois, N. Bermudez, and M. Garcia, *Laboratorio De Biología Molecular Bioara S.a. Bogotá, Colombia*.
- 478 **Host-driven selection of infectious bronchitis virus.**  
J. Phillips\*, S. Thor, D. A. Hilt, and M. W. Jackwood, *Poultry Diagnostic And Research Center, University of Georgia, Athens*.

- 479 **Phylogenetic analysis and identification of infectious bronchitis virus (IBV) strains worldwide.**  
M. Jackwood\* and D. A. Hilt, *University of Georgia.*

## **Infectious Bursal Disease Posters Rooms 230-231, 240-242**

- 480 **Molecular diversity in the hypervariable region of VP2 from infectious bursal disease viruses.**  
D. J. Jackwood\* and S. E. Sommer-Wagner, *Food Animal Health Research Program, The Ohio State University/OARDC, Wooster.*
- 481 **Reassortant infectious bursal disease viruses from California with a vvIBDV genome segment A and a serotype 1 non-vvIBDV segment B.**  
S. Stoute\*, D. J. Jackwood, S. E. Sommer-Wagner, B. M. Crossley, P. R. Woolcock, and B. R. Charlton, *Food Animal Health Research Program, Ohio Agricultural Research and Development Center, The Ohio State University, Wooster.*
- 482 **Correlation between phylogenetic topology and antigenic properties determined by virus neutralization of field infectious bursal disease viruses detected in U.S. during 2009 and 2010.**  
A. Banda\*, T. Tabor, and R. Mackey, *Poultry Research and Diagnostic Laboratory, College of Veterinary Medicine, Mississippi State University, Pearl.*

## **Laryngotracheitis Posters Rooms 230-231, 240-242**

- 483 **Glycoprotein J and glycoprotein I specific ELISA for the detection of ILT.**  
A. Mundt\* and M. García, *Poultry Diagnostic and Research Center, Department of Population Health, University of Georgia.*
- 484 **Withdrawn**
- 485 **Whole genome sequencing of infectious laryngotracheitis.**  
C. Boettger\* and C. L. Keeler, *University of Delaware.*
- 486 **Onset of immunity in chickens following vaccination with a recombinant herpesvirus of turkeys vaccine expressing infectious laryngotracheitis antigens.**  
L. S. Melson\* and D. L. Laris, *Intervet Schering Plough Animal Health, Millsboro, DE.*

## **Metabolism and Nutrition: Amino Acid Posters**

### **Rooms 230-231, 240-242**

- 487 **Relative effectiveness and toxicity of methionine sources in diets for White Pekin ducks.**  
M. Xie\*<sup>1,2</sup>, S. S. Hou<sup>1,2</sup>, and W. Huang<sup>1,2</sup>, <sup>1</sup>*Institute of Animal Science, Chinese Academy of Agricultural Sciences, Beijing, China*, <sup>2</sup>*State Key Laboratory of Animal Nutrition, Beijing, China.*
- 488 **Inevitable endogenous amino acid and CP losses in the terminal ileum of Pekin ducks as affected by cellulose supplementation.**  
O. Akinde\*<sup>1</sup>, H. Kluth<sup>1</sup>, and M. Rodehutschord<sup>2</sup>, <sup>1</sup>*University of Halle-Wittenberg, Halle (Saale), Germany*, <sup>2</sup>*University of Hohenheim, Stuttgart, Germany.*
- 489 **Estimation of ileal endogenous amino acid flow in broiler chickens fed various nitrogen-free diets.**  
C. Kong\* and O. Adeola, *Purdue University, West Lafayette, IN.*
- 490 **Optimization of broiler performance fed diets varying in digestible protein and amino acids using response surface model.**  
H. Ahmadi\* and A. Golian, *Ferdowsi University of Mashhad, Mashhad, Iran.*
- 491 **Performance of broiler chicks fed pre-starter diets formulated with increasing digestible lysine levels and obtained from eggs of different breeder ages.**  
E. S. Oliveira\*<sup>1,2</sup>, J. S. Santos<sup>1,2</sup>, E. M. Oliveira<sup>1,2</sup>, S. L. Aguilár<sup>1,2</sup>, and J. H. Stringhini<sup>1,2</sup>, <sup>1</sup>*Universidade Federal de Goiás, Goiânia, Goiás, Brazil*, <sup>2</sup>*Cnpq.*
- 492 **Effects of glutamine added to glutamic acid and phytonics additive on intestinal mucous morphology of broilers challenged with *Eimeria acervulina*.**  
V. C. Pelícia\*<sup>1</sup>, J. R. Sartori, A. C. Stradiotti, P. C. Araujo, M. K. Maruno, T. C. Putarov, W. T. Silva, L. A. Madeira, and A. C. Pezzato, *São Paulo State University, Botucatu, SP, Brazil.*
- 493 **Dietary lysine levels for broiler breeder hens.**  
C. F. S. Oliveira<sup>2</sup>, N. K. Sakomura<sup>1</sup>, F. G. P. Costa\*<sup>2</sup>, E. P. Silva<sup>1</sup>, and L. Hauschild<sup>1</sup>, <sup>1</sup>*Universidade Estadual Paulista - Faculdade de Ciências Agrárias e Veterinárias, Jaboticabal, SP, Brazil*, <sup>2</sup>*Universidade Federal da Paraíba, Areia, Paraíba, Brazil.*
- 494 **Crude protein requirement for egg production of free-range laying hens.**  
M. M. A. Brainer<sup>1,2</sup>, C. B. V. Rabello\*<sup>1</sup>, C. C. Lopes<sup>1</sup>, W. R. L. Medeiros<sup>1</sup>, and R. A. Lima<sup>1</sup>, <sup>1</sup>*Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil*, <sup>2</sup>*IFET Goiano, Campus Ceres/GO, Ceres, Goiás, Brasil.*

- 495 **Threonine biomass as a source of amino acids for poultry.**  
P. Utterback\*<sup>1</sup>, E. Jimenez<sup>1</sup>, S. Block<sup>2</sup>, J. Less<sup>2</sup>, and C. Parsons<sup>1</sup>, <sup>1</sup>*University of Illinois, Urbana*, <sup>2</sup>*ADM, Decatur, IL*.
- 496 **Broiler responses to essential crystalline amino acid supplementation of a low crude protein starter diet with different glycine + serine:lysine ratio.**  
I. C. O. Rojas<sup>1</sup>, A. E. Murakami\*<sup>1</sup>, R. V. Nunes<sup>2</sup>, F. J. Urganí<sup>1</sup>, and C. Eyng<sup>1</sup>, <sup>1</sup>*Universidade Estadual de Maringá, Maringá, Paraná, Brazil*, <sup>2</sup>*Universidade Estadual do Oeste do Paraná, Marechal Cândido Rondon, Paraná, Brazil*.
- 497 **The effect of a low crude protein starter diet with different glycine + serine:lysine ratio on serum parameters and litter characteristics in broilers.**  
I. C. O. Rojas<sup>1</sup>, A. E. Murakami<sup>1</sup>, R. V. Nunes<sup>2</sup>, K. M. O. Boso<sup>1</sup>, and C. R. do Amaral Duarte\*<sup>1</sup>, <sup>1</sup>*Universidade Estadual de Maringá, Maringá, Paraná, Brazil*, <sup>2</sup>*Universidade Estadual do Oeste do Paraná, Marechal Cândido Rondon, Paraná, Brazil*.
- 498 **Digestible lysine requirement of broilers based on practical diet.**  
M. Shivazad\*<sup>1</sup>, F. Alami, M. Zaghari, and H. Moravej, *University of Tehran, College of Agriculture and Natural Resources, Animal Science Department, Karaj, Tehran, Iran*.
- 499 **Effects of different dietary level of arginine, lysine and their ratios on performance and meat yield of broilers.**  
F. Sun\*<sup>1</sup>, H. Yan, and H. Cai, *Feed Research Institute, Chinese Academy of Agricultural Sciences, Beijing, China*.
- 500 **Methionine plus cystine requirements for pullets from 13 to 18 weeks of age.**  
F. G. Perazzo Costa\*<sup>1</sup>, M. Ramalho Lima<sup>1</sup>, Y. Mercier<sup>2</sup>, P. Geraert<sup>2</sup>, M. Ceccantini<sup>2</sup>, S. G. Pinheiro<sup>1</sup>, R. B. Souza<sup>1</sup>, A. S. Cardoso<sup>1</sup>, and C. S. Santos<sup>1</sup>, <sup>1</sup>*Federal University of Paraíba, Areia, Paraíba, Brazil*, <sup>2</sup>*Adisseo France S.A.S, France*, <sup>3</sup>*Adisseo Brazil, Sao Paulo*.
- 501 **An approach to determine endogenous lysine in the gastrointestinal tract of broiler chickens.**  
S. Cerrate\*<sup>1</sup>, C. Salas, R. Ekmay, J. England, and C. Coon, *University of Arkansas, Fayetteville*.

## Metabolism and Nutrition: Enzymes Posters

### Rooms 230-231, 240-242

- 502 **Effect of wheat inclusion and xylanase supplementation of the diet on intestinal enzyme activity, nutrient retention and performance in laying hen from 25 to 47 wks of age.**  
S. Mirzaei<sup>1</sup>, M. Zaghari<sup>1</sup>, S. Aminzadeh<sup>2</sup>, M. Shivazad<sup>1</sup>, M. P. Serrano<sup>3</sup>, and G. G. Mateos<sup>\*3</sup>, <sup>1</sup>*Department of Animal Science, University of Tehran, Karaj, Iran*, <sup>2</sup>*Department of Animal and Marine Biotechnology, National Institute of Genetic Engineering and Biotechnology, Tehran, Iran*, <sup>3</sup>*Department of Animal Science, Universidad Politécnica de Madrid, Madrid, Spain*.
- 503 **Effect of wheat cultivars and enzyme supplementation on broiler chicks performance from 1 to 42 day of age.**  
N. Saeidi, A. Karimi\*, G. Sadeghi, and A. Vaziri, *Animal Science Department, Faculty of Agr., University of Kurdistan, Sanandaj, Kurdistan, Iran*.
- 504 **True ileal amino acid digestibility of ingredients in broilers in the presence or absence of a mono component protease.**  
M. Iwaniuk\*<sup>1</sup>, C. R. Angel<sup>1</sup>, S. L. Vieira<sup>2</sup>, and N. E. Ward<sup>3</sup>, <sup>1</sup>*University of Maryland, College Park*, <sup>2</sup>*Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil*, <sup>3</sup>*DSM Nutritional Products, Parsippany, NJ*.
- 505 **Effects of a mono component protease on true ileal amino acid digestibility of selected ingredients for turkey poults.**  
C. R. Angel\*<sup>1</sup>, S. L. Vieira<sup>2</sup>, M. Iwaniuk<sup>1</sup>, and N. E. Ward<sup>3</sup>, <sup>1</sup>*University of Maryland, College Park*, <sup>2</sup>*Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil*, <sup>3</sup>*DSM Nutritional Products, Parsippany, NJ*.
- 506 **Performance of broilers fed diets containing multienzyme complex and lipid sources during starter phase.**  
G. V. Polycarpo\*<sup>1</sup>, A. C. Pezzato<sup>1</sup>, V. C. Cruz<sup>2</sup>, J. R. Sartori<sup>1</sup>, V. B. Fascina<sup>1</sup>, F. B. Carvalho<sup>1</sup>, I. M. G. P. Souza<sup>1</sup>, W. T. Silva<sup>1</sup>, N. C. Alexandre<sup>1</sup>, L. P. Centenaro<sup>1</sup>, and F. Vercese<sup>1</sup>, <sup>1</sup>*São Paulo State University, UNESP–Botucatu Campus, Botucatu, São Paulo, Brazil*, <sup>2</sup>*São Paulo State University, UNESP–Dracena Campus, Dracena, São Paulo, Brazil*.
- 507 **Effect of phytase supplementation on the sodium needs of broilers.**  
S. D. Goodgame\*, F. J. Mussini, C. D. Bradley, C. Lu, N. Comert, and P. W. Waldroup, *University of Arkansas, Fayetteville*.
- 508 **Effects of a mono component protease on true ileal amino acid digestibility of selected ingredients for commercial laying hens.**  
C. R. Angel\*<sup>1</sup>, S. Purdum<sup>2</sup>, S. L. Vieira<sup>3</sup>, M. Iwaniuk<sup>1</sup>, and N. E. Ward<sup>4</sup>, <sup>1</sup>*University of Maryland, College Park*, <sup>2</sup>*University of Nebraska, Lincoln*, <sup>3</sup>*Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil*, <sup>4</sup>*DSM Nutritional Products, Parsippany, NJ*.

- 509 **Keratinase treatment improves feather meal processing conditions and quality.**  
S. Kaczowka\*, B. Spencer, B. Talbot, J. D. Garlich, and J. J. Wang,  
*BioResource International Inc., Morrisville, NC.*
- 510 **Effects of supplementing Allzyme SSF and Allzyme PT in wheat based diet on the performance of chicks.**  
T. Ao\*, J. L. Pierce, M. Paul, A. J. Pescatore, A. H. Cantor, K. A. Dawson,  
and M. J. Ford, *Alltech-University of Kentucky Nutrition Research Alliance,  
Lexington.*
- 511 **Effects of dietary inclusion of  $\beta$ -D-mannanase and a cocktail NSPase separately and in combination in low energy diets on broiler performance and white meat yield.**  
J. Klein\*<sup>1</sup>, M. Williams<sup>1</sup>, B. Brown<sup>2</sup>, S. Rao<sup>3</sup>, and J. T. Lee<sup>1</sup>, <sup>1</sup>*Poultry Science Department, AgriLife Research, Texas A&M System, College Station,* <sup>2</sup>*Enzyvia LLC, Sheridan, IN,* <sup>3</sup>*Foster Farms, Livingston, CA.*
- 512 **Effect of an enzyme blend supplementation on performance of broiler chickens fed wheat based diets.**  
L. Romero<sup>1</sup>, P. Medel\*<sup>2</sup>, J. Sánchez<sup>2</sup>, and M. I. Gracia<sup>2</sup>, <sup>1</sup>*Danisco Animal Nutrition, Marlborough, Wiltshire, United Kingdom,* <sup>2</sup>*Imasde Agroalimentaria, S.L., Madrid, Spain.*
- 513 **The influence of supplemental fat and enzyme inclusion on passage rate and metabolizable energy in broiler diets.**  
J. D. Hamburg\* and A. B. Batal, *University of Georgia, Athens.*

## **Metabolism and Nutrition: Feed Additives Posters**

### **Rooms 230-231, 240-242**

- 514 **Gene expression study reveals the association of dietary supplementation of Actigen and the regulation of pathogen-influenced signaling pathways in broiler chickens.**  
R. Xiao\*<sup>1,2</sup>, R. F. Power<sup>1,2</sup>, D. Mallonee<sup>1,2</sup>, L. Spangler<sup>1</sup>, K. Routt<sup>1</sup>, K. M. Brennan<sup>1,2</sup>, J. L. Pierce<sup>1,2</sup>, and K. A. Dawson<sup>1,2</sup>, <sup>1</sup>*Alltech, Nicholasville, KY,* <sup>2</sup>*Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*
- 515 **Effect of medicinal plants on protein and lipid oxidation of broilers meat.**  
A. Niknam, S. Rahimi\*, S. Askari, M. Hoseinzade, and M. A. Karimi Torshizi,  
*Department of Poultry Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Tehran, Iran.*
- 516 **Reducing cholesterol levels in broiler serum and meat using *Ocimum basilicum*.**  
S. Askari, S. Rahimi\*, A. Niknam, M. Hoseinzade, M. A. Karimi Torshizi,  
and F. Asadi, *Department of Poultry Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Tehran, Iran.*

- 517 **Effects of turmeric rhizome powder and black pepper on blood constituents and performance of male broiler chickens.**  
A. Akbarian, A. Golian\*, H. Kermanshahi, A. Gilani, and S. Moradi, *Ferdowsi University of Mashhad, Mashhad, Khorasan Razavi Province, Iran.*
- 518 **Evaluation of mistletoe (*Viscum album*) and water plantain (*Alisma canaliculatum*) on the growth performance, internal organ development, fatty acid composition and lipid oxidation of broiler.**  
M. E. Hossain\*<sup>1</sup>, K. S. Kim<sup>1</sup>, G. M. Kim<sup>1</sup>, S. S. Sun<sup>2</sup>, J. D. Firman<sup>3</sup>, and C. J. Yang<sup>1</sup>, <sup>1</sup>*Department of Animal Science and Technology, Suncheon National University, Suncheon, Korea,* <sup>2</sup>*Department of Animal Science, Chonnam National University, Gwanju, Korea,* <sup>3</sup>*Department of Animal Sciences, University of Missouri, Columbia.*
- 519 **Effect of a mixture of cinnamaldehyde, carvacrol and capsicum oleoresin and of a combination of enzymes on performance of broilers fed standard and low dietary energy levels.**  
C. Oguey\* and D. M. Bravo, *Pancosma, Geneva, Switzerland.*
- 520 **Effect of a blend of carvacrol, cinnamaldehyde and capsicum oleoresin and of an antibiotic on growth performance, metabolizable energy and ileal digestibility.**  
D. M. Bravo\*<sup>1</sup>, L. T. Albino<sup>2</sup>, and H. S. Rostagno<sup>2</sup>, <sup>1</sup>*Pancosma, Geneva, Switzerland,* <sup>2</sup>*Federal University of Viçosa, Viçosa, Brazil.*
- 521 **The effects of medicinal plants, nettle (*Urticaceae dioica*) chicory (*Chicorium intybus*) with enzyme on performance, and constituents in broilers.**  
A. Safamehr\*<sup>1,2</sup>, F. Fallah<sup>1</sup>, and A. Nobakht<sup>1</sup>, <sup>1</sup>*Department of Animal Science, Islamic Azad University, Maragheh branch, Maragheh, East Azarbyjan, Iran,* <sup>2</sup>*Department of Plant & Animal Science, Nova Scotia Agriculture College, Truro, Nova Scotia, Canada.*
- 522 **The effects of different levels of canola oil, lupin seed and garlic powder on performance, egg quality in laying hens.**  
A. Safamehr\*<sup>1,3</sup>, S. Farajollahzade<sup>1</sup>, M. H. Shahir<sup>2</sup>, and S. Chodaei<sup>1</sup>, <sup>1</sup>*Department of Animal Science, Islamic Azad University, Maragheh branch, Maragheh, East Azarbyjan, Iran,* <sup>2</sup>*Department of Animal Science, Zanjan University, Zanjan, Iran,* <sup>3</sup>*Department of Plant & Animal Science, Nova Scotia Agriculture College, Nova Scotia, Canada.*
- 523 **Impact of Oasis supplement and lysozyme on incidence of early mortality, digestive system development and growth performance of turkey poults having delayed access to feed and water.**  
A. Gillcrist\*, D. Anderson, and J. MacIsaac, *Nova Scotia Agricultural College, Truro, Nova Scotia, Canada.*

- 524 **Effects of essential oils on performance of broilers fed diets with different nutrient concentrations.**  
L. Borsatti<sup>1</sup>, R. V. Nunes\*<sup>1</sup>, T. Steiner<sup>2</sup>, J. L. Schneiders<sup>1</sup>, T. R. Hofferber<sup>1</sup>, and R. Frank<sup>1</sup>, <sup>1</sup>*State University West of Paraná, Marechal Cândido Rondon, Paraná, Brasil*, <sup>2</sup>*Biomin Holding GmbH, Industriestrasse, Herzogenburg, Austria*.
- 525 **Live performance and intestinal morphology of broiler chickens fed diets supplemented with BMD, Actigen or neither product in two pen trials on built-up litter.**  
S. R. Collett\*<sup>1</sup>, G. F. Mathis<sup>2</sup>, B. Lumpkins<sup>2</sup>, D. M. Hooze<sup>3</sup>, K. M. Brennan<sup>4</sup>, and J. L. Pierce<sup>4</sup>, <sup>1</sup>*Poultry Diagnostic and Research Center, Athens, GA*, <sup>2</sup>*Southern Poultry Research Inc., Athens, GA*, <sup>3</sup>*Hooze Consulting Service Inc., Eagle Mountain, UT*, <sup>4</sup>*Alltech Inc., Nicholasville, KY*.
- 526 **Ethanol extract of propolis: Intestinal morphology and digestive organs weight of broiler chickens.**  
C. Eyng\*, C. R. A. Duarte, A. E. Murakami, and T. C. Santos, *Universidade Estadual de Maringá, Maringá, Parana, Brazil*.
- 527 **Ethanol extract of propolis affects the maltase activity in broiler chickens.**  
C. R. do Amaral Duarte\*, C. Eyng, A. E. Murakami, and A. F. Q. M. Garcia, *Universidade Estadual de Maringá, Maringá, Paraná, Brazil*.
- 528 **Effect of dietary inclusion of Actigen on ileal villi morphology of turkey poults.**  
I. B. Barasch\*, P. R. Ferket, J. L. Grimes, C. R. Stark, and R. D. Malheiros, *North Carolina State University, Raleigh*.
- 529 **The effects of eucalyptus, rosemary and mint essential oils on cecal microflora and performance: A comparison to antibiotic effects in broilers.**  
M. Koopaie<sup>1</sup>, K. Ghazvinian<sup>2</sup>, A. Mahdavi<sup>2</sup>, B. Darabi Ghane\*<sup>3</sup>, M. A. Jafari<sup>1</sup>, and F. Alemi<sup>4</sup>, <sup>1</sup>*Islamic Azad University-Ghaemshahr Branch, Ghaemshahr, Iran*, <sup>2</sup>*Semnan University, Semnan, Iran*, <sup>3</sup>*Islamic Azad University-Karaj Branch, Karaj, Iran*, <sup>4</sup>*Iranian Research Organization for Science and Technology, Tehran, Iran*.
- 530 **Sugar cane yeast in the diet of laying hens and effects on intestinal morphology.**  
J. C. R. Silva, C. B. V. Rabello\*, C. C. Lopes, A. S. Júnior, D. A. T. Silva, and E. M. F. Arruda, *Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil*.
- 531 **Hematology, organ development and performance of broiler finishers fed rations supplemented with *Telfaria occidentalis* leaf meal (TOLM) (Ugu leaves).**  
A. H. Ekeocha\*, *University of Ibadan, Ibadan, Oyo, Nigeria*.

- 532 **Response of broiler starters fed rations supplemented with *Vernonia amygdalina* leaf meal (VALM) (Bitter leaf).**  
A. H. Ekeocha\*, *University of Ibadan, Ibadan, Oyo, Nigeria.*
- 533 **Dose responses to a dietary experimental MOS product versus a leading commercial MOS product in a 42-day broiler chicken pen trial with relatively high stocking density and recycled litter.**  
T. T. Lohrmann\*<sup>1</sup> and M. D. Sims<sup>2</sup>, <sup>1</sup>*Quality Technology International (QTI), Elgin, IL,* <sup>2</sup>*Virginia Diversified Research Corp., Harrisonburg.*
- 534 **Feeding value of *Capsicum frutescens* on laying performance and egg quality.**  
H. Paguia\*, R. Paguia, and D. Magpantay, *Bataan Peninsula State University, Abucay, Bataan, Philippines.*
- 535 **Comparison of herbal extracts, antibiotic, probiotic and organic acid on serum lipids, immune response, GIT microbial population, intestinal morphology and broilers performance.**  
S. Rahimi<sup>1</sup>, S. Yakhkeshi\*<sup>1</sup>, K. Gharib Naseri<sup>1</sup>, and A. Rahimi<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Tehran, Iran,* <sup>2</sup>*Islamic Azad University, Tehran, Iran.*
- 536 **Effects of yarrow (*Achillea millefolium*), antibiotic and probiotic on GIT microbial population, immune response, serum lipids and broilers performance.**  
S. Yakhkeshi<sup>1</sup>, S. Rahimi\*<sup>1</sup>, H. R. Hemati Matin<sup>1</sup>, and A. Rahimi<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Iran,* <sup>2</sup>*Islamic Azad University, Tehran, Iran.*
- 537 **Performance assessment of three prebiotic feed supplements in pasture flock broilers.**  
I. Hanning\*, A. Clement, S. Milillo, S. Park, S. Pendleton, E. Scott, and S. Ricke, *University of Arkansas, Fayetteville.*
- 538 **Effect of Maxigen (yeast product) supplementation on broiler growth performance.**  
Y. Fasina\* and Y. Olowo, *Auburn University, Auburn, AL.*
- 539 **Impact of dietary supplementation of EconomasE on egg selenium, production performance and egg quality of white egg laying hens.**  
A. N. Meredith\*, A. H. Cantor, A. J. Pescatore, M. J. Ford, J. L. Pierce, T. Ao, K. A. Dawson, L. M. Macalintal, and W. D. King, *Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*
- 540 **Influence of EconomasE supplementation on egg selenium, production performance and egg quality parameters of brown egg laying hens.**  
A. N. Meredith\*, A. H. Cantor, A. J. Pescatore, M. J. Ford, J. L. Pierce, T. Ao, K. A. Dawson, L. M. Macalintal, and W. D. King, *Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*

- 541 **Impact of non-antibiotic alternatives on performance, gut inflammation and integrity in broiler chickens.**  
H. Lu\*, O. Adeola, and K. M. Ajuwon, *Purdue University, West Lafayette, IN.*

## **Metabolism and Nutrition: Feed Ingredient Posters Rooms 230-231, 240-242**

- 542 **Growth response of broilers to lysine levels and hydrolyzed porcine digestive mucosa (Palbio) inclusion in diet from 1 to 21 d of age.**  
M. Frikha<sup>1</sup>, S. Mirzaie<sup>1</sup>, H. Irandoust<sup>1</sup>, M. Mohiti-Asli<sup>1</sup>, C. Chetrit<sup>2</sup>, and G. G. Mateos\*<sup>1</sup>, <sup>1</sup>*Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain,* <sup>2</sup>*I+D Nutrition and Health Care, Bioibérica S.A., Palafolls, Barcelona, Spain.*
- 543 **Effects of heat treating rapeseed meal on amino acid digestibility in broilers.**  
J. Boguhn<sup>1</sup>, A. Helmbrecht<sup>2</sup>, and M. Rodehutschord\*<sup>1</sup>, <sup>1</sup>*University of Hohenheim, Institute of Animal Nutrition, Stuttgart, Germany,* <sup>2</sup>*Evonik Degussa GmbH, Animal Nutrition Services, Health & Nutrition, Hanau, Germany.*
- 544 **Feeding plant extract to chickens reared under different hygienic conditions: effects on metabolizable energy, nutrient digestibility and endogenous losses.**  
V. Pirgozliev\*<sup>1</sup> and D. Bravo<sup>2</sup>, <sup>1</sup>*SAC, Ayr, UK,* <sup>2</sup>*Pancosma S.A., Geneva, Switzerland.*
- 545 **Prediction model of digestible amino acid in sorghum.**  
M. Sedghi<sup>1</sup>, M. R. Ebadi<sup>2</sup>, A. Golian\*<sup>1</sup>, and H. Ahmadi<sup>1</sup>, <sup>1</sup>*Ferdowsi University of Mashhad, Iran,* <sup>2</sup>*Isfahan Research Center of Agriculture and Natural Resources, Isfahan, Iran.*
- 546 **Relationship between chemical composition and total amino acid contents in pearl millet hybrid.**  
P. Soleimani, M. Sedghi, and A. Golian\*, *Ferdowsi University of Mashhad, Iran.*
- 547 **Application of mathematical models for true metabolizable energy determination in sorghum grain for poultry.**  
M. Sedghi<sup>1</sup>, M. R. Ebadi<sup>2</sup>, A. Golian\*<sup>1</sup>, and P. Soleimani<sup>1</sup>, <sup>1</sup>*Ferdowsi University of Mashhad, Iran,* <sup>2</sup>*Research Center of Agriculture and Natural Resources, Isfahan, Iran.*
- 548 **Feeding the meal or full fat seeds of *Camelina sativa* or flax to laying hens: Effects on egg production, egg quality and fatty acids.**  
G. Cherian\*, A. E. Aziza, and N. Quezada, *Oregon State University, Corvallis.*

- 549 **Metabolizable energy values of corn distillers grains and corn distillers grains with solubles for 6-week-old broiler chickens.**  
O. Adeola and H. Zhai\*, *Purdue University, W. Lafayette, IN.*
- 550 **Effects of the inclusion of oat hulls or sugar beet pulp in the diet on gizzard characteristics, apparent ileal digestibility of nutrients, and microbial count in the ceca in 36-day-old broilers reared on floor.**  
E. Jimenez-Moreno\*, C. Romero, J. D. Berrocoso, M. Frikha, and G. G. Mateos, *University Polytechnic of Madrid, Madrid, Spain.*
- 551 **Effect of snack food byproduct on the feeding behavior and production parameters of laying hens.**  
R. C. Van Wyhe\*, S. E. Fraley, C. Szybisty, D. M. Karcher, and E. L. Karcher, *Michigan State University.*
- 552 **Different levels of biodiesel glycerin in the diets of broiler chickens.**  
K. C. Zavarize\*<sup>1</sup>, J. F. M. Menten<sup>1</sup>, R. Pereira<sup>1</sup>, L. L. Freitas<sup>1</sup>, C. L. S. Silva<sup>1</sup>, Y. K. Carvalho<sup>2</sup>, and S. R. A. Rosa<sup>3</sup>, <sup>1</sup>*University of São Paulo, Piracicaba, São Paulo, Brazil,* <sup>2</sup>*Federal University of Acre, Rio Branco, Acre, Brazil,* <sup>3</sup>*Montes Belos College, São Luis de Montes Belos, Goiás, Brazil.*
- 553 **Determination of metabolizable energy contents of barley and wheat for broiler chickens using regression method.**  
O. A. Bolarinwa\* and O. Adeola, *Purdue University, West Lafayette, IN.*
- 554 **Use of the corn germ meal in diets of laying hens.**  
C. S. Albuquerque<sup>1</sup>, C. B. V. Rabello\*<sup>1</sup>, D. A. T. Silva<sup>1</sup>, M. B. Lima<sup>2</sup>, T. S. Lima<sup>1</sup>, D. P. V. Silva<sup>1</sup>, C. C. Lopes<sup>1</sup>, and E. P. Silva<sup>3</sup>, <sup>1</sup>*Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil,* <sup>2</sup>*Esalq, USP, Piracicaba, São Paulo, Brasil,* <sup>3</sup>*Unesp, Campus de Jaboticabal, Jaboticabal, São Paulo, Brasil.*
- 555 **Energetic and nutritional values of sugar cane yeasts for broilers post-hatch.**  
E. N. R. Barbosa<sup>1</sup>, C. B. V. Rabello\*<sup>1</sup>, W. R. L. Medeiros<sup>1</sup>, R. V. S. Júnior<sup>1</sup>, L. R. Custódio<sup>1</sup>, K. L. A. Carvalho<sup>1</sup>, A. M. A. T. Samay<sup>1</sup>, C. C. Lopes<sup>1</sup>, and E. P. Silva<sup>2</sup>, <sup>1</sup>*Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil,* <sup>2</sup>*Unesp, Campus Jaboticabal, Jaboticabal, São Paulo, Brasil.*
- 556 **Development of intestinal mucosa of broiler chicks post-hatch fed sugar cane yeast (*Saccharomyces cerevisiae*).**  
C. C. Lopes, C. B. V. Rabello\*, V. A. S. Júnior, E. M. F. Arruda, J. C. R. Silva, and M. C. M. M. Ludke, *Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil.*

- 557 **Metabolizable energy of castor bean meal through broiler metabolism trial.**  
J. C. N. Santana<sup>1</sup>, M. C. M. M. Ludke\*<sup>1</sup>, J. V. Ludke<sup>2</sup>, A. S. Silva<sup>1</sup>, C. B. V. Rabello<sup>1</sup>, and G. R. Bertani<sup>3</sup>, <sup>1</sup>*Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brasil*, <sup>2</sup>*Embrapa Suínos e Aves, Concórdia, Santa Catarina, Brasil*, <sup>3</sup>*Universidade Federal de Pernambuco, Recife, Pernambuco, Brazil*.
- 558 **Effects of dietary content of corn distillers dried grains with solubles (DDGS) on chemical composition and nutrients of eggs.**  
H. Sun<sup>1</sup>, E. J. Lee\*<sup>1</sup>, M. Persia<sup>1</sup>, H. S. Ragheb<sup>2</sup>, and D. U. Ahn<sup>1</sup>, <sup>1</sup>*Department of Animal Science, Iowa State University, Ames*, <sup>2</sup>*Indiana State Chemist Laboratories, Biochemistry Department, Purdue University, West Lafayette, IN*.
- 559 **Effect of Mexican sunflower leaf meal (MSLM) based diets on carcass characteristics of turkey (*Meleagris gallopavo*).**  
A. H. Ekeocha\*, *University of Ibadan, Ibadan, Oyo, Nigeria*.
- 560 **Carcass traits of Nigerian local hens fed varying dietary levels of palm kernel cake with added vegetable oil.**  
K. D. Afolabi\*, A. O. Akinsoyinu, A. H. Ekeocha, and O. I. Adeyosoye, *University of Ibadan, Ibadan, Oyo, Nigeria*.
- 561 **Metabolizable energy of different soy products.**  
T. Loeffler\* and A. B. Batal, *University of Georgia, Athens*.
- 562 **Effects of heating and drying on xanthophyll levels of distillers grains.**  
C. M. Rude\*, F. Karim, M. A. Barrios, J. S. Smith, and R. S. Beyer, *Kansas State University, Manhattan*.
- 563 **Production performance and egg quality of hens fed diets containing up to thirty percent distillers dried grains with solubles (DDGS) and an enzyme supplement.**  
A. D. Quant\*, A. J. Pescatore, J. L. Pierce, T. Ao, P. Rossi, A. H. Cantor, M. J. Ford, and W. D. King, *Alltech/ University of Kentucky Nutrition Research Alliance, Lexington*.
- 564 **Effect of pearl millet in broiler diets fed until 21 days of age: Carcass characteristics and organ weights.**  
T. R. Torres<sup>1</sup>, M. C. M. M. Ludke\*<sup>1</sup>, J. V. Ludke<sup>2</sup>, E. J. O. Souza<sup>3</sup>, M. R. Lima<sup>1</sup>, J. E. Serafim<sup>1</sup>, and G. M. Silva<sup>1</sup>, <sup>1</sup>*Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brazil*, <sup>2</sup>*Embrapa Suínos e Aves, Concórdia, Santa Catarina, Brazil*, <sup>3</sup>*UAST - Universidade Federal Rural de Pernambuco, Serra Talhada, Pernambuco, Brazil*.

- 565 **Evaluating the effect of feeding up to 30 percent distillers dried grains with solubles (DDGS) and an enzyme supplement on the performance and egg quality of brown egg layers through 30 weeks of production.**  
A. D. Quant, A. J. Pescatore, J. L. Pierce, T. Ao, P. Rossi\*, A. H. Cantor, M. J. Ford, and W. D. King, *Alltech/ University of Kentucky Nutrition Research Alliance, Lexington.*
- 566 **Cost analysis of poultry feed formulated with insect larvae.**  
R. Holser and D. Samuel\*, *Russell Research Center, Athens, GA.*
- 567 **Effect of canola on the growth performance and carcass composition of heavy hen turkeys.**  
J. L. MacIsaac<sup>1</sup> and D. M. Anderson\*<sup>2</sup>, <sup>1</sup>*Atlantic Poultry Research Institute, Truro, Nova Scotia, Canada,* <sup>2</sup>*Nova Scotia Agricultural College, Truro, Canada.*
- 568 **Effect of storage on lipid composition of egg from hens fed with shrimp meal (*Penaeus* spp.) and red crab meal (*Pleuroncodes planipes*).**  
M. E. Carranco<sup>1</sup>, C. Calvo<sup>1</sup>, E. Avila<sup>2</sup>, L. Sanginés<sup>1</sup>, E. Morales<sup>3</sup>, R. Ramírez<sup>4</sup>, B. Fuente<sup>2</sup>, S. Carrillo\*<sup>1</sup>, and F. Pérez-Gil<sup>1</sup>, <sup>1</sup>*Depto. Nutrición Animal, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, México,* <sup>2</sup>*Facultad de Medicina Veterinaria y Zootecnia, UNAM, México,* <sup>3</sup>*Universidad Autónoma Metropolitana-Xochimilco, México,* <sup>4</sup>*Facultad de Química, UNAM, México.*
- 569 **Growth response and economic benefits of male turkey on Mexican sunflower leaf meal (MSLM) based diets.**  
A. H. Ekeocha\*<sup>1</sup> and A. A. Mako<sup>2</sup>, <sup>1</sup>*University of Ibadan, Ibadan, Oyo, Nigeria,* <sup>2</sup>*Tai Solarin University of Education, Ijagun Ijebu-Ode, Ogun, Nigeria.*
- 570 **Increasing feeding meals influences the reproductive performance of broiler breeder females during laying period.**  
S. Moradi<sup>1</sup>, M. Zaghari<sup>1</sup>, M. Shivazad\*<sup>1</sup>, R. Osfori<sup>2</sup>, and M. Mardi<sup>2</sup>, <sup>1</sup>*University of Tehran, Karaj, Iran,* <sup>2</sup>*Agriculture Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.*

## **Metabolism and Nutrition: General Posters**

### **Rooms 230-231, 240-242**

- 571 **Prediction models of productive parameters and energy utilization due energy levels for young laying hens.**  
P. A. P. Ribeiro\*<sup>1</sup>, J. B. Matos Junior<sup>2</sup>, L. J. C. Lara<sup>2</sup>, and N. C. Baiao<sup>2</sup>, <sup>1</sup>*Universidade de Sao Paulo, Pirassununga, Sao Paulo, Brazil,* <sup>2</sup>*Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil.*

- 572 **Effects of feeding strategy, fiber source of the diet, and crude protein content on productive performance of broiler breeder hens.**  
M. Mohiti-Asli<sup>1</sup>, M. Shivazad<sup>1</sup>, M. Zaghari<sup>1</sup>, M. Rezaian<sup>2</sup>, S. Aminzadeh<sup>3</sup>, and G. G. Mateos\*<sup>4</sup>, <sup>1</sup>*Department of Animal Science, University of Tehran, Karaj, Iran*, <sup>2</sup>*Department of Veterinary Science, University of Tehran, Tehran, Iran*, <sup>3</sup>*National Institute of Genetic Engineering and Biotechnology, Tehran, Iran*, <sup>4</sup>*Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain*.
- 573 **Fatty acids and cholesterol oxidized products in turkey breast meat with different ultimate pH.**  
P. K. Hong\*, I. V. Spevackova, and M. Betti, *University of Alberta, Edmonton, Canada*.
- 574 **Expression of nutrient transporters and digestive enzymes in the yolk sac membrane and embryonic intestine.**  
J. S. Speier\*<sup>1</sup>, L. Yadgary<sup>2</sup>, Z. Uni<sup>2</sup>, and E. Wong<sup>1</sup>, <sup>1</sup>*Virginia Tech, Blacksburg*, <sup>2</sup>*University of Jerusalem, Rehovot, Israel*.
- 575 **Maternal n-3 polyunsaturated fatty acid alters cardiac phospholipids and gene expression in post-hatch chicks.**  
G. Cherian\* and C. J. Bullock, *Oregon State University, Corvallis*.
- 576 **Prediction models of productive parameters and energy utilization due energy levels for old laying hens.**  
P. A. P. Ribeiro\*<sup>1</sup>, N. C. Baiao<sup>2</sup>, L. J. C. Lara<sup>2</sup>, and J. B. Matos Junior<sup>2</sup>, <sup>1</sup>*Universidade de Sao Paulo, Pirassununga, Sao Paulo, Brazil*, <sup>2</sup>*Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil*.
- 577 **Digestion of fat and fatty acids along the digestive tract of chickens.**  
P. Tanchaerorat, F. Zaefarian, G. Ravindran, and V. Ravindran\*, *Massey University, Palmerston North, New Zealand*.
- 578 **Apparent digestibility and metabolizable energy content of lipid sources in poultry.**  
M. Frikha<sup>1</sup>, J. Alcaniz<sup>2</sup>, J. J. Mallo<sup>2</sup>, M. P. Serrano<sup>1</sup>, and G. G. Mateos\*<sup>1</sup>, <sup>1</sup>*Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain*, <sup>2</sup>*I+D Norel Animal Nutrition, S.A, Madrid, Spain*.
- 579 **Nitrogen-corrected apparent metabolizable energy of poultry oil for broiler chickens.**  
E. J. Kim\*<sup>1</sup> and W. A. Dozier<sup>2</sup>, <sup>1</sup>*ARS-USDA Poultry Research Unit, Mississippi State, MS*, <sup>2</sup>*Department of Poultry Science, Auburn University, Auburn, AL*.
- 580 **Characterization of the intestinal microbiota of chickens with deprived growth.**  
C. Eying\*<sup>1,2</sup>, A. A. Pedroso<sup>2</sup>, and M. D. Lee<sup>2</sup>, <sup>1</sup>*Universidade Estadual de Maringa, Maringa, Parana, Brazil*, <sup>2</sup>*The University of Georgia, Athens*.

- 581 **Effects of essential oils on carcass yield of broilers fed diets with different nutrient concentrations.**  
L. Borsatti<sup>1</sup>, R. V. Nunes\*<sup>1</sup>, T. Steiner<sup>2</sup>, C. Polese<sup>1</sup>, R. Shone<sup>1</sup>, and J. R. Henz<sup>1</sup>, <sup>1</sup>state university west of Paraná, Marechal Cândido Rondon, Paraná, Brasil, <sup>2</sup>Biomín Holding GmbH, Industriestrasse, Herzogenburg, Austria.
- 582 **Interrelationships among diet, bone growth and black bone discoloration in broiler chickens.**  
S. Singla, D. R. Korver\*, and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 583 **Poultry offal meal traceability in meat broiler chicken using the technique of carbon (<sup>13</sup>C/<sup>12</sup>C) and nitrogen (<sup>15</sup>N/<sup>14</sup>N) stable isotopes.**  
V. C. da Cruz\*<sup>1</sup>, C. Ducatti<sup>2</sup>, J. R. Sartori<sup>2</sup>, and A. C. Pezzato<sup>2</sup>, <sup>1</sup>São Paulo State University, Dracena Campus, São Paulo State University, Dracena, São Paulo, Brazil, <sup>2</sup>São Paulo State University, Botucatu Campus, São Paulo State University, Botucatu, São Paulo, Brazil.
- 584 **Study of the mechanisms of lipid mobilization towards egg formation in broiler breeder hens using stable isotopes.**  
C. Salas, R. D. Ekmay\*, J. England, S. Cerrate, and C. N. Coon, *University of Arkansas.*
- 585 **Energy utilization modeling for broiler breeder hens.**  
C. Salas, R. D. Ekmay\*, J. England, S. Cerrate, and C. N. Coon, *University of Arkansas.*
- 586 **Improving egg quality and reducing egg cholesterol level by supplementing layer diets with sugar syrup.**  
A. S. Hussein\*<sup>1</sup>, J. Al-Ghurair<sup>2</sup>, P. G. John<sup>2</sup>, and H. M. Habiba<sup>1</sup>, <sup>1</sup>Faculty of Food and Agriculture, United Arab Emirates University, Al-Ain, United Arab Emirates, <sup>2</sup>Al-Khaleej Sugar CO (L.L.C.), Dubai, United Arab Emirates.
- 587 **Evaluation of crumble and pellet quality on broiler performance and gizzard weight.**  
B. Hu\*<sup>1,2</sup>, C. R. Stark<sup>1</sup>, and J. Brake<sup>1</sup>, <sup>1</sup>North Carolina State University, Raleigh, <sup>2</sup>China Agricultural University, Beijing, China.
- 588 **Effect of a fumonisin-degrading enzyme in broiler diets contaminated with aflatoxins and/or fumonisins.**  
U. Hofstetter\*<sup>1</sup>, C. A. Mallmann<sup>2</sup>, and R. Rauber<sup>2</sup>, <sup>1</sup>Biomín Holding GmbH, Herzogenburg, Austria, <sup>2</sup>Instituto Samitec, Instituto de Soluções Analíticas Microbiológicas e Tecnológicas Ltda., Santa Maria, Brazil.
- 589 **Low dosage efficacy of a commercial purified phyllosilicate to reduce the toxicity of T-2 toxin in broilers.**  
M. Forat<sup>1</sup>, V. Brito<sup>1</sup>, and D. Zaviezo\*<sup>2</sup>, <sup>1</sup>Instituto Internacional Investigacion Animal, Queretaro, Mexico, <sup>2</sup>Special Nutrients, Miami, FL.

- 590 **The laying performance and egg quality traits of Nigerian local hen fed diets with varying energy levels.**  
K. D. Afolabi\*, A. H. Ekeocha, A. B. Omojola, and O. A. Abu, *University of Ibadan, Ibadan, Oyo, Nigeria.*
- 591 **Dietary dihydropyridine can improve laying rate, feed efficiency, and regulate lipid metabolism of broiler breeder hens.**  
Z. Y. Niu, F. Z. Liu\*, H. Y. Wang, J. Zhang, W. C. Li, and L. Li, *College of Animal Science and Technology, Northwest A&F University, Yangling, Shaanxi, China.*
- 592 **Effects of dietary energy and protein on growth performance and carcass quality of broilers during finishing phase.**  
F. Z. Liu\*, J. S. Shi, Z. Y. Niu, and Y. P. Gao, *College of Animal Science and Technology, Northwest A&F University, Yangling, Shaanxi, China.*
- 593 **The effect of acidifiers on broilers GIT microbial population, intestinal morphology, ileal digestibility and performance.**  
S. Yakhkeshi, S. Rahimi\*, and K. Gharib Naseri, *Tarbiat Modares University, Tehran, Iran.*
- 594 **Use of nonlinear programming to determine the economically optimal energy density in laying hens diet.**  
M. Shivazad\*<sup>1</sup>, M. Afrouzizyeh<sup>2</sup>, M. Chamani<sup>3</sup>, and S. Amirdahri<sup>4</sup>, <sup>1</sup>*University of Tehran, College of Agriculture and Natural Resources, Animal Science Department, Karaj, Tehran, Iran,* <sup>2</sup>*Tabriz Branch, Islamic Azad University, Tabriz, Iran,* <sup>3</sup>*Department of Animal Science, Science and Research Branch, Islamic Azad University, Tehran, Iran,* <sup>4</sup>*Department of Animal Science, University of Tabriz, Tabriz, Iran.*

## **Metabolism and Nutrition: Minerals and Vitamins Posters**

### **Rooms 230-231, 240-242**

- 595 **Influence of soy oil source and supplementation of the diet with vitamin E and vitamin C on performance and egg quality of Single Comb White Leghorn laying hens from forty four to fifty six weeks of age.**  
H. Irandoust<sup>1</sup>, A. H. Samie<sup>1</sup>, H. R. Rahmani<sup>1</sup>, J. Pourreza<sup>1</sup>, M. Kadivar<sup>2</sup>, M. A. Edriss<sup>1</sup>, P. García-Rebollar<sup>3</sup>, and G. G. Mateos\*<sup>3</sup>, <sup>1</sup>*Department of Animal Sciences, Isfahan University of Technology, Isfahan, Iran,* <sup>2</sup>*Department of Food Science and Technology, Isfahan University of Technology, Isfahan, Iran,* <sup>3</sup>*Departamento de Producción Animal, Universidad Politécnica de Madrid, Spain.*
- 596 **Differential effects of sodium selenite and Sel-Plex selenium yeast on the hepatic gene expression profile of laying hens.**  
R. Xiao\*<sup>1,2</sup>, R. F. Power<sup>1,2</sup>, D. Mallonee<sup>1,2</sup>, K. Routt<sup>1</sup>, L. Spangler<sup>1</sup>, T. Ao<sup>1,2</sup>, J. L. Pierce<sup>1,2</sup>, and K. A. Dawson<sup>1,2</sup>, <sup>1</sup>*Alltech, Nicholasville, KY,* <sup>2</sup>*Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*

- 597 **Effect of chelated trace minerals, zinc, manganese, copper and iron on layer performance and egg shell quality.**  
S. S. Padhye<sup>1</sup>, A. S. Ranade<sup>1</sup>, D. N. Desai<sup>\*1</sup>, P. E. Avari<sup>1</sup>, M. Manangi<sup>2</sup>, M. Vazquez-Anon<sup>2</sup>, and D. Joardar<sup>2</sup>, <sup>1</sup>*Bombay Veterinary College, Mumbai, Maharashtra, India*, <sup>2</sup>*Novus International Inc., St. Charles, MO*.
- 598 **Influence of graded levels dietary sodium on the development of foot pad dermatitis in broiler chickens.**  
Ö. Cengiz<sup>1</sup>, J. B. Hess<sup>2</sup>, and S. F. Bilgili<sup>\*2</sup>, <sup>1</sup>*Adnan Menderes University, Aydin, Turkey*, <sup>2</sup>*Auburn University, Auburn, AL*.
- 599 **Performance and egg iron contents of Cobb 500 female broiler breeders fed diets having meat meal or iron-amino acid.**  
F. Bess<sup>\*1</sup>, S. L. Vieira<sup>1</sup>, E. Allix<sup>1</sup>, P. C. Nascimento<sup>2</sup>, and A. Favero<sup>1</sup>, <sup>1</sup>*Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil*, <sup>2</sup>*Universidade Federal de Santa Maria, Santa Maria, RS, Brazil*.
- 600 **Effect of dietary zinc proteinate on growth performance, and skin and meat quality of male and female broiler chicks.**  
H. M. Salim<sup>1,2</sup>, H. R. Lee<sup>1</sup>, C. Jo<sup>1</sup>, S. K. Lee<sup>1</sup>, and B. D. Lee<sup>\*1</sup>, <sup>1</sup>*Department of Animal Science and Biotechnology, Chungnam National University, Daejeon, South Korea*, <sup>2</sup>*Department of Livestock Services, Dhaka, Bangladesh*.
- 601 **Identification of copper and manganese glycinate complexes in enriched feeds and study of their bioavailable forms using capillary electrophoresis coupled with inductively coupled plasma mass spectrometry (CE-ICP-MS).**  
C. Ionescu<sup>\*1</sup>, V. Vacchina<sup>2</sup>, R. Lobinski<sup>3</sup>, and D. M. Bravo<sup>1</sup>, <sup>1</sup>*Pancosma, Geneva, Switzerland*, <sup>2</sup>*UTA, Pau, France*, <sup>3</sup>*CNRS, Pau, France*.
- 602 **Feeding organic trace minerals source instead of inorganic sources at high trace mineral doses improves broiler carcass quality.**  
C. Ionescu<sup>\*1</sup>, S. Elmaliach<sup>2</sup>, R. Planck<sup>2</sup>, and D. Bravo<sup>1</sup>, <sup>1</sup>*Pancosma, Geneva, Switzerland*, <sup>2</sup>*Bar-Magen, KfarBenei-Zion, Israel*.
- 603 **Inclusion of organic selenium on performance and egg quality of Japanese quails at 56 to 76 d old.**  
V. C. da Cruz<sup>\*1</sup>, L. C. Carvalho<sup>1</sup>, R. V. Ferreira<sup>1</sup>, D. D. Millen<sup>1</sup>, G. do Valle Polycarpo<sup>2</sup>, D. O. dos Santos Gomes<sup>1</sup>, L. H. Zanetti<sup>1</sup>, R. F. de Oliveira<sup>1</sup>, A. L. C. Brichi<sup>1</sup>, and R. G. A. Cardoso<sup>1</sup>, <sup>1</sup>*São Paulo State University, Dracena Campus, São Paulo State University, Dracena, São Paulo, Brazil*, <sup>2</sup>*São Paulo State University, Botucatu Campus, São Paulo State University, Botucatu, São Paulo, Brazil*.
- 604 **Effect of dietary vitamin E on tocopherol content and fatty acid profile of liver.**  
J. Viguera<sup>1</sup>, O. Caso<sup>2</sup>, A. Ayllón<sup>2</sup>, M. D'Arrigo<sup>3</sup>, A. Villares<sup>3</sup>, and P. Medel<sup>\*1</sup>, <sup>1</sup>*Imasde Agroalimentaria, S.L., Pozuelo de Alarcón, Madrid, Spain*, <sup>2</sup>*Canard, S.A., Abejar, Soria, Spain*, <sup>3</sup>*INIA, Soria, Spain*.

- 605 **Effect on omega 3 fatty acids egg content and productive parameters when laying hens diets are supplemented with sardine oil and vitamin E.**  
S. Carrillo\*<sup>1,2</sup>, E. Avila<sup>1</sup>, C. Vasquez<sup>1</sup>, B. Fuente<sup>1</sup>, C. Calvo<sup>2</sup>, M. E. Carranco<sup>2</sup>, and F. Perez-Gil<sup>2</sup>, <sup>1</sup>FMVZ, Universidad Nacional Autonoma de Mexico, Mexico, D.F., Mexico, <sup>2</sup>Depto. Nutricion Animal, Insituto Nacional de Cienicas Medicas y Nutricion Salvador Zubiran, Mexico.
- 606 **The effect of selenomethionine vs. sodium selenite supplementation on vitelline membrane strength, glutathione peroxidase activity in the liver and magnum of laying hens, and egg se content when using a corn starch based diet.**  
A. A. Aljamal\*<sup>1</sup>, C. A. Fassbinder-Orth<sup>2</sup>, K. J. Hanford<sup>1</sup>, and S. E. Purdum<sup>1</sup>, <sup>1</sup>University of Nebraska-Lincoln, Lincoln, <sup>2</sup>Creighton University, Omaha, NE.
- 607 **Performance of Pearl Grey guinea fowl fed diets varying in calcium and available phosphorus concentrations.**  
S. N. Nahashon\*, L. Glover, and G. Kelley, Department of Agricultural Sciences, Tennessee State University, Nashville.
- 608 **The regulation of intestinal folic acid absorption in the laying hen supplemented with increased levels of dietary folic acid.**  
G. B. Tactacan\*, J. C. Rodriguez-Lecompte, K. O., and J. D. House, University of Manitoba, Winnipeg, Manitoba, Canada.

## **Mycoplasma Posters**

### **Rooms 230-231, 240-242**

- 609 **Virulence evolution of mycoplasmal conjunctivitis in house finches.**  
D. Ley\*, D. M. Hawley, E. E. Osnas, A. P. Dobson, K. V. Dhondt, J. L. Grodion, K. A. Schat, W. M. Hochachka, and A. A. Dhond, Dept. of Population Health and Pathobiology, College of Veterinary Medicine, North Carolina State University, Raleigh.
- 610 **Phylogenetic analysis of *Mycoplasma synoviae* isolated from the chickens with history of clinical signs.**  
E.-O. Jeon\*, K. Jung, and I. Mo, Chungbuk National University, Republic of Korea.
- 611 **Sequencing of South African *Mycoplasma gallisepticum* isolates reveals novel genotypes.**  
N. K. Armour\*, V. Laibinis, and N. Ferguson-Noel, Department of Population Health, Poultry Diagnostic and Research Center, The University of Georgia, Athens.
- 612 **Revised amplified fragment length polymorphism (AFLP) protocol for avian mycoplasmas.**  
A. Wetzel\* and Z. Raviv, The Ohio State University.

## Newcastle Disease Virus Posters

### Rooms 230-231, 240-242

- 613 **Further assessment of the VG/GA Newcastle disease virus strain (AVINEW) for in ovo vaccination in commercial broilers.**  
F. A. Perozo\*, R. Marcano, L. Gómez, R. Fernandez, and F. Rojo, *University of Zulia, Maracaibo, Venezuela.*
- 614 **Effect of Newcastle disease virus (La Sota strain) infection on chicken respiratory macrophage.**  
H. Jang\* and I.-P. Mo, *Chungbuk National University, Republic of Korea.*
- 615 **Characterization of avian paramyxoviruses isolated from migratory waterfowl in chickens, turkeys and ducks.**  
Jack Gelb\*, B. S. Ladman, G. V. Oldfield, C. R. Pope, L. A. Preskeni, and S. K. Sama, *Avian Bioscience Center, University of Delaware, Newark.*
- 616 **Avian paramyxovirus serotype 1 strains of low virulence with unusual fusion protein cleavage sites isolated from poultry species.**  
P. Miller\*, M. L. Killian, J. C. Pederson, and C. L. Afonso, *Southeast Poultry Research Laboratory, USDA/ARS, Athens, GA.*
- 617 **Analysis of transcriptional cytokine responses of chickens infected with different Newcastle disease virus isolates using paraffin embedded samples.**  
R. Ecco\*, C. Brown, L. Susta, C. Cagle, I. Cornax, M. Pantin-Jackwood, P. J. Miller, and C. L. Afonso, *Universidade Federal De Minas Gerais-Ufmg, Veterinary School.*

## Pathology Posters

### Rooms 230-231, 240-242

- 618 **Comparison of microscopic methods for bursa histopathology evaluation.**  
F. Wilson\*, A. Banda, and I. Alvarado, *MVRDL & PRDL, Pearl, MS.*
- 619 **Testicular and epididymal lesions in broiler breeders.**  
H. J. Barnes\*, S. A. Montgomery, S. E. Tilley, and J. Brake, *North Carolina State University, Department of Population Health & Pathobiology, Raleigh.*
- 620 **An efficient method of blood collection from poultry presented for necropsy.**  
J. L. Cline\* and B. M. Parker, *Alabama Department of Agriculture And Industries, J. B. Taylor Diagnostic Laboratory, Elba, AL.*
- 621 **Bacteria and viruses present in light and heavy turkey poults.**  
A. J. Calvert\*<sup>1</sup>, S. L. Noll<sup>1</sup>, S. M. Goyal<sup>1</sup>, Y. Chander<sup>1</sup>, C. M. Logue<sup>2</sup>, J. S. Sherwood<sup>2</sup>, T. J. Johnson<sup>1</sup>, K. V. Nagaraja<sup>1</sup>, and A. F. Ziegler<sup>1</sup>, <sup>1</sup>*University of Minnesota, St Paul,* <sup>2</sup>*North Dakota State University, Fargo.*

- 622 **Comparison of incidence of poultry diseases in commercial and noncommercial poultry in North Alabama.**  
S. P. Christenberry\*, F. J. Hoerr, S. B. Lockaby, J. D. Bright, and L. Waldrep,  
*State of Alabama Department of Agriculture and Industries.*

## **Physiology, Endocrinology, and Reproduction Posters** **Rooms 230-231, 240-242**

- 623 **Elimination of sensitive chicks to ascite syndrome by adding salt to drinking water.**  
S. Askari\* and M. A. K. Torshizi, *Tarbiat Modares University, Tehran, Iran.*
- 624 **Packed cell volume and blood sugar level as indicators of approaching sexual maturity in Japanese quail.**  
V. Vatsalya and K. L. Arora\*, *Fort Valley State University, Fort Valley, GA.*
- 625 **Effect of differing temperature-humidity index values on physiological blood parameters in broilers.**  
H. A. Olanrewaju\*, J. L. Purswell, S. D. Collier, and S. L. Branton, *USDA-ARS Poultry Research Unit, Mississippi State, MS.*
- 626 **Role of dopamine in maternal behavior of the native Thai chicken.**  
D. Chokchaloemwong<sup>1</sup>, O. Chaiyachet<sup>1</sup>, N. Prakobsaeng<sup>1</sup>, N. Sartsoongnoen<sup>2</sup>, S. Kosonsiriluk<sup>3</sup>, M. E. El Halawani<sup>3</sup>, and Y. Chaiseha\*<sup>1</sup>, <sup>1</sup>*Suranaree University of Technology, Nakhon Ratchasima, Thailand*, <sup>2</sup>*Nakhon Ratchasima Rajabhat University, Nakhon Ratchasima, Thailand*, <sup>3</sup>*University of Minnesota, St. Paul.*
- 627 **Comparison of Actigen and bacitracin methylene disalicylate (BMD) supplementation gene expression profiles in the jejunum of 6-week old broilers.**  
K. M. Brennan\*<sup>1</sup>, G. F. Mathis<sup>2</sup>, R. Xiao<sup>1</sup>, B. S. Lumpkins<sup>2</sup>, and J. L. Pierce<sup>1</sup>, <sup>1</sup>*Center for Animal Nutrigenomics & Applied Animal Nutrition, Alltech Inc., Nicholasville, KY*, <sup>2</sup>*Southern Poultry Research Inc., Athens, GA.*
- 628 **Organ development of embryos and chicks from eggs of different broiler breeder ages and egg weights.**  
J. S. Santos<sup>1,2</sup>, J. H. Stringhini\*<sup>1,2</sup>, E. S. Oliveira<sup>1,2</sup>, M. M. Jardim<sup>1,2</sup>, and R. M. A. D. Castro<sup>1</sup>, <sup>1</sup>*Universidade Federal de Goias, Goiania, Goias, Brazil*, <sup>2</sup>*CNPq, Brasilia, Distrito Federal, Brazil.*
- 629 **Effect of genistein on the bone quality of laying hens.**  
L. M. Stevenson\*, S. S. Oates, J. B. Hess, and W. D. Berry, *Auburn University, Auburn, AL.*
- 630 **Mineralization of the developing embryo and post-hatched chick.**  
N. P. Johnston\* and C. L. Buckley, *Brigham Young University, Provo, UT.*

- 631 **Characterization of the Chilean tinamou (*Nothoprocta perdicaria*) major egg white proteins.**  
O. Varon\*, C. H. Scaman, D. C. Bennett, and K. M. Cheng, *The University of British Columbia, Vancouver, BC, Canada.*
- 632 **The effect of selenium supplementation on oxidative damage and mRNA levels of antioxidant genes in the testes of Single Comb White Leghorn roosters.**  
M. L. Spry, K. M. Brennan\*, K. E. Routt, A. J. Pescatore, and J. L. Pierce, *Alltech-University of Kentucky Nutrition Research Alliance, Lexington.*
- 633 **Potential candidate genes for fat deposition revealed by transcriptome and proteome analysis.**  
X. Wang\*<sup>1</sup>, F.-C. Chen<sup>1</sup>, A. Stewart<sup>1</sup>, G. Kelley<sup>1</sup>, H. Zhou<sup>2</sup>, H. H. Cheng<sup>3</sup>, and S. Nahashon<sup>1</sup>, <sup>1</sup>Tennessee State University, Nashville, <sup>2</sup>Texas A&M University, College Station, <sup>3</sup>USDA ARS Avian Disease and Oncology Laboratory, East Lansing, MI.
- 634 **Assessment of bioenergetics in intestinal tissue from neonatal broiler chicks.**  
A. Piekarski\*, K. Lassiter, K. Byrne, B. M. Hargis, and W. G. Bottje, *Dept. of Poultry Science, Center of Excellence for Poultry Science, University of Arkansas, Fayetteville.*
- 635 **Performance and immune response of broiler chickens fed with crude propolis.**  
C. Eying\*, A. E. Murakami, C. R. A. Duarte, and T. C. Santos, *Universidade Estadual de Maringa, Maringa, Parana, Brazil.*
- 636 **Effect of light wavelength on growth and sexual maturation of Smoky Joe Leghorn.**  
G. Y. Bedecarrats\*, K. Marinac, B. Scace, J. Fleming, and N. Joseph, *University of Guelph, Guelph, Ontario, Canada.*
- 637 **Efficacy of the antimicrobial compound enrofloxacin for reducing the incidence of lameness in broilers grown on wire flooring.**  
K. N. Mitchell\*<sup>1</sup>, J. Blankenship<sup>1</sup>, I. Pevzner<sup>2</sup>, and R. F. Wideman<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Cobb-Vantress Inc., Siloam Springs, AR.
- 638 **Efficacy of biomin probiotic for reducing the incidence of lameness in broilers grown on wire flooring.**  
J. M. Stark\*<sup>1</sup>, G. Lorenzoni<sup>2</sup>, I. Pevzner<sup>3</sup>, J. Blankenship<sup>1</sup>, and R. F. Wideman<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Biomin GmbH, Herzogenburg, Austria, <sup>3</sup>Cobb-Vantress Inc., Siloam Springs, AR.
- 639 **Finding background material for duckling mineral DXA scans.**  
B. C. Browne\* and N. P. Johnston, *Brigham Young University, Provo, UT.*

- 640 **Effects of egg remover on bone development at hatch, and male broiler live performance and leg health at market age under commercial conditions.**  
E. O. Oviedo-Rondon\*, M. J. G. Costa, M. R. Dalmagro, C. Evans, C. Miller, and M. J. Wineland, *Department of Poultry Science, North Carolina State University, Raleigh.*

## **Processing, Products, and Food Safety Posters Rooms 230-231, 240-242**

- 641 **Effects of medicinal plants, probiotic and organic acids on *Campylobacter* excretion, immune response and serum lipids in broilers.**  
K. Gharib Naseri<sup>1</sup>, S. Rahimi\*<sup>1</sup>, and P. Khaki<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Tehran, Iran*, <sup>2</sup>*Razi Vaccine and Serum Research Institute, Karaj, Alborz, Iran.*
- 642 **The effect of probiotic, prebiotic and organic acids on *Campylobacter jejuni* count in cecum and intestinal morphology of broilers.**  
K. Gharib Naseri<sup>1</sup>, S. Rahimi\*<sup>1</sup>, and A. Rahimi<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Tehran, Iran*, <sup>2</sup>*Islamic Azad University, Tehran, Tehran, Iran.*
- 643 **Effects of electron-beam irradiation on diet characteristics, intestinal microbial population and morphology, ileal digestibility and performance of broilers.**  
S. Yakhkeshi<sup>1</sup>, S. Rahimi\*<sup>1</sup>, and P. Shawrang<sup>2</sup>, <sup>1</sup>*Tarbiat Modares University, Tehran, Tehran, Iran*, <sup>2</sup>*Agricultural, Medical and Industrial Research School, Nuclear Science and Technology Research Institute, Atomic Energy Organization, Karaj, Alborz, Iran.*
- 644 **Microbial identification and analysis of antimicrobial resistance in samples of avian cellulitis from slaughterhouses located in the Federal District, Brazil.**  
M. M. Santos\*, A. C. M. Alcântara, A. P. Santana, and P. H. C. Silva, *University of Brasília, Federal District, Brazil.*
- 645 **Effect of simultaneous use of high pressure processing and transglutaminase enzyme on spent hen protein isolate (SPI).**  
D. A. Omana\* and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 646 **Application of high pressure processing to improve the functional properties of pale, soft, and exudative (PSE)-like turkey meat.**  
J. T. Y. Chan, D. A. Omana\*, and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 647 **Effect of testosterone injection on occurrence of lipid and protein oxidation in frozen stored broilers meat.**  
S. Askari\*, M. A. K. Torshizi, and F. B. Kasmani, *Tarbiat Modares University, Tehran, Iran.*

- 648 **Effect of extruded full fat soybean (EFFSB) on performance and blood constituents of broiler chickens.**  
S. A. Mirghelenj\*, A. Golian, and H. Kermanshahi, *Ferdowsi University of Mashhad, Mashhad, Khorasan Razavi, Iran.*
- 649 **Effect of full fat soybean extruded at different temperatures on performance and blood constituents of broiler chickens.**  
A. Golian\*, S. A. Mirghelenj, H. Kermanshahi, and S. Zhaleh, *Ferdowsi University of Mashhad, Mashhad, Khorasan, Iran.*
- 650 **Improving the functionality of mechanically separated turkey meat protein isolates by enzymatic cross-linking using transglutaminase.**  
Y. Hrynets\*, D. A. Omana, and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 651 **Antibacterial activity of plant extracts on major foodborne bacterial pathogens.**  
N. Murali\*, G. S. Kumar, and M. F. Slavik, *Poultry Science Department, University of Arkansas, Fayetteville.*
- 652 **pH shifting processing of spent hens mince: Protein extraction optimization.**  
H. Wang\*, J. Wu, and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 653 **Consumer preference for omega-3 fatty acid enriched chicken frankfurters.**  
S. Srinivasan<sup>1</sup>, B. Rathgeber\*<sup>2</sup>, K. Thompson<sup>2</sup>, and N. Pitts<sup>1</sup>, <sup>1</sup>*Nova Scotia Agricultural College, Truro, Nova Scotia, Canada,* <sup>2</sup>*Agriculture and Agri-Food Canada, Kentville, Nova Scotia, Canada.*
- 654 **Black bone discoloration in bone-in broiler chicken thighs.**  
S. Singla, D. R. Korver\*, and M. Betti, *University of Alberta, Edmonton, Alberta, Canada.*
- 655 **Relationship between ground flaxseed-based omega-3 PUFA enrichment of broiler breast meat and meat quality attributes.**  
S. Nain\*, R. A. Renema, B. L. Schneider, M. Betti, and M. J. Zuidhof, *University of Alberta, Edmonton, AB, Canada.*
- 656 **Models to predict specialty egg purchasers' behavior.**  
M. Bejaei\*, K. Wiseman, and K. M. Cheng, *University of British Columbia, Vancouver, BC, Canada.*
- 657 **Enzymatic susceptibility of phosvitin for improved hydrolysis.**  
H. Samaraweera\*, E. J. Lee, and D. U. Ahn, *Iowa State University, Ames.*

- 658 **Effects of dietary content of corn distillers dried grains with solubles (DDGS) on the egg production and internal quality of eggs.**  
H. Sun, E. J. Lee\*, M. Persia, and D. U. Ahn, *Department of Animal Science, Iowa State University, Ames.*
- 659 **Influence of dietary vitamin E supplementation on shelf life of ground broiler chicken meat during frozen storage.**  
B. Saenmahayak\*, M. Singh, J. B. Hess, and S. F. Bilgili, *Auburn University, Auburn, AL.*
- 660 **Influence of growth rate on the occurrence of white striping in broiler breast fillets.**  
V. A. Kuttappan\*, V. B. Brewer, P. W. Waldroup, and C. M. Owens, *University of Arkansas, Fayetteville.*
- 661 **Impact of further processing on dielectric properties of broiler poultry meat.**  
D. Samuel\* and S. Trabelsi, *Russell Research Center, Athens, GA.*
- 662 ***Salmonella* spp., *Escherichia coli* and *Campylobacter* spp. in chickens: Updates on antimicrobial resistance trends, patterns and recovery rates in Canada.**  
A. Agunos\*, B. Avery, C. Carson, A. Deckert, L. Dutil, S. Gow, D. Légr, J. Parmley, M. Tessier, R. Reid-Smith, and R. Irwin, *Laboratory for Foodborne Zoonoses, Public Health Agency of Canada.*
- 663 **The effects of Cordyceps fermented products on the production performance and the protection against infection of *Salmonella* Enteritidis in laying hens.**  
T. T. Chen<sup>\*1</sup>, C. Chu<sup>2</sup>, B. C. Weng<sup>2</sup>, and K. L. Chen<sup>3</sup>, <sup>1</sup>*Graduate Institute of Agriculture, National Chiayi University, Chiayi City, Taiwan,* <sup>2</sup>*Microbiology and Immunology, National Chiayi University, Chiayi City, Taiwan,* <sup>3</sup>*Animal Science, National Chiayi University, Chiayi City, Taiwan.*

## Runting Stunting Syndrome Posters

### Rooms 230-231, 240-242

- 664 **Evaluation of lymphoid tissues from broilers with runting and stunting syndrome.**  
H. Sellers\*, S. Williams, E. Linnemann, and E. Mundt, *University of Georgia, Athens.*
- 665 **Isolation, purification and full genome sequence of a chicken astrovirus isolated from broiler chickens with runting and stunting syndrome.**  
S. Cheng\*, G. Zavala, and T. Barbosa, *Department of Population Health, University of Georgia, Athens.*

## **Virus - Miscellaneous Posters**

### **Rooms 230-231, 240-242**

- 666     **Development of an enteric virus panel test for detection of turkey enteric viruses.**  
S. Kariyawasam\*, D. Trampel, and T. N. Denagamage, *Pennsylvania State University, Department of Veterinary and Biomedical Sciences, University Park.*
- 667     **Protection against turkey coronaviral enteritis by DNA vaccination.**  
T. L. Lin\*, M. Ababneh, M. Hsieh, and C. C. Wu, *Department of Comparative Pathobiology, Purdue University, West Lafayette, IN.*
- 668     **Sequential pathogenesis of chicken proventricular necrosis virus (R11/3 Virus) in transmissible viral proventriculitis-affected chickens.**  
J. S. Guy\*, M. West, and O. Fletcher, *North Carolina State University, Raleigh.*
- 669     **A preliminary survey of hemoagglutinating virus in red-winged tinamous from Buenos Aires Province, Argentina.**  
C. Buscaglia\*, *Comisión De Investigaciones Científicas De La Buenos Aires, Argentina. Fundacion Ecologica Pinamar, Argentina.*
- 670     **Propagation and characterization of turkey reoviruses isolated in Germany, 2004–2008.**  
M. Day\*, S. Kenklies, and R. Günther, *USDA/ARS, Athens, GA.*
- 671     **Identification and molecular characterization of avian reovirus in commercial broilers using RT-PCR and sequencing.**  
L. Li\*, E. M. Handley, M. R. Luther, A. Wise, A. Fulmer, and F. J. Hoerr, *Auburn University, Auburn, AL.*
- 672     **Comparison of fluorescent antibody and RT-PCR testing for the detection of avian reovirus in clinical diagnosis.**  
L. Li\*, E. M. Handley, M. R. Luther, A. Wise, A. Fulmer, and F. J. Hoerr, *Auburn University, Auburn, AL.*
- 673     **Clinical, pathological and virological investigations of multicentric lymphomas reported from pheasants flocks.**  
L. Corrand\*, X. Chatenet, P. Albaric, M. L. Lucas, S. Tricoire, and J. L. Guerin, *Ecole Nationale Veterinaire De Toulouse.*
- 674     **Emergence of an acute chicken fibrosarcoma induced by avian leukosis virus in China.**  
Z. Cui\*, S. Sun, X. Wang, and C. Li, *Shandong Agricultural University, College of Veterinary Medicine, Taian, China.*