AAAP/AVMA Scientific Program

New Orleans, LA

July 19-23, 2008

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Thank You!

In Advance for Your Support to the Upcoming Annual Meeting in New Orleans, LA

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Thank You!

Continued from page 4.

In Advance for Your Support to the Upcoming Annual Meeting in New Orleans, LA

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AAAP Awards Luncheon

Monday, July 21, 2008 – 12:15 til 2:45 PM

Marriott New Orleans

Blaine Kern Ballroom Salons A-D

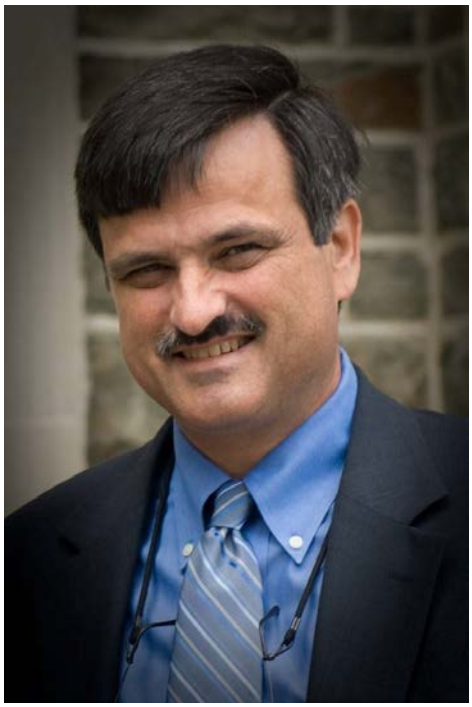
PLEASE ATTEND THE
AAAP BUSINESS MEETING

TUESDAY, JULY 22, 2008

10:30 - NOON

Meet the new management team for AAAP.

Bob & Janece Bevans-Kerr



Poster Presenters – VERY IMPORTANT -

Posters must be set up before 8:00 AM on Sunday, July 20 and removed promptly on Tuesday, July 22 by 4:50 pm.

Presenters should be available during each scheduled break in the scientific program to discuss their posters.

SPECIAL PRESENTATIONS

Monday, July 21, 2008

8:00 AM — ***Keynote Speaker: Y.M. Saif***
"Enteric Diseases: Present and Future"

8:30 AM — ***Richard Rimler Memorial Paper: Dharani Ajithdoss***
"Transactivation Properties of Meq Oncoproteins of Marek's Disease Vaccine Strain, CV1988"

8:45 AM — ***Reed Rumsey Award Presentation: John R. Dunn***
"Frequency of Multiple Serotype 1 Marek's Disease Virus Strains in Feather Follicle Epithelium and Tumor Cells following Superinfection"

Tuesday, July 22, 2008

10:00 AM — ***Lasher History Lecture: David Halvorson***
"The History of Avian Influenza in the USA"

Wednesday, July 23, 2008

1:15 PM — ***Reed Rumsey Award Presentation: Justin Brown***
"Experimental Infections of Waterfowl and Gulls with a H5N1 Highly Pathogenic Avian Influenza Virus"

AAAP Schedule of Events – Intercontinental Hotel, New Orleans, LA

Date / Time	Meeting Name	Room Assignments
Friday, July 18, 2008		
7:00 am – 5:00 pm	AAAP Board of Directors Meeting	Fulton
Saturday, July 19, 2008		
7:00 am – 5:00 pm	AAAP Board of Directors & Foundation Board Meeting	Fulton
7:00 am – 8:00 pm	ACPV Exam	Vieux Carre B
7:00 am – 8:00 pm	ACPV Exam # 2	Pontalba
7:00 am – 10:00 pm	ACPV Exam # 3 – (Exam Grading Room)	Vieux Carre A
8:00 am – 4:00 pm	Association of Veterinarians in Broiler Practice Breakfast – sponsored by Merial Select Lunch – sponsored by Fort Dodge Animal Health	Pelican II
12:00 pm – 5:00 pm	Association of Veterinarians in Turkey Production Lunch – sponsored by Alpharma	Acadian
2:00 pm – 5:00 pm	AAAP Histopathology/ Case Report Interest Group	Pelican I
3:00 pm – 4:00 pm	AAAP Education Committee	Oak
3:30 pm – 5:00 pm	AAAP Biologics Committee	Magnolia
4:00 pm – 5:00 pm	AAAP Biotechnology Committee	Cabildo
	NO OPENING RECEPTION THIS YEAR	
Sunday, July 20, 2008		
6:00 am – 8:00 am	AAAP Animal Welfare Committee	Acadian I
6:30 am – 8:00 am	Georgia MAM Alumni Breakfast	Pelican I
7:00 am – 8:00 am	AAAP Drugs & Therapeutic Committee	Audubon
7:00 am – 8:00 am	AAAP Membership Committee	Magnolia
8:30 am – 9:30 am	AAAP Awards Committee	Oak Room
11:30 am – 1:30 pm	Association of Primary Poultry Breeder Veterinarians Luncheon – sponsored by Fort Dodge Animal Health	Poydras
12:00 pm – 1:30 pm	California Poultry Medicine Alumni	Pelican I
2:00 pm – 6:00 pm	ACPV Board Meeting	Magnolia
3:00 pm – 4:00 pm	AAAP AVMA Liaison Committee	Acadian 2
3:00 pm – 4:00 pm	AAAP Food Safety Committee	Cypress
3:15 pm – 5:00 pm	AAAP Epidemiology Committee	Pelican II
4:00 pm – 5:00 pm	AAAP Diseases of Poultry Committee	Oak
6:00 pm – 7:00 pm	Highly Pathogenic Avian Influenza (HPAI)	LaSalle BC
Monday, July 21, 2008		
6:30 am – 8:00 am	AAAP Avian Diseases Editorial Board Meeting	Poydras
7:00 am – 8:00 am	AAAP Eskelund Preceptorship Committee	Audubon
7:00 am – 8:00 am	AAAP History Committee	Oak
7:00 am – 8:00 am	AAAP Toxic, Infectious, Miscellaneous & Emerging Diseases (TIME) Committee	Magnolia
7:00 am – 9:00 am	Association of Veterinarians in Egg Production	Pelican II
12:15 pm – 2:45 pm	**AAAP Awards Luncheon** **(sponsored by Fort Dodge Animal Health)** **Marriott New Orleans Convention Center**	**Blaine Kern Ballroom Salons A-D**
7:30 pm – 11:00 pm	NC State University Poultry Health Management	Pelican I/II
Tuesday, July 22, 2008		
7:00 am – 8:00 am	AAAP Enteric Diseases of Poultry Committee	Poydras
7:00 am – 9:00 am	ACPV Reception / Annual Meeting	LaSalle A
10:30 am – Noon	**AAAP Business Meeting (Convention Center)**	**Conv. Ctr. Rm. 391-392**
3:15 pm – 5:15 pm	AAAP Respiratory Diseases Committee	LaSalle BC
4:00 pm – 5:00 pm	AAAP Tumor Virus Committee	Poydras
Wednesday, July 23, 2007		
7:00 am – Noon	AAAP Board of Directors Meeting	Poydras

American Association of Avian Pathologists
July 19-23, 2008
Morial Convention Center
New Orleans, Louisiana

SCIENTIFIC PROGRAM

	Monday, July 21, 2008 – Morning Program	
	Rooms 391-392 Session A	**Rooms 393-394 Session B**
	Moderator: Gregorio Rosales	
8:00 AM	**Keynote Speaker:** **Rooms 391-392** **Dr. Mo Saif** **"Enteric Diseases: Present and Future"**	
	Moderator: Guillermo Zavala	**Moderator: Aly Fadly**
8:30 AM	**Sequence Analysis of Parvoviruses Associated with Enteric Disease of Poultry** Laszlo Zsak, Keith O. Strother, and J. Michael Day	**RIMLER MEMORIAL PAPER:** **Transactivation Properties of Meq Oncoproteins of Marek's Disease Virus Strain, CV1988** Dharani K. Ajithdoss, Sanjay M. Reddy, and Blanca Lupiani
8:45 AM	**Efficacy of Lasalocid Against Select Isolates of *Eimeria* from Turkey Flocks** Steven R. Clark and H.D. Chapman	**REED RUMSEY AWARD WINNER:** **Frequency of Multiple Serotype 1 Marek's Disease Virus Strains in Feather Follicle Epithelium and Tumor Cells following Superinfection** John R. Dunn, Richard L. Witter, Robert F. Silva, and Lucy F. Lee
9:00 AM	**Isolation of Avian Rotaviruses from a Normal Turkey Flock and from a Flock with Signs of Enteric Disease** J. Michael Day, Erica Spackman, Mary J. Pantin-Jackwood, and Laszlo Zsak	**Diagnosis of Marek's Disease by Real Time PCR from Samples Collected on FTA® Cards** Aneg Lucia Cortes and Isabel M. Gimeno
9:15 AM	**Genomic Characterization of Adenovirus-like Virus (R11-3), the Etiology of Transmissible Viral Proventriculus, Identifies the Virus as a Novel Chicken Birnavirus** James S. Guy and Frederick J. Fuller	**Optimization of Revaccination Procedure to Improve Protection against Marek's Disease** Isabel M. Gimeno, Aneg Lucia Cortes, and Richard L. Witter
9:30 AM	**Experimental Reproduction of Inclusion Body Hepatitis in Broiler Chickens** Samantha Ekanayake, Susantha Gomis, Suresh Tikoo, George Mutwiri, Philip Willson, Davor Ojkic, Robert Goodhope, and Tennille Knezacek	**Transcriptional Profiling of Marek's Disease Virus Genes during Cytolytic and Latency Infection** Lucy F. Lee, Huanmin Zhang, and Mohammed Heidari
	Break **9:45 AM – 10:00AM**	**Break** **9:45 AM – 10:00AM**
	Moderator: Kate Barger	**Moderator: Isabel Gimeno**
10:00 AM	**Strain Relationships and *in vivo* Comparison of *Clostridium perfringens* (CP) Field Isolates Obtained from Chickens with Gangrenous Dermatitis (GD) or Necrotic Enteritis (NE)** G. Donald Ritter, Tony Neumann, and Daniel Bautista	**Role of Cytokines in Marek's Disease Vaccines** Robert F. Silva, Lucy Lee, Mohammad Heidari, and John Dunn
10:15 AM	**Gangrenous Dermatitis in Commercial Turkeys – Prevention and Control** Daniel Karunakaran	**Laboratory and Animal Safety of a Herpesvirus Chimera Marek's Vaccine and Recombinant Vector** Linda R. Gergen, Ledesma Brooke, Stephanie Cook, Gary Petersen, and Joan Schrader

	Monday, July 21, 2008 – Morning Program	
	Rooms 391-392 Session A	**Rooms 393-394 Session B**
10:30 AM	**Case Report: *Pasteurella multocida* and Mycoplasma in Pharoah Quail** Tami F. Kelly	**Dynamics of Infection, Pathology and Impact on Performance of a 2007 Field Isolate of Avian Leukosis Virus Subgroup J in Broiler Breeders and Broilers** Andres Montoya, Guillermo Zavala, Sunny N. Cheng, and Taylor Barbosa
10:45 AM	**"What is Your Diagnosis for Spotty Livers in Baby Chicks?"** Philip A. Stayer, C. Gabriel Senties-Cue, and Mark A. Burleson	**Comparison of Proviral DNA Sequences of Seven Isolates of a Naturally Occurring Recombinant Avian Leukosis Virus Associated with Myelocytomatosis in Commercial Layers** Ghida R. Banat, Robert F. Silva, Scott D. Fitzgerald, Willie M. Reed, and Aly M. Fadly
11:00 AM	**Management Factors Contributing to Quail Disease in Georgia** Donna Kelly	**Molecular Analysis of Reticuloendotheliosis Virus Isolates obtained from Chickens, Turkeys, and Prairie Chickens located in Different Regions in the United States** Aly M. Fadly, Jody K. Mays, and Robert F. Silva
11:15 AM	**An Outbreak of Meningitis in Commercial Poultry: A Field Perspective** Mark Burleson, Danny Magee, and Marshall Putnam	**Use of Retroviral-Based Vectors for Gene Delivery and Expression in Cell Lines of Avian Origin** Taylor Barbosa, Guillermo Zavala, and Sunny Cheng
11:30 AM	**An Outbreak of Meningitis in Commercial Poultry: A Diagnostic Perspective** Danny L. Magee, Mark Burleson, and Marshall R. Putnam	**The Commercial Duck Industry in the United States: History, Current Disease Challenges and Future** Jaime Ruiz, Tirath Sandhu, Benjamin Lucio, and Alejandro Banda
11:45 AM	**Focal Duodenal Necrosis – An Increased Understanding** Tammy A. Baltzley, Thomas G. Rehberger, and Greg R. Siragusa	**Current Status of the National Poultry Improvement Plan** C. Stephen Roney and Andrew Rhorer
	AAAP Awards Luncheon **12:15 – 2:45 PM** **Lunch served at 12:30 PM** **Marriott New Orleans Convention Center – Blaine Kern Ballroom Salons A-D** (across from Convention Center and a couple of blocks away)	

Marriott New Orleans
at the Convention Center
859 Convention Center Boulevard
New Orleans, LA 70130

	Monday, July 21, 2008 – Afternoon Program	
	Rooms 391-392 Session A	**Rooms 393-394 Session B**
	Moderator: Patty Dunn	**Moderator: Eric Jensen**
3:00 PM	**Field Evaluation of Same-day and Next-day Placement of Turkey Poults** David Rives, Julian D. Brake, and Summer M. Russell	**Characterization of Recent H5N1 Avian Influenza Isolates from Vietnam and Evaluation of Vaccine Efficacy Using Commercial Vaccines** Jennifer Pfeiffer, Mary Pantin-Jackwood, and David L. Suarez
3:15 PM	**Day of Hatch Compared with Day After Hatch Placement of Turkey Poults** John Barnes, Michael P. Martin, Lisa K. Nolan, J. Michael Day, Dennis P. Wages, David H. Ley, and David V. Rives	**Immunogenicity of Newcastle Disease Virus Vectored Vaccine for Avian Influenza A Subtype H5 Virus and Evaluation of Protective Efficacy for Homologous and Heterologus Challenge Strains** Baibaswata Nayak, Subrat N. Rout, Daniel R. Perez, and Siba K. Samal
3:30 PM	**Use of the I-Stat Serum Chemistry Analyzer for Evaluation of Poult Health** Michael P. Martin, John Barnes, and David Rives	**Evaluation of a Newcastle Disease Virus Vectored Avian Influenza Vaccine** Carlos N. Estevez, Daniel J. King, David Suarez, and Qingzhong Yu
3:45 PM	**Severe Disseminated *Aspergillus flavus* Infection associated with High Mortality in Broiler Chickens** Monique Silva de França and H. L. Shivaprasad	**Induction of Mutations in M1 and NS1 Genes of H7N2 Avian Influenza Virus for Generation of Vaccine Candidates with Built-in DIVA Strategy** Sankhiros Babapoor, Mazhar Khan, Zeinab Helal, Dipu Mohan Kumar
	Moderator: Bruce Charlton	**Moderator: Kenton Kreager**
4:00 PM	**Causes of Broiler Breeder Hen Mortality During the Early Lay Period** Lauren M. Boswell, Michael J. Wineland, and H. John Barnes	**Comparative Seroconversion in Chicken Flocks Vaccinated with Avian Influenza H5N1 and H5N2 Vaccines** Salah Mousa
4:15 PM	**One Medicine Approach to Biosecurity in the Live Bird Marketing Systems in Central America** Patrice N. Klein, Fidelis N. Hegngi, Jose J. Bruzual, Mara E. Gonzalez-Ortiz, and Cesar H. Sandoval	**Lessons Learned Preparing Developing Countries for Highly Pathogenic H5N1 Avian Influenza** Richard M. Fulton, Jarra Jagne, and Ross Graham
4:30 PM	**Crate Tracking in the Live Bird Markets (LBMs), NY** Susan C. Trock, Joy Bennett, and John P. Huntley	***In Silico* Analysis of Current Real-Time PCR Assays for the Detection of Avian Influenza Virus** Scott A. Callison
4:45 PM	**Welfare Auditing – When to Review Records and When to Use Your Eyes** James T. Barton	**Development of Multiplex Bead Assays for the Detection and Differentiation of H5 and H7 Subtype Avian Influenza Virus** Wonhee Cha, Y.M. Saif, Keumsuk Hong, and Chang-Won Lee
5:00 PM	**Gait Scoring of Commercial Broilers** Timothy S. Cummings, Bruce Webster, Kelli Jones, and Mark Cooper	**Development and Validation of a Competitive ELISA to Detect Antibodies against the Influenza H5 Protein** Rudiger Hauck and Egbert S. Mundt
5:15 PM	**High Mortality in Backyard Chickens Associated with Proximity to Wild Waterfowl** Andre F. Ziegler	**Rapid Multiplexed Detection of Antibodies to Avian Influenza Virus using Liquid Crystals** Stacey Schultz-Cherry, John Lindner, Jeremy Jones, Joseph Burkholder, Josephy Kakkassery, Kurt Kupcho, and Ganesh Vasuvedan
5:30 PM	**ADJOURN**	**ADJOURN**

	Tuesday, July 22, 2008 – Morning Program	
	Rooms 391-392 Session A	**Rooms 393-394 Session B**
	Moderator: Steven Clark	**Moderator: Maricarmen García**
8:00 AM	**Cellulitis in Turkeys: *Clostridium septicum* being a Primary Pathogen?** Anil J. Thachil, David A. Halvorson, and Kakambi V. Nagaraja	**Evolution and Mutation Rates of Avian Coronavirus Infectious Bronchitis Virus** Enid T. McKinley, Deborah A. Hilt, and Mark W. Jackwood
8:15 AM	**Epidemiological Factors Associated with the Prevalence of Gangrenous Dermatitis** Marshall Vogt, Margie Lee, Steve Collett, and Roy Berghaus	**Pathogenesis of a Recent Field Isolate of Nephropathogenic Infectious Bronchitis Virus** Blair E. Telg, H. Sellers, S.M. Williams, G. Zavala, J. Fricke, and A. Montoya
8:30 AM	**Assessment of *Clostridium perfringens* and *Clostridium septicum* from Commercial Broilers with Gangrenous Dermatitis and Asymptomatic Broilers within the Same Houses** Susan Dunham, Anthony P. Neumann, Kimberle A. Agle, Thomas G. Rehberger, and John A. Smith	**Significance of Minor Viral Subpopulations within Ark-type Infectious Bronchitis Vaccines** Vicky L. Van Santen, Haroldo Toro, and Kellye S. Joiner
8:45 AM	**Live Recombinant *Salmonella* Vector Vaccine for Necrotic Enteritis** Bereket Zekarias, Hua Mo, and Roy Curtiss III	**The Emergence of Infectious Bronchitis Virus Strain CA1737 in Chickens in California** Peter R. Woolcock and Carol J. Cardona
9:00 AM	**Bacterial Respiratory Diseases of Economic Importance of Poultry in Mexico** Ariel M. Ortiz, Edgardo Soriano, Ernesto Soto, Alejandro García, and Patrick Blackall	**Protection and Immunogenicity Studies of *in ovo* Injection of Recombinant DNA Vaccine and Interferon Type 1 against Infectious Bronchitis Infection** Mazhar I. Khan, Sankhiros Babapoor and Zhiqin Xie
9:15 AM	**Field Observations and Experimental Studies on the Pathogenic Potential of Small Colony Variants of *Pasteurella multocida*** Magne Bisgaard, Andreas Petersen, Anders M. Bojesen, Jens P. Christensen, and Henrik Christensen	**Vaccination and Arkansas Infectious Bronchitis Virus (IBV) Persistence in the Field** Mark W. Jackwood, Deborah A. Hilt, Amber W. McCall, Enid T. McKinley and Crystal N. Polizzi
	Break **9:30 AM – 10:00AM**	**Break** **9:30 AM – 10:00AM**
	Moderator: Richard Chin	
	Lasher History Lecture: 10:00 – 10:30 AM **Rooms 391-392** **Dr. David Halvorson –** **"The History of Avian Influenza in the USA"**	
	AAAP Business Meeting 10:30 – 12:00 noon **Rooms 391-392**	
	Lunch 12:00 noon – 1:00 PM	

Tuesday, July 22, 2008 – Afternoon Program

	Room 391-392 Session A	Room 393-394 Session B
	Moderator: Hector Cervantes	**Moderator: Alejandro Banda**
1:00 PM	**A Live Attenuated *aro*-A Mutant Vaccine against Fowl Cholera - Vaxsafe® PM** Peter C. Scott and Rima Youil	**Evaluation of an Updated Real Time RT-PCR Test for the Identification of the H7 Subtype** Erica Spackman and David L. Suarez
1:15 PM	**Characterization of *Taxon 14* Isolates Involved in Upper Respiratory Tract Infections and Blepharoconjunctivitis in Turkeys** Ronald Guenther, Henrik Christensen, Anders M. Bojesen, and Magne Bisgaard	**REED RUMSEY AWARD WINNER:** **Experimental Infections of Waterfowl and Gulls with a H5N1 Highly Pathogenic Avian Influenza Virus** Justin Brown, David E. Stallknecht, and David E. Swayne
1:30 PM	**Hemagglutination-inhibition Antibodies Induced by *Ornithobacterium rhinotracheale*** Edgardo V. Soriano, Vicente Vega, Salvador Lagunas-Bernabé and Simón Martinez	**Variation in Infectivity and Adaption of Wild Duck- and Poultry-Origin High and Low Pathogenicity Avian Influenza Viruses for Poultry** David E. Swayne and Richard D. Slemons
1:45 PM	**Isolation and Identification of Serovar B-1 of *Avibacterium paragallinarum* in Panama** Erick N. Calderón, Karina M. Thomas, Vladimir Morales, and Edgardo V. Soriano	**Ability of an Avian Influenza Virus with Truncated NS1 Protein to Grow in Presence of Interferon** Vinayak Brahmakshatriya, Blanca Lupiani, and Sanjay M. Reddy
2:00 PM	**Active motility is not required for *Campylobacter* colonization of chickens** A. Singh Dhillon, Mike E. Konkel and Kari Shoaf-Sweeney	**Expression of Recombinant Avian Influenza Virus Hemagglutinin Protein in Mammalian Cells via an Alphavirus Vector** Blayne Mozisek, Sanjay M. Reddy, and Blanca Lupiani
2:15 PM	**Re-occurrence of Fowl Typhoid in Commercial Layers** Franz Sommer and Martina Glatzl	**Gene Expression Responses to Highly Pathogenic Avian Influenza H5N1 Virus Infections in Ducks** Mary J. Pantin-Jackwood, Darrell Kapczynski, Jamie Wasilenko, Luciana Sarmento, and Claudio L. Afonso
2:30 PM	**Practical Application of Spray Live Salmonella Vaccine at the Hatchery on Table Egg Pullets** Hugo Medina	**Avian Influenza Virus-induced Regulation of Duck Fibroblast Gene Expression** Luciana Sarmento, Jamie Wasilenko, and Mary J. Pantin-Jackwood
2:45 PM	**Reduction in Prevalence of *Salmonella spp.* in Broiler Progeny from Vaccinated Breeders** Robert L. Owen	**Replication of H5N1 Avian Influenza Viruses in Chickens is Affected by the PB1, PB2, and NP Viral Genes** Jamie Wasilenko, Chang Won Lee, Luciana Sarmento, and Mary J. Pantin-Jackwood
	Break **3:00 PM – 3:30 PM**	**Break** **3:00 PM – 3:30 PM**
	Moderator: Jose Linares	**Moderator: Holly Sellers**
3:30 PM	***Caenorhabditis elegans* as a Simple Model to Study Avian Pathogenic *Escherichia coli* Virulence** Subhashinie Kariyawasam, Yvonne Wannemuehler, Jack Hardy, Ganwu Li, Luke Baldwin, Tim Johnson, and Lisa Nolan	**Influenza A Virus Whole Genome RNA Amplification** Weiwen Ge, Xingwang Fang, Mangkey Bounpheng, and John El-Attrache
3:45 PM	**The Putative Virulence Region Found in Large Plasmids of Avian Pathogenic *Escherichia coli* Contributes to Colibacillosis** Kelly A. Tivendale, Amir H. Noormohammadi, and Glenn F. Browning	**The Role of Untranslated Regions of Newcastle Disease Virus Hemagglutinin-neuraminidase Gene in Replication and Pathogenesis** Yonggi Yan, Subrat N. Rout, and Siba K. Samal
4:00 PM	**Vaccination Programming of a Live *E. coli* Vaccine in Commercial Leghorn Chickens** Cheryl Gustafson, Jon L. Schaeffer, and Kalen Cookson	**The Role of Antigenic Composition of Newcastle Disease (ND) Vaccines in ND Control** Patti J. Miller, C. Estevez, Q. Yu, D.L. Suarez, and D.J. King
4:15 PM	**Recombinant Iss as a Potential Vaccine for Avian Colibacillosis** Aaron M. Lynne, Steven L. Foley, Subhashinie Kariyawasam, and Lisa K. Nolan	**Serological Survey on the Prevalence of Antibodies to Avian Paramyxovirus – 2, 3, 4, 6, 7, 8 and 9 in Commercial Poultry in the United States** Ashwini Warke and Egbert S. Mundt
4:30 PM	**The Characterization of Several Avian Pathogenic *E. coli* (APEC) Strains from Commercial Broilers using PCR Analysis of Key Virulence Genotypes** Kalen Cookson, Lisa Nolan, and Cheryl Gustafson	**Construction of a Fowl Adenovirus Recombinant to Express Avian Metapneumovirus Glycoprotein** Kevin O. Strother, Qingzhong Yu, Darrell R. Kapczynski, Eva Nagy, and Laszlo Zsak
4:45 PM	**Chukar Partridge (*Alectoris chukar*): A Laboratory Model for West Nile Virus Infection** Robert E. Porter and Erik K. Hofmeister	**Protection against Avian Metapneumovirus in Turkeys Immunized via the Respiratory Track with Inactivated Virus** Ra Mi Cha, Mahesh Khatri, and Jagdev M. Sharma
5:00 PM	**ADJOURN**	**ADJOURN**

	Wednesday, July 23, 2008 – Morning Program	
	INTERCONTINENTAL HOTEL Cabildo Room Session A	**INTERCONTINENTAL HOTEL Pontalba Room Session B**
	Moderator: Steve Fitz-Coy	**Moderator: Patricia Wakenell**
8:00 AM	**Differentiation of *Mycoplasma gallisepticum* Live Vaccines and Field Strains in Clinical Samples** Ziv Raviv, Victoria A. Laibinis, and Stanley H. Kleven	**Delivery of Rapid Nuclear Imported and High-level Expressive DNA Vaccine Vector by Using Attenuated *Samonella* Displaying Programmed Lysis** Wei Kong, Xiangmin Zhang, Shifeng Wang, and Roy Curtiss III
8:15 AM	**The Chonal Slit as an Alternative Sampling Method for *Mycoplasma gallisepticum* (MG) and *Mycoplasma synoviae* (MS) and Use of a High Throughput System for Molecular Detection of MG and MS** Jenny A. Fricke, Guillermo Zavala, Stanley H. Kleven, Victoria Laibinis, Maricarmen Garcia, and Ziv Raviv	**Isolation and Differentiation of Mesenchymal Stem Cells from Chicken Bone Marrow** Mahesh Khatri and Jagdev M. Sharma
8:30 AM	**Coccidiosis Vaccination Improves Feed Conversion in Turkey Toms** Eng H. Lee	**Compatibility of Recombinant Herpesvirus of Turkeys Vaccines** Alecia Godoy, Motoyuki Esaki, Katalin Varga, Peter Flegg, Kristi Moore Dorsey, Sandra Rosenberger and John K. Rosenberger
8:45 AM	**Passive Protection against Multiple *Eimeria* Species by Orally Administered Hyperimmune Egg Yolk Antibodies** Hyun S. Lillehoj, Dong W. Park, Andres Morales, and Eduardo Lucio	**First Detection of Very Virulent Form of Bursal Disease Virus (vvIBDV) in Peru** Branko Alva, Eliana Icochea, Yannick Gardin, Vilmos Palya, Xavier Catropozo, and Paola Cruz
9:00 AM	***Eimeria praecox*: New Observations on its Gross Pathology in Chickens** Patricia C. Allen, M.C. Jenkins, and G.C. Wilkins	**Evaluation of Priming with *in ovo* DNA Vaccine and Boosting with Killed Vaccine Strategies for Protective Immunity against IBDV and Effects of Plasmid-encoded Chicken Interleukin-2 and Chicken Interferon-γ** Jeong Ho Park, Haan Woo Sung, and Hyuk Moo Kwon
9:15 AM	***Eimeria praecox* Prevents *E. maxima*-associated Clinical Coccidiosis in Chickens** Mark C. Jenkins, Patricia Allen, Katrzyna B. Miska, and Spangler Klopp	**Effect of *in ovo* Exposure to Virulent and Vaccine Strains of Infectious Bursal Disease Virus on Embryonal Immune Cells** Jagdev Sharma, Mahesh Khatri, and Manohar Mutnal
	Break 9:30 AM – 10:00AM	**Break 9:30 AM – 10:00AM**
	Moderator: Gabriel Sentíes-Cué	**Moderator: Pedro Villegas**
10:00 AM	**Field Comparison of an *in ovo* Coccidiosis Vaccine, Inovocox™, and an Ionophore Coccidiostat** Andrea Sinclair Zedek, David G. Kelly, Christopher J. Williams, and Jonathan L. Schaeffer	**Reverse Genetics as Diagnostic Tool for Analysis of Antigenicity of Infectious Bursal Disease Virus** Egbert Mundt, Aswani Vunnava, Alan H. Icard, and Holly S. Sellers
10:15 AM	**Influence of Diet on Oocyst Output and Intestinal Lesion Development in Coccivac®-D Vaccinated Replacement Broiler Breeders** Leslee A. Oden, J. Lee, S. Pohl, S. Young, C. Broussard, S. Fitz-Coy and D. Caldwell	**Cellular Proteins Interact with VP3 of Infectious Bursal Disease Virus During Replication** Ruth Stricker and Egbert S. Mundt
10:30 AM	***Eimeria mivati* Prevalence in US** Steve Fitz-Coy, Joan Schrader, and Deborrah Higuchi	**Efficacy and Seroconversion of Various IBD Vaccination Programs in Broiler Breeders: Seroconversion and IBD Progeny Challenge Results** Enrique Montiel, Nikki Pritchard, Julio Cruz-Coy, Elleen Katigbak, and David D. Smith
10:45 AM	**Evaluation of Molecular Characteristics of *Eimeria mivati*** Joan Schrader, D. Higuchi, S. Cook, A. Oetting, and G. Petersen	**Point Mutations that Affect Pathogenicity in Classic Infectious Bursal Disease Virus** Daral J. Jackwood, B. Sreedevei, L.J. LeFever, and S.E. Sommer-Wagner
11:00 AM	**Development of Energy Models to Predict the Impact of Coccidiosis Challenge on Gravimetric and Calorific Cost in Growing Broilers** R.G. Teeter, Charles Broussard, and Linnea Newman	**Efficacy Studies of a HVT Vector Expressing Laryngotracheitis Virus Genes** Lauren Jensen, Motoyuki Esaki, Peter Flegg, Kristi Moore Dorsey, Sandra Rosenberger, and John K. Rosenberger

	Wednesday, July 23, 2008 – Morning Program	
	INTERCONTINENTAL HOTEL Cabildo Room Session A	**INTERCONTINENTAL HOTEL Pontalba Room Session B**
11:15 AM	**Application of Coccidiosis-Modified Energy Models to Evaluate the Impact of Low-level Lesion Scores on Broiler Performance** Linnea Newman, Robert G. Teeter, A. Beker, and C. Brown	**Challenge Study for the Evaluation of Protection Induced by Recombinant HVT-LT Vaccine against a Current Infectious Laryngotracheitis Virus (ILTV) Isolate** Andrés Rodriguez-Avila, Sylva M. Riblet, and Maricarmen García
11:30 AM	**Molecular and Morphological Characterization of *Eimeria* in Game Birds** Katarzyna B. Miska, R.S. Schwartz, B. MacFarlane, E. Pendleton, and M.C. Jenkins	**Recurring Outbreaks of Infectious Laryngotracheitis: Investigating Knowledge Gaps** Nathaniel L. Tablante
11:45 AM	***In vitro* Development of Avian Coccidia in Three Macrophage Cell Lines** Raymond H. Fetterer, Katarzryna B. Miska, Patricia C. Allen, Rami A. Dalloul, and Ruth C. Barfield	**Unusual Outbreaks of Infectious Laryngotracheitis in Broiler Chickens** H.L. Shivaprasad, R.M. Crespo, M.S. França, R.P. Chin, and P.R. Woolcock
12:00	**Adjourn**	**Adjourn**

INSTRUCTIONS FOR POULTRY POSTERS PRESENTION

The following is specific information about the 2008 AVMA/AAAP Poultry Poster Presentation:

Location of the Poultry Posters Presentation:

Earnest N. Morial Convention Center, Room 395-396

Dates/Times of the Poultry Posters Presentation:

Sunday, July 20 – 8:00 AM – 4:50 PM
Monday, July 21 – 8:00 AM – 4:50 PM
Tuesday, July 22 – 8:00 AM – 4:50 PM

NOTE: Posters must be set up before 8:00 AM on Sunday, July 20 and removed promptly on Tuesday, July 22 by 4:50 pm.

Your poster number can be found at the top of your Poultry Poster Presenter Agreement page included in your confirmation packet.

Dimensions: Size of the Mounting Board for Poster: 4 feet X 8 feet (48 inches x 96 inches). All posters must fit within the outer edges of the board. All boards will be double-sided, so another presenter may be mounting a poster on the other side of the board at the same time.

General Information:

- Your poster presentations must be available for viewing during the hours scheduled by the Poultry Poster Section.
- Handouts are permitted. *Sale of any material is strictly prohibited*.
- Poster sessions are intended to serve as informal discussions and not as lectures or paper reading sessions.
- Pushpins will be available in the poster areas. Please do not write or paint on the poster boards.
- Projection equipment and electrical outlets will not be provided in the poster session area.
- One (1) complimentary convention registration will be provided for the primary author of each poster.

Poster Session
Sunday, July 20 – Tuesday, July 22, 2008
Room 395-396

Avian Influenza

1. **Susceptibility and Clinical Description of Severe H5N1 Avian Influenza in Some Domestic and Pet Birds**
   Salah Mousa

2. **Estimation of Protective Antibodies in Yolk and Offspring of Ducks Vaccinated with H5N1 and H5N2 Inactivated Influenza Vaccines**
   Ghada Mousa

3. **Effect of Dose on Immune Response of Ducks Vaccinated with Different Avian Influenza Regimens**
   Heba Salah Mousa

4. **Avian Influenza – Immune Response Differences between Gender in Two Different Types of Chickens**
   Alejandro García, Rodrigo Salamanca, Erika Gallegos, and Sergio González

5. **Genetic Characterization of Triple Reassortant H1N1 Influenza Virus**
   Hadi M. Yassine, Chang-Won Lee, Yan Zhang, and Y.M. Saif

6. **The Influence of Immunogenomics on the Innate Immune Response to Avian Influenza-Comparison of Toll-like Receptor 7 and Cytokine Responses between Chickens and Ducks**
   Darrell R. Kapczynski, Adrian l. Smith, Victoria Philbin, Karen L. Liljebjelke, and Mary Pantin-Jackwood

7. **Nutrient Synergy in Alleviation of Specific Signs and Lesions Produced by H9N2/*E. coli* in Broilers**
   Elie K. Barbour, Fouad Mstouri, Houssam Shaib, Ryan Yaghi, and Rana Sawaya

8. **Sequencing and Mutational Analysis of the Non-Coding Regions of Influenza A Virus**
   Leyi Wang, Keumsuk Hong, and Chang-Won Lee

9. **Pathogenesis, Virus Shedding and Serologic Response of Selected Domestic Avian Species Against Low Pathogenic Avian Influenza (LPAI) Wild Bird Isolates**
   Antonio C. Morales, Jr., Mark W. Jackwood, and Debora A. Hilt

10. **Evaluation of Low Path Avian Influenza Viruses of Wild Bird Origin in Commercial Turkeys and Broiler Chickens**
    Brian S. Ladman, Jack Gelb, Jr., Conrad Pope, Richard Slemons, and Cindy Driscoll

11. **DNA Barcoding: Preliminary Studies with Avian Influenza Virus**
    Dipu Mohan Kumar, Ion Mandolu, Craig Nelson, Mazhar Khan, and Sankhiros Babapoor

12. **Highly Pathogenic Avian Influenza (HPAI) Virus of Subtype H5N1 in Europe**
    Jeanne Brugére-Picoux

13. **Species-Specific Responses to Infection with Avian Influenza**
    Keeler, Calvin L., Jr., Michele N. Maughan, Lorna Dougherty, and Jack Gelb

14. **Phylogenetic Analysis of the Hemagglutinin and Neuraminidase Genes of Avian Influenza Viruses Isolated from Migratory Birds in Korea during 2006-2008**
    Byun, Seong-Hwan, Jung-Hwa Shin, Jeong-Young Yi, Hyun-Mi Jung, and In-Pil Mo

15. **Phylogenetic Analysis of Avian Influenza Viruses Isolated in the Areas Mixed with Duck Farms and Migratory Bird Habitat**
    Kim, Hwan-hee, Jae-myoung Park, Jong-jin Lee, Seong-Hwan Byun, Hak-su Kim, and In-Pil Mo

16. **Nationwide Serologic and Genetic Monitoring after Avian Influenza Vaccination (H9N2) in the Layer Farms**
    Lee, Chang-Hee, Yun-Jeong Lee, Min-Jeong Kim, Eun-Ok Jeon, and In-Pil Mo

17. **Field Trials of Reassorted H9N3 Inactivated Avian Influenza Vaccine and its Diagnostic Kit in Commercial Layers**
    Mo, In-Pil, Jung-Eun Kim, Jeong-Hwa Shin, Ji-Ye Kim, Jong-Nyeo Kim, and Seong-Hway Byun

18. **Efficacy of a Vectored Fowl Pox-Avian Influenza Vaccine Administered *in ovo* to Broiler Chicken Embryos and Challenged with Low Pathogen Virus at 35 Days Old**
    Victor M. Petrone, Wilfrido Pedroza, Diodoro Batalla, and Joaquin Delgadillo

Bacteria, Miscellaneous

19. **Development of a *Clostridium perfringens* Alpha Toxin (Phospholipase C) Antibody ELISA Assay Using a Single Serum Dilution**
    Stephan G. Thayer, Charles L. Hofacre, and Charles Broussard

20. **Comparative Microbiological Ecology of the Intestines in Poultry Species**
    Teresa Morishita and Jonathan Padilla

21. **Macrolide Characterization of *Campylobacter* from Production Turkeys**
    Catherine M. Logue, Gregory T. Danzeisen, Julie S. Sherwood, Jessica L. Thorsness, and Jason E. Axtman

22. **Genome Sequencing of *Gallibacterium anatis* Causing Peritonitis in Laying Hens**
    Timothy J. Johnson, Lisa K. Nolan, Darrell W. Trampel, and Yvonne M. Wannemuehler

Chicken Anemia Virus

23. **Field Surveillance: Level of Maternal Antibodies and CAV Infection at the Broiler Farm Related to Condemnations at Slaughter**
    Beatriz Cardoso

24. **A Survey of Chicken Anemia Virus Infection in Broilers and Broiler Breeders Using the Polymerase Chain Reaction: 1997-2007**
    Lanqing Li, Michael J. Luther, Alicia Wise, and Fred J. Hoerr,

25. **Chicken Anemia Virus and *Escherichia coli* Coinfection in Broiler Chicken**
    Lanqing Li, Fred J. Hoerr, Michael J. Luther, Alecia Wise, Sam Christenberry, and Julia Bright

E. coli

26. **R Plasmids Found among Emergent APEC Strains**
    Anne-Marie C. Overstreet, Timothy J. Johnson, Yvonne M. Wannemuehler, Catherine M. Logue, and Lisa K. Nolan

27. **A Novel 16-kb Pathogenicity Island Containing *tkt1* Found among Avian Pathogenic *Escherichia coli***
    Ganwu Li, Subhasinie Kariyawasam, Yvonne Wannemuehler, and Lisa K. Nolan

28. **Distribution of APEC-like Plasmids and Other Traits among Extraintestinal Pathogenic *Escherichia coli* of Human and Avian Hosts**
    Yvonne Wannemuehler, Timothy J. Johnson, and Lisa K. Nolan

29. **pAPEC-408: An APEC R Plasmid Harboring a Pathogenicity Island**
    Lisa K. Nolan, Timothy J. Johnson, Subhashinie Kariyawasm, Yvonne Wannemuehler, Ganwu Li, Dianna M. Jordan, and Catherine M. Logue

30. ***E. coli* Plasmid Genome Database: A Tool to Study the Plasmids of Avian Pathogenic *E. coli* and Related Bacteria**
    Paul Mangiamele, Timothy J. Johnson, and Lisa K. Nolan

31. **Virulence of Avian and Human Extraintestinal Pathogenic *Escherichia coli* Assigned to Different Sequence Types**
    Luke G. Baldwin, Timothy J. Johnson, Yvonne Wannemuehler, Jack Hardy, Paul Mangiamele, Subhashinie Kariyawasam, and Lisa K. Nolan

General Diseases & Management

32. **Comparison of Mortality/Culling Rates between Two Strains of Broilers**
    Rosa González, Eliana Icochea, John Guzman, Pablo Reyna, and Maria Francia

33. **Morphometric Evaluation of Proliferative Lesions in *In-Situ* Fixed Chicken Lungs**
    Oscar J. Fletcher, John Barnes, Michael Martin, and Isabel Gimeno

34. **Website Resource Center for Emergency Preparedness, Biosecurity, and Reportable Poultry Diseases Information**
    David H. Ley

35. **Application of Plasma Protein Electrophoresis to Poultry Diagnostic**
    Charles Facon, Y. Roman, and J.L. Guerin

36. **Comparative Bacterial Community Analysis of Intestines from Healthy and Sick Chickens**
    Daniel Dlugolenski, A. Pedroso, G. Zavala, and M.D. Lee

37. **Identification of Viruses Present in Tissues Collected from Chickens with Hypoglycemia-Spiking Mortality Syndrome (H-SMS)**
    James F. Davis, Reynaldo Resurreccion, Arun Kulkarni, and Erica Spackman

38. **Comparison of a Pro-biotic Program and a Growth Enhancing Antibiotic Program in a Commercial Broiler Operation**
    Tim Cherry, Joey Bray, and Quinton Hanssens

39. **Unusual and Interesting Disease Syndromes in Broiler Breeders**
    H.L. Shivaprasad and R.M. Crespo

40. **Tibial Rotation in a Saurus Crane**
    Dorothy G. Horton, Michael P. Martin, and H. John Barnes

41. **2008 Poultry Health Management School: Continuing Education for the Poultry Health Professional**
    Robert E. Porter, Teresa Y. Morishita, Todd J. Applegate, Richard M. Fulton, and Ralph H. Stonerock

Infectious Bronchitis Virus

42. **S1 Gene Fragment Amplification of Infectious Bronchitis Virus Variant by RT-PCR from Brazil**
    Jorge Luis Chacón Villanueva, Maria Del Pilar Vejarano, and Antonio José Piantino Ferreira

43. **Influence of Early Infection with an Infectious Bronchitis Virus (IBV) Isolate on the Reproductive System of Specific Pathogen Free (SPF) Chicks**
    Il Hwan Kim, Eun Kyoung Lee, Sun-Joong Kim, Chang Seon Song, Haan Woo Sung, and Jae Hong Kim

Infectious Bursal Disease

44. **Efficacy of Infectious Bursal Disease Virus Vaccine(s) Against Various Forms of the Disease**
    Yannick Gardin, Vilmos Palya, Luis Sesti, and Kristi Moore Dorsey

45. **Molecular Epidemiological Investigation of Infectious Bursal Disease Virus Isolates from Wild Birds in Korea**
    Woo-Jin Jeon, Eun-Kyoung Lee, Seong-Joon Joh, Min-Jeong Kim, Jun-Hun Kwon, Yeo-Sung Yoon, and Kang-Seuk Choi

46. **Mice as Potential Carriers of Infectious Bursal Disease Virus**
    Hyuk Moo Kwon, Min Joon Park, and Jeong-ho Park

47. **Environmental Factors Affecting FTA Card Integrity Inhibiting Molecular Detection of Infectious Bursal Disease Virus (IBDV)**
    Linda B. Purvis, Pedro Villegas, Francisco Perozo, Martha Pulido, and Hugo Moscoso

48. **Sequence Analysis of the VP2 Hypervariable Region of Eight Very Virulent Infectious Bursal Disease Viruses Isolated from the Northeast of China**
    Xiaomei Wang, Yanqing Yuwen, Yulong Gao, Honglei Gao, and Xiaole Qi

49. **High Level Secretion of Recombinant Infectious Bursal Disease Virus VP2 in the Methylotrophic Yeast *Pichia pastoris***
    Xiaomei Wang, Honglei Gao, Yulong Gao, and Xiaole Qi

50. **Enhancing Viral Protein Expression by DNA Encoding Infectious Bursal Disease Virus Large Segment Protein Gene Linked to Chicken Calreticulin Gene**
    Ching Ching Wu, Tsung Wei Feng, and Tsang Long Lin

51. **Effect of Two Strains of Infectious Bursal Disease Virus (IBDV) on the Different Isotypes of Anti-Cryptosporidium Antibodies in SPF White Leghorn Chickens**
    Hayet Abbassi, M. Naciri, and J. Brugére-Picoux

Laryngotracheitis

52. **Efficacy of a Recombinant Fowl Pox Vectored Laryngotracheitis Vaccine and Sequence Comparison to Recent Field Isolates**
    Alecia Godoy, Peter Flegg, Ivomar Oldoni, Maricarmen García, and Kristi Moore Dorsey

53. **Construction and Evaluation of an HVT Vector Expressing a Laryngotracheitis Virus Gene**
    Motoyuki Esaki, Lauren Jensen, Shuji Saitoh, Sakiko Saeki, and Kristi Moore Dorsey

54. **Molecular Epidemiology of an Outbreak of Infectious Laryngotracheitis in Brazil using Restriction Fragment Length Polymorphism**
    Jorge Luis Chacón Villanueva, Metheus Yu Mizuma, Maria Del Pilar Vejarano, Antonio Carlos Pedroso, and Antonio José Piantino Ferreira

55. **Control of Infectious Laryngotracheitis: Impact of Cleaning, Disinfection, Vaccination and Downtime**
    Richard Chin, Charles Corsiglia, Sylva Riblet, Rocio Crespo, Maricarmen García, H.L. Shivaprasad, Andrés Rodriguez-Avila, Peter Woolcock, and Monique França

56. **Laryngotracheitis: Anatomy of an Outbreak in a Disease-free State**
    Donna K. Carver and Sarah J. Mason

Miscellaneous Virus

57. **Unusual Adenoviral-Associated Histopathological Lesions in Chickens, Layer Hens and Guinea Fowls**
Olivier Albaric, Frédérique Nguyen, Jérõme Abadie, and Monique Wyers

58. **Epidemiology of Inclusion Body Hepatitis in Mississippi Broilers**
C. Gabriel Sentíes-Cué, Philip A. Stayer, Mark A. Burleson, Robert W. Wills, and Danny L. Magee

59. **Extrahepatic Lesions Observed with Inclusion Body Hepatitis in Meat-Type Chickens: Routine Histopathology and Histomorphometric Findings for the Kidney and Bone Marrow**
Floyd D. Wilson, William R. Maslin, C. Gabriel Sentíes-Cué, Philip A. Stayer, and Danny L. Magee

60. **An *in situ* PCR for Detection of Astrovirus in Broiler Intestines with Lesions of Runting/Stunting Enteritis**
Susan B. Lockaby, Frederic J. Hoerr, Lanqing Li, and Tami F. Kelly

61. **Sequence Analysis of Turkey Coronavirus with Emphasis on Polyprotein 1ab Gene**
Tsang Long Lin, Jianzhong Cao, and Ching Ching Wu

62. **Assessment of Duck Enteritis Virus (DEV) Epidemiology Using a Real-Time PCR Assay**
Jean Luc Guerin, T.N. Bich, R. Py and C. Boissieu

63. **Baculovirus Expressing VP1 Protein of Duck Hepatitis Type 1 Virus (DHV-1): Induction of Neutralizing Antibodies against DHV-1**
Yun Zhang, Junwei Wang, and Dongchun Guo

64. **First Isolation of an Avian Poxvirus in Grenada**
Deoki N. Tripathy, Mohmmad I Bhaiyat, Alferd Chikweto, Vanessa Matthew and Rabinndra N. Sharma

Mycoplasma

65. **Using a Combined MG & MS ELISA Kit as a Screening Tool Around the World**
Ricardo Munoz

66. **Innovative Database from *Mycoplasma gallisepticum* Sequence Data**
Victoria A. Laibinis and S.H. Kleven

67. **Field Trials of PoulShot® MG-F Vaccine against *Mycoplasmas gallisepticum* Infection in the Layer Farms**
Jeon-Eun-Ok, Hak-su Kim, Jong-bo Shim, Ho-keun Won, Chang-gok Woo, and In-Pil Mo

Newcastle

68. **AIV and NDV in Peru: An Update for the 2006-2007 Migratory Season**
Eliana Icochea, Armando González, Rosa Gonzalez, Bruno Ghersi, David Blazes, and Joel Montgomery

69. **Relationship Between Wild-Birds and Newcastle Disease in Peru**
Eliana Icochea, Rosa Gonzalez, Bruno Ghersi, and Armando González

70. **Full Genome Sequencing of the Newcastle Disease Virus Strains VG/GA and Clone 5**
Francisco Perozo, Pedro Villegas, and Claudio Afonso

71. **Phylogenetic and Biological Characterization of Virulent Newcastle Diseases Viruses Isolated in Wild Birds during 2002-2007**
Claudio L. Afonso, Daniel J. King, L. Mia Kim, Hilda Guzman, Robert B. Tesh, Rudy Bueno, Jr., and James A. Dennett

Parasitic Diseases

72. **Current Observations on the Treatment of *Ascaridia dissimilis* Infections in Turkeys**
    Jana Reynolds, Thomas A. Yazwinski, Chris A. Tucker, and David A. Pyle

73. **Severe Cryptosporidiosis in Chukars**
    A. Singh Dhillon and Mike E. Konkel

74. **Case Report: Swan Heartworm Disease**
    Scott D. Fitzgerald, Jana M. Ritter, and Thomas M. Cooley

75. **Evaluation of the Efficacy of 1% Ivermectin in a Propylene Glycol Carrier against *Capillaria obsignata* in Broiler Breeder Pullets**
    Samuel P. Christenberry, Darryl M. Moore, N. Scott Vanhoy, and Clyde A. Weathers

76. **Influence of Diet on Oocyst Output and Intestinal Lesion Development in Coccivac®-D Vaccinated Replacement Broiler Breeders**
    Leslee A. Oden, J. Lee, S. Pohl, S. Young, C. Broussard, and D. Caldwell

Pneumovirus

77. **What Else Can We Improve in Molecular Diagnostic Tests for Avian Pathogens: Example of Avian Metapneumovirus (aMPV)**
    Hayet Abbassi

78. **Longitudinal Studies and Phylogenetic Analysis of Avian Metapneumovirus Subtypes A and B in Brazilian Chicken Commercial Flocks**
    Jorge Luis Chacón Villanueva and Antonio José Piantino Ferreira

79. **Comparative Evaluation of Different Methods of Avian Metapneumovirus C Vaccination in Turkeys**
    Kakambi V. Nagaraja, Binu Velayudhan, Sally Noll, and David Halvorson

80. **The Role G Attachment Glycoprotein in Pathogenesis and Immunity of Avian Metapneumovirus Subgroup C in Turkeys**
    Shin-Hee Kim, Dhanasekaran Govindarajan, and Siba K. Samal

Reovirus

81. **Apoptosis Induced by Nucleocytoplasm Localization of Duck Reovirus p10.8 Protein**
    Yun Zhang and Ming Liu

82. **Molecular Characterization of Reovirus Field Isolates Identifies a Shift in Resident Reovirus Populations on Broiler Farms**
    Holly S. Sellers and Erich G. Linnemann

83. **Evaluation of Pathogenicity of Reoviruses Isolated from Broilers in Korea**
    Shim, Jong-Bo, Yeo-Jin Kang, Dong-Myong Choi, Jong-Man Kim, Kyeon-Cheol Min, Sung-Hwan Byeon, and In-Pil Mo

Salmonella

84. **Transfer of VirB/D4 Type IV Secretion System among *Salmonella enterica* Serovar Heidelberg from Turkeys**
    Steven Foley, Donna E. David and Aaron M. Lynne

85. **Discerning Genetic Differences in *Salmonella enteritidis* Isolates by RAPD, a Powerful Molecular Tool for Understanding *Salmonella* Epidemiology in Poultry Integrators**
    Demetrius Mathis, Margie D. Lee, Foy Berghaus, and John J. Maurer

86. **Study of Salmonella Contamination in Feed Ingredients and Balanced Rations Intended for Feeding Poultry In Peru**
    R. Iván Camargo C., R. Magali, and M. Salas

87. **Reducing *Salmonella* Prevalence in the Processing Plant by Breaking Vertical Transmission through Vaccination of Affected Broiler-Breeder Flocks**
    John Maurer, Charles Hofacre, Dana Cole, Demetrius Mathis, and Katherine Zamperini

Tumor viruses

88. **Serologic and Anatomicopathologic Analysis of Broilers Vaccinated with Vectorized Commercial Vaccine of Marek's Disease and VP2 Gen from IBD Virus**
    Victor Perez Peñafiel

89. **Uncommon Tumors and Tumor Locations Associated with Avian Leukosis Virus Subgroup J Infection**
    Susan M. Williams, Guillermo Zavala and Scott Hafner

Session A, Monday, July 21, 2008 **Rooms 391-392** **Moderator: Gregorio Rosales**

8:00-8:30 AM **"Enteric Diseases: Present and Future"**

Dr. Y. M. Saif, Keynote Speaker

The Ohio State University, Food Animal Health Research Program,
OARDC, Wooster, Ohio

Session A, Monday, July 21, 2008 **Moderator: Guillermo Zavala**
8:30−8:45 AM

Sequence Analysis of Parvoviruses Associated with Enteric Disease of Poultry

Laszlo Zsak*, Keith O. Strother, and Michael J. Day.
Southeast Poultry Research Laboratory, USDA, ARS, SAA, Athens, GA

Poult Enteritis Mortality Syndrome (PEMS) and Runting-Stunting Syndrome (RSS) are significant viral enteric diseases of poultry. The etiology of these diseases is not completely understood. Here, we report the application of a molecular screening method that was designed to detect novel viruses from intestinal samples of chickens and turkeys exhibiting characteristic signs of enteric diseases. Using this method we successfully identified novel parvovirus DNA sequences in intestinal homogenates of affected birds. Data suggest a significant role of these parvoviruses in the etiology of PEMS and RSS.

8:45−9:00 AM

Efficacy of Lasalocid Against Select Isolates of Eimeria from Turkey Flocks

SR Clark and HD Chapman
Alpharma Animal Health

Investigate if resistance to Avatec is evident in recent USA turkey field isolates of Eimeria. Recent investigations (unpublished, on-going) have shown that a majority of isolates obtained from turkey flocks are resistant, or partly resistant to COMPOUND-A. Demonstration that lasalocid is more efficacious than COMPOUND-A against strains resistant to the latter drug would provide justification for the use of lasalocid in turkey flocks and its inclusion in rotation programs. Results will be presented and discussed.

Session A, Monday, July 21, 2008
9:00−9:15 AM

Isolation of Avian Rotaviruses from a Normal Turkey Flock and from a Flock with Signs of Enteric Disease

J. Michael Day, Erica Spackman, Mary J. Pantin-Jackwood, and Laszlo Zsak
USDA/ARS, Southeast Poultry Research Laboratory
934 College Station Road, Athens, GA 30605

It is often difficult to obtain enteric-origin viruses as pure isolates, complicating characterization and pathogenesis investigations. Two turkey-origin rotaviruses detected via NSP4-specific RT-PCR in pooled intestinal contents were isolated by serial passage in the African green monkey kidney cell line MA104. One rotavirus was isolated from a nine-day old flock with disease signs consistent with Poult Enteritis Complex (PEC). The second rotavirus was isolated from a nine-day old flock with no enteric signs. Following MA104 passage, turkey astrovirus type-2—also detected in both original samples—was eliminated and could no longer be detected via RT-PCR in cell culture supernatants. The rotavirus isolates were further characterized via sequence and electropherotype analysis.

9:15−9:30 AM

Genomic characterization of adenovirus-like virus (R11/3), the etiology of transmissible viral proventriculitis, identifies the virus as a novel chicken birnavirus

J. S. Guy and F. J. Fuller
NCSU College of Veterinary Medicine

R11/3 virus was identified as the likely etiology of transmissible viral proventriculitis based on isolation of the virus from diseased proventriculi and experimental challenge studies. R11/3 virus tentatively was identified as an adenovirus-like virus based on morphologic and biologic properties (icosahedral, ~70-nm diameter, non-enveloped, density ~1.32 in CsCl, intranuclear morphogenesis). However, characterization of the viral genome and nucleic acid sequence analyses identity R11/3 virus as a novel chicken birnavirus.

Session A, Monday, July 21, 2008
9:30−9:45 AM

Experimental Reproduction of Inclusion Body Hepatitis in Broiler Chickens

Samantha Ekanayake[1], Davor Ojkic[2], Suresh Tikoo[3], Robert Goodhope[1], Tennille Knezacek[4], Philip Willson[3]. Susantha Gomis[1]
[1]Dept. of Veterinary Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, SK, Canada S7N 5B4.

Inclusion body hepatitis (IBH) is an acute viral infection reported worldwide in 2-6 week old broiler chickens caused by several serotypes of fowl adenoviruses (FAdV). The objective of this study was to reproduce IBH in commercial broiler chickens. Two-week-old broiler chickens were intramuscularly inoculated with FAdV-7, FAdV-8a, FAdV-8b or FAdV-11 isolated from field outbreaks of IBH in Saskatchewan, Canada. Development of IBH lesions and mortality occurred as early as 4 days post-infection. Mortality due to different serotypes of adenoviruses varied from 3-16%. Birds died due to IBH had gross and histopathological lesions similar to field outbreaks of IBH and adenoviruses were reisolated from those livers. In addition to lesions in the liver, some birds had pancreatitis with intranuclear inclusion bodies. This broiler chicken model of IBH will be useful for development of vaccination strategies to control IBH in broilers.

9:45−10:00 AM **BREAK**

Session A, Monday, July 21, 2008 **Moderator: Kate Barger**
10:00−10:15 AM

Strain relationship and in vivo comparison of *Clostridium perfringens* (CP) field isolates obtained from chickens with Gangrenous Dermatitis (GD) or Necrotic Enteritis (NE)

G. Donald Ritter, DVM, ACPV and Tony Neumann
Mountaire Farms Inc.
PO Box 1320
Millsboro, DE 19966

Field isolates of Clostridium perfringens (CP) were obtained from clinical cases of chickens with either Gangrenous Dermatitis (GD) or Necrotic Enteritis (NE). Isolates were characterized using T-RFLP. CP isolates originating from GD and NE lesions were selected and compared in vivo using a GD reproduction model in chickens. Results of the molecular and in vivo characterizations of CP isolates from two different disease syndromes in chickens will be discussed.

Session A, Monday, July 21, 2008
10:15−10:30 AM

Gangrenous Dermatitis (Cellulitis) in Commercial Turkeys – Prevention and Control

Daniel Karunakaran DVM., PhD
Agtech Products, Inc.

Gangrenous Dermatitis is a disease of economic importance caused by *Clostridium sp*. The disease prevalence and distribution is spreading in the US. The disease commonly affects mature turkeys although occasionally observed in young birds. The causative agent is present in abundance in the environment and gastrointestinal tract. Exact pathogenesis is not clearly understood.
Several control efforts have been outlined but only effective partially. It is believed that reduction of *Clostridial* numbers and management of beneficial microflora in the gastrointestinal tract may hold the key to preventing out breaks.
Microbial community analysis and other observations from affected and non-affected farms will be presented and discussed.

10:30−10:45 AM

CASE REPORT: *Pasteurella multocida* & *Mycoplasma* in Pharaoh Quail

Tami F. Kelly
Boaz Diagnostic Lab

These birds were from purchased eggs approximately 5 months ago and the grower also hatches some of his own eggs. The eye problems started approximately 2 months ago. Morbidity is high, but mortality is low: 4 to 6 per day. The swelling of the sinuses displaced the eyes. Several birds had severe sinusitis on histopathology. The birds were well fleshed. Tests to date have isolated *Pasteurella multocida*, *E. coli*, *Streptococcus*, and *Mycoplasma* spp. Further testing is in the process to type the *Mycoplasma*, test for *Haemophilus* and testing for the runting/stunting viruses from suspicious looking intestinal contents. The final results should be completed shortly.

Session A, Monday, July 21, 2008
10:45−11:00 AM

"What is Your Diagnosis for Spotty Livers in Baby Chicks?"

P. A. Stayer*, C. G. Senties and M.A. Burleson
Sanderson Farms, Inc.

Dead and moribund day-old broiler chicks were examined on routine brooding inspection. Over half of the affected chicks had multiple, pin-point dark red spots scattered over all visible surfaces of the liver which was otherwise normal in size and color for recently hatched chickens. Other gross lesions included subcutaneous edema between the skin and the abdominal wall and inflamed enlargement of the navel scar. Problems were noted at the hatchery of origin and Koch's Postulates were implemented to demonstrate a cause of the lesions seen in the chicks. The diagnostic process and a proven pathogenic cause will be presented.

11:00−11:15 AM

Management Factors Contributing to Quail Disease in Georgia

Donna Kelly
Georgia Poultry Laboratory Network

A retrospective look will be taken at the diagnostic cases of quail submitted to the Georgia Poultry Laboratory Network over the last eight years. The most frequently occurring diseases will be covered and contributing management factors will be discussed.

11:15−11:30 AM

An Outbreak of Meningitis in Commercial Poultry: A Field Perspective

Mark Burleson[1], Danny L. Magee[2], Marshall R. Putnam[3]
[1]*Sanderson Farms, Inc.,* [2]*Mississippi State University,* [3]*Wayne Farms, LLC*

An outbreak of meningitis occurred in five broiler flocks and one pullet flock, all of which were located within a 2-mile radius of each other. The farms were associated with two different poultry companies. Mortality was accompanied by synovitis, hypopyon, and neurological signs. The entire field approach, including the epidemiology will be discussed.

Session A, Monday, July 21, 2008
11:30−11:45 AM

An Outbreak of Meningitis in Commercial Poultry: A Diagnostic Perspective

Danny L. Magee[1], Mark Burleson[2], Marshall R. Putnam[3]
[1]*Mississippi State University,* [2]*Sanderson Farms, Inc.,* [3]*Wayne Farms, LLC*

This outbreak in six poultry flocks presented itself in such a way that the diagnostic workup seemed to be simple. Samples were collected for serology, bacteriology, histopathology, toxicology, virus isolation, and molecular diagnostics. Samples came from the birds and from the environment. The results of these tests will be discussed.

11:45−12:00 PM

Focal Duodenal Necrosis – An Increased Understanding

Tammy A. Baltzley, Greg SIragusa and Thomas G. Rehberger
Agtech Products, Inc.
W227 N752 Westmound Dr.
Waukesha, WI 53186

Focal Duodenal Necrosis (FDN) is a disease affecting the layer industry. We have identified what we believe to be a crucial pathogenic organism correlated with this disease. To better establish this association we developed specific PCR primers that can be used to identify this organism in FDN affected samples. A detailed lesion scoring system has also been developed. Will present results of an attempt to develop a real-time PCR assay which can be used to understand pathogen number as it relates to lesion severity and lesion score. This assay will ultimately aid laboratories in accurately diagnosing the FDN disease complex.

12:00−2:45 PM **AAAP AWARDS LUNCHEON**
MARRIOTT NEW ORLEANS

Marriott New Orleans
at the Convention Center
859 Convention Center Boulevard
New Orleans, LA 70130

Session A, Monday, July 21, 2008 **Moderator: Patty Dunn**
3:00−3:15 PM

Field Evaluation of Same-day and Next-day Placement of Turkey Poults

David V. Rives, Julian D. Brake, and Summer M. Russell
Prestage Farms, Inc.
4651 Taylors Bridge Highway
Clinton, NC 28328

Current commercial turkey hatchery practices routinely result in poults being held overnight after processing and delivered to the farm the following morning. Occasionally, poults are delivered the same day they hatch. Field data (livability, uniformity, five-week weight) will be presented comparing performance of poults placed same-day and next-day. Management strategies to improve performance will also be discussed.

3:15−3:30 PM

Day of Hatch Compared with Day After Hatch Placement of Turkey Poults

H. John Barnes, Michael P. Martin, Lisa K. Nolan, J. Michael Day, Dennis P. Wages, David H. Ley, David V. Rives
College of Veterinary Medicine, North Carolina State University
4700 Hillsborough Street, Raleigh, NC 27606 USA

Two groups of poults that differed only in day of placement (Group A = Day of Hatch, Group B = Day after Hatch) were reared together. Sequential body weights and fecal samples were obtained and all birds that died or were culled were necropsied. Samples were examined for enteropathogens and skeletal lesions were cultured for *Mycoplasma iowae.* Day of placement had effects on growth, uniformity, *Salmonella* colonization, and pattern and causes of mortality and culling. It did not affect total mortality, *E. coli* colonization, or enteric virus infection. *E. coli* colonized poults prior to placement and isolates were highly resistant to antimicrobials. *Campylobacter* and parasite infections did not occur. *M. iowae* was isolated infrequently. Group A poults were consistently heavier, had better uniformity, less *Salmonella* colonization, and greater losses from culling and musculoskeletal diseases. Mortality and cardiovascular diseases occurred more frequently in Group B poults.

Session A, Monday, July 21, 2008
3:30−3:45 PM

Use of the I-Stat Serum Chemistry Analyzer for Evaluation of Poult Health

Michael P. Martin [A], H. John Barnes [A], and David Rives [B]
[A] Poultry Health Management Team
Population Health & Pathobiology Department
College of Veterinary Medicine, NC State University
4700 Hillsborough Street
Raleigh, NC 27606-1499

The I-Stat serum analyzer has been used in our previous clinical evaluations of broiler breeders and has been established as a useful diagnostic tool for poultry flocks. Current evaluations of poult quality, health, and therapeutic interventions may also be aided by the use of the serum analyzer. Since this is the first use of the I-Stat analyzer in turkey poults, normal baseline data and standardized procedures are being established.

Serum chemistries of poults were evaluated pre-processing, post-processing, and one day post-hatch after being held in the hatchery. Also evaluated were poult progeny from different age breeders. Blood parameters of poults clinically affected by 'Flip-Over' Syndrome compared with unaffected poults were also evaluated.

3:45−4:00 PM

Aspergillus flavus causing severe disseminated infection in two broiler chicken flocks

M. França and H.L. Shivaprasad
California Animal Health and Food Safety Laboratory System – Fresno Branch –
University of California - Davis

Severe aspergillosis due to *Aspergillus flavus* was diagnosed in two 18 and 20-day-old broiler chicken flocks. There was increased mortality in the flock and clinically the birds had respiratory and neurological signs. Mold was observed in the litter. Grossly, most of the birds had multiple pale tan nodules involving air sacs and lungs and there were pale tan patches in the brain, heart and proventriculus in some. There was severe granulomatous inflammation containing septate branching hyphae in the lungs, air sacs, heart and brain by microscopic examination. *Aspergillus flavus* was isolated from air sacs, lungs and brain.

Session A, Monday, July 21, 2008 **Moderator: Bruce Charlton**
4:00−4:15 PM

Causes of Broiler Breeder Hen Mortality During the Early Lay Period

Lauren Boswell, Michael Wineland, and H. John Barnes
College of Veterinary Medicine, North Carolina State University
4700 Hillsborough Street, Raleigh, NC 27606 USA

Mortality during the early lay period between onset and peak egg production is typically higher than later in the egg-laying cycle. In this study, the most likely cause of death was determined by necropsy in six broiler breeder flocks represented by two flocks each of Arbor Acre Plus, Cobb 500, and Cobb 700. Hens that died during a single day each week between 25 and 32 weeks of age were identified with the location where they were found in the house, date, time, and farm. A total of 128 birds were necropsied. Most mortality (77%) resulted from non-infectious diseases such as vent picking/mate aggression, musculoskeletal disorders, and calcium tetany. The greatest single cause of mortality was vent picking. No cause of death was determined for 12% of the hens. Infectious disease accounted for 23% of the mortality. Abscesses in the vertebral column were found in some of the birds that had evidence of persecution.

4:15−4:30 PM

One Medicine Approach to Biosecurity in the Live Bird Marketing Systems in Central America

Patrice N. Klein[1]*, Fidelis N. Hegngi[2], Jose J. Bruzual[3], Mara E. Gonzalez Ortiz[4], Cesar H. Sandoval[5]
[1, 2] USDA APHIS/VS – National Center for Animal Health Programs, Riverdale, MD;
[3,5]USDA APHIS/IS – Washington D.C and Panama; [4]OIRSA – El Salvador, C.A.

USDA/APHIS VS and IS in collaboration with OIRSA conducted a model training program on Biosecurity in the Live Bird Marketing Systems (LBMS) in 2007 to address prevention and control of HPAI in 6 Central American countries and the Dominican Republic. Officials from the Ministries of Agriculture and Public Health, local municipalities, poultry industry, and local LBMS participated. Presentations on biosecurity, public health, and AI epizootiology were followed by inspection of a local LBM with reported recommendations. Working Groups formed to continue interagency discussions. All these countries convened for a meeting in March 2008 to address common identified public health and animal health issues. Results of this regional meeting will be presented.

Session A, Monday, July 21, 2008
4:30−4:45 PM

Crate Tracking in the Live Bird Markets (LBMs), NY

Susan C. Trock, Joy Bennett, John P. Huntley
Cornell University/New York State Agriculture & Markets

Cleaning and disinfection of transport crates between uses is an important component of disease control efforts within the live bird market system. NY regulations require individuals approved to deliver birds directly to the markets possess and utilize a mechanical crate washer. Those not possessing a crate washer may contract with an approved facility for this service, but must attach permanent identification to each crate to allow verification of the cleaning and disinfecting procedure. Group identification, based upon crate identification, will allow limited tracking of birds as they enter the system. Current results of various experimental tracking methods will be discussed.

4:45−5:00 PM

Welfare Auditing – When to Review Records, When to Use Your Eyes

James T. Barton, DVM, dipl. ACPV
Veterinary Consultant

Welfare auditors measure reality against the artificial construct of audit guidelines. In response, some auditors adopt the practice of reviewing records for each guideline. This places non-additive costs on the system and diverts limited resources away from better evaluation methods. Observation of the process, interviewing persons performing the process, and reviewing the available records are the three accepted methods to evaluate compliance. It is imperative that auditors use the best measurement available for each audit point. It is equally important for auditees to understand the best methods to comply with the needs of the client requesting the audit.

Session A, Monday, July 21, 2008
5:00−5:15 PM

GAIT SCORING OF COMMERCIAL BROILERS

Timothy S. Cummings, Mississippi State University, College of Veterinary Medicine
Bruce Webster, University of Georgia
Kelli Jones, Aviagen Inc.
Mark Cooper, Cobb-Vantress Inc.

This presentation will introduce a training DVD to be used for gait scoring in the modern, commercial broiler. It was developed in response to the need for a practical, training guide for use by field personnel is assessing walking ability in the commercial setting. It can also be used to help welfare auditors score lameness in a given broiler flock as required by certain welfare audits. The DVD also includes recommendations with regard to how and where in the poultry house to conduct the gait scoring. Information as to how to obtain a copy will be provided.

5:15−5:30 PM

High Mortality in Backyard Chickens Associated with Proximity to Wild Waterfowl

Andre F. Ziegler
University of Minnesota / CVM / Veterinary Diagnostic Laboratory

Two small flocks of chickens on the same “backyard” premise experienced peracute high mortality within a period of five days. Birds appeared to be healthy and were subsequently found dead within a period of 24 hours with no discernable clinical signs of disease noted.

The premise consisted of a naturalist setting with extensive evidence of wild waterfowl intermingling with domesticated poultry and waterfowl. Wild waterfowl were frequently noted in a pond within 50 feet of the first affected house.

This presentation will describe the historical background of this case, gross necropsy and other laboratory findings associated with the case investigation.

5:30 PM **ADJOURN**

Session B, Monday, July 21, 2008 Rooms393-394 Moderator: Gregorio Rosales

8:00-8:30 AM **"Enteric Diseases: Present and Future"**

Dr. Y. M. Saif, Keynote Speaker
The Ohio State University, Food Animal Health Research Program,
OARDC, Wooster, Ohio

Session B, Monday, July 21, 2008 Moderator: Aly Fadly
8:30−8:45 AM **RIMLER MEMORIAL PAPER:**

Transactivation properties of Meq oncoproteins of Marek's disease virus strain, CVI988

Dharani Ajithdoss[1], Sanjay Reddy [1,2] and Blanca Lupiani [1,2]
[1] Department of Poultry Science and [2] Department of Pathobiology
Texas A&M University, College Station, Texas, 77840.

Meq is a proven oncoprotein of Marek's disease virus. Though CVI988 is non-oncogenic, it encodes for two forms of Meq, CVI988 Meq and CVI988 long Meq. We have previously shown that the Meq proteins from both pathogenic (Md5) and vaccine (CVI988) strains are capable of transforming fibroblasts *in vitro*. Here, we report the transactivation properties of the Meq protein of Md5 and CVI988. When co-expressed with c-jun, CVI988 Meq proteins activated the *meq* promoter in a dose dependent manner. Interestingly, CVI988 Meq proteins, when co-expressed with Md5 Meq, repressed transactivation by Md5 Meq in a dose dependent manner. Though, all three Meq proteins activated the MDV late promoter gB and cellular MMP-2, activation by Md5 Meq was significantly higher. We are currently investigating the DNA binding properties of Md5 and CVI988 Meq proteins using EMSA and CHIP assays.

Session B, Monday, July 21, 2008
8:45−9:00 AM **REED RUMSEY AWARD WINNER**

Frequency of multiple serotype 1 Marek's disease virus strains in feather follicle epithelium and tumor cells following superinfection.

J.R. Dunn, R.L. Witter, R.F. Silva, L.F. Lee
USDA – ARS – Avian Disease and Oncology Laboratory, East Lansing, MI

This study was designed to determine what effect multiple virulent Marek's disease viruses have on each other during superinfection. Serotype 1 viruses able to be differentiated were administered either simultaneously or with a short (24 hours) or long (13 days) interval and virus frequency was measured in each sample. The short interval and simultaneous dual-infection both led to mixed infections or random domination by either virus in virus shedding and in tumors. In contrast, the first virus dominated after the long interval in both virus shed and in tumors except, interstingly, in the tumors from one virus pair in which the second virus was dominant in some birds.

9:00−9:15 AM

Diagnosis of Marek's disease by real time PCR from samples collected on FTA® cards

A.L. Cortes, I.M. Gimeno
Department of Population Health and Pathobiology,
College of Veterinary Medicine, NCSU

Previous work have shown load of Marek's disease virus (MDV) in blood samples detected by real time PCR is an adequate criteria for the diagnosis of Marek's disease and for monitoring vaccines. FTA® cards are very useful for collection and transportation of biological samples. The goal of this study was to evaluate if diagnosis of MD by real time PCR can be made from samples obtained in FTA® cards. Samples of blood, feather pulp and tumors collected in FTA® cards were compared with frozen samples for the load of MDV DNA. No statistically significant differences could be detected between the load of MDV DNA in samples collected in FTA® cards and in original sample.

Session B, Monday, July 21, 2008
9:15−9:30 AM

Optimization of revaccination procedure to improve protection against Marek's disease

I.M. Gimeno, A.L. Cortes, R.L. Witter
Population Health and Pathobiology
College of Veterinary Medicine, NCSU

Revaccination against Marek's disease (MD) has been used for decades to improve protection against MD in several countries. The rationale is largely anecdotal as it has been very difficult to reproduce the beneficial effects under laboratory conditions. In previous work, we have developed an experimental model in which the beneficial effect of revaccination could be reproduced. The objective of the present work was to optimize the protocol for MD revaccination and to determine if differences in the replication of the vaccine strains and/or challenge virus are associated with higher levels of protection. Results will be discussed in this paper.

9:30−10:00 AM

Transcriptional profiling of Marek's disease virus genes during cytolytic and latency infection

Lucy F. Lee, Huanmin Zhang, and Mohammad Heidari
USDA-ARS-Avian Disease and Oncology Laboratory
3606 East Mount Hope Road, East Lansing, MI. 48823

The role of cytokines and other related proteins in Marek's disease pathogenesis and immunity is poorly understood. The aim of this study was to examine the transcriptional profiling of a panel of cytokines and other immune-related genes in the spleen tissues of chickens infected with rMd5, rMd5ΔvIL8, or rMd5Δdpp38 strains of MDV during cytolytic and latency infection. Real-Time PCR analysis revealed significant up-regulation in the expression levels of interleukins, interferons, colony stimulating factors, and inducible nitric oxide synthase in the rMd5-, and rMd5ΔvIL8-infected chickens at 5 days post inoculation (lytic infection). rMd5Δpp38, however, induced minor changes in the transcriptional activities of the examined genes. The expression pattern of all the tested genes was similar between the infected and age-matched control birds at 15 days post inoculation (latency infection). It appears that there is no significant MDV-specific immune response in the latent phase of infection.

9:45−10:00 AM **BREAK**

Session B, Monday, July 21, 2008 **Moderator: Isabel Gimeno**
10:00−10:15 AM

Role of Cytokines in Marek's Disease Vaccines

Robert F. Silva, Lucy Lee, Mohammad Heidari and John Dunn
USDA/Agricultural Research Service
Avian Disease and Oncology Laboratory
East Lansing, MI

Cytokines are naturally occurring proteins that help regulate the host immune response to infection. Numerous studies have shown that cytokines can be effective immune stimulators in mammals. However, the immunostimulatory function of avian cytokines has been less well studied. To evaluate the role of avian cytokines in vaccine protection, we deleted the MEQ gene in an oncogenic BAC clone of Marek's disease virus (MDV) and replaced MEQ with different chicken cytokine genes. We will compare the efficacy of these cytokine expressing MDVs with standard MD vaccines.

10:15−10:30 AM

Laboratory and Animal Safety of a Herpesvirus Chimera Marek's Vaccine and Recombinant Vector

L. Gergen, B. Ledesma, S. Cook, G. Petersen and *J.* Schrader
Schering Plough Animal Health Corporation

Schering-Plough Animal Health has developed a chimeric Herpesvirus Serotype 1 and 3 Marek's virus as a vaccine against Marek's disease and a vector for immunogenic inserts of Newcastle disease virus and Laryngotracheitis virus. This paper describes safety testing performed for characterizing physical characteristics of the viruses, dissemination in the natural host (chicken) and safety in non-target species.

Session B, Monday, July 21, 2008
10:30−10:45 AM

Dynamics of Infection, Pathology and Impact on Performance of a 2007 Field Isolate of Avian Leukosis Virus Subgroup J in Broiler Breeders and Broilers

Andres Montoya, The University of Georgia
Co-Authors: Guillermo Zavala, Sunny Cheng, Taylor Barbosa

An outbreak associated with avian leukosis virus subgroup J (ALV-J) was detected in 38 week old broiler breeders and was confirmed by virus isolation and PCR in the summer of 2007. Viremia rate of the breeder was 14.7% at 40 weeks of age. Eggs were collected at 46 and 47 weeks of age and congenital transmission rate was 4.1% and 4.3% respectively. Broiler embryos from two commercial breed crosses including the progeny of the broiler breeder flock affected were experimentally infected with the ALV-J isolate from the affected broiler breeder flock. The progeny chicks were placed in 8 different pens. The weekly mean body weights were significantly lower at 7 through 36 days of age and coefficient of variation of body weights were increased compared with uninfected controls. No significant differences were found in the feed conversion ratio of survivors for the seventh week of growth between the infected and uninfected broilers. The present of tumors in the experimentally infected broilers were detected as early as 25 days of age. In the naturally infected progeny, horizontally infection resulted in up to 25% rate of viremia in chickens at 5 weeks of age. This result suggest that oncogenic ALV-J still flow in commercial meat type chickens, spreads horizontally and congenitally and induces delayed in growth and poor uniformity.

10:45−11:00 AM

Comparison of proviral DNA sequences of seven isolates of a naturally occurring recombinant avian leukosis virus associated with myelocytomatosis in commercial layers

Ghida R. Banat[1,2], Robert F. Silva[1], Scott D. Fitzgerald[2], Willie M. Reed[3], and Aly M. Fadly[1]

[1] USDA-ARS-Avian Diseases and Oncology Laboratory, East Lansing, Michigan
[2] Department of Pathobiology and Diagnostic Investigation, Michigan State University, East Lansing, Michigan
[3] School of Veterinary Medicine, Purdue University, West Lafayette, Indiana

Using biological assays and PCR, seven avian leukosis virus (ALV) isolates from commercial layers with myeloid leukosis were shown to be similar to a naturally occurring recombinant ALV termed ALV-B/J. Proviral DNA sequences of these isolates were compared with ALV-B/J and prototypes of various ALV subgroups. Results suggested one isolate showed significant amino acid differences in gp85 SU protein; and another showed nucleotide additions and deletions in 3' UTR and LTR regions. However, TM gp37 proteins of all isolates were identical to ALV-B/J. Whether these genomic variations influence isolates' pathogenicity is not known and will be assessed in susceptible chickens.

Session B, Monday, July 21, 2008
11:00−11:15 AM

Molecular analysis of reticuloendotheliosis virus isolates obtained from chickens, turkeys and prairie chickens located in different regions in the United States

Aly M. Fadly, Jody K. Mays and Robert F. Silva
USDA-ARS Avian Disease and Oncology Laboratory
East Lansing, Michigan

We have previously reported on the isolation of reticuloendotheliosis virus (REV) from broiler breeder chickens, turkeys and prairie chickens located in Alabama, California and Texas, respectively. In order to determine the genetic relationship among these REV isolates, one isolate from each species was chosen for molecular characterization. PCR primer sets were designed to amplify a 2135 base pair fragment overlapping the REV envelope region and partial long terminal repeat region. A high degree of DNA sequence homology between and among the three REV isolates was noted, demonstrating greater than 99.0% homology at the nucleotide level between the three isolates and strain CSV, a prototype of REV subtype C. Also, the percent homology for the amino acid sequence coding for the envelope protein between the three isolates and strain CSV of REV ranged from 97.8% to 99%. Results suggest that these REV isolates although obtained from different avian species located at three different locations in the USA are very closely related genetically.

11:15−11:30 AM

Use of Retroviral-Based Vectors for Gene Delivery and Expression in Cell Lines of Avian Origin

Taylor Barbosa*, Guillermo Zavala and Sunny Cheng.
Department of Population Health, College of Veterinary Medicine
The University of Georgia.
953, College Station Rd. Athens, GA. 30602

Many avian viral diseases are preventable by vaccination with attenuated strains, which can be propagated in embryonated eggs or cell cultures. However, because some important pathogens are difficult to propagate *in vitro*, we aimed to develop a system for subunit vaccine production using replication-defective retroviral vectors derived from non-oncogenic natural recombinant viruses. Three recombinant ALV-A/E viruses were fully sequenced and used to construct plasmids containing regulatory elements and GFP, or plasmids with the ALV-A/E proteins. Using such system, we have expressed GFP in DF-1 cells. This system is being used to attempt expression of Chicken Infectious Anemia Virus immunogenic proteins.

Session B, Monday, July 21, 2008
11:30−11:45 AM

The Commercial Duck Industry in the United States: History, Current Disease Challenges and Future

Jaime Ruiz, Tirath Sandhu, Benjamin Lucio-Martínez and Alejandro Banda
Cornell University, College of Veterinary Medicine – Duck Research Laboratory
192 Old Country Road, Easport, New York 11941

In recent years the commercial duck industry has gradually grown in importance worldwide, becoming a very important part of the poultry meat industry. Specialized business ventures are being established, especially in Asia. In the US the duck industry is a highly efficient and specialized poultry business with a stable and highly demanding specific market. Historical remarks if the industry in the US, current disease challenges and future marketing directions will be reviewed.

11:45−12:00 PM

Current Status of the National Poultry Improvement Plan

C. Stephen Roney
Andrew Rhorer
National Poultry Improvement Plan

The National Poultry Improvement Plan (NPIP) is a voluntary disease control program for the poultry industry in the United States. Formed in 1935 the NPIP has been instrumental in controlling horizontally transmitted diseases that could be devastating to the commercial poultry industry. In 2004, the delegates of the biennial conference voted to add the H5/H7 Low Pathogenic Avian Influenza (LPAI) Monitored classification for table-egg layers, broilers, and meat type turkeys marking the first time of the addition of a non-hatchery transmitted disease to the program.

This presentation will summarize the current status of the NPIP LPAI program, the status of the APHIS electronic database for reporting AI testing results and the results of the voting on proposed changes at the NPIP biennial conference from June 2-5, 2008.

12:00−2:45 PM **AAAP AWARDS LUNCHEON**
MARRIOTT NEW ORLEANS

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859 Convention Center Boulevard
New Orleans, LA 70130

Session B, Monday, July 21, 2008 **Moderator: Eric Jensen**
3:00−3:15 PM

Characterization of recent H5N1 avian influenza isolates from Vietnam and evaluation of the protective efficacy using commercial vaccines

J. Pfeiffer, M. Pantin-Jackwood, and D. L. Suarez
Southeast Poultry Research Laboratory

All eight gene segments of nineteen recent avian influenza (AI) virus isolates from Vietnam were sequenced, then phylogenetically and molecularly characterized. Based on the hemagglutinin (HA) gene, they formed 2 distinct sublineages within Clade 2. Additionally, the HAs of representative viruses from each subgroup were cloned into expression plasmids and used as DNA vaccines in chickens. Serum produced was used for antigenic characterization with the cross- hemagglutination inhibition (HI) test. Two distinct antigenic groups were detected, based on HI titers, which correlated to the genetic data. Finally, a challenge study was performed to evaluate the efficacy of currently used vaccines in protecting chickens and ducks against clinical disease and viral shedding. Serum samples were taken both before and after challenge, and used in the HI test to assess correlation between HI titers and protection against disease and viral shedding rendered by the vaccine. Swab samples were taken at various time points following challenge. Amounts of virus shed were quantified by using real-time RT-PCR. Information gained from this study will help to determine how effective the currently used vaccines are at protecting poultry against circulating H5N1 viruses in Vietnam and whether or not it is time to choose a new vaccine seed strain.

3:15−3:30 PM

Immunogencity of Newcastle disease virus vectored vaccine for avian influenza A subtype H5 virus and evaluation of protective efficacy for homologous and heterologus challenge strains.

Baibaswata Nayak, Subrat N Rout, Daniel R Perez and Siba K Samal

Department of Veterinary Medicine, University of Maryland, College Park

Highly pathogenic avian influenza (HPAI) strains H5N1are a great threat to both animal and public health. Using reverse genetic technique, we have recovered Newcastle disease virus (NDV) strain LaSota expressing the hemagglutinin (HA) gene of HPAI strain Influenza A/Vietnam/1203/04. In one recombinant NDV, the HA gene was expressed without any modification and in another recombinant NDV, the HA gene was modified to contain the cytoplasmic domain of the fusion protein of NDV. Both these rNDVs were tested for their immunogenicity and protective efficacy in chickens using homologous and heterologous HPAI strains.

Session B, Monday, July 21, 2008
3:30−3:45 PM

Evaluation of a Newcastle disease virus vectored avian influenza vaccine

Carlos Estevez, Daniel King, David Suarez and Qingzhong Yu
Southeast Poultry Research Lab
Athens GA.

Newcastle disease virus (NDV)-vectored vaccines are efficacious in the delivery of immunogenic protein genes. We have recently generated a bivalent recombinant NDV vaccine coding for the hemagglutinin gene of the A/Whooper/Swan/Mongolia/244/2005 H5N1 strain of avian influenza virus in a NDV vector backbone. The safety of the recombinant vaccine was assessed by the mean death time and intracerebral pathogenicity index tests. Results showed that the vaccine is of low virulence for chickens. The vaccine efficacy will be assessed by vaccination and challenge of susceptible specific pathogen-free chickens with virulent NDV and highly pathogenic H5 avian influenza virus. The results of the protection against challenge will be discussed.

3:45−4:00 PM

Induction of mutations in M1 and NS1 genes of H7N2 avian influenza virus for generation of vaccine candidate with built-in DIVA strategy

Sankhiros Babapoor, Zeinab Helal, Dipu Mohan Kumar and Mazhar Khan

Department of Pathobiology and Veterinary Science
University of Connecticut, Storrs, CT 06269-3089

Reverse genetic technique was developed to generate an attenuated low pathogenic H7N2 avian influenza virus. Site directed mutation in Matrix 1 (M1) and Non Structural1 (NS1) gene segments were induced in low pathogenic AI viruses. Cell culture and plaque assays were used for in vitro comparison of attenuation level of these reassortant viruses with other non pathogenic viruses. Suitable reassortant attenuated virus will be considered for further in-vivo experiments as a vaccine candidate for LPAI.

Session B, Monday, July 21, 2008 **Moderator: Kenton Kreager**
4:00−4:15 PM

Comparative Seroconversion in Chicken Flocks Vaccinated With Avian Influenza H5N1 and H5N2 Vaccines

Salah MOUSSA
Dept. of Poultry Dis. Fac. Of Vet. Med. Assiut Univ. Assiut EGYPT

Three hundred blood samples were collected at random from commercial chicks. subjected to different Avian influenza (AI) vaccination schedules to study the vaccinal response at field level.
Seroconversion of 2 commercialy available H5N1 and H5N2 (AI) vaccines was compared based on the HI and Elisa tests.
It was found that for primary vaccination both vaccines produced nearly similar response (where HI antibody reached a peak of 6.7log2 at 3 weeks p.v. then declined to 4log2 at 7 weeks), but for secondary vaccinations H5N2 vaccine was better than H5N1 vaccine regarding titer and duration of immunity.

4:15−4:30 PM

Lessons Learned Preparing Developing Countries for Highly Pathogenic H5N1 Avian Influenza

R. M. Fulton, Jarra Jagne, and R. Ross Graham
Diagnostic Center for Population and Animal Health, Michigan State University

STamping Out Pandemic and Avian Influenza (STOP AI) is a US Agency for International Development project to increase the capacity of developing countries to prevent, detect, respond to, control, and recover from the devastating effects of the highly pathogenic strain (HP) of H5N1 originating in Asia. While on sabbatical working on this project, the author has been involved in the development and delivery of training materials to educate government officials, veterinarians, livestock officers, poultry producers and live bird market supervisors about the disease and the importance of stopping its spread. During these trainings, many lessons were learned from veterinarians in countries that had experienced HP H5N1 infections about the nature and spread of this disease. Those lessons will be shared during this paper and hopefully prevent US veterinarians from learning them the hard way.

Session B, Monday, July 21, 2008
4:30−4:45 PM

In Silico Analysis of Current Real-Time RT-PCR Assays for the Detection of Avian Influenza Virus

Scott A. Callison
GTCAllison, LLC, Mocksville, NC 27028

Avian influenza virus (AIV), which belongs to the Orthomyxoviridae family, has a multi-segmented negative-sense RNA genome. AIV experiences a high level of mutation due to antigenic shift (segment reassortment) and antigenic drift (accumulation of point mutations). Therefore, diagnostic assays based on the detection of specific nucleic acid sequences can be problematic for AIV detection due to constant mutation. An *in silico* analysis of available AIV sequence data shows that currently available assays may have difficulty detecting a significant number of AIV strains. Strategies for the continuing development of useful AIV specific real-time RT-PCR diagnostic assays will be discussed.

4:45−5:00 PM

Development of multiplex bead assays for the detection and differentiation of H5 and H7 subtype avian influenza virus

Wonhee Cha*, Yehia M. Saif, Keumsuk Hong, Chang-Won Lee
The Ohio State University, Food Animal Health Research Program, Wooster, OH

The microsphere-based assay is a flow cytometric-based system with the ability to multiplex up to 100 different assays from a single sample at a time. In this study, we utilized the system to detect influenza A virus and differentiate H5 and H7 subtypes simultaneously by targeting the viral RNA of the matrix and HA genes. Testing 66 strains in lab inventory, there was no false positive, indicating high specificity of the assay, while the sensitivity was dependent upon 3 factors: number of probes actually matching to individual sequence, viral amount in a sample, and RNA concentration in a sample. Hence, we further increased the sensitivity by designing the probes in a more specific way, and optimized the assay with hybridization time and temperature. The validation was done by comparing the common assay performance characteristics with virus isolation and RRT-PCR. Furthermore, the assay worked directly with allantoic fluid and other clinical samples without RNA extraction, showing the high potential to be an effective surveillance tool.

Session B, Monday, July 21, 2008
5:00−5:15 PM

Development and validation of a competitive ELISA to detect antibodies against the influenza H5 protein

Rudiger Hauck and Egbert Mundt

Poultry Diagnostic and Research Center, College of Veterinary Medicine
The University of Georgia, 953 College Station Rd., Athens, GA.

The HA gene of an avian influenza virus (H5N2) was cloned and expressed in a Baculovirus system. The purified recombinant protein was used to develop a competitive ELISA (cELISA). To detect H5 antibodies in a species-independent approach a monoclonal antibody (mAb) directed against H5 was used. cELISA performed with sera of animals infected with other than H5-AIV showed no significant inhibition of H5-mAb binding indicating a high specificity of the test. In contrast, sera of experimentally infected animals (chickens, turkeys, mallards, redheads, woodducks) significantly inhibited the binding of the mAb. Possible applications of the test will be discussed.

5:15−5:30 PM

Rapid, multiplexed detection of antibodies to avian influenza virus using liquid crystals

Stacey Schultz-Cherry[1], John Lindner[1], Jeremy Jones[1], Joseph Burkholder[2], Joseph Kakkassery[2], Kurt Kupcho[2], and Ganesh Vasuvedan[2]
[1]Dept of Medical Microbiology and Immunology, University of Wisconsin, Madison, Wisconsin and [2]Platypus Technologies LLC, Madison WI

We developed a rapid assay to detect antibodies to influenza virus nucleoprotein and hemagglutinin H5 and H7 based on liquid crystal detection of proteins. This novel assay uses liquid crystals to detect and report the presence of proteins on the assay surface allowing detection of multiple antibody specificities in a single test sample in less than one hour using basic equipment. Species specific secondary detection reagents are unnecessary, allowing the same assay to detect antibodies to influenza A virus antigens in sera from several avian and mammalian species. Work to determine assay sensitivity and specificity is underway.

5:30 PM **ADJOURN**

Session A, Tuesday, July 22, 2008
8:00−8:15 AM **Moderator: Steven Clark**

Cellulitis in turkeys: *Clostridium septicum* being a primary pathogen?

Anil J. Thachil [*], David A. Halvorson, and Kakambi V. Nagaraja.

**Department of Veterinary and Biomedical Sciences,
University of Minnesota, 1971 Commonwealth Ave, St. Paul, MN 55108.**

Clostridium perfringens and *Clostridium septicum* are widely considered as the organisms responsible for cellulitis in turkeys, a major cause of economic loss to turkey producers over the last few years. Though *Clostridium perfringen*s was attributed as a major pathogen in causing turkey cellulitis, the experimental reproduction of the disease is not often successful. Moreover the role of other species of Clostridia in the development of cellulitis in turkeys is also currently unknown. The objective of our study was to look at the effects of various strains of *Clostridium septicum* and their toxins in the development of cellulitis and mortality in turkey poults. Both *C. perfringens* and *C. septicum* strains were grown and allowed to sporulate producing toxins in suitable media. Varying doses of bacteria and toxins were used to experimentally reproduce cellulitis lesions and mortality in 5-week-old turkeys originated from flocks with no history of cellulitis. The infectious agents *Clostridium perfringens* and *Clostridium septicum* were consistently isolated from cellulitis lesions developed. The results of this experiment will be presented.

8:15−8:30 AM

Epidemiological Factors Associated with the prevalence of Gangrenous Dermatitis

Vogt, M., MD Lee, S. Collett, R. Berghaus
The University of Georgia

Gangrenous dermatitis was ranked as one of the top three “most serious current disease entities” in a recent survey of US broiler veterinarians. Many experts in the poultry industry have theorized about potential causative factors, but to date, no study has been able to pinpoint one factor or a set of factors responsible for the disease. This study aims to identify likely factors for gangrenous dermatitis using statistical and epidemiologic analyses. After identifying likely causative factors, we hope to conduct cost benefit analyses in order to examine how growers could alter management practices to reduce the incidence of the disease.

Session A, Tuesday, July 22, 2008
8:30−8:45 AM

Assessment of *Clostridium perfringens* and *Clostridium septicum* from Commercial Broilers with Gangrenous Dermatitis and Asymptomatic Broilers within the Same Houses

Susan M. Dunham[1*], Anthony P. Neumann[1], Kimberle A. Agle[1], Thomas G. Rehberger[1], and John A. Smith[2]
Agtech Products, Inc., Waukesha, WI[1] and
Fieldale Farms Corporation, Baldwin, GA[2]

Poultry gangrenous dermatitis is an acute bacterial disease causing rapidly progressing necrosis of skin, abdominal subcutaneous tissue, and underlying musculature with *Clostridium perfringens* and *Clostridium septicum* commonly isolated. Gastrointestinal tract, liver, and spleen samples were collected from live symptomatic (n=25) and live asymptomatic (n=25) broilers. Skin lesions were collected from the diseased broilers. From the GD symptomatic broilers 126 toxigenic *Clostridium* were isolated versus four in asymptomatic broilers. Of the GD symptomatic bird-derived isolates 27 identified as *C. perfringens* and 99 as *C. septicum*. Of the asymptomatic bird-derived isolates three identified as *C. perfringens* and one as *C. septicum*.
Key Words: Broilers, *Clostridium*, Gangrenous dermatitis

8:45−9:00 AM

Live recombinant *Salmonella* vector vaccine for necrotic enteritis

Zekarias B., Mo H., R. Curtiss III
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Alpha-toxin is major factor in the pathogenesis of *Clostridium perfringens*-induced necrotic enteritis (NE). We have developed a live recombinant attenuated *Salmonella* vaccine (RASV) that delivers the C-terminal domain of the toxin. The 3'-end of α-toxin gene was cloned into expression plasmid vector, and inserted into *ΔpabA/ΔpabB Salmonella* Typhimurium strain. Three-day old chicks were orally immunized with 10^9 CFU of the vaccine strain and developed α-toxin neutralizing serum antibodies. Serum antibodies from these chickens bind to the bacteria surface and suppressed bacterial growth. Immunized chickens had reduced intestinal pathology after challenge with *C. perfringens*. Thus, RASV-expressing the α-toxin C-terminal peptide induces protective immunity against NE.

Session A, Tuesday, July 22, 2008
9:00–9:15 AM

Bacterial Respiratory Diseases of Economic Importance of Poultry in Mexico.

Ariel Ortiz[A], Edgardo Soriano[B], Ernesto Soto[C], Alejandro García[A] and [D]Patrick Blackall[D].

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A major problem of the poultry industry around the world are bacterial respiratory tract infections, which cause a major economic impact due to the increase in treatment cost and losses through the deaths of animals and higher condemnation rates. They arise from the various agents, including bacterias like: *Mycoplasmas gallisepticum and synoviae, Avibacterium paragallinarum,* Ornithobacterium rhinotracheale *Gallibacterium anatis and Pasteurella multocida*

These microorganisms may act as primary or secondary infections. The severity of clinical signs, duration of the disease and mortality rate are variable and influenced by environmental factors, such as poor hygiene, inadequate management/ventilation, ammonia levels and concurrent diseases.

In the present report we will discuss the pathogenic role of these agents in commercial chickens in Mexico.

9:15–9:30 AM

Field observations and experimental studies on the pathogenic potential of small colony variants of *Pasteurella multocida*

M. Bisgaard, A. Petersen, A.M. Bojesen, J.P. Christensen H. Christensen,

Department of Veterinary Pathobiology, Faculty of Life Sciences, University of Copenhagen, Denmark

Small colony variants (SCV) constitute a subpopulation of bacteria with distinctive phenotypic and pathogenic traits making them a challenge for clinical microbiologists to identify. The impact of culling, treatment and subsequent vaccination on production parametes in a broiler PS flock affected by arthritis, tenosynovitis and panophthalmitis due to SCV of *Pasteurella multocida* is reported. In addition, the virulence of the SCV clone in a previously reported model using I/T inoc. of 10^4 CFU is reported. Although the SCV clone was demonstrated highly virulent in the experimental model vaccination protected against systemic, but not local infections. The stability of SCV under field conditions and possible virulence factors associated with SCV are reported and discussed.

9:30–10:00 AM **BREAK**

Session A, Tuesday, July 22, 2008
10:00−10:30 AM **Moderator: Richard Chin**

LASHER HISTORY LECTURE:

"The History of Avian Influenza in the USA"

Dr. David Halvorson
University of Minnesota

10:30−12:00 PM **AAAP BUSINESS MEETING** **ROOMS 391-392**

12:00−1:00 PM **LUNCH**

Session A, Tuesday, July 22, 2008
1:00−1:15 PM **Moderator: Hector Cervantes**

A live attenuated *aro-A* mutant vaccine against fowl cholera – Vaxsafe® PM

P. C. Scott and R. Youil
School of Veterinary Science, The University of Melbourne 250 Princess Highway
Werribee Victoria 3030 Australia

Fowl cholera (FC) due to *Pasteurella multocida* (PM) is a disease that causes mortalities and production losses in chickens and other avian species including turkeys and waterfowl. While control using autogenous inactivated vaccines provides homologous protection, live attenuated FC vaccines demonstrate cross protection against different serovars of PM. Current live vaccines though can cause disease problems due to partial reversion to virulence or as a consequence of their use in livestock undergoing stress or intercurrent disease. An auxotrophic mutant of PM designated PMP1 developed by creating a non-reverting mutation in the *aro-A* gene was tested as a potential vaccine candidate. Laboratory and early field studies indicate that the candidate vaccine Vaxsafe®PM is a safe and efficacious vaccine.

Session A, Tuesday, July 22, 2008
1:15−1:30 PM

Characterisation of *Taxon 14* isolates involved in upper respiratory tract infections and blepharoconjunctivitis in turkeys

R. Guenther, H. Christensen, A. M. Bojesen, M. Bisgaard

HEIDEMARK, Germany

Bacteria tentatively named *Taxon 14* are members of the family *Pasteurellaceae* based on DNA:rDNA hybridization and are phylogenetically closely associated with taxon 32, 40 and *[P.] testudinis* based upon 16S rRNA sequence similarity. Between 2005 and 2007 a number of isolates were obtained from field cases of upper respiratory tract infections and blepharoconjunctivitis in turkeys. In order to elucidate the role of *Taxon 14* in the aetiology of these infections 34 field isolates were characterized by PFGE and ribotyping and compared with 19 reference strains from six different countries. In addition, the presence of *Taxon 14* in infected tissue samples was investigated by in situ hybridization. The findings indicate the existence of clonal outbreaks suggesting a primary rather than a secondary role in blepharoconjunctivitis in turkeys.

1:30−1:45 PM

Hemagglutination-inhibition antibodies induced by *Ornithobacterium rhinotracheale*.

Edgardo V. Soriano, Vicente Vega, S. Lagunas-Bernabé, and Simón Martínez
Centro de Investigación y Estudios Avanzados en Salud Animal, FMVZ-UAEM

Hemagglutinating activity by some *O. rhinotracheale* reference strains and field isolates has been previously reported. Based on this activity, the hemagglutination-inhibition (HI) antibody titers raised by nine *O. rhinotracheale* reference strains were studied. Different patterns of HI antibodies titers were obtained. The results indicate that the HI test could be used as an additional serological laboratory tool for identifying and typing this bacterium. Also, the importance of the HI antibodies in the immunogenicity of *O. rhinotracheale* in chickens is discussed.

Session A, Tuesday, July 22, 2008
1:45−2:00 PM

Isolation and identification of serovar B-1 of *Avibacterium paragallinarum* in Panama

Erick N. Calderón, Karina Thomas, Vladimir Morales, Edgardo V. Soriano
Productos Toledano S. A., República de Panamá

Outbreaks of infectious coryza had not been observed in the broiler breeder area of La Mesa, El Valle in Panama for many years. Recently, two outbreaks were registered in this population, showing typical signs of the disease. The main feature of these outbreaks was the rapid dissemination of the agent between the flocks. *Avibacterium paragallinarum* was isolated in pure culture from several birds and the serovar B-1 was identified. The disease was prevented in other flocks by using a commercial, trivalent ABC bacterin. In America, serovar B-1 has been identified in USA, Mexico and Ecuador.

2:00−2:15 PM

Active motility is not required for *Campylobacter* colonization of chickens

A. Singh Dhillon, Michael E. Konkel and Kari Shoaf-Sweeney
Washington State University, Avian Health and Food Safety Laboratory/ Dept. of Microbiology, School of Molecular Biosciences, 7613 Pioneer Way E, Puyallup, WA 98371

Campylobacter jejuni is a Gram-negative, motile, spiral-shaped bacterium, and a common cause of gastroenteritis in humans. The flagellum of *C. jejuni*, which confers motility and serves as a secretion apparatus for the export of virulence proteins from the bacterium, is composed of a basal body, hook, and filament. The filament is comprised of two proteins, termed FlaA and FlaB. While these two proteins are 94% homologous, the *flaA* and *flaB* genes differ in that they are expressed from separate promoters controlled by different sigma factors (σ^{28} and σ^{54}, respectively). The sigma factor RpoN (σ^{54}) and filament protein FlaB are adequate for a functional secretion apparatus, but only confer partial motility, whereas both the FliA (σ^{28}) and RpoN (σ^{54}) sigma factors and the FlaA and FlaB filament proteins are required for full motility of the bacterium. We hypothesized that *C. jejuni* colonization of chickens does not require fully motile bacteria. To test this hypothesis, we inoculated Leghorn broiler chickens with the *C. jejuni* F38011 wild-type strain, *fliA* (σ^{28}) mutant, and *rpoN* (σ^{54}) mutant. We then determined the number of *C. jejuni* in the cecum at 7 and 14 days post-inoculation. The *C. jejuni fliA* mutant colonized a majority of the inoculated chickens, albeit at a reduced level when compared to the F38011 wild-type strain. Specifically, 5 of 10 chickens were colonized with the *C. jejuni fliA* mutant at day 7, whereas 10 of 10 chickens were colonized with this mutant by day 14. In contrast, the *C. jejuni rpoN* mutant was not recovered from any of the chickens at either time point. *In vitro* assays revealed that

the *C. jejuni* strains used had the expected motility, flagellar structure as judged by transmission electron microscopy, and ability to adhere to tissue culture cells. Collectively, these findings support the hypothesis that active motility, which requires σ^{28} and the FlaA filament protein, is not required for *Campylobacter* colonization of chickens.

Session A, Tuesday, July 22, 2008
2:15–2:30 PM

Re-occurrence of Fowl Typhoid in Commercial Layers

Franz Sommer*, Martina Glatzl
*Cutler Associates International

Sudden high mortality was noted in 1 out of 8 compartments in the first placement run in a new volary system house with more than 40000 hens, soon extending to the neighboring compartments. The preliminary diagnosis fowl typhoid was made on the clinical presentation of the young flock, and later confirmed by the isolation of Salmonella gallinarum. In an attempt to control the disease, the hens were vaccinated with a commercially available vaccine (Nobilis SG9R). Nevertheless, overall mortality was high.

The results of the investigations into the underlying break of biosecurity and the course of the outbreak will be dicussed.

2:30–2:45 PM

Practical Application of Spray Live Salmonella Vaccine at the hatchery on Table Egg Pullets

Hugo Medina
Sparboe Companies, Plymouth Minnesota

The Table Egg Industry is working to prevent the presence of *Salmonella enteritidis* on any of the pullets/layers producing eggs fro Human Consumption. There are a variety of vaccination programs and procedures, although based on past research indicates that the earlier in the life of the bird any of these Salmonella vaccines are provided the more successful on early protection against either external or pathogenic type of Salmonella challenge.
This live Salmonella (*Salmonella typhimurium gene diluted*) type of vaccines available to the industry need to be applied under correct conditions for its effective protection to the birds.

Session A, Tuesday, July 22, 2008
2:45–3:00 PM

Reduction in Prevalence of *Salmonella spp*. in Broiler Progeny from Vaccinated Breeders

Robert L. Owen, V.M.D., Ph.D
Alpharma Animal Health

The purpose of this work was to investigate whether administration of an autogenous bacterin to breeder hens would affect the levels of Salmonella at the broiler level. Parent stock breeder hens were vaccinated with either one or two doses of an autogneous bacterin. Drag swabs were collected from progeny broiler flocks approximately 10 to 14 days before movement to the processing plant. If the drag swabs were positive, ceca from 10 broilers randomly selected from each flock were cultured for Salmonella. Results indicated that vaccination of parent stock hens did have an effect in reducing Salmonella prevalence at the broiler level.

3:00–3:30 PM **BREAK**

3:30–3:45 PM **Moderator: Jose Linares**

Caenorhabditis elegans as a Simple Model to Study Avian Pathogenic *Escherichia coli* Virulence

Subhashinie Kariyawasam, Yvonne Wannemuehler, Jack Hardy, Ganwu Li, Luke Baldwin, Tim Johnson, and Lisa Nolan
College of Veterinary Medicine, Iowa State University, Ames, IA 50011

Losses in the poultry industry due to colibacillosis caused by avian pathogenic *E. coli* (APEC) have created the demand for a cost effective method for determining pathogenicity of APEC. In the present study, the nematode, *Caenorhabditis elegans*, was tested as a substitute for chicken and chick embryo models for assessing APEC virulence. Sixteen isolates of APEC from chickens or turkeys with colisepticemia and sixteen isolates of commensal *E. coli* from the feces of apparently healthy chickens were tested. Results of this assay were compared to those obtained with the embryo lethality assay (ELA) and the intra-tracheal, 1-day-old chicken challenge model. Results indicated that the *C. elegans* model could accurately differentiate between pathogenic and non-pathogenic strains of avian *E. coli* but was unable to discriminate between high, intermediate and low pathogenicity groups of APEC. In sum, *C. elegans* may prove a useful alternative to standard animal models used for assessing APEC virulence.

Session A, Tuesday, July 22, 2008
3:45−4:00 PM

The putative virulence region found in large plasmids of Avian Pathogenic *Escherichia coli* contributes to colibacillosis

Kelly A. Tivendale, Amir H. Noormohammadi and Glenn F. Browning
Veterinary Microbiology and Preventative Medicine, VMRI #2, Iowa State University, Ames, Iowa, 50011

Large plasmids have long been associated with the virulence of Avian Pathogenic *E. coli* and recently published sequence of these large plasmids revealed a putative virulence region encoded by these plasmids. Gene prevalence studies identified a conserved and variable portion of the putative virulence region and the current study sought to determine the contribution of these regions to virulence of APEC. The conserved portion of the putative virulence region was found to be involved in colonization of and generation of lesions in the air sacs, whilst both the conserved and variable portions of the putative virulence region contribute to colonization of the trachea. However, it was found that the variable portion does not make a major contribution to virulence of APEC.

4:00−4:15 PM

Vaccination Programming of a Live *E. coli* Vaccine in Commercial Leghorn Chickens

C. Gustafson, J. Schaeffer and K. Cookson
Fort Dodge Animal Health
Overland Park, KS

Escherichia coli (E. coli) infection is often the cause of peritonitis in long-lived birds such as commercial layers. The infection is commonly associated with high morbidity and mortality. Decreases in production caused by *E. coli* peritonitis and other *E. coli* infections can cause significant economic losses to the producer. The purpose of this study was to evaluate various vaccination programs in commercial layers to determine its immunogenicity relative to the laying cycle.

Session A, Tuesday, July 22, 2008
4:15–4:30 PM

Recombinant Iss as a Potential Vaccine for Avian Colibacillosis

Aaron M. Lynne, Steven L. Foley, Subhashinie Kariyawasam and Lisa K. Nolan
National Farm Medicine Center, Marshfield Clinic Research Foundation,
Marshfield, WI 54449

Avian pathogenic *Escherichia coli* (APEC) cause colibacillosis, a disease which is responsible for significant losses in poultry. The potential of an Iss-based vaccine was further examined by assessing its effectiveness against multiple APEC isolates. Iss proteins were administered to two-week old broiler chickens and were challenged with one of three APEC strains. Chickens were euthanatized, necropsied, and lesions consistent with colibacillosis were scored. Antibody titers to Iss were determined by Enzyme-linked Immunosorbent Assay (ELISA) from collected sera. Immunized chickens produced an antibody response to Iss and had significantly lower lesion scores than non-immunized chickens following challenge regardless of challenge strain.

4:30–4:45 PM

The characterization of several avian pathogenic *E. coli* (APEC) strains from commercial broilers using PCR analysis of key virulence genotypes

Kalen Cookson, Lisa Nolan and Cheryl Gustafson
Fort Dodge Animal Health

Avian pathogenic *E. coli* (APEC) strains can carry a broad array of virulence factors that help determine their pathogenic potential. APEC from several diseased broiler flocks will be compared based on the clinical presentation of the *E. coli*, flock performance and the profile of key virulence markers.

4:45–5:00 PM

Chukar Partridge (Alectoris chukar): A Laboratory Model for West Nile Virus Infection

Robert E. Porter, Wisconsin Veterinary Laboratory, Madison, WI 53706
Co-author: Erik Hofmeister

West Nile virus (WNv) was injected (10^5 pfu, SQ) in chukar partridges at 5 days, 2 weeks and 6 weeks of age. Mortality was not observed in 6-week-old birds, but was 100% in 5 and 2-week-old chicks. Clinical signs in 6-week-old birds were depression and decreased weight gain. WNv-infected 6-week-old birds were PCR-positive (brain, heart, skin and liver) for 2 weeks post challenge while only skin and brain were positive by virus isolation at 8 days post challenge. WNv-infected birds were viremic for 1-5 days post challenge with peak viremia occurring on day 3. Lesions included nonsuppurative myocarditis, histiocytic splenitis and nonsuppurative encephalitis.

5:00 PM **ADJOURN**

Session B, Tuesday, July 22, 2008 **Moderator: Maricarmen García**
8:00−8:15 AM

Evolution and mutation rates of avian coronavirus infectious bronchitis virus

Enid T. McKinley, Deborah A. Hilt and Mark W. Jackwood
Department of Population Health
953 College Station Rd
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Coronaviruses have high mutation rates and undergo genetic recombination by a genomic template switching mechanism, which could lead to the emergence of new viruses capable of infecting and causing disease in animals and humans. To determine past mutation rates and evolutionary trends in these viruses, we sequenced a selected group of avian coronavirus infectious bronchitis viruses (IBV), Massachusetts and Connecticut serotypes, isolated over a 40-year period. Molecular phylogenetic analysis of the data collected will be presented. This data increases our understanding of mutation rates and evolutionary trends, which is essential for predicting which new IBV strains will become widespread and persist in the field.

8:15−8:30 AM

Pathogenesis of a Recent Field Isolate of Nephropathogenic Infectious Bronchitis Virus

B. E. Telg, H. Sellers, S.M. Williams, G. Zavala, J. Fricke, and A. Montoya
Poultry Diagnostic & Research Center, University of Georgia, Athens, GA 30602

In the spring of 2007, an Infectious Bronchitis Virus (IBV) was isolated from the kidneys of several commercial broiler flocks exhibiting excessive flushing. The nucleotide sequence of the S1 gene was approximately 85% similar to previously published sequences of Nephropathogenic strains of IBV. The virus was used in a challenge experiment in SPF and broiler chickens. Along with the challenge group, a Mass-41 positive control group, and a non-challenged negative control group were utilized. Clinical signs, gross lesions, histopathology, virus isolation, PCR and serology were evaluated for all groups. Serum uric acid levels were evaluated for the broilers in an attempt to assess renal function.

Session B, Tuesday, July 22, 2008
8:30–8:45 AM

Significance of Minor Viral Subpopulations within Ark-type Infectious Bronchitis Vaccines

Vicky L. van Santen, Haroldo Toro, and Kellye S. Joiner
Department of Pathobiology, College of Veterinary Medicine, Auburn University

We previously reported that commercially-available Ark IBV vaccines contain different proportions of a small subpopulation that replicates more efficiently in the upper respiratory tract of SPF chickens than the "major" vaccine population and is thus "selected" by the chickens after ocular vaccination. We will present results of a study designed to determine the effect these different subpopulation structures have on vaccine reaction, vaccine persistence, and antibody development in SPF chickens.

8:45–9:00 AM

The emergence of infectious bronchitis virus strain CA1737 in chickens in California

Peter R. Woolcock and Carol J. Cardona

California Animal Health & Food Safety Laboratory System

In 2004 infectious bronchitis virus strain CA1737 was first detected in young layer chickens; it was recovered from respiratory, cecal tonsil, and kidney tissues. Since that time the virus has been isolated from 8 layer and 74 meat chicken cases submitted to CAHFS. In 14 cases the isolates were recovered from tracheal tissue of meat chickens between 38 and 47 days of age; indicating a current respiratory infection. Other isolations were from cecal tonsil tissues of birds older than 35 days. The isolates will be reviewed in relation to tissue tropism, interaction with other diseases, and molecular biology of the S1 gene.

Session B, Tuesday, July 22, 2008
9:00–9:15 AM

Protection and immunogenicity studies of in-ovo injection of recombinant DNA vaccine and interferon type 1 against infectious bronchitis infection

Mazhar I. Khan
Department of Pathobiology & Veterinary Science, University of Connecticut,
61 North Eagleville Road, Storrs, CT 06269-3089 USA

In this study, 18 days embryonating eggs were simultaneously inoculated with recombinant DNA plasmid containing IBV spike gene and with interferon alpha 1. Two weeks post hatched chicks were challenged with the field isolate of Mass 41. Production of spike protein specific antibody response prior to challenge were observed in both vaccinated as well as birds boosted with attenuated vaccine at 7 day post hatch. Birds vaccinated with rDNA plus interferon, over 90% of the chicks were protected. On the other hand, birds which were boosted at 7 day post hatch with attenuated vaccine, the protection was 100%.

9:15–9:30 AM

Vaccination and Arkansas infectious bronchitis virus (IBV) persistence in the field

Mark W. Jackwood, Deborah A. Hilt, Amber W. McCall, Enid T. McKinley, and Crystal N. Polizzi
Department of Population Health, PDRC, College of Veterinary Medicine, University of Georgia, Athens, GA 30602.

In this study, we followed the dynamics of IBV modified live vaccine virus infection, transmission, and persistence in broiler flocks following vaccination in the field. Although generally considered safe, modified live IBV vaccines, commonly used to control the disease, can persist in field-vaccinated flocks for up to 42 days post-vaccination. Additionally, when virus isolation attempts are made, the Arkansas vaccine is almost exclusively detected even when other types of IBV vaccine are used in combination with Arkansas vaccine. The impact of persisting Arkansas vaccine viruses on the virus and host will be discussed.

9:30–10:00 AM **BREAK**

Session B, Tuesday, July 22, 2008 **Moderator: Rich Chin**
10:00−10:30 AM

LASHER HISTORY LECTURE:

"The History of Avian Influenza in the USA"

Dr. David Halvorson
University of Minnesota

10:30−12:00 PM **AAAP BUSINESS MEETING** **ROOMS 391-392**

12:00−1:00 PM **LUNCH**

Session B, Tuesday, July 22, 2008
1:00−1:15 PM **Moderator: Alejandro Banda**

Evaluation of an Updated Real-time RT-PCR Test for the Identification of the H7 Subtype

Erica Spackman and David L. Suarez

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Rapid detection of avian influenza (AI) virus and identification of the H5 and H7 subtypes is critical for wild bird monitoring programs. A real-time RT-PCR test for identification of the H7 subtype in North America was first reported in 2002. With the recent surveillance in wild birds it was discovered that the original test did not detect all H7 viruses. Therefore a new test was developed using the newly available H7 sequence. Here we report the development and initial evaluation of this new H7 subtype test with broader specificity for New World H7 subtype AI viruses.

Session B, Tuesday, July 22, 2008
1:15–1:30 PM **REED RUMSEY AWARD WINNER**

Experimental infections of waterfowl and gulls with a H5N1 highly pathogenic avian influenza virus

Justin D. Brown[1], David E. Stallknecht[1], and David E. Swayne[2]

[1]Southeastern Cooperative Wildlife Disease Study, Department of Population Health, Wildlife Health Building, College of Veterinary Medicine, The University of Georgia, Athens, GA, USA, 30602
[2]United States Department of Agriculture, Agricultural Research Service, Southeast Poultry Research Laboratory, Athens, GA, USA, 30605

Thirteen waterfowl and gull species were inoculated intranasally with A/whooper swan/Mongolia/244/05 (H5N1) highly pathogenic avian influenza (HPAI) virus to evaluate the range of susceptibility and viral shedding. Several characteristics of H5N1 HPAI infection differed between the species, including morbidity, mortality, and viral shedding. These results suggest that susceptibility to these viruses is species-dependent in wild birds and they provide an explanation for the observed mortality associated with H5N1 HPAI infection in Eurasian waterfowl in 2005-2006.

1:30–1:45 PM

Variation in Infectivity and Adaptation of Wild Duck- and Poultry-Origin High Pathogenicity and Low Pathogenicity Avian Influenza Viruses for Poultry

David E. Swayne and Richard D. Slemons
USDA/ARS, SEPRL, Athens, Georgia

Avian influenza viruses (AIV) vary in their adaptation which impacts transmission between and infection of different bird species. We determine the intranasal mean bird infectious doses (BID_{50}) for 11 high pathogenicity (HP) AIV for layer type chickens (LC), and three low pathogenicity (LP) AIV for turkeys (TK), LC, broiler type chickens (BC), ducks (DD), geese (DG) and Japanese quail (JQ). The BID_{50} for HPAIV ranged from $10^{1.2\text{-}4.7}$ mean embryo infectious dose (EID_{50}) with a median of $10^{2.9}$. The data suggested a BID_{50} of $<10^4$ was needed for sustained transmission. For a chicken-origin LPAIV, the BID_{50} were $<10^4$ EID_{50} for JQ, BC and DD, but $>10^5$ EID_{50} for TK and LC. With an H4N8 waterfowl-origin LPAIV, the BID_{50} was $<10^4$ for DG, DD, JQ and TK, but for an H5N1 waterfowl-origin LPAIV, only DD had BID_{50} $<10^4$. This suggests DD are an excellent introductory and maintenance host for LPAIV from wild waterfowl which has impact in live poultry markets systems

Session B, Tuesday, July 22, 2008
1:45−2:00 PM

Ability of an Avian Influenza Virus with Truncated NS1 Protein to Grow in Presence of Interferon

V. Brahmakshatriya[1] B. Lupiani[1,2] and S.M. Reddy[1,2]
[1] Department of Poultry Sciences, [2] Department of Veterinary Pathobiology,
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Using reverse genetics we recovered an H5N3 avian influenza virus expressing a truncated NS1 protein lacking the carboxy-terminal half (H5N3/NS1-143). Growth of rH5N3/NS1-143 was attenuated in the presence of interferon compared to the wild type virus. To further understand the mechanism of interferon inhibition by influenza virus we adapted the NS1 mutant virus, to grow in the presence of interferon. Adaptation of the virus resulted in additional mutations in the NS1 including further truncations. We recovered by reverse genetics several rH5N3 viruses expressing these mutant NS1 proteins. The NS1 mutant and wild type viruses grew to comparable levels in the presence of interferon, highlighting the role of these mutations on virus adaptation to interferon competent systems.

2:00−2:15 PM

Expression of Recombinant Avian Influenza Virus Hemagglutinin Protein in Mammalian Cells via an Alphavirus Vector

Blayne Mozisek, Sanjay M. Reddy and Blanca Lupiani
Texas A&M University, Department of Veterinary Pathobiology

Diagnostic tests for detection and subtyping of avian influenza viruses (AIV) must be sensitive, specific, and possess high-throughput capabilities. Identifying antibodies to specific hemagglutinin proteins and determining subtype is crucial information necessary for authorities to mount a proper response in the case of an outbreak.

Utilizing a Venezuelan Equine Encephalitis Virus vector, mammalian cells were engineered to secrete high levels of accurately glycosylated and processed AIV H5 hemagglutinin protein. The H5 protein gene was cloned in frame with a histadine tag, for easy purification of the recombinant protein. Initial efforts have focused on the development of an ELISA-based test for the detection of H5 specific antibodies using the recombinant H5 protein. Future plans include the development of a fluorescent microsphere based immunoassay for the detection of H5 specific antibodies.

Session B, Tuesday, July 22, 2008
2:15−2:30 PM

Gene expression responses to highly pathogenic avian influenza H5N1 virus infections in ducks

M. Pantin-Jackwood, D. Kapczynski, J. Wasilenko, L. Sarmento, and C. L. Afonso
Southeast Poultry Research Laboratory, United States Department of Agriculture, Athens, GA 30605, USA

This study investigated the differences in host response to infection with avian influenza (AI) viruses by identifying genes differentially expressed in tissues of infected ducks. Clear differences in pathogenicity were observed among ducks inoculated with five H5N1 HPAI viruses. Virus titers in tissues correlated with severity of the disease. A complete chicken genome microarray was used to determine differences in gene expression in the spleen in response to infection with the AI viruses. Semi-quantitative RT-PCR was also performed on selected genes related to host response. The results provide important information on different mechanisms potentially induced by avian influenza viruses to modulate innate immune host response of the ducks.

2:30−2:45 PM

Avian influenza virus-induced regulation of duck fibroblast gene expression

Luciana Sarmento, Jamie Wasilenko and Mary Pantin-Jackwood
Southeast Poultry Research Laboratory, United States Department of Agriculture, Athens, GA 30605, USA

Highly pathogenic avian influenza (HPAI) H5N1 viruses have been non-pathogenic in ducks causing no disease or mild respiratory infections. However, in 2002 new viruses emerged causing systemic disease and death. To better understand the differences in pathogenicity of HPAI viruses in ducks, we investigated the ability of wild-type and recombinant viruses to replicate in duck fibroblasts. In addition, differences in host gene expression were accessed by semi-quantitive RT-PCR. Substantial differences in the expression of IFN-α, Mx1 and IL-8 genes were found. Our results suggest that differences in cellular gene expression may contribute to the differences in avian influenza virus replication.

Session B, Tuesday, July 22, 2008
2:45−3:00 PM

Replication of H5N1 avian influenza viruses in chickens is affected by the PB1, PB2 and NP viral genes.

Jamie L. Wasilenko, Chang Won Lee, Luciana Sarmento, and Mary J. Pantin-Jackwood
Southeast Poultry Research Laboratory, United States Department of Agriculture, Athens, Georgia, USA

Devastating losses to the poultry industry can result from pathogenic avian influenza viruses (AIVs) created by natural reassortment events. The role of individual viral genes on the pathogenesis of AIVs in chickens is unclear. Reverse genetics was used to create single-gene reassortants to determine which viral genes contribute to the virulence of AIVs. Changes in replication occurred when the PB1, PB2 and NP genes were exchanged. Differences in expression levels of cytokines and several genes involved in the host innate immune response were determined by semi-quantitative RT-PCR after infection with the reassortant viruses.

3:00−3:30 PM **BREAK**

3.30−3:45 PM **Moderator: Holly Sellers**

Influenza A Virus Whole Genome RNA Amplification

Weiwen Ge, Xingwang Fang, Mangkey Bounpheng, and John El-Attrache
Ambion, Inc., An Applied Biosystems Business

The high mutation frequency throughout the genome of influenza viruses underlies their widespread infection and pathogenicity. Rapid and accurate whole genome sequence information is required for effective surveillance of emerging variants. Currently, isolated field viruses need propagation for weeks to generate enough sequencing template. We describe protocols for amplification of all eight full-length segments of Influenza A genome in less than 5 hours from field AIV fecal swab samples and SIV serum samples. Amplified products are suitable for immediate sequence analysis, providing a fast and reliable solution for Influenza A virus surveillance and management.

Session B, Tuesday, July 22, 2008
3:45−4:00 PM

The Role of Untranslated Regions of Newcastle Disease Virus Hemagglutinin-neuraminidase Gene in Replication and Pathogenesis

Yongqi Yan, Subrat N.Rout, and Siba K.Samal
VA-MD Reg., College of Vet. Med, University of Maryland,
College Park, MD 20742

Newcastle disease virus (NDV) causes a major disease in poultry worldwide. The role of the 5' and 3' untranslated regions (UTRs) of the hemagglutininneuraminidase (HN) gene of NDV in replication and pathogenesis is not known. Several recombinant NDVs with deletions in 5' and 3' UTR of HN gene were generated by reverse genetic techniques. The levels of HN mRNA transcription and HN protein incorporation into viral particles were studied. Pathogenesis and virulence of the recombinant NDVs were evaluated in chickens. Our results showed that the length of HN gene UTR can modulate the HN protein expression.

4:00−4:15 PM

The role of antigenic composition of Newcastle disease (ND) vaccines in ND control

P.J. Miller, C. Estevez, Q. Yu, D.L. Suarez, D.J. King
Southeast Poultry Research Laboratory

Virulent Newcastle disease virus (NDV) isolates from recent outbreaks are the same serotype but are antigenically different from current vaccine strains. Recent experiments in chickens with inactivated vaccines show significantly less virus shed in birds vaccinated with a homologous vaccine compared to chickens vaccinated with heterologous vaccines. Subsequent experiments have compared the protection induced in chickens by live vaccines formulated from B1, LaSota, Ulster, and recombinant viruses that express the hemagglutinin (HN) gene or the HN and fusion (F) genes of CA 2002. Vaccinates were challenged with virulent CA 2002 (genotype V) or Texas GB, a virus of the same genotype (II) as LaSota vaccines. Results are similar to killed vaccines with reduced shed when birds are vaccinated with homologous vaccines.

Session B, Tuesday, July 22, 2008
4:15−4:30 PM

Serological survey on the prevalence of antibodies to avian paramyxovirus – 2, 3, 4, 6, 7, 8 and 9 in commercial poultry in the United States.

Ashwini Warke, Egbert Mundt
Poultry Diagnostic and Research Center, College of Veterinary Medicine
The University of Georgia, 953 College Station Rd., Athens, GA.

Avian paramyxoviruses (APMVs) other than Newcastle disease virus (NDV) circulate widely in wild birds sometimes causing severe disease in them. Thus, it is important to know their prevalence in commercial poultry flocks. Sera from 100 commercial, domestic flocks were obtained and pooled serum samples from each flock were tested for the presence of antibodies to APMV-2, 3, 4, 6, 7, 8 and 9 by HI test. 15% to 47 % of the investigated flocks showed positive HI titers for the respective antigens. Implications of this serosurvey on commercial poultry production will be discussed.

4:30−4:45 PM

Construction of a fowl adenovirus recombinant to express avian metapneumovirus glycoprotein

Keith O. Strother*, Qingzhong Yu, Darrell R. Kapczynski, Éva Nagy, and Laszlo Zsak
Southeast Poultry Research Laboratory, USDA, ARS, SAA, Athens, GA

Avian metapneumovirus (aMPV) is the cause of severe respiratory infection in turkeys. Despite detailed sequence analyses of most of the aMPV genes, very little is known about the role these proteins in viral virulence, pathogenesis, and immune response. Here, we report the construction of an avian adenovirus recombinant expressing the aMPV subtype C glycoprotein G gene. This live expression vector will be a valuable tool to study the function of the G gene during virus infection.

Session B, Tuesday, July 22, 2008
4:45–5:00 PM

Protection against avian metapneumovirus in turkeys immunized via the respiratory track with inactivated virus

Ra Mi Cha, Mahesh Khatri and Jagdev M. Sharma
College of Veterinary Medicine
Department of Veterinary and Biomedical Sciences
University of Minnesota, St. Paul, Minnesota

Commercial turkeys were inoculated oculonasally with three doses of inactivated avian metapneumovirus (aMPV) adjuvanted with synthetic double-stranded RNA polyriboinosinic polyribocytidylic acid (Poly I:C). Immunization induced virus-specific mucosal IgG and IgA in lachrymal fluid and IgG in serum. After 7 or 21 days post immunization, turkeys were challenged oculonasally with live aMPV. Immunized groups were protected against respiratory lesions induced by the challenge virus at 5 days post challenge. Further, viral copy numbers in the respiratory tract were significantly lower in the immunized turkeys than in the unimmunized turkeys ($P<0.05$). Immunized birds were protected against mitogenic inhibition of splenocyte induced by the challenge virus.

5:00 PM **ADJOURN**

Session A, Wednesday, July 23, 2008
8:00–8:15 AM **Moderator: Steve Fitz-Coy**

Differentiation of *Mycoplasma gallisepticum* Live Vaccines and Field Strains in Clinical Samples

Ziv Raviv, Victoria A. Laibinis, Stanley H. Kleven
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The University of Georgia, Athens, GA 30602-4875,
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Vaccination of poultry with *Mycoplasma gallisepticum* (MG) live vaccines is an approach to reduce the disease symptoms and its economic losses. However, the protection of vaccinated birds from super infection with field strains is variable, and the determination of the MG status of vaccinated flocks is problematic. The currently available diagnostic and strain differentiation methods are lacking in the detection of wild-type strains in flocks vaccinated with live vaccines. We utilized PCR based methods to target unique genetic sequences in the ts-11 and the 6/85 vaccine strains to rapidly differentiate these strains from all the MG prototypes in our laboratory database.

8:15–8:30 AM

The choanal slit as an alternative sampling method for *Mycoplasma gallisepticum* (MG) and *Mycoplasma synoviae* (MS) and use of a high throughput system for molecular detection of MG and MS.

J. Fricke, G. Zavala, S. Kleven, V. Leiting, M. Garcia, and Z. Raviv
The University of Georgia

Chicken flocks known to be infected with MG and/or MS or that had been vaccinated against MG with a live MG vaccine were included in this study. The samples taken included whole blood and esophageal, choanal and tracheal swabs. The blood was used for agglutination and hemagglutination inhibition tests for antibody detection. MG and/or MS DNA were extracted and purified using a high throughput DNA extraction system. Molecular detection was accomplished by real time PCR. Two positive samples per flock were selected for DNA sequencing of the VlhA, mgc2, and IGSR genes for further confirmation and phylogenetic analysis. Comparative results evaluating the choanal slit as an alternative sampling site for Mycoplasma molecular detection are presented.

Session A, Wednesday, July 23, 2008
8:30−8:45 AM

Coccidiosis Vaccination Improves Feed Conversion in Turkey Toms.

Eng H. Lee, Vetech Laboratories Inc. Guelph Canada

Performance of two paired-barn studies on turkey toms, one vaccinated and one medicated against coccidiosis 16 years apart, are compared to show that feed conversion can directly linked to different coccidiosis control. Similar differentials in average body weight and feed conversion were observed for both studies even though they were conducted 16 years apart (1989 & 2005) and with poults grown on different formulation of feed as well as genetics. Because antibiotics or prebiotics when given was added to the feed of both test barns. The differentials could therefore only be the result of using different methods of coccidiosis control with vaccination performing 19 points better in feed conversion than medication. This Observation is supported by performance of turkey toms in Ontario, Canada.

8:45−9:00 AM

Passive protection against multiple *Eimeria* species by orally administered hyperimmune egg yolk antibodies.

Lillehoj, Hyun, Park, Dongwoon, Morales, Andres, and Lucio, Eduardo.
Animal Parasitic Diseases Laboratory, ANRI, USDA-ARS, Beltsville, MD 20705, U.S.A., Investigacion Aplicada, S. A. de C.V (IASA), Puebla, Mexico.

Egg yolk powder containing high titer antibodies against *Eimeria* parasites (IgY-E) was used to successfully induce passive immunity against *Eimeria.* Broilers chickens fed standard diets supplemented with various doses of hyperimmune IgY-E powder showed significantly lower fecal oocyst production and improved body weight gain compared to non-treated control birds following challenge infection with 3 different *Eimeria* oocysts. These results provide a promising new method to confer protection against coccidiosis.

Session A, Wednesday, July 23, 2008
9:00–9:15 AM

Eimeria praecox: New observations on its gross pathology in chickens

P. C. Allen, M. C. Jenkins, G. C. Wilkins
USDA/ARS/ANRI/APDL, Beltsville, Maryland 20705

In chickens challenged with 5 x 10^4 oocysts, an inflammatory response in the duodenum and jejunum began at Day 1 post challenge (PC), and was associated with increased plasma levels of NO_2^-+NO_3^- which peaked at Day 4 PC. Plasma carotenoids levels were depressed Days 4 through 6 PC. Plasma NO_2^-+NO_3^- decreased to control levels by Day 6 PC. These observations can be linked to life cycle development of *E. praecox* and show that the acute host response to primary infection with *E. praecox* occurs earlier than in experimental infections with other *Eimeria* sp.

9:15–9:30 AM

Eimeria praecox prevents *E. maxima*-associated clinical coccidiosis in chickens

Mark C. Jenkins, Patricia Allen, Katarzyna B. Miska, Spangler Klopp
Animal Parasitic Diseases Laboratory, ARS, USDA

The purpose of the present study was to characterize the interaction of *Eimeria praecox* with the 3 predominant species of *Eimeria* (*E. acervulina*, *E. maxima*, *E. tenella*) found in commercial broiler operations and present in live oocyst vaccines. These studies revealed that *E. praecox* excysts rapidly and has a much shorter patent period compared to other *Eimeria* species. Infection of chickens with only *E. praecox* produced a slight, yet insignificant effect on growth parameters with neglible intestinal lesions. Coinfecting chickens with *E. praecox* and *E. maxima* provided a significant improvement in clinical coccidiosis parameters compared to *E. maxima* infection alone.

9:30–10:00 AM **BREAK**

Session A, Wednesday, July 23, 2008
10:00−10:15 AM **Moderator: Gabriel Senties-Cue**

Field Comparison of an *In Ovo* Coccidiosis Vaccine, Inovocox™, and an Ionophore Coccidiostat

Andrea Sinclair Zedek, David G. Kelly, Christopher J. Williams, and Jonathan L. Schaeffer
Pfizer Inc, Poultry Health Division

Inovocox™ is a USDA licensed, sporulated oocyst vaccine composed of two strains of *Eimeria maxima* and one strain each of *Eimeria acervulina* and *Eimeria tenella*. Inovocox™ was compared to an ionophore coccidiostat, narasin, in five paired house trials, which were set up on five different commercial broiler farms in two disparate areas of the USA. Birds were grown to 50-64 days of age. Livability, average weight, and feed conversion parameters were compared between the two groups.

10:15−10:30 AM

Influence of Diet on Oocyst Output and Intestinal Lesion Development in Coccivac®-D Vaccinated Replacement Broiler Breeders.

L. Oden[1*], J. Lee[1], S. Pohl[1], S. Young[2], C. Broussard[3], and D. Caldwell[1]

[1]Department of Poultry Science, Texas A&M University; [2]Pilgrim's Pride Corporation; [3]Schering-Plough Animal Health

An experiment was conducted to investigate the effect of diet on oocyst output and lesion development in male and female replacement broiler breeders of two different genetic strains. Dietary formulations were based on either breeder specific recommendations or formulations of a broiler integrator. Fecal material was collected from 6 to 41 days of age for oocyst per gram determination. Oocyst output peaked at 16 days of age and gross intestinal lesion score was predictive of oocyst output. Dietary interactions were observed where the magnitude or duration of oocyst output was influenced by diet in both male and female genetic lines.

Session A, Wednesday, July 23, 2008
10:30−10:45 AM

Eimeria mivati prevalence in US

S. Fitz-Coy, J. Schrader, D. Huguchi and C. Broussard
Schering-Plough

E. mivati was first isolated in 1959 from poultry farms in Florida. During the early years Dr. S. Allen Edgar reported incidences as high as 50%. From 2003 to 2007 observations from necropsy sessions and litter samples from chicken houses, produced oocysts that 20% morphologically conformed to the parasite described by Edgar as *E. mivati.* In pathological studies using coccidia-naïve chickens inoculated with semi-purified material, produced mortality that ranged from 20 to 50%.

10:45−11:00 AM

Molecular Characterization of *Eimeria mivati*

J. Schrader, D. Higuchi, S. Cook, S. Fitz-Coy, A. McGowan, A. Oetting and G. Petersen

Schering-Plough Animal Health Corporation

556 Morris Ave, Summit, NJ 07901

Phylogenetic analysis has shown that *Eimeria mivati* (Emv) is most closely related to *E. acervulina* (Eac) and *E. mitis* (Emi) among chicken coccidia. Clear physical and immunologic differences exist between the species, supporting the hypothesis that immune selection could select for a subpopulation of Emv that was also genetically distinct. Eac hyperimmunized chickens were challenged with Emv. Shed oocysts were purified, single oocysts isolated and inoculated into chickens. SOI inoculations that yielded detectable oocysts were expanded in chickens. The resulting pools were screened by PCR amplification of the 18S ribosomal gene and restriction enzyme digest. Two Emv isolates yielded unique digestion patterns. Sequence analysis of the 18S ribosomal DNA fragments from these 2 isolates matched the published sequence for Emv.

11:00−11:15 AM

Development of energy models to predict the impact of coccidiosis challenge on gravimetric and calorific cost in growing broilers.

R. G. Teeter*[1], A. Beker[1] C. Brown[1], C.Broussard[2], S.Fitz-Coy[2], J.Radu[2] and L. Newman[2]

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Broilers reared in calorimetry chambers were used to model coccidiosis lesion scores with metabolic, digestive and performance variables. A classical energetic model incorporated maintenance and energetic efficiency of protein and lipid accretion to closely predict energy consumption of nonchallenged birds. The application of this model has always failed with coccidiosis challenged birds. Addition of lesion scores to this energetic model created numerous ($P<.05$) mathematic formulae that improved the ability to predict energy consumption for challenged birds. In summary, models converting coccidiosis lesion scores into gravimetric and calorific cost have been developed in growing broilers 20 to 48 days of age.

11:15−11:30 AM

Application of coccidiosis-modified energy models to evaluate the impact of low-level lesion scores on broiler performance.

L. Newman, R.G. Teeter, A. Beker, C. Brown, C. Broussard, S. Fitz-Coy and J. Radu

Schering-Plough Animal Health, Summit, NJ

Predictive models (Teeter, et al.) were utilized to estimate the impact of coccidiosis on broiler metabolic rate, excreta energy loss, appetite suppression, average daily live gain and feed conversion ratio at 6 separate points from day 20 to day 48. The adverse impact of coccidiosis correlated with increasing lesion scores, as expected. But the adverse effect also increased with broiler age for each lesion score category. Laboratory models are compared with actual data from on-farm studies comparing coccidial oocyst shedding and daily weights from in-house scales. The laboratory models appear to successfully predict low-level coccidiosis challenge impact on broiler performance.

Session A, Wednesday, July 23, 2008
11:30−11:45 AM

Molecular and morphological characterization of *Eimeria* in game birds.

Miska, KB, Schwarz RS, MacFarlane B, Pendleton E, Jenkins MC
USDA/ARS, APDL

Coccidiosis is generally known as a disease of economic importance in chickens. However, *Eimeria* species also negatively impacts the game bird industry. Here we present data generated from litter samples collected from two farms experiencing coccidiosis in chukars and pheasants. From morphological descriptions and molecular characterization of three genomic regions, we conclude that in these samples a single species of *Eimeria* was primarily responsible for coccidiosis in chukars, while a distinct species is observed in pheasants. This data represents the first molecular characterization of *Eimeria* in game birds, and lays the groundwork for developing future vaccines.

11:45−12:00 PM

In Vitro Development of Avian Coccidia in Three Macrophage Cell Lines

R.H. Fetterer, K.B. Miska, P.C. Allen, R.A. Dalloul, and R.C. Barfield
Animal Parasitic Diseases Laboratory, USDA/ARS, Henry Wallace Beltsville Agricultural Research Center, Beltsville, Maryland USA

Invasion and early intracellular development are key events in establishing immunity to coccidia. Three widely used chicken macrophage cell lines (NCSU, HD11 and HTC) were used to investigate the in vitro growth and development of *Eimeria tenella* and *E. acervulina*. In all three cell lines*, E. tenella* invaded and developed to schizont stage by 48 hrs and first stage merozoites were evident after 72 hrs. *E. acervulina* did not invade any of the cell lines and neither schizonts nor merozoites were observed. However, cells stained intensively for a parasite protein suggesting phagocytosis of parasites or parasite proteins.

12:00 PM **ADJOURN**

Session B, Wednesday, July 23, 2008
8:00−8:15 AM **Moderator: Patricia Wakenell**

Delivery of Rapid Nuclear Imported and High-level Expressive DNA Vaccine Vector by Using Attenuated *Salmonella* Displaying Programmed Lysis

Wei Kong, Xiangmin Zhang, Shifeng Wang and Roy Curtiss III
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We developed a non-viral DNA vaccine vector possesses a regulatable *araC*P_{BAD} activator-promoter complex controlling the in vitro/in vivo expression of two genetically modified genes necessary for synthesis of the rigid layer of the bacterial cell wall. Since gene expression from non-viral DNA vaccine vectors in vivo remains much lower than observed with their viral counterparts, SV40 enhancer as a DNA nuclear targeting sequence for vector nuclear import and SV40 poly A to increase the resistance to nuclease were inserted to enhance the effectiveness of DNA vaccine vector. Influenza virus antigens were using to evaluate the DNA vaccine host-vector delivery system.

8:15−8:30 AM

Isolation and Differentiation of Mesenchymal Stem Cells from Chicken Bone Marrow

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College of Veterinary Medicine, University of Minnesota, Saint Paul, MN 55108

Mesenchymal stem cells (MSCs) are pluripotent progenitor cells found in bone marrow that have the capacity of differentiating into bone, cartilage, fat, muscle, and other tissues. Chicken MSCs were isolated from 1- to 2-week-old chickens. Microscopically, the cultured cells showed morphology resembling fibroblast and divided actively. The multilineage differentiation potential of chicken MSCs was revealed by their ability to undergo adipogenic and osteogenic differentiation. Like mammalian MSCs, chicken MSCs also had immunoregulatory activity and inhibited in vitro mitogenic response of T cells. The inhibition of mitogenic response of T cells was possibly mediated by production of nitric oxide (NO) and prostaglandins in cultures containing MSCs and T cells. Our data show for the first time that MSCs can be isolated from chicken bone marrow and these cells are capable of in vitro multiplication and multilineage differentiation thus making them a suitable model in the field of stem cell research.

Session B, Wednesday, July 23, 2008
8:30−8:45 AM

Compatibility of Recombinant Herpesvirus of Turkeys Vaccines

Alecia Godoy[a], Motoyuki Esaki[a], Katalin Varga[a], Peter Flegg[a], Kristi Moore Dorsey[a], Sandra Rosenberger[b] and John K. Rosenberger[b]
CEVA Biomune[a] and Aviserve[b]

To answer whether recombinant herpesvirus vaccines can be administered together without affecting Marek's, infectious bursal disease or Newcastle Disease protection, interference studies will be presented in which vaccines were administered in various combinations with and without SB-1.

8:45−9:00 AM

First detection of very virulent form of Bursal Disease Virus (vvIBDV) in Peru

B.Alva[1], E.Icochea[2], Y.Gardin[1], V.Palya[1], X.Castropozo[1],P.Cruz[1]
[1] Ceva Sante Animale, [2] San Marcos University, Lima - Peru

Gumboro disease is recognized in all poultry industry in Peru, where previously were identified classical and variants A and E strains.
Since 2004, clinical cases of IBD with high mortality were reported in broilers and layers from a south-east region of the country (Puerto Maldonado). Bursa samples taken on August 2007 from affected flocks were sent to Ceva-Phylaxia lab (Budapest, Hungary) where by RT-PCR and Sequencing of the 721-1128 bp segment on the hypervariable region of the vp2 gene of IBDV was confirmed the presence of vvIBDV. Genetic identity with many vvIBD viruses showed a closest relation with Brazilians vvIBDVs.

Session B, Wednesday, July 23, 2008
9:00−9:15 AM

Evaluation of priming with in ovo DNA vaccine and boosting with killed vaccine strategies for protective immunity against IBDV and effects of plasmid-encoded chicken interleukin-2 and chicken interferon-γ

Jeong Ho Park, Haan Woo Sung, Hyuk Moo Kwon

Department of Veterinary Microbiology, School of Veterinary Medicine, Kangwon National University, Chunchon 200-701, Republic of Korea

We have established priming with in ovo DNA vaccine and boosting with killed vaccine strategies for protective immunity against IBDV in chicken and tested effects of plasmid-encoded chicken interleukin-2 and chicken interferon-γ. Plasmid DNA vaccine either alone, or in combination with cytokine genes were injected into the amniotic sac at day 18 of embryonation followed by an intramuscular injection of killed IBD vaccine at 1 week of age and chickens were orally challenged with very virulent IBDV SH/92 strain at 3 weeks of age and observed for 10 days. DNA vaccine alone - killed vaccine and DNA vaccine plus chicken interleukin-2 – killed vaccine groups showed higher protective rate than other groups. In ovo DNA vaccine and boosting with killed vaccine strategies seem to be effective method for protection against IBDV in chicken.

9:15−9:30 AM

Effect of *in ovo* Exposure to Virulent and Vaccine Strains of Infectious Bursal Disease Virus on Embryonal Immune Cells

J. M. Sharma, M. Khatri and M. Mutnal
College of Veterinary Medicine, University of Minnesota
1971 Commonwealth Avenue, St. Paul, Minnesota U.S.A

Embryonated chickens eggs at embryonation day (ED) 18 were exposed to virulent and vaccine strains of IBDV. At ED21, embryonic tissues and lymphoid cells were examined. Virulent IBDV caused extensive destruction of bursa and thymus. Virus was localized in both tissues, the incidence of apoptosis was enhanced and total recoverable cells from the thymus were reduced. The vaccine strain of IBDV caused minimal and often undetectable damage to the bursa or the thymus. Neither virus caused detectable alterations in the relative proportions of T cell subsets in the thymus or the spleen. Thymocytes from the virulent IBDV-exposed embryos were deficient in mitogenic response to T cell mitogens. The mitogenic response of vaccine-exposed embryos was unaffected and was similar to that of controls. Bursal and spleen cells from virulent or vaccine strain-exposed embryos were activated and showed marked upregulation of a battery of T cell cytokines and other cell activation-associated factors.

Session B, Wednesday, July 23, 2008

9:30−10:00 AM **BREAK**

Session B, Wednesday, July 23, 2008
10:00−10:15 AM **Moderator: Pedro Villegas**

Reverse Genetics as diagnostic tool for analysis of antigenicity of Infectious bursal disease virus

Egbert Mundt, Aswani Vunnava, Alan Icard, and Holly Sellers
Poultry Diagnostic and Research Center, College of Veterinary Medicine
The University of Georgia, 953 College Station Rd., Athens, GA.

Vaccination strategies against IBDV are defined by the antigenic properties of field strains. To gain more insight in the relation between antigenic phenotype and molecular genotype the reverse genetics system was used. The neutralizing epitopes containing VP2 of IBDV was cloned into segment A backbone. The resulting chimeric segment A was used for transfection of in vitro transcribed cRNA into eukaryotic cells. The antigenicity was investigated by immunofluorescence using a panel of monoclonal antibodies (mAb) characterizing antigenic subtypes of IBDV. Using this method IBDV field strains with an unknown antigenic subtype were detected.

10:15−10:30 AM

Cellular proteins interact with VP3 of Infectious bursal disease virus during replication

Ruth Stricker and Egbert Mundt
Poultry Diagnostic and Research Center, College of Veterinary Medicine
The University of Georgia, 953 College Station Rd., Athens, GA.

Four cellular proteins of chicken origin which normally reside in the cellular nucleus have been cloned and expressed in the baculovirus system. Using newly established polyclonal antisera directed against the purified recombinant cellular proteins and IBDV-specific monoclonal antibodies co-localization of IBDV VP3 with certain cellular proteins has been detected in the cytoplasm of infected cells. Due to cross-reactivity of the sera with appropriate cellular proteins of other species (quail, monkey) it was observed that this phenotype was not species-specific. In addition the presence of the cellular proteins in the cytoplasm has also been detected in interferon-negative Vero cells.

Session B, Wednesday, July 23, 2008
10:30−10:45 AM

Efficacy and seroconversion of various IBD vaccination programs in broiler breeders: seroconversion and IBD progeny challenge results

Enrique R. Montiel[1], Nikki Pritchard, Julio Cruz-Coy, Elleen Katigbak and David D. Smith
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Groups of broiler breeders were vaccinated with a vectored HVT+IBD vaccine and re-vaccinated with a commercially available inactivated IBD vaccine or vaccinated with a conventional live+ killed IBD program. Serum samples were collected at 26, 30, 40 and 50 weeeks of age using three different ELISA kits. A progeny challenge test was conducted when the hens were 30 and 50 weeks of age. The IBD titers obtained were variable depending on the ELISA kit used. The progenies from breeders receiving a vectored vaccine and one inactivated boost showed better protection against challenge with various IBD virus strains

10:45−11:00 AM

Point Mutations that affect Pathogenicity in Classic Infectious Bursal Disease Virus

D.J. Jackwood, B. Sreedevi, L.J. LeFever, and S.E. Sommer-Wagner
Food Animal Health Research Program, Ohio Agricultural Research and Development Center, The Ohio State University, Wooster, OH 44691

Two classic infectious bursal disease virus (IBDV) strains GA-1 and H-30 caused significant gross and microscopic lesions in specific-pathogen-free chicks. The lesions and bursa/body weight ratios were consistent with classic pathogenic strains of IBDV. The viral genomes of these two classic strains were sequenced in their entirety and compared to sequences of attenuated strains of IBDV. All the attenuated strains examined had identical genome segment B sequences and compared to these viruses, the GA-1 and H-30 isolates each had one silent mutation in the gene that encodes VP1. When genome segment A sequences of the GA-1 and H-30 viruses were compared to the attenuated viruses, three nucleotide mutations in GA-1 and four in H-30 were observed. These nucleotide mutations caused one amino acid (H253N) change in the GA-1 virus and two amino acids (H253Q and G259D) were different in the H-30 virus. The data suggest that GA-1 and H-30 are genetically related and have a common ancestor even though they were isolated from geographically distant flocks in Ohio and Iowa. Molecular and pathogenicity study data indicate that a single amino acid mutation from Histidine (H) to Glutamine (Q) or Asparagine (N) at position 253 in VP2 was responsible for the increased virulence of GA-1 and H-30 compared to the attenuated classic viruses examined.

Session B, Wednesday, July 23, 2008
11:00−11:15 AM

Efficacy Studies of a HVT Vector Expressing Laryngotracheitis Virus Genes

Lauren Jensen, CEVA Biomune
Co Authors: Motoyuki Esaki, Peter Flegg, Kristi Moore Dorsey, Sandra Rosenberger and Jack Rosenberger

These studies were conducted using a turkey herpesvirus expressing the gB gene of laryngotracheitis virus. Efficacy of the recombinant vaccine in SPF chickens and commercial chickens by either the *in ovo* or SQ administration, against the laryngotracheitis virus challenge will be presented.

11:15−11:30 AM

Challenge Study for the Evaluation of Protection Induced by Recombinant HVT-LT Vaccine against a Current Infectious Laryngotracheitis Virus (ILTV) Isolate

Andrés Rodriguéz-Avila[1], Sylva M. Riblet[1], and Maricarmen García[1]
Poultry Diagnostics and Research Center, Department of Population Health, College of Veterinary Medicine, University of Georgia, Athens, GA. 30602

The protection induced by the recombinant HVT-LT (INNOVAX-ILT) was evaluated in commercial broilers by clinical signs, mortality, body weight gain, and viral DNA detection. Twenty *in-ovo* vaccinated broilers were obtained from the field and challenged at 37 days of age with group VI genotype virus. Other group of 20 none-vaccinated broilers was divided in two groups of 10 chickens and used as positive and negative controls. Eye-conjunctiva and tracheal swabs were collected from day 2 to 11 post-challenge for real time PCR. Clinical signs and mortality were scored up to 11 days post-challenge. Body weight was recorded at 28, 37, and 49 days.

Session B, Wednesday, July 23, 2008
11:30−11:45 AM

Recurring Outbreaks of Infectious Laryngotracheitis: Investigating Knowledge Gaps

Nathaniel L. Tablante
VA-MD Regional College of Veterinary Medicine
University of Maryland College Park

Infectious Laryngotracheitis, an acute respiratory disease of chickens caused by a herpesvirus, occurs worldwide in major poultry production regions and causes severe economic losses. Epidemiologic investigations of past and recent outbreaks in the United States and other countries point to common sources of infection such as recovered or vaccinated birds and contaminated people and equipment. Although much progress has been made in terms of biosecurity and other prevention and control measures, knowledge gaps such as the role of reservoir hosts (wild animals and backyard flocks); vaccine type, dose, route of administration, and timing; and virus latency and incubation period still need to be thoroughly investigated.

12:00 PM **ADJOURN**

INSTRUCTIONS FOR POULTRY POSTERS PRESENTION

The following is specific information about the 2008 AVMA/AAAP Poultry Poster Presentation:

Location of the Poultry Posters Presentation:
Earnest N. Morial Convention Center, Room 395-396

Dates/Times of the Poultry Posters Presentation:
Sunday, July 20 – 8:00 AM – 4:50 PM
Monday, July 21 – 8:00 AM – 4:50 PM
Tuesday, July 22 – 8:00 AM – 4:50 PM

NOTE: Posters must be set up before 8:00 AM on Sunday, July 20 and removed promptly on Tuesday, July 22 by 4:50 pm.

Your poster number can be found at the top of your Poultry Poster Presenter Agreement page included in your confirmation packet.

Dimensions: Size of the Mounting Board for Poster: 4 feet X 8 feet (48 inches x 96 inches). All posters must fit within the outer edges of the board. All boards will be double-sided, so another presenter may be mounting a poster on the other side of the board at the same time.

General Information:

- Your poster presentations must be available for viewing during the hours scheduled by the Poultry Poster Section.
- Handouts are permitted. *Sale of any material is strictly prohibited*.
- Poster sessions are intended to serve as informal discussions and not as lectures or paper reading sessions.
- Pushpins will be available in the poster areas. Please do not write or paint on the poster boards.
- Projection equipment and electrical outlets will not be provided in the poster session area.
- One (1) complimentary convention registration will be provided for the primary author of each poster.

AAAP POSTERS

AVIAN INFLUENZA

1.

Susceptibility and Clinical Description of Severe H5N1 Avian Influenza in Some Domestic and Pet Birds

Salah MOUSSA
Dept. of Poultry Dis. Fac. Of Vet. Med. Assiut Univ. Assiut EGYPT

Natural cases of highly pathogenic H5N1 avian influenza were diagnosed in chickens, turkeys, ducks, budgerigars, zebra finches, and fisher`s love birds. Infection was severe and fatal in chickens and turkeys and manifested with septicemia. Infection in ducks was subclinical but some cases showed nervous signs and moderate mortality rate. Budgerigars and zebra finches showed sinusitis, facial swelling and low mortality. while fisher`s love birds showed transient depression, greenish diarrhea and respiratory distress. Infection was confirmed withAGP test as well as rapid kits for immunochromatographic qualitative detection of AI virus and H5 antigen on tracheal and cloacal swabs.
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2.

Estimation of protective antibodies in yolk and offspring of ducks vaccinated with H5N1 and H5N2 inactivated influenza vaccines.

Ghada MOUSSA
Assiut, Egypt

The duration of immunity was investigated by detecting the HI antibody of birds hatched from vaccinated dams. Ducklings were monitored until HI titres were down to zero. Results have shown that the maternal antibody declines in a smooth curvilinear manner with a half-life of about five days. The duration of maternal antibody protection at which the flock was becoming susceptible seemed to be directly correlated to the initial hatch-day titers. HI titers at day-old ranged from 6.5 to 8.8 log2. No detectable titers were found at 21 days of age. Protective titers were found during the first 2 weeks of life.

3.

Effect of Dose on Immune Response of Ducks Vaccinated with Different Avian Influenza Regimens

By
Heba MOUSSA

Ducks were vaccinated with a commercial H5N2 inactivated oil adjuvant vaccine. The duration of protective immunity in ducks was investigated by detecting the HI antibody of the field vaccinated birds. Results showed that inoculation of single dose of either 0.5 or 1 ml. resulted in undependable low HI titers which did not exceed 3.8 log2. Inoculation of 2 doses each of 1 ml. of the vaccine with 3 weeks interval could induce a 12 weeks protection with a peak HI titer of 7.6 log2, Third poster dose inoculated prior to egg production resulted in high HI titer of 9.2 log2.

4.

Avian Influenza – Immune Response differences between Gender in two different types of chicken

A. García.; R.Salamanca; S. González y E. Gallegos.
Laboratorios Avilab, Porcicultores 80 Tepatitlan, Jalisco, México C.P. 47698

Avian Influenza diseases are a world - wide concern, due to the risk of a possible pandemic. One tool to control it though is through the use of a vaccine and its immune response in chickens.

We used an inactivated vaccine (H5N2) standardized (Single Immune Radial Diffusion) in terms of hemaglutinin per dose to vaccinate commercial layers (egg –type- female and male) and broilers (meat –type - female and male).

The egg type Male had the highest immune response after 4 wks post –vaccine using HI assay (871 M.G) the Female meat type had the lowest immune response (285 M.G.)

To control the diseases it is important to know the immune response in vaccinated chickens

We do not know, why the males in both types of chickens had the best immune response.

5.

Genetic Characterization of Triple Reassortant H1N1 Influenza Virus

Yassine H.M., Lee C.W., Zhang Y., Saif Y.M.

Before 1998, classic swine H1N1 lineage viruses were the dominant cause of influenza in pigs in the United States (U.S.). Since 1998, a new lineages of double and triple reassortant influenza viruses have been isolated from pigs in the U.S. Triple reassortant viruses with genes from human (HA, NA, and PB1), Swine (NP, M, and NS) and avian viruses (PA and PB2) included three subtypes: H3N2, H3N1 and H1N2. Similar viruses are continuously isolated from turkey breeder hens experiencing drops in egg production in the U.S. and Canada. In 2007, we isolated a new lineage of triple reassortant influenza viruses (H1N1) from pigs in Ohio with influenza like symptoms. Genetic analysis revealed that the new isolate had six genes (PB2, PB1, PA, NP, M, and NS) similar to the triple reassortants viruses currently circulating in turkeys and pigs in the U.S. and Canada. The new virus had the Hemaglutinin (HA) and Neuraminidase (NA) genes most similar to the HA and NA genes of A/swine/MN/16419/01 (H1N2) and A/swine/Iowa/17672/88 (H1N1) respectively. The new virus will be compared using genetic tools to recent H1N1 isolates from human and pigs isolated in Ohio.

6.

The Influence of Immunogenomics on the Innate Immune Response to Avian Influenza-Comparison of Toll-like Receptor 7 and Cytokine Responses Between Chickens and Ducks

D. R. Kapczynski, A. L. Smith, V. Philbin, K. Liljebjelke, and M. Pantin-Jackwood
Southeast Poultry Research Laboratory, United States Department of Agriculture, Athens, GA 30605, USA

The early responses of the innate host defense are dedicated to the containment of pathogens, holding infections to a level that can be resolved by the ensuing acquired immune mechanisms. Toll-like receptor (TLR) family members are responsible for initiation of the innate immune response. In particular, TLR7 has been shown to respond to ssRNA viral genomes. To explore the differences in innate immune responses between chickens and ducks, sequence analysis of TLR7 was performed and compared with cytokine induction following highly pathogenic AI infection. Differences in the TLR7 gene and cytokine responses were observed between chickens and ducks.

7.

Nutrient synergy in alleviation of specific signs and lesions produced by H9N2/*E.coli* in broilers

Elie K. Barbour, Fouad Mastouri, Honssam Shaib, Ryan Yaghi and Rana Sawaya
Department of Animal Sciences, American University of Beirut, Lebanon

The objective of this work is to attempt to alleviate specific signs and lesions produced in broilers by controlled challenge with constant level of H9N2 virus followed by high or low levels of *E.coli* exposure, using a nutrient synergy of nine molecules. Performance parameters of mortality, weight, and feed conversions are compared in six differently treated groups, including controls. In addition, seven clinical signs and nine lesions were examined, and their frequency compared statistically among the six treatments. Results and discussion will be concluded and presented.

8.

Sequencing and mutational analysis of the non-coding regions of influenza A virus

Leyi Wang, Keumsuk Hong, Chang-Won Lee
The Ohio State University, Food Animal Health Research Program, Wooster, OH

The genome of influenza A virus consists of eight negative-stranded RNA segments which contain one or two coding regions flanked by the 3' and 5' non-coding regions (NCR). The NCR plays an important role in the replication cycle of influenza A virus. This study was designed to sequence the NCRs of different influenza A viruses and evaluate their role in transcription. We sequenced the NCRs of seven influenza A virus strains of different host origin and varying pathogenicity using a T4 RNA ligase based strategy. We found that differences were present not only in the non-conserved sequences of the NCRs, but also in the presumably conserved sequences among these different viruses. We then introduced mutations in the NCRs of different segments to test mutational effect of the NCRs on transcription using a green fluorescence protein (GFP) marker. The different combination of mutations introduced in the 3' and 5' NCRs of PB1 and PA gene clearly altered the transcription efficiency. The role of NCRs in transcription, and thus in replication and pathogenicity of influenza virus, will be further elucidated through additional experiments.

9.

Pathogenesis, Virus Shedding and Serologic Response of Selected Domestic Avian Species Against Low Pathogenic Avian Influenza (LPAI) Wild Bird Isolates

Antonio C. Morales Jr., Deborah A. Hilt and Mark W. Jackwood
Poultry Diagnostic and Research Center, Department of Population Health,
The University of Georgia, Athens, Georgia 30602

Free living birds are considered the natural reservoirs of low pathogenic avian influenza (LPAI) viruses. The potential of these LPAI viruses to transmit to and cause disease in domestic poultry and its ability to persist and evolve into highly pathogenic avian influenza (HPAI) viruses necessitate biological characterization by pathogenesis, virus shedding and serologic response studies in commercial poultry. Such will provide relevant insights and/or complement strategies laid out for the prevention and control of avian influenza in domestic poultry. Experimental results generated from inoculating a number of LPAI isolates in selected domestic avian species will be reported.

10.

Evaluation of Low Path Avian Influenza Viruses of Wild Bird Origin in Commercial Turkeys and Broiler Chickens

B. Ladman[A], C. Pope[A], J. Gelb, Jr.[A], R. Slemons[B], and C. Driscoll[C]
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Avian Biosciences Center, University of Delaware, Newark, DE 19716
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The Ohio State University, Columbus OH 43210
[C]Fish and Wildlife Health Program
Maryland Department of Natural Resources
Cooperative Oxford Laboratory, Oxford, MD 21654

The pathogenicity of wild bird origin low path AIV isolates was determined for commercial turkey and chickens. The isolates, representing subtypes H5N1, H7N3, H6N2, and H3N6, were recovered from swabbings or feces from waterfowl or shorebirds in the Delmarva Peninsula region. The viruses used in this study were not pathogenic for two-week-old meat type turkeys and broiler chickens based on clinical signs and microscopic lesions. However, virus was recovered from the trachea and cloaca up to 7 days post inoculation.

11.

DNA Barcoding: Preliminary studies with Avian Influenza virus

Dipu Mohan Kumar, Ion Mandoiu, Craig Nelson, Mazhar Khan, Sankhiros Babapoor
Department of Pathobiology and Veterinary Science,
University of Connecticut, Storrs, CT 06269-3089

DNA Barcoding is a taxonomical tool for the characterization of species of an organism using a short DNA sequence from a standard position in the genome. Viruses, as a class of organism are polyphyletic in origin having a number of independent origins at different times and thus species differentiation of all the existing viruses based on a single gene sequencing approach may not be possible. Avian Influenza viruses belong to the Influenza type A viruses of the family Orthomyxoviridae. It is a highly mutable virus, with Haemagglutinin (HA) and Neuraminidase (NA) genes being the most susceptible for mutation. In this study, we try to differentiate the various subtypes of Avian Influenza virus using subtype-specific primers in a multiplex fashion. The assay helps to easily and efficiently differentiate between the common avian influenza subtypes.

12.

Highly pathogenic avian influenza (HPAI) virus of subtype H5N1 in Europe

Jeanne Brugère-Picoux, professor, National veterinary school of Alfort,
94704 Maisons-Alfort. France

At the date of 15th December 2007, the HPAIV H5N1 virus remains a problem as it is still circulating in Asia, notably in China and Indonesia and Africa. In Europe, the pathogenic agent had been brought to the western Europe (in particular Germany and Austria) by non-migratory birds, notably mute swans, pushed westwards during a cold spell in January 2006 but also by trade. New outbreaks are notified in 2007 (Czech Republic, Hungary, United Kingdom, Germany…). The new focus find in December 2007 in England is intriguing.

13.

Species-Specific Responses to Infection with Avian Influenza

Calvin L. Keeler, Jr., Michele N. Maughan, Jack Gelb, Jr., Lorna Dougherty
Department of Animal and Food Sciences, University of Delaware, Newark, DE 19716-2150

A 4,959 element cDNA microarray has been designed and created for the purpose of examining the avian immune response at the transcriptional level (Keeler et al., 2007). Over 80% of the elements on this microarray, including cytokines and genes involved in the innate immune response, have been found to hybridize to fluorescently-labeled aRNA derived from the spleens of turkey and duck. These results enabled us to examine and compare at the transcriptional level the immune response of chickens, turkeys, and ducks exposed to avian influenza (H7N2 Hobo). Although across species a common core set of elements responds to infection with this virus, species-specific differences in the immune response were also observed.

14.

Phylogenetic Analysis of the Hemagglutinin and Neuraminidase genes of Avian Influenza Viruses Isolated from Migratory Birds in Korea during 2006-2008

Byun, Seong-Hwan, JH Shin, JY Yi, HM Jung and IP Mo
College of Veterinary Medicine, Chungbuk National University, Chungbuk, Korea

Generally, the migratory wild birds transmit and propagate the variety of avian influenza (AI) viruses without any clinical signs. Also, thes viruses were easily mutated by antigenic shift or drift when infected in the domestic birds. Therefore, continuous monitoring the AI virus in the migratory habitat is very important. This study has been conducted to isolate and characterize the AI viruses in the most popular migratory habitats throughout Korea. By this time, several serotypes of AI viruses such as HA5, HA6, HA7, HA8, HA9, and HA10 were detected from total 3,292 samples assessed from 2006 to 2008.

15.

Phylogenetic Analysis of Avian Influenza Viruses Isolated in the Areas Mixed with Duck Farms and Migratory Bird Habitat

Kim, Hwan-hee, JM Park, JJ Lee, SH Byun, HS Kim and IP Mo
College of veterinary Medicine, Chungbuk National University, Chungbuk, Korea

In 2003 and 2006, outbreak of highly pathogenic avian influenza (HPAI) occurred in Korea and migratory birds were supposed as one of the sources of HPAI virus introduction into this country. The population of domestic ducks was also suspected to play important role in the transmission of HPAI virus throughout infected areas during outbreaks. Therefore, we conducted this epidemiological study emphasized on the relationship between domestic ducks and migratory birds by molecular characterization of AI viruses isolated in the areas mixed with duck farms and migratory bird habitat.

16.

Serologic and Genetic Monitoring of Avian Influenza Infection after Use of Inactivated Vaccine (H9N2) in the Layer Farms

Lee, Chang-Hee, YJ Lee, MJ Kim, EO Jeon and IP Mo

College of Veterinary Medicine, Chungbuk National University, Chungbuk, Korea

This study has been conducted to monitor both the efficacy of vaccine and the genetic change of LPAI (H9N2) virus after introduction of inactivated vaccine. The 32 layer farms located at different areas were randomly selected and 14 farms among them were vaccinated against LPAI (H9N2). Both blood samples for antibody titration and fecal samples for virus isolation have been collected at a regular basis. The specific hemagglutinin (HA) gene and neuraminidase (NA) gene of isolated viruses were sequenced and phylogenetically analyzed.

17.

Field Trials of Reassorted H9N3 Inactivated Avian Influenza Vaccine and its Diagnostic Kit in Commercial Layers

Mo, In-Pil, JE Kim, JH Shin, JY Kim, JN Kim and SH Byun
College of Veterinary Medicine, Chungbuk National University, Chungbuk, Korea

To reduce the economic impact induced by low pathogenic avian influenza (LPAI) infection, inactivated vaccine has been used worldwide including Korea. Although most inactivated influenza vaccines was clinically effective, the vaccination cause problem in the surveillance of LPAI outbreak because the antibodies induced by inactivated vaccine could not be differentiated from those by field infection. Therefore, we tried to determine the effectiveness of both the reassorted LPAI vaccine (H9N3) and diagnostic kit, which can differentiate the field exposure from vaccination because the reassorted vaccine (H9N3) has different type of neuraminidase compare to those of field LPAI virus (H9N2).

18.

Efficacy of a Vectored Fowl Pox-Avian Influenza Vaccine Administered *in ovo* to Broiler Chicken Embryos and Challenged with Low Pathogen Virus at 35 days old

Victor M. Petrone*, Wilfrido Pedroza, Diodoro Batalla and Joaquin Delgadillo
*Departamento de Ciencias Pecuarias, Facultad de Estudios Superiores Cuautitlán
Universidad Nacional Autónoma de México
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Avipox vector vaccine (VV) containing avian influenzavirus (AIV) gene H5 (TROVAC AI™) and inactivated avian influenza oil-vaccine (OV) were surveyed. VV was used *in ovo* (IO-VV) and in day old chicks (D-VV) meanwhile OV at ages 1 (OV-1) and 11 (OV-11) days. Chicks were challenged with H5N2 low pathogen AIV (ChV) later. Sentinels, control group (CG) were not treated. ChV was isolated: on 3rd day of post-challenge: IO-VV trachea 5/7, D-VV cloacae 1/7, OV-1 trachea, cloacae 1/7, CG trachea 3/7, cloacae 4/7; on 7th day of post-challenge: IO-VV trachea 1/7, OV-1 cloacae 1/7, CG trachea, cloacae 1/7. No virus found in sentinels.

BACTERIA, MISCELLANEOUS

19.

Development of a Clostridium perfringens alpha toxin (Phospholipase C) antibody ELISA assay using a single serum dilution

Stephan G. Thayer, Charles L. Hofacre, The University of Georgia and Charles Broussard, Schering-Plough Corporation

An ELISA was developed that uses a single serum dilution to measure antibody titers to Clostridium perfringens alpha-toxin (Phospholipase C). This assay replaced a previous version that used serial doubling dilutions to titrate antibody titers. The conversion to the new format reduced test costs and materials consumption by 10-fold and permitted the use of a computer and software to read the plates and manage the data. The new test format increased efficiency by permitting the testing of 90 samples per plate instead of 9 samples using the previous format.

20.

Comparative Microbiological Ecology of the Intestines in Poultry Species

Teresa Y. Morishita and Jonathan Padilla
College of Veterinary Medicine
Western University of Health Sciences
309 E. Second Street
Pomona, California 91766 USA

Understanding intestinal bacteria colonization and shedding patterns among poultry species can provide insight into factors affecting bacterial colonization and excretion. Bacteria, like *Campylobacter jejuni,* play an important role in the incidence of food-borne illnesses and has been shown to colonize the intestines of poultry species such as chickens and turkeys as early as 2 weeks of age. This study examines the intestinal colonization of *Campylobacter* in various avian species to determine if there are species differences in intestinal colonization. Intestines will be cultured for the presence of *Campylobacter* species and preliminary results have indicated trends related to species differences.

21.

Macrolide Characterization of *Campylobacter* from Production Turkeys

Catherine M. Logue, Gregory T. Danzeisen, Julie S. Sherwood, Jessica L. Thorsness, Jason E. Axtman
Department of Veterinary and Microbiological Sciences,
North Dakota State University, Fargo, ND 58105

The antimicrobial resistance of *Campylobacter* recovered from macrolide treated turkeys was assessed using a flock raised for 18 weeks. The flock was treated with macrolide antimicrobials at three intervals during the growout period. *Campylobacter* isolates recovered were assessed to determine the level of resistance to erythromycin using the agar dilution method. Isolates showing high resistance >256 µg/ml were subject to molecular analysis using PCR and restriction digest to detect point mutations of the 23s rRNA and screened for the presence of efflux associated resistance (*cmeABC*).

22.

Genome Sequencing of *Gallibacterium anatis* Causing Peritonitis in Laying Hens

Timothy J. Johnson, Lisa K. Nolan, Darrell W. Trampel, and Yvonne M. Wannemuehler
University of Minnesota
Saint Paul, MN

Gallibacterium is a recently established genus within the family *Pasteurellaceae*, previously reported as *Actinobacillus salpingitidis*, avian *Pasteurella haemolytica*-like organisms, and *Pasteurella anatis*. *Gallibacterium anatis* is a component of the normal flora of healthy birds, but has also been implicated in cases of peritonitis in laying hens worldwide. To better understand the potential role of this organism in avian diseases, we have sequenced the genomes of virulent and avirulent *G. anatis* strains. Here, we identify pathogen-specific genes and examine their distribution among *Gallibacterium* populations.

CHICKEN ANEMIA VIRUS

23.

Field surveillance: level of maternal antibodies and CAV infection at the broiler farm related to condemnations at slaughter.

Beatriz Cardoso, DVM; MSc; ACPV Diplomate
Lohmann Animal Health

21 broiler flocks from the same integration company were monitored.
Blood samples were collected on the farms at 3 days of age and prior to slaughter to monitor IBV, CAV, IBD, MG, MS and REO.
During the rearing time any behavior different from the standards were computed.
Flocks with high CAV titer at slaughter tended to present more condemnations.
High titers at the end was related to low CAV titers at 3 days of age, showing the importance in maternal antibodies titers to reduce field problems when there is CAV field infection.

24.

A Survey of Chicken Anemia Virus Infection in Broilers and Broiler Breeders Using the Polymerase Chain Reaction: 1997-2007

Lanqing Li, PhD, Michael R. Luther, BS, Alicia Wise, BS and Frederic J. Hoerr DVM, PhD.
Alabama Department of Agriculture and Industries, Thompson Bishop Sparks State Diagnostic Laboratory, Auburn, AL 36832

Chicken anemia virus (CAV) can cause acute aplastic anemia, and lymphoid atrophy with high morbidity and mortality rates in young susceptible chickens. The purpose of this study was to determine whether the age of chicken was correlated with the infection by CAV. During 1997-2007, 1,786 samples from broilers and broiler breeders, including spleen, thymus, or bone marrow, variably pooled as like tissues or in combinations, were submitted to Alabama State Diagnostic Laboratory and tested for CAV using PCR. Based on the PCR results, 744 samples (42%) were positive for CAV. Age differences in regards to infection by CAV were analyzed for 1,279 samples. The samples were divided into nine groups by chicken age (week). The statistic results indicate there is a significant correlation between age and CAV infection in broiler chickens among overall groups ($Qcs=236.39$, $P<.0001$). There was no significant difference between age one week and two week groups ($Qcsmh=0.259$, $P<0.6108$). Compared with two week group, CAV infection increased significantly from third week ($Qcsmh=10.2184$, $P<.0014$). From the third week, the CAV infection increased significantly as the age increased. The peak infection rate (89%) occurred in eight-week age group ($p<.0001$). In the group nine (≥ 9 week), the CAV infection dropped significantly ($P<.0001$).

25.

Chicken Anemia Virus and *Escherichia Coli* Coinfection in Broiler Chicken

Lanqing Li, PhD, Michael R. Luther, BS, Alicia Wise, BS, Sam. Christenberry, DVM, Julia Bright, BS and Frederic J. Hoerr DVM, PhD.
Alabama Department of Agriculture and Industries, Thompson Bishop Sparks State Diagnostic Laboratory, Auburn, AL 36832 and Hinton Michem Poultry Laboratory, Hanceville , Alabama 35077.

Infectious chicken anemia virus (CAV)can cause significant economic loss in chickens, especially to the broilers. CAV causes anemia and immunosuppression in susceptible young chickens. The morbidity and mortality are enhanced with secondary bacterial or viral infection. *Escherichia coli* (*E. coli*) is the most common bacteria isolated from field samples collected from broilers and causes a variety of diseases in poultry including yolk sac infection, omphalitis, respiratory infection, septicemia, and cellulitis. In order to understand the correlation of CAV and *E coli* infection, a total 63 samples from broilers were tested by PCR (CAV) and bacteria isolation (*E. coli*). Twenty-eight samples were CAV positive. *E. Coli* was isolated from 26 (92%) of the 28 CAV positive samples. *E. Coli* was isolated from 21 (60%) of 35 CAV negative samples. Compared with CAV negative chickens, *E coli* infection in CAV-positive chickens was 32% higher. These data show that CAV and *E coli* coinfection are common in broilers and also CAV-infected chickens may be more susceptible to *E coli* infection.

E. coli

26.

R Plasmids Found among Emergent APEC Strains

A.-M. C. Overstreet, T. J. Johnson, Y. M. Wannemuehler, C. M. Logue, & L. K. Nolan

Department of Veterinary Microbiology and Preventive Medicine, College of Veterinary Medicine, Iowa State University, Ames, Iowa 50011

R plasmids are common among avian pathogenic *Escherichia coli* (APEC). These plasmids often encode resistance to multiple antibiotics and disinfectants and harbor class 1 integrons. Recent study of APEC isolated over a 30 year period has revealed that R plasmid-containing strains of APEC are emergent. In this study, classic and molecular bacteriologic techniques are used to characterize the plasmids of these emerging strains.

27.

A Novel 16-kb Pathogenicity Island Containing *tkt1* Found Among Avian Pathogenic *Escherichia coli*

Li, G., Kariyawasam, S., Wannemuehler, Y.M., and Nolan, L.K.

Department of Veterinary Microbiology and Preventive Medicine, College of Veterinary Medicine, Iowa State University, Ames, Iowa 50011

Tkt1, a gene encoding a transketolase like protein, was found in a 16 kb genomic island of avian pathogenic *Escherichia coli* (APEC) O1, the first APEC which has been completely sequenced. This gene and the island which it is located on are much more likely to be found in APEC than avian commensal *E. coli*. This distribution is similar to that found among human extraintestinal pathogenic *E. coli*. The association of tkt1 with pathogenic *E.coli* suggests that the tkt1 island may be an as yet undescibed pathogenicity island of APEC. Characteristics of this island will be described.

28.

Distribution of APEC-Like Plasmids and Other Traits among Extraintestinal Pathogenic *Escherichia coli* of Human and Avian Hosts

Y. M. Wannemuehler, T. J. Johnson, & L. K. Nolan

Department of Veterinary Microbiology and Preventive Medicine, College of Veterinary Medicine, Iowa State University, Ames, Iowa 50011

Here, 1,074 extraintestinal pathogenic *Escherichia coli* (ExPEC) isolates were studied for their content of avian pathogenic *E. coli* (APEC)-like plasmids. Specifically, 452 APEC were compared to 91 *E. coli* isolates from neonatal meningitis (NMEC or neonatal meningitis *E. coli*), 464 *E. coli* from UTIs (uropathogenic *E. coli* or UPEC), and 67 *E. coli* from septicemia (septicemia *E. coli* or SEPEC). The avian and human ExPEC showed substantial overlap in terms of serogroups, phylogenetic groups, plasmid replicons, and plasmid-associated virulence and resistance genotypes. This was particularly true in the case of certain sub-pathotypes. Based on these and other results, the potential of ExPEC and their plasmids to be involved in zoonotic disease should be considered.

29.

pAPEC-408: An APEC R Plasmid Harboring a Pathogenicity Island

Lisa K. Nolan, Timothy J. Johnson, Subhashinie Kariyawasam, Yvonne M. Wannemuehler, Ganwu Li, Dianna M. Jordan, and Catherine M. Logue
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Previously, we reported that colicin-encoding virulence plasmids were a defining trait of the avian pathogenic *Escherichia coli* (APEC) pathotype. Often such plasmids are transmissible by conjugation and co-transfer with large multidrug-resistance-encoding R plasmids. Here, we describe the characteristics of a 150-kb APEC R plasmid that harbors a pathogenicity island, containing many of the genes that contribute to APEC virulence. This association of resistance and virulence genes on the same plasmid suggests that use of certain antibiotics and disinfectants, such as heavy metal and quaternary ammonium compounds, may select for more virulent and resistant APEC.

30.

E. coli Plasmid Genome Database: A tool to Study the Plasmids of Avian Pathogenic *E. coli* and Related Bacteria

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Plasmids are key players in avian pathogenic *Escherichia coli* (APEC) virulence and antimicrobial resistance. They are also important in horizontal gene transfer which enables dissemination of drug resistance and virulence traits among bacteria. Here, we describe our use of genomic and bioinformatic approaches to construct a tool, the *E. coli* Plasmid Genome Database, to facilitate worldwide study of plasmids from APEC and related bacteria. This tool allows users to visualize plasmid maps, perform cross-database searches for genes and proteins, perform alignments between plasmids, and perform BLAST searches of sequences within the database.

31.

Virulence of Avian and Human Extraintestinal Pathogenic *Escherichia coli* Assigned to Different Sequence Types

Luke G. Baldwin, Timothy J. Johnson, Yvonne Wannemuehler, Jack Hardy, Paul Mangiamele, Subhashinie Kariyawasam, and Lisa K. Nolan
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Ninety-eight *Escherichia coli* isolates from retail poultry meat, healthy and sick avian hosts, and sick human hosts, were assigned to different sequence types (STs) using multilocus sequence typing for seven housekeeping genes. The virulence of these isolates was then assessed using the *Caenorhabditis elegans* model. Reduced time from inoculation until death of the worms was associated with certain ST groups, regardless of the isolates' origin. These results suggest that ST assignment is more predictive of an *E. coli* isolate's virulence than its origin.

GENERAL DISEASES AND MANAGEMENT

32.

COMPARISON OF MORTALITY/CULLING RATES BETWEEN TWO STRAINS OF BROILERS

Rosa Gonzalez[1],Eliana Icochea[1], John Guzman[1],Pablo Reyna[1], Maria Francia[1]
[1]College of Veterinary Medicine, University of San Marcos, Lima-PERU

The mortality rates of two genetic lines of broiler chickens were compared in three consecutive campaigns during 2004 to 2005. Three hundred and sixty birds (170 males and 190 females) were used for each line, trial and campaign. Culling rates during raising and market times were also registered. An statistically significant difference was found in mortality in the first trial. Line B was more susceptible to lameness and pendulous crop in the three campaigns. Mortality by ascítis, colibacilosis of the respiratory tract, or sudden death by pulmonary edema was similar for both lines.

33.

Morphometric Evaluation of Proliferative Lesions in In-Situ Fixed Chicken Lungs.

Oscar J. Fletcher, H. John Barnes, Michael Martin, and Isabel Gimeno
Poultry Health Management, Department of Population Health & Pathobiology, College of Veterinary Medicine, NC State University, Raleigh, NC 27606.

Image J, a powerful open-source software tool for morphometry, was developed at the National Institutes of Health (NIH), and is available for download from an NIH website (rsb.info.nih.gov/ij/download.html) at no cost. Measurements made using Image J on H&E stained histologic sections prepared from *in-situ* fixed lungs from broiler breeder chickens include volume of respiratory lobules, diameter of parabronchi, thickness of smooth muscle in the walls of atria, depth of infundibulae, and size of granulomas associated with dust and/or plant material. Measurements in thickness of atrial and infundibular walls and of air-blood capillaries due to hypertrophy and hyperplasia of pneumocytes are compared with measurements made on H&E stained histologic sections of *in-situ* fixed lungs from SPF chickens housed in isolation. Results from these morphometric studies further characterize the condition of avian proliferative pulmonary disease described in broiler breeders.

34.

Website Resource Center for Emergency Preparedness, Biosecurity, and Reportable Poultry Diseases Information

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Emergency preparedness, biosecurity, and reportable poultry diseases have gained increased attention and importance based on recent experiences and concerns with events such as exotic Newcastle disease in the Western US, highly pathogenic avian influenza worldwide and H5N1 in Asia and Europe, natural disasters, and concerns of agroterrorism. A website has been established to serve as a resource center for information on these interrelated topics that have become increasingly important operational, management, and planning challenges to poultry producers and poultry health professionals. The goal is to identify and organize relevant available sources of information on a single website to facilitate access.

35.

Application of Plasma Protein Electrophoresis to Poultry Diagnostic

C. Facon, Y. Roman, JL Guerin

Plasma Protein Electrophoresis (EPH) is a diagnostic procedure routinely applied to avian species, mainly psittacines. In poultry medicine, the necropsy is the main procedure performed to identify gross and microscopic lesions and clarify infectious or metabolic conditions. In some particular cases, i.e. when no reliable lesion can be identified, EPH may be an alternative way to clarify if the clinical signs are actually associated with any inflammatory process.
The interest of EPH in poultry diagnostic was evaluated in several poultry species and 3 clinical situations: (i) avian botulism vs. infectious disorders in broiler and meat turkey, (ii) nutritional vs. infectious disorders and (iii) egg drop syndroms in breeders or layers flocks.

36.

Comparative bacterial community analysis of intestines from healthy and sick chickens

Daniel Dlugolenski, A. Pedroso, G. Zavala, M. D. Lee
Poultry Diagnostic and Research Center
The University of Georgia

Since 2004, a wide range of poultry companies in the southern and western United States and Delmarva have characterized a prevalent issue of diarrhea and reduced growth in commercial broilers. These symptoms have finally been linked to the enteric syndrome known as runting/stunting syndrome. Runting/stunting syndrome is characterized by gross and histological intestinal lesions, diarrhea, and cloacal impactions. Broiler populations with runting/stunting syndrome will exhibit huddling, reduced growth, and the house will exude a foul odor probably from the wet litter and undigested feed associated with the syndrome. Runting/stunting syndrome has a significantly detrimental impact on the economics of the commercial broiler industry. A wide array of studies have been done to isolate the causative agent however studies have shown that the syndrome cannot be ascribed to a single agent. One possible cause is pathological changes in the composition of the intestinal bacterial community of affected animals. In order compare the composition of the intestinal bacterial community between affected and unaffected broilers, the distribution of 16s rRNA sequences will be determined. Intestinal content was isolated from healthy and symptomatic broilers. Bacterial DNA was isolated and purified, and DNA was amplified by PCR using universal bacterial primers. Amplicons were cloned using the TOPO TA cloning kit and sequenced. Compositional analysis of intestinal communities will be presented

37.

Identification of viruses present in tissues collected from chickens with Hypoglycemia-Spiking Mortality Syndrome (H-SMS)

James F. Davis, Renaldo Resurreccion, Arun Kulkarni, & Erica Spackman
Georgia Poultry Laboratory, Oakwood, GA 30566

Tissues were collected from selected field cases of severe Hypoglycemia-Spiking Mortality Syndrome (H-SMS) in chickens, which were submitted to the Georgia Poultry Lab in Oakwood, GA, over a ten-year period. The tissues, which included pancreas, liver, intestines, feces, and brains, were first inoculated into yolk sacs of embryonating SPF chicken eggs. Following death of the embryos, they were submitted for virus isolated in tissue culture and for selected PCR's for identification of any viruses present. A summary of our findings will be presented.

38.

Comparison of a Pro-biotic Program and a Growth Enhancing Antibiotic Program in a Commercial Broiler Operation

Tim Cherry DVM , Stephen F. Austin State University
Joey Bray, MS, Stephen F. Austin State University
Quinton Hanssens VMD, Huevepharma

This study was conducted on a modern four house solid wall, environmentally controlled university broiler farm. Houses 1 & 2 (Farm 1) were fed a diet containing a pro-biotic* and houses 3 & 4(Farm2) were fed a diet with a standard growth enhancing antibiotic program**. Four mini-pens were set up in each of houses 2 and 3. Weight and feed conversion was evaluated on days 18, 35, and 48 in each mini-pen. Final farm weights and feed conversions were determined by the integrator company at 49 days of age. In both the mini-pens and farm calculations, there was no statistical difference in weight gain or feed efficiency.

39.

Unusual outbreaks of Infectious Laryngotracheitis in broiler chickens

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University of California, Davis

Infectious Laryngotracheitis (ILT) is a respiratory disease of chickens caused by herpesvirus. It is characterized by hemorrhage in the trachea and inflammation with syncytia and intranuclear inclusion bodies. In a series of outbreaks of ILT in broilers mortality was increased in the flock but the lesions were unusual, increased mucus but no hemorrhage in the trachea. Microscopically there was inflammation and syncytia with intranuclear inclusions deep in the lungs (bronchi and parabronchi), air sacs, oral mucosa and its glands in addition to the lesions commonly seen in trachea, conjunctiva and sinus. ILT virus was difficult to isolate from trachea and lungs but it was identified by PCR and characterized as CEO vaccinal-like.

40.

Tibial Rotation in a Saurus Crane

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Population Health & Pathobiology Department
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Tibial rotation is associated with increased morbidity and mortality in production flocks. Reduced activity and pain due to tibial rotation has been documented. Affected birds typically do not recover and either die or are culled. The parents of this Saurus crane were unrelated and showed no signs of genetic malformations. A progressive valgus deformity of the right leg started early in life and progressively worsened until the distal limb was rotated 90^{o}. No improvement occurred and the crane was euthanized at approximately 4 months of age. Necropsy confirmed rotation of the distal right tibiotarsus. No other gross lesions were identified in the bird and no other birds with this deformity have been seen.

41.

2008 Poultry Health Management School: Continuing Education for the Poultry Health Professional

Robert E. Porter, Wisconsin Veterinary Laboratory, Madison, WI 53706

Co-authors: Teresa Morishita, Todd Applegate, Richard Fulton, Ralph Stonerock

The Poultry Health Management School was established as a multi-state cooperative program to provide continuing education for poultry field service personnel and veterinarians seeking updated and practical information on poultry disease and management. The 2008 school was held in Madison, Wisconsin and provided two-days of intensive instruction for broilers, turkeys and layers (two days each). Students received certificates for participating in both didactic lectures and hands-on wet labs in avian necropsy and disease diagnosis. Topics included diseases, vaccination and medication procedures, coccidiosis treatment, pest management and emerging diseases in the poultry industry.

INFECTIOUS BRONCHITIS VIRUS

42.

S1 Gene Fragment Amplification of Infectious Bronchitis Virus Variant by RT-PCR from Brazil

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Prof. Dr. Orlando Marques de Paiva, 87 Ave. Sáo Paulo, SP, Brazil
Sáo Paulo University

A reverse primer based on conserved region of the S1 glycoprotein gene of infectious bronchitis virus (IBV) was designed. This primer was used in combination with a published forward primer for the amplification of 586 bp fragment. Eight IBV isolates previously characterized as variant that were submitted to the new RT-PCR. The identity of amplified product was confirmed by DNA sequencing. Nucleotide sequences of S1 gne revealed 92.6 to 100% identity among the Brazilian IBV, 68.7 to 69.7% identity with H120 vaccine strain, 72.6 to 73.7% with Arkansas, 67.2 to 68% identity with Connecticut, 69.1 to 69.9% with M-41 and 70.3 to 71.4% with 4-91.

43.

Influence of early infection with an infectious bronchitis virus (IBV) isolate on the reproductive system of specific pathogen free (SPF) chicks

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Many different genotypes and variants of IBV have been isolated from chickens in South Korea since 1986. Among them, 6 ones produced cystic oviduct following experimental infection in day-old SPF chicks. Particularly, an isolate ES90 induced severe atrophied cystic oviduct (20%) and/or nonpatency at the vagina, resulting in non-laying hens with normal ovaries after 25 weeks of infection. The isolate also affected egg production and egg quality in adult chickens. Phylogenic analysis revealed that ES90 belonged to the nephropathogenic strain in Korea. This results suggests that current nephropathogenic IBV can cause permanent damages of the oviduct in early infection.

INFECTIOUS BURSAL DISEASE VIRUS

44.

Efficacy of Infectious Bursal Disease Virus Vaccine(s) Against Various Forms of the Disease

Yannick Gardin, Vilmos Palya, Luis Sesti, Kristi Moore Dorsey
Ceva Santé Animale

Controlled efficacy trials will be presented demonstrating various degrees of efficacy against infectious bursal disease viruses with different disease presentations.

45.

Molecular Epidemiological Investigation of Infectious Bursal Disease Virus Isolates from Wild Birds in Korea

Woo-Jin Jeon, Eun-Kyoung Lee, Seong-Joon Joh, Min-Jeong Kim, Jun-Hun Kwon, Yeo-Sung Yoon[1], Kang-Seuk Choi
National Veterinary Research & Quarantine Service, Anyang, Gyeongii, Korea.
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Previous serological data suggest that wild birds have potential as a reservoir of IBDV, causative agent of infectious bursal disease (IBD). Deal wild birds in Korea in 2007 were examined for IBDV. IBDV was isolated from cecal tonsils of 5 dead wild birds (magpie, mallard duck and wild goose), previously diagnosed as pesticide poisoning or unknown. The viruses were genetically placed in type bellowing to very virulent IBV (vvIBDV) strains and showed the most similarity with vvIBDV strains recently from domestic chicken in Korea. In this study, epidemiological links between wild birds and domestic chickens were discussed.

46.

Mice as potential carriers of infectious bursal disease virus

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Infectious bursal disease virus (IBDV) causes an immunosuppression and high mortality in chickens. IBDV can be diffused through insects and animals as carriers. The purpose of this study was to investigate the potential role of mice as carriers of IBDV. The vaccine or very virulent IBDV strains were inoculated into mice and viruses were detected from organs and feces, and those samples were inoculated into chickens. All samples collected from mice inoculated with vv IBDV strains were positive for IBDV and maintained viability. Based on those results, viruses excreted from mice sustained their infectivity and pathogenicity. Therefore it's assumed that mice may play an important role as IBDV carriers in chicken farm.

47.

Environmental Factors effecting FTA card integrity inhibiting molecular detection of Infectious Bursal Disease Virus (IBDV)

Linda B. Purvis[A], Pedro Villegas[A], Francisco Perozo[A], Martha Pulido[B] and Hugo Moscoso[A]

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Poultry Diagnostic and Research Center
Department of Population Health
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Universidad Nacional de Colombia

The use of Whatman FTA cards for the submission of samples for molecular diagnostics has greatly increased over the last several years. In the fall of 2007, several FTA cards were submitted to our laboratory for molecular diagnosis for IBDV. After several attempts, molecular detection of nucleic acid by RT-PCR was unsuccessful. The filter paper of the indicating FTA cards had changed to a different color indicating that the nucleic acid could have been altered. The environmental factors and conditions that can affect the FTA cards ability to maintain intact nucleic acid will be presented.

48.

Sequence Analysis of the VP2 Hypervariable Region of Eight Very Virulent Infectious Bursal Disease Viruses Isolated from the Northeast of China

Xiaomei Wang, Yanqing Yuwen, Yulong Gao, Honglei Gao, Xiaole Qi
Division of Avian Infectious Diseases, National Key Laboratory of Veterinary Biotechnology, Harbin Veterinary Research Institute, The Chinese Academy of Agricultural Sciences, Harbin 150001, PR China

SUMMARY. Nucleotide sequences of VP2 gene of eight infectious bursal disease viruses isolated from vaccinated chicken flocks in the northeast of China were determined. Sequence analysis showed that all of the isolates were characterized by the vvIBDV conserved amino acid residues: 222A, 256I, 294I and 299S. Four of them had one amino acid change (D→N) at position 212 in peak A in the VP2 hypervariable region, while two of the four isolates had another one (A→V) at position 321 in peak B. The other isolates were similar to the UK661 strain. Our findings demonstrated that the vvIBDV strains in the northeast of China could be diverse.

49.

High Level Secretion of Recombinant Infectious Busal Diease Virus VP2 in the Methylotrophic Yeast *Pichia pastoris*

Xiaomei Wang, Honglei Gao, Yulong Gao, Xiaole Qi
Division of Avian Infectious Diseases, National Key Laboratory of Veterinary Biotechnology, Harbin Veterinary Research Institute, Chinese Academy of Agricultural Sciences, Harbin, 150001, PR China

SUMMARY: For optimization of *Pichia* protein expression very virulent infectious bursal disease virus strain Gx vp2, the major protective immunogen-gene, was transformed by software and was synthesized, and the synthetic gene was inserted into *Pichia pastoris* genome by electroporation. Multicopy transformants were isolated by G418 selection and induced with methanol. The shake-flask analysis indicated that IBDV VP2 expression was optimal with the Mut^+ sixteen-copy strain, and the strain was tested under fermentation conditions. The recombinant protein achieved yields of 0.4g/L of product, formulated as an oil-emulsion vaccine, induced virus neutralizing antibody in chickens and protected them against a challenge infection with vvIBDV.

50.

Enhancing viral protein expression by DNA encodig infectious bursal disease virus large segment protein gene linked to chicken calreticulin gene

Ching Ching Wu, Tsung Wei Feng, Tsang Long Lin
Department of Comparative Pathobiology, Purdue University, West Lafayette, IN 47907

DNA plasmid carrying infectious bursal disease virus (IBDV) VP243 gene linked to chicken calreticulin (CRT gene (p-CRT-VP243) were constructed and transfected to COS-7 cells for 12, 24, and 48 hours. Transfected COS-7 cells were incubated with anti-IBDV monoclonal antibody (Mab), followed by FITC-conjugated goat anti-mouse IgG, or subsequently permeated by methanol and incubated with anti-IBDV Mab again, followed by Texas red-conjugated goat anti-mouse IgG. The levels of expressed IBDV VP243 protein on the surface of COS-7 cells transfected with p-CRT-VP243 were significantly higher (P<0.05) than those of COS-7 cells transfected with p-VP243 at 12, 24, and 48 hours after transfection, respectively.

51.

Effect of Two Strains of Infectious Bursal Disease Virus (IBDV) on the Different Isotypes of Anti-Cryptosporidium Antibodies in SPF White Leghorn Chickens

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[C]Laboratoire de Pathologie Médicale du Bétail et des Animaux de Basse-cour, Ecole nationale Vétérinaire d'Alfort, Maisons-Alfort, France

Two experiments were conducted using each five groups of SPF white Leghorn chicks. In the first experiment, the chicks received at hatching an intermediate strain of IBDV and *Cryptosporidium baileyi* oocysts the following day. In the second experiment, they received a vvIBDV strain at one week of age followed by *C. baileyi* four days later. The other groups were the relevant control groups that received the virus only, the parasite only or a placebo. Sera were examined every week in all groups for the presence of different isotypes of antibodies against *C. baileyi* by ELIZA for a period of 7 to 11 weeks. The results of this study and their practical implications will be summarized in the full abstract.

LARYNGOTRACHEITIS

52.

Efficacy of a Recombinant Fowl Pox Vectored Laryngotracheitis Vaccine and Sequence Comparison to Recent Field Isolates

Alecia Godoy[a], Peter Flegg[a], Ivomar Oldoni[b], Maricarmen Garcia[b] and Kristi Moore Dorsey[a]
CEVA Biomune[a] and University of Georgia[b]

The recombinant vaccine administered *in ovo* at 18 days of incubation and boosted by the wing web route at seven days of age was efficacious against subsequent laryngotracheitis and fowl poxvirus challenges. When administered only by the wing web route at seven days of age, the vaccine was efficacious. The laryngotracheitis virus genes inserted into the fowl poxvirus genome were sequenced and compared to these genes in recent laryngotracheitis virus isolates.

53.

Construction and Evaluation of a HVT Vector Expressing A Laryngotracheitis Virus Gene

Motoyuki Esaki, Lauren Jensen, Shuji Saitoh, Sakiko Saeki, and Kristi Moore Dorsey
Biomune

A turkey herpesvirus expressing the gB gene was constructed by inserting the gB gene of laryngotracheitis virus into the genome of turkey herpesvirus vaccine. Molecular testing showed the gB gene was inserted and expressed correctly. The molecular testing also demonstrated that the recombinant vaccine was stable after multiple passages in cell culture. Results of molecular testing and some safety features of this vaccine will be presented.

54.

Molecular Epidemiology of an Outbreak of Infectious Laryngotracheitis in Brazil using Restriction Fragment Length Polymorphism

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Twelve infectious laryngotracheitis (ILT) virus field isolates from severe ILT outbreak were characterized by restriction fragment length (RFLP) of PCR products amplified. DNA extracted was submitted to a PCR to amplify a fragment of the ILTV thymidine kinase (TK) gene. PCR products were digested with *Hae*III, *Sau*96I, and *Nci*I. Combination of PCR-RFLP patterns classified the ILTV isolates into two groups. Ten isolates were identical among them but differed from the chicken embryo origin (CEO) and tissue-culture-origin (TCO) vaccine virus. These results suggested that vaccine-unlike ILT viruses were involved in the field outbreak.

55.

Control of Infectious Laryngotracheitis: Impact of Cleaning, Disinfection, Vaccination and Downtime

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Infectious laryngotracheitis (ILT) occurred on numerous ranches of one broiler company. Initially, ranches were cleaned and disinfected as usual, but ILT continued to occur. Recominbant vaccine given in ovo and CEO spray vaccine were also tried. Finally, it was decided to clean, disinfect and leave the ranches vacant for approximately 8 weeks. Extensive surveillance for ILT was performed on initial flocks placed after the extend downtime at 28-, 35- and 42-days of age. There was no evidence of ILT in any of the ranches inferring that extended downtime is necessary to control ILT in broilers.

56.

Laryngotracheitis: Anatomy of an Outbreak in a Disease-free State

Donna K. Carver and Sarah J. Mason
North Carolina State University, Raleigh, NC

Laryngotracheitis virus (LT) is a reportable disease in North Carolina. Outbreaks of LT are not uncommon but are generally confined to small areas involving a limited number of companies. Control of the disease in the past has relied on quarantine, biosecurity, cleaning and disinfection, and the weather. The outbreak of 2007-2008 has proven to be much more difficult to control with over 250 quarantines issued to date. This poster will outline outbreak details such as flock age, farm location and vaccine use in an attempt to delineate potential risk factors for disease spread.

MISCELLANEOUS VIRUS

57.

Unusual adenoviral-associated histopathological lesions in chikens, layer hens and guinea fowls

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Adenovirus infections in poultry are mainly diagnosed through histopathology. Four rare or atypical microscopic pictures associated with adenoviral infections are described. First, inclusion body hepatitis can be associated with pancreatic necrosis with typical intranuclear inclusions. Second, chronic active hepatitis-like lesions with rare or no adenoviral inclusions were observed in several chicken flocks. Third, in layer hens, cases of splenic lesions with intranuclear inclusions highly suggestive of type II adenovirosis were observed. Finally, several cases of type II adenovirosis, with features very similar to marble spleen disease in pheasants, were diagnosed in guinea fowl, this later condition showing an increasing incidence in the field.

58.

Epidemiology of Inclusion Body Hepatitis in Mississippi Broilers

C. Gabriel Sentíes-Cué[1,3], Philip. A. Stayer[2], Mark A. Burleson[2], Robert W. Wills[3], and Danny L. Magee[1,3]
[1]Poultry Research and Diagnostic Laboratory, College of Veterinary Medicine, Mississippi State University
[2]Sanderson Farms
[3]Department of Pathobiology/Population Medicine, College of Veterinary Medicine, Mississippi State University

In the spring of 2007 outbreaks of Inclusion Body Hepatitis (IBH) occurred in one broiler grow-out division in Mississippi. Multiple farms were involved during the outbreak. Pathogenicity tended to increase while flock age tended to decrease as the outbreaks progressed. Epidemiology of the entire course of IBH will be discussed.

59.

Extrahepatic Lesions Observed with Inclusion Body Hepatitis In Meat-Type Chickens: Routine Histopathology and Histomorphometric Findings for the Kidney & Bone Marrow

Floyd D. Wilson, William R. Maslin, C. Gabriel Senties-Cue, Philip A. Stayer, Danny L. Magee

Poultry Research and Diagnostic Laboratory (Wilson, Senties-Cue, Magee) and Department of Pathobiology and Production Medicine (Maslin), College of Veterinary Medicine, Mississippi State University, Starkville, Mississippi; Sanderson Farms Inc, Laurel, Mississippi (Stayer)

Routine histological evaluation of tissues obtained from an outbreak of inclusion body hepatitis in Mississippi poultry demonstrated a high incidence of glomerulonephopathy and bone marrow hyperplasia. Grossly, these birds manifested with classical hepatic pathology that was also accompanied by renal enlargement. Characteristic intranuclear adenoviral inclusion bodies were usually demonstrated in the livers of most birds, and *fowl adenovirus* was recovered from livers of many of the groups that were also positive with PCR testing. Birds with hepatitis exhibited a high incidence of membranoproliferative glomerulonephritis and bone marrow obtained from many also demonstrated a dramatic hypercellularity of the femoral bone marrow owing to marked elevations in both primitive and mature forms of granulocytic elements (The findings were previously presented in part at the AAVLD meeting in Reno, Nevada, in 2007).

60.

An in situ PCR for detection of astrovirus in broiler intestines with lesions of runting/stunting enteritis

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Thompson Bishop Sparks Veterinary Diagnostic Laboratory
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An in situ PCR was developed for detection of astrovirus in fixed broiler intestines with lesions of runting/stunting enteritis. Results will be presented and discussed.

61.

Sequence oanalysis of turket coronavirus with emphasis on polyprotein 1ab gene

Tsang Long Lin*, Jianzhong Cao, and Ching Ching Wu
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Viral RNA from turkey coronavirus (TCoV) isolate was reversely trnascribed and PCR-amplified for polyprotein gene 1, 5'-, and 3'-ends of the genome. The full-length genome sequence of TCoV polyprotein gene was 19,871 nucleotides (nt). The polyprotein gene encoded two open reading frames (ORF), ORF1a and ORF1b. Polyprotein 1ab was predicted to have 6623 amino acids. Peptide mapping predicted at least 14 proteins in polyprotein 1ab including a typical 3-cystine-like protease, an RNA-dependent-RNA polymerase, and an NTPase/Helicase. Assembly of entire TCoV genomic sequence revealed 27779 nt including a poly (A) tail of 30-nt. Phylogenetic analysis supported that TCoV is a group 3 coronavirus.

62.

Assessment of Duck Enteritis Virus (DEV) epidemiology, using a Real-Time PCR assay

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National Veterinary School of TOULOUSE, UMR INRA 1225 IHAP, Toulouse, FRANCE

Duck Enteritis virus (DEV) is the agent of Duck Plague (or herpesvirosis), a highly contagious and lethal disease of waterfowl. It is admitted that DEV infections may result in healthy carriage and shedding of virus for months.

We investigated the epidemiology of DEV infection in ducks, using a quantitative real-time polymerase chain reaction (PCR) assay: a SYBR green real-time PCR assay, targeted on the DNA polymerase gene, was designed and was shown to be sensitive and specific.

DEV DNA was detected and quantified on both tissues and cloacal swabs of birds from several putatively infected flocks.

Furthermore, the Real-time PCR assay was applied to the detection of DEV in breeder ducks and their hatching ducklings: we showed that breeders spontaneously infected by a highly virulent DEV vertically transmit the virus to the offspring.

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63.

Baculovirus expressing Vp1 protein of Duck Hepatitis type 1 virus (DHV-1): induction of neutralizing antibodies against DHV-1

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The VP1-encoding gene of duck hepatitis type 1 virus (DHV-1) HP-1 strain was first cloned and expressed in a recombinant baculovirus expression system. The open reading frame (ORF) comprised 714 bp and encoded 238 amino acids, with a predicated molecular mass of 26.447 kDa. Variant amino acids cluster in the common C-terminal region of VP1 at residues 180-187 and 212-224, implying that the two areas may expose on the outer surfaces of DHV and undergo selective pressure from host immune system. The expressed fusion protein could be detected by Western blotting under duck anti-hepatitis virus polyclonal serum. Duck inoculated with VP1 generated neutralizeing antibodies against the virus. These results might indicate that VP1 is a functional protein involved in initiating the host immune response and may be used as the vaccine candidate.

64.

First Isolation of an Avian poxvirus in Grenada

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This is the first report of any virus isolation in Grenada. In this case, a pox virus was isolated from a pigeon. Consequently the epidemiology of the disease in domestic or wild birds in Grenada is not known. The virus isolation was confirmed with clinical and histopathological observations. In addition, it provided demonstration of isolation technique to the veterinary students in virology with locally available resources. Further, it generated material for future laboratory exercises. Studies on molecular characterization of the virus are in progress. Since virus isolation has not been attempted previously in Grenada, this report has historical significance.

MYCOPLASMA

65.

Using a combined MG & MS ELISA kit as an screening tool around the world

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Idexx laboratories

The monitoring programs for *Mycoplasma gallisepticum* (MG) and *Mycoplasma synoviae* (MS) have been used the plate agglutination tests and the ELISAs for antibody detection in a separate way. A combined ELISA for MG & MS was developed to detect antibodies against both agents at the same time, using the same serum sample with higher sensitivity. This tool could help to improve the efficiency in the laboratory and use a more specific test, such as hemagglutination inhibition (HI) as a confirmatory tool for any positive reactor; if it is considered un-specific reactor sample.

66.

Innovative database from *Mycoplasma gallisepticum* sequence data

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With the advent of routine sequencing of two genomic regions of *Mycoplasma galliepticum* (MG), it becomes challenging to track and record field strains encountered. All strain types from each *mgc2* and IGSR are designated as lab, vaccine strain, or wild type, and are assigned either a letter or a number for *mgc2* or IGSR sequences, respectively. Once the designation is established, it is entered into a database using “FileMaker Pro8.1” software. This database can be sorted and is searchable by chosen parameters. It provides a means to compare isolates within a company, grower, geographic area, or date.

67.

Field trials of PoulShot® MG-F vaccine against *Mycoplasma gallicepticum* Infection in the Layer farms

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Mycoplasma gallisepticum infection causes considerable economic loss such as chronic respiratory distress, downgrading of carcasses, decreased growth and egg production. F strain is one of the *Mycoplasma gallisepticum*, is low pathogenic for chicken. This strain not only protects against virulent field mycoplasma infection but also replace the field strain at infected farms. Although F strain has many advantages described above, the strain has not been used in this country. Therefore, this study is conducted to evaluate the efficacy of PoulShot®, which is locally manufactured with F strain, in the commercial chickens.

NEWCASTLE

68.

AIV and NDV in Peru: an update for the 2006-2007 migratory season

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The objective of the present study was to evaluate the presence of Newcastle Disease virus and Avian Influenza virus in wild-birds. At least 2,000 fecal samples were collected from resident and migratory wild-birds. Samples were systematically sampled from the Peruvian Central Coast. Presence of AIV and NDV were diagnosed inoculating a filtered suspension in 10-days old SPF embryonated chicken eggs.

69.

Relationship between wild-birds and Newcastle diseases in Perú

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Newcastle disease is endemic in many countries of the World. Two studies evaluated the role of wild-birds in transmission and dispersion of virus. The first experiment was devised to evaluate if wild-birds living around poultry farms with and without NDV outbreaks at the sampling time. At least 1,200 wild-birds were sampled and their sera or feces processed to detect antibodies with HI and virus isolation using SPF embryonated eggs. The second experiment evaluated if the wild birds experimentally infected could eliminate virus and develop clinical ND. Up to 68 columbiformes birds.

70.

FULL GENOME SEQUENCING OF THE NEWCASTLE DISEASE VIRUS STRAINS VG/GA AND CLONE 5.

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The complete genome sequence of the VG/GA strain of Newcastle disease virus (Villegas-Glisson/University of Georgia) and of a plaque purified clone obtained from the same strain (clone 5) were analyzed. The VG/GA strain isolated from the intestine of healthy turkeys replicates in the respiratory and intestinal tract of chickens. The clone 5 was selected from the respiratory tract and was not isolated from the intestine. To assess the genomic base of their tissue tropism, a modified primer sequence-independent amplification method was used for full genome sequencing. Differences observed at both the nucleotide and amino acid levels may help explain the differential phenotype.

71.

Phylogenetic and Biological Characterization of Virulent Newcastle Disease Viruses Isolated in Wild Birds During 2002-2007

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[3]. Mosquito Control Division, Harris County Public Health and Environmental Services, Houston, TX

As part of a West Nile virus surveillance program in the Houston Metropolitan Area and in Rhode Island, extracts from brain from 5608 dead birds representing 21 avian orders, were cultured in Vero cells. Sixteen Newcastle disease virus isolates were recovered from birds of the order Columbiformes. These viruses were identified as pigeon paramyxoviruses from genotype VIb by partial genomic sequencing and phylogenetic analysis. All viruses corresponded to virulent phenotypes upon analysis of the fusion protein cleavage site, and intracerebral pathogenicity tests suggested mesogenic pathotypes (0.98-1.35); however none were detected with the U.S. validated real time RT-PCR assay which targets the fusion gene.

PARASITIC DISEASES

72.

Current observations on the treatment of *Ascaridia dissimilis* infections in turkeys

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Ascaridia dissimilis infections are commonplace in commercial turkeys, with infections ranging from approximately 10 to 3000 nematodes per bird. Two studies were recently completed wherein the effectiveness of parasiticides were documented in infected turkeys. In a Michigan study, naturally-infected birds were treated on two occasions with fenbendazole (® Safe Guard) in the feed at 16 ppm for 6 days, or with levamisole (® Prohibit) in the water at 16 mg/kg bw, with resultant efficacies of 99.3-99.9 % and 54.6-85.8 %, respectively. In an Arkansas study, nitarsone (® Histostat) in the feed (0.01875 %) was effective in reducing worm numbers (up to 73% efficacy) as well as the fecundity of established worms.

73.

Severe Cryptosporidiosis in Chukars

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Avian Health and Food safety Laboratory-WADDL

A Severe outbreak of cryptosporidiosis was diagnosed in a flock of Chukars with extremely high mortality. The intestine was pale, flaccid and full of yellow colored fluid contents. No significant alterations were present in the liver, spleen, lungs and airsacs. On histopathology Cryptsporidial organisms were present in large numbers on the apical surfaces of intestine and in the bursa of Fabricius.

74.

Case Report: Swan Heartworm Disease

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Waterfowl deaths occur due to a variety of diseases. This report describes a juvenile female Tundra Swan (*Cygnus columbianus*) which was one of 30 mixed waterfowl found dead near the Detroit River. The swan presented in thin body condition, and the primary gross lesion was dozens of thin white filarid worms present throughout the epicardium and myocardium. The parasite is *Sarconema eurycerca,* which previous surveys demonstrate may be present in 3 to 20% of free-ranging swans. This infestation resulted in lympho-plasmacytic myocarditis and resulted in this bird's death. Biting lice play an important role in the transmission of this parasite.

75.

Evaluation of the Efficacy of 1% Ivermectin in a Propylene Glycol Carrier against *Capillaria obsignata* in Broiler Breeder Pullets

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Nematode infections are commonplace in broiler breeder pullets. The number of approved anthelmintics remains static. The lack of a potential drug market and testing costs to obtain Food and Drug Administration approval make pursuit of new label claims for existing compounds and development of new products unlikely. Lack of approved, efficacious products infers investigations of viable, extra-label use of existing products.

The efficacy 0.2 mg/kg of ivermectin administered to broiler breeder pullets against *Capillaria obsignata* was evaluated. Treatment was administered through the drinking water at twelve and twenty-two weeks of age. Quantitative pre and post treatment comparisons of worm burden by light microscopy revealed ivermectin was efficacious against *Capillaria obsignata* in broiler breeder pullets.

76.

Influence of Diet on Oocyst Output and Intestinal Lesion Development in Coccivac®-D Vaccinated Replacement Broiler Breeders.

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[1]Department of Poultry Science, Texas A&M University; [2]Pilgrim's Pride Corporation; [3]Schering-Plough Animal Health

An experiment was conducted to investigate the effect of diet on oocyst output and lesion development in male and female replacement broiler breeders of two different genetic strains. Dietary formulations were based on either breeder specific recommendations or formulations of a broiler integrator. Fecal material was collected from 6 to 41 days of age for oocyst per gram determination. Oocyst output peaked at 16 days of age and gross intestinal lesion score was predictive of oocyst output. Dietary interactions were observed where the magnitude or duration of oocyst output was influenced by diet in both male and female genetic lines.

PNEUMOVIRUS

77.

What Else Can we Improve in Molecular Diagnostic Tests for Avian Pathogens: Example of Avian Metapneumovirus (aMPV)

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We were able to develop an improved molecular diagnostic test for aMPV with higher sensitivity and very good specificity compared to the original Minnesota Diagnostic Laboratory test. This was achieved by N gene targeting and some changes in the buffer composition and the cycling conditions. In the present paper we describe the possibility of reducing significantly (over 40%) the cost of this aMPV molecular test by replacing a “buffer kit” of an unknown composition with a dye (free rox) and choosing the RT-PCR kit from a different company. These changes were applied to other viruses from different animal species and showed very promising results.

78.

Longitudinal Studies and Phylogenetic Analysis of Avian Metapneumovirus Subtypes A and B in Brazilian Chicken Commercial Flocks

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Primers that amplify a fragment of N gene of avian metapneumovirus (aMPV) were modified for detection of all subtypes. DNA sequencing validated this assay. Thirty-four strains of aMPV were detected by RT-PCR from flocks with respiratory and/or reproductive disorders. A multiplex RT-PCR used for typification of detected strains showed that twenty samples belonged to subtype B and fourteen strains were characterized as subtype A. Nucleotide sequences of G gene revealed 98.5 to 100% identity among the Brazilian subtype B and 93.6 to 95.6% identity with the subtype vaccine strain. The subtype A samples showed 99.5% identity among them. In twenty-five cases, co-infection with infectious bronchitis infectious was detected.

79.

Comparative evaluation of different methods of avian metapneumovirus C vaccination in turkeys

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Earlier studies in our laboratory demonstrated that a single low volume spray avian metapneumovirus (aMPV) vaccination was not protective in turkeys against challenge. In the present study we evaluated seven different vaccination methods for their comparative efficacy. We evaluated immune response, reduction in clinical disease and virus shedding post challenge. Turkeys were challenged with aMPV; three weeks post first, second and third vaccinations. Following the first vaccination challenge, birds in the low and high volume spray vaccinated groups showed clinical signs almost similar to the non-vaccinated but challenged control group whereas birds in the eyedrop and spray cabinet vaccinated groups showed very mild clinical signs post-challenge. However, birds in spray and eyedrop vaccinated challenged groups showed only minimal signs post second and third vaccine challenges. The results of this study will be presented.

80.

The Role of G Attachment Glycoprotein in Pathogenesis and Immunity of Avian Metapneumovirus Subgroup C in Turkeys

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Avian metapneumovirus (AMPV) causes an upper respiratory tract infection in turkeys, thus resulting in serious economic losses to the turkey industry. To develop a better vaccine against AMPV, we evaluated the role of AMPV G attachment glycoprotein by studying the pathogenesis and immunity of wild-type AMPV and the G-deleted mutant virus in turkeys. The G-deleted mutant virus induced less severe clinical signs and weaker immune response in turkeys than wild-type AMPV, despite its *in vivo* replication. Our findings suggest that AMPV G glycoprotein is an important determinant for virus virulence and immunogenic protein for vaccine development.

REOVIRUS

81.

Apoptosis induced by nucleocytoplasm localization of duck reovirus p10.8 protein

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The p10.8, specified by the ORF_1, was individually cloned and expressed in bacterial and eukaryotic cells. The p10.8 is an acidic protein, without transmembrane domain, which shared no sequence similarity to other known fusion-associate small transmembrane (FAST) proteins encoded by avian reovirus (ARV), Nelson Bay virus (NBV) and Baboon reovirus (BRV) and did not show syncytium formation activity. The immunofluorescence experiments indicate that p10.8 localized in the nucleocytoplasm of transfected and infected cells. The p10.8 protein could induce apoptosis when expressed by itself in transfected primary duck embryonated fibroblast (DEF) or Vero E6 cells. p10.8 induced apoptosis was analyzed by four kinds of assays: (1) assay for DNA ladders; (2) Tunnel; (3) ELISA detection of cytoplasmic histon-associated DNA fragments; (4) nuclear staining with PI. Deletion analysis suggests that the N-terminal region of p10.8 is important in mediating p10.8-induced apoptosis because its deletion abolishes the induction of apoptosis.

82.

Molecular Characterization of Reovirus Field Isolates Indentifies a Shift in Resident Reovirus Populations on Broiler Farms

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New genotypic variants of avian reoviruses were isolated and characterized from a series of sentinel bird studies on broiler farms. Phylogenetic analysis of the immunogenic sigma C protein (S1 gene) was utilized to genotype new isolates. Isolate similarities were evaluated by comparison with our reovirus database as well as GenBank. Characterization of the isolates revealed new variants as well as some that have highest similarities to those isolated from broiler farms experiencing runting and stunting syndrome. Our data suggests resident populations of reoviruses have shifted from that of vaccine origin to newly identified genotypes.

83.

Evaluation of Pathogenicity of Reoviruses Isolated from Broilers in Korea

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Avian reovirus (ARV) induces various clinical diseases such as tenosynovitis, hydropericardium, hepatitis and malabsortion syndrome (MAS) which cause significant economic loss especially in the broilers. Although several studies with serological and clinical basis have been conducted, there was no report related with pathogenicity of ARV in this country. Therefore, this study has been performed to evaluate the pathogenicity of the ARV isolated from the broilers with history of malabsorption in the specific pathogen free (SPF) chickens based on the mortality, histological lesions and clinicochemical changes.

SALMONELLA

84.

Transfer of VirB/D4 type IV secretion system among *Salmonella enterica* serovar Heidelberg from turkeys

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Salmonella enterica serovar Heidelberg is consistently one of the most detected serovars from poultry, is the fourth most commonly detected serovar in human salmonellosis and is disproportionately associated with invasive infections and mortality in humans. We have identified plasmids in isolates from turkey-associated sources that are associated with antimicrobial resistance and likely virulence. Based on conjugation and PCR-screening results it appears that a VirB/D4 type IV secretion system (T4SS)-containing plasmid is able to be transferred among strains along with a multidrug resistance plasmid. Similar T4SS in other Gram negative pathogens play key roles in virulence and genetic transfer.

85.

Discerning genetic differences in *Salmonella* Enteritidis isolates by RAPD, a powerful molecular tool for understanding *Salmonella* epidemiology in poultry integrators

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With poultry recognized as an important vehicle in past *Salmonella* outbreaks, pressure has been placed on the poultry industry to reduce poultry and egg contamination. With the exception of *S.* Enteritidis (SE), pulsed-field gel electrophoresis (PFGE) has been a useful tool in typing most *S. enterica* serovars. We have been able identify genetic differences in SE isolates using random polymorphic DNA amplification (RAPD) PCR. While we were able to discern some differences in SE isolates by RAPD, no single typing, PCR primer was sufficient to type SE by this method. However, when we collate the different RAPD DNA patterns for each typing primer into a single phylogenetic tree, we could identify sufficient genetic differences to discriminate SE isolates.

86.

STUDY OF SALMONELLA CONTAMINATION IN FEED INGREDIENTS AND BALANCED RATIONS INTENDED FOR FEEDING POULTRY IN PERU

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The objective of this study is to determine the risk of Salmonella contamination from feed ingredients and balances rations used to feed poultry. For this purpose, 2284 feed ingredient samples and 466 balanced ration samples used in poultry breeding in the Valley of Lima during the year 2007 were analyzed. Results showed that 5.04% of total feed ingredients were Salmonella positive, while 100% of balanced ration samples were negative. Ground whole soybean accounts for 87% of Salmonella-positive feed ingredients. Some Salmonella varieties were typified, S.anatum was identified, which has been previously isolated in humans. These results made it possible to identify new varieties of Salmonella in Perú. This demonstrated that the analysis of feed ingredients and balanced rations for poultry is important to control or reduce the transmission of Salmonella to poultry.

87.

Reducing *Salmonella* prevalence in the processing plant by breaking vertical transmission through vaccination of affected broiler-breeder flocks

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Very little information is available about which particular management practices effectively reduce *Salmonella* carriage by poultry flocks, or points within the poultry production pyramid best for blocking transmission. Using an epidemiological approach, we examined the impact of a *Salmonella* vaccination program of broiler-breeders on reducing the prevalence of *Salmonella* at each level of production. We observed a difference in the number of *Salmonella*-positive flocks placed on broiler chicken farms, and over time the number of broiler farms environmentally contaminated with *Salmonella* for company with a vaccination program. While no differences were observed in prevalence of breeder-hens, the *Salmonella* vaccines did seem to reduce *Salmonella* colonization of the reproductive tract in hens.

TUMOR VIRUSES

88.

Serologic and Anatomicopathologic Analysis of Broiler Vaccinated with Vectorized Commercial Vaccine of Marek's Disease and VP2 Gen from IBD Virus

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[1]Merial Mexico

The purpose of this trial was evaluated macroscopic and microscopic the bursa and antibodies of IBD in commercial broilers when are vaccinated at 18 days of embryonation or hatched with vectorized commercial vaccine. All groups at 18 days were challenged with IBD intermediate strain. Mortality, gross and microscopic lesion, bursal index, clinical signs and immune response (ELISA) were evaluated. Some morphological characteristics and benefits were founded inherent to vaccination.

89.

Uncommon tumors and tumor locations associated with Avian Leukosis Virus subgroup J infection

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Myelocytomas are the most common presentation of Avian Leukosis Virus subgroup J (ALV-J) infection, but other tumors may uncommonly be encountered. In this study, 38 week old broiler breeders infected with ALV-J exhibited numerous gross neoplasms including myeloblastosis of tissues of the head. Microscopically, these tumor cells were also found in the choroid of the eye and extending into adjacent tissues. Progeny of these birds were infected with ALV-J viruses isolated from some neoplasms of these broiler breeders. Tumors induced in the experimentally infected progeny included a hemangiosarcoma from the head and leiomyosarcoma of the small intestine, in addition to myelocytomas in various organs. Immunohistochemical characterization of the leiomyosarcoma and hemangiosarcoma will be included.