Robert J. Eckroade, Secretary-Treasurer of A.A.A.P.
University of Pennsylvania, New Bolton Center
Kennett Square, PA 19348-1692
(215) 444-4282

AAAP SUMMER NEWSLETTER **JUNE 15, 1992**

ENCLOSURES FOR YOUR REVIEW

MESSAGE FROM THE PRESIDENT

The year is rapidly drawing to a close---Boston is just around the corner. If you have not finalized your plans to be at the meeting, please do so now. As in previous years, the program and myriad events associated with it promise to be outstanding. Not only will we have the opportunity to learn about biotechnology and other scientific and professional information, we will learn who the AAAP award recipients will be for 1992, who the next officers will be, who will be among the first ever board-certified poultry veterinarians, the success of the AAAP Foundation fund-raising effort, and about all of our organization's activities. If your contribution to the AAAP this year, in whatever form it may be, is still unfinished, it is time to wrap it up in the next few weeks.

Perhaps even more importantly, the meeting is a time to renew old acquaintances and make new ones. It is encouraging that so many bright, talented, and enthusiastic young people are making poultry medicine the focus of their professional careers. I'm looking forward to seeing each of you at the meeting and learning how your year has gone. I hope it has been a successful and rewarding one.

1992 AVMA-AAAP MEETING IN BOSTON

REMEMBER TO RESERVE YOUR AWARDS LUNCHEON TICKETS! LUNCHEON WILL BE ON MONDAY, AUGUST 3 FROM 12-2. TICKETS, WHICH ARE AVAILABLE FROM THE BUSINESS OFFICE, ARE $20 EACH.

The updated program for the IMPROVED DIAGNOSIS OF AVIAN DISEASES USING MOLECULAR BIOLOGY Symposium and the AVMA-Avian Medicine Scientific program, and the function list are enclosed. The scientific program begins with the Symposium and the poster paper session on Sunday, August 2 and the platform papers on Monday, August 3 and goes through Wednesday noon. Please note that dual sessions will be held again this year. All of these sessions will be held in the **BOSTON MARRIOTT HOTEL - COPLEY PLACE** not the convention center where the exhibits will be located.

The AAAP Board of Directors will meet all day Friday, July 31 and Saturday, August 1 and again Wednesday morning. Any member having business to bring to the Board is welcome. Those members having special issues needing more time might consider contacting the Business Office as soon as possible to schedule the issue on the agenda.

POSTER JUDGING

Posters should be put up Saturday night. They must be up by 8:00 am Sunday to be eligible for judging.

AVMA MEETING RESERVATION FORMS

AVMA meeting reservation forms are automatically mailed to all AVMA members in good standing and program participants. **ASSOCIATE MEMBERS OF AAAP AND NON AVMA MEMBERS SHOULD WRITE TO MR. SCHLAX TO OBTAIN REGISTRATION FORMS.**

Mr. Robert Schlax
AVMA Convention Manager
1931 North Meacham Road
Suite 100
Schaumburg, IL 60173

OBITUARIES

Allyn Dietzel, 44, died May 25, 1992 at his home. He was director of live production for Hudson Foods and was a licensed veterinarian in Arkansas. He was a member of the Arkansas Poultry Association, Arkansas and American Veterinary Medical Associations, AAAP, Poultry Science Association and the Sequoyah United Methodist Church. He was past president of the Arkansas Poultry Veterinarians and the Association of Veterinarians in Broiler Production.

FOR YOUR INFORMATION

The Salmonella Risk Reduction Program, published in USAHA proceedings (Oct 1991) is available from any USAHA member, state veterinarian or the AAAP business office.

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Permission has been given to the National Control Institute of Veterinary Bioproducts and Pharmaceuticals to translate "A LABORATORY MANUAL FOR THE ISOLATION AND IDENTIFICATION OF AVIAN PATHOGENS" into Chinese. Information about obtaining copies will be presented as it becomes available.

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Use of Biologics for Unlicensed Purposes - Veterinarians are frequently confronted with instances where pet owners wish to have animals vaccinated for diseases that affect more than one species, but the vaccine is not USDA-licensed for the species of animal presented for vaccination. The question of whether or not a veterinarian may use a USDA-licensed product for a species not listed on the label has been addressed by Terry L. Meddley, J.D., who is Director of Biotechnology, Biologics and Environmental Protection, USDA-APHIS. Mr. Medley states, "Our policy regarding 'off-label use' or 'extra-label use' is similar to that of the Food and Drug administration. Regarding 'off-label use': If a veterinarian uses a vaccine in a species not specified on the product label or insert, then the practitioner assumes full responsibility for any adverse reaction or lack of protection. Regarding 'extra-label use': If a veterinarian adds an antibiotic or (other) drug to a biologic, then the final product would be subject to the labeling policies of both the FDA and USDA." Mr. Medley added that questions about the above policies should be directed to Dr. George Shibley at (301) 436-8674.

NOW AVAILABLE - A new continuing education slide study set entitled MARBLE SPLEEN DISEASE OF RING-NECKED PHEASANTS is now available from the AAAP business office for a cost of $30.00.

The Poultry Science Association announces the availability of two videotapes to be used in recruitment efforts: "Consider a Career in Poultry Science" (10:22), for students and "Poultry Science... A Dynamic Career Choice" (11:18), for high school or university counselors. The two programs are available on one cassette. To order, send a check made payable to: Poultry Science association, videotape project. Each copy of the VHS version is $25.00 and each MASTER copy is $50.00. Specify the quantity and format you are ordering.
Send your order to: Bob Schmidt, Recruitment Videotape project, Poultry Science association, 309 West Clark Street, Champaign, IL 61820.

ARCHIVES

Archives of the AAAP have been established at the Parks Library of Iowa State University (ISU). ISU's Department of Special Collections will organize and manage the archives. The initial contribution was the historical material which has been maintained by the AAAP Secretary-Treasurer; additional contributions from individuals will be appreciated. Contributions considered appropriate include: correspondence, meeting minutes, bylaws, publications (when authored by the organization), information on conferences and symposia, and photographs (when individuals are identified). Contributions may be sent directly to Manuscripts Curator, Department of Special Collections, 403 Parks Library, Iowa State University, Ames, IA 50011. The AAAP appreciates the efforts of Dr. Lee Grumbles and other History of Avian Medicine Committee members in establishing these archives.

AVIAN BIOTECHNOLOGY FORUM

Presented by the Biotechnology Committee - AAAP No. 3-5\15\92

NEWS FROM THE COMMITTEE:

BIOTECHNOLOGY SYMPOSIUM - 1992. The program has been finalized for the upcoming biotechnology symposium on "Improved Diagnosis of Avian Diseases using Molecular Techniques". We expect strong attendance at this Sunday symposium and look forward to an informative program.

CALL FOR PROBES (AND OTHER REAGENTS). We have recieved a few responses to our call for reagents. The hope is to provide a list of available biotechnology related reagents for use by anyone who may need them in their research areas. Currently, the following are available by contacting the investigator to discuss their use:

Monoclonal Antibodies:
- Mouse anti-chicken CD4
- Mouse anti-chicken CD8
- Mouse anti-chicken lymphocyte (leucocyte common antigen)
- Mouse anti-chicken macrophage
- Mouse anti-chicken class II MHC (Ia)

Contact: Dr. Hyun S. Lillehoj
Research Immunologist
USDA, ARS, LPSI, PDL
Bldng 1040, Room 103, BARC-East
Beltsville, Maryland 20705

Monoclonal Antibodies:
- Mouse anti-influenza A (Nucleoprotein)
- Mouse anti-influenza A (N3 Neuramidase)
- Mouse anti-influenza A (H7 Hemagglutinin)

Contact: Dr. Michael L. Perdue (see below)

Nucleic Acid Probes:
- cDNA probes to Infectious Bursal Disease Virus

Contact: Dr. Daral J. Jackwood
Food Animal Health
OARDC
1680 Madison Avenue
Wooster, Ohio 44691

Send further comments, questions or information to:

Michael L. Perdue
SEPRL
934 College Station Rd.
Athens, GA. 30605 PH: (404)-546-3435 Fax: (404)-546-3161

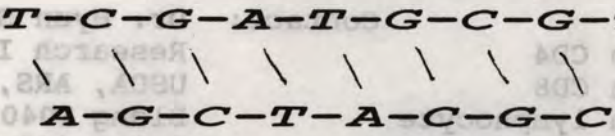
MINIREVIEW

WHAT IS HYBRIDIZATION?

Mark W. Jackwood
Dept. Avian Medicine
University of Georgia
Athens, GA 30602

Hybridization is the basic mechanism behind nucleic acid probe based diagnostic tests. It involves base paring of complementary sequences of DNA with DNA or RNA, and RNA with RNA.

DNA consists of purine (A & G) and pyrimidine (C & T) bases which contain the genetic code, and a sugar (deoxyribose) and phosphate backbone which makes up the structure of DNA. In double stranded DNA, A pairs with T and G pairs with C. The base pairs are held together by hydrogen bonds.



RNA contains bases like DNA except that instead of T it contains uracil (U). In addition, RNA has a ribose and phosphate backbone whereas DNA utilizes a deoxyribose sugar. RNA is single stranded but can double back on its self to form stretches of double strands called hairpin loops. RNA is not as stable as DNA. It acts as a carrier of genetic information from the DNA to proteins.

The basic steps in a hybridization procedure are:

1. *Denaturation- the separation of 2 complementary strands of DNA (or RNA) usually accomplished by heating which breaks the hydrogen bonds thus separating the strands.*

2. *Annealing- base paring that occurs between two complementary strands when the reaction is slowly cooled.*

Conditions that influence whether two complementary nucleic acid strands will hybridize to each other are referred to as stringency. High stringency conditions require that the base pairing between two complementary sequences be an exact match. Low stringency conditions will allow for some base pair mismatches between two nucleic acid sequences. The conditions that affect hybridization are;

1. *The type of nucleic acid involved in the hybridization (DNA-DNA base pairing is not as strong as DNA-RNA base pairing).*

2. *The longer the nucleic acid sequence (ie. the greater the number of complementary base pairs) the stronger the hybridization.*

3. *The base composition of the nucleic acids involved in the hybridization (G-C base pairing [3 hydrogen bonds] is stronger than A-T base pairing [2 hydrogen bonds]).*

4. *The temperature of the hybridization reaction mixture (the higher the temperature the higher the stringency).*

5. *The ionic strength of the hybridization buffer (the lower the salt content, the higher the stringency).*

Nucleic acid probes are used in hybridization reactions to identify specific complementary base sequences. The base sequence of the probe is designed so that the base pairing between the probe and the genome of a disease agent will be an exact match. By varying the stringency conditions in the hybridization reaction, the probe can also be used to detect sequences that are not exactly complementary to the probe.

WORKSHOP ON MODERN TECHNIQUES IN THE DIAGNOSIS AND CONTROL OF POULTRY DISEASES *- The department of Avian and Aquatic Animal Medicine will offer a 2-week workshop for twenty poultry diagnosticians working in developing areas. The workshop will take place from June 29 to July 10, 1992 at Cornell University. To receive information, contact the organizers Dr. Benjamin Lucio or Dr. Syed Naqi, Dept of Avian and Aquatic Animal Medicine, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853. Phone (607) 253-3365. Fax (607) 253-3369.*

41st ANNUAL WILDLIFE DISEASE ASSOCIATION (WDA) MEETING *- To be held August 9-14, 1992 at the University of Texas, El Paso, Texas. for information, contact conference co-chairs Lillian Mayberry and Jack Bristol, University of Texas, El Paso, Department of Biological Sciences, El Paso, TX 79968. Phone 915-747-5844.*

XIX WORLD'S POULTRY CONGRESS *- To be held September 20-24, 1992 in Amsterdam, The Netherlands. Contact Congress Secretariat, C/O RAI, Organisatie Bureau Amsterdam bv Europaplein 12, 1078 GZ Amsterdam, The Netherlands. Contact: Jewel D. Cochran, Irvine Travel Service, Inc., 127 Northwestern Ave, West Lafayette, IN 47906. Phone (800) 227-7477.*

XIII PANAMERICAN VETERINARY SCIENCES CONGRESS *- To be held October 5-9, 1992 at the Diego Portales Convention Center in Santiago Chile. There will be simultaneous Spanish-English translation. Please contact XIII Congreso Panamericano De Ciencias veterinarias, Casilla 13384 - Correo 21, Santiago, Chile. Phone (56-2) 223-7087. Fax (56-2) 225-0136.*

43RD NORTH CENTRAL AVIAN DISEASE CONFERENCE *- To be held October 4-6, 1992 at the Holiday Inn International Airport, Minneapolis, MN. Please contact Dr. M.C. Kumar, Jennie-O Foods, Box 439, Atwater, MN 56209.*

FIRST INTERNATIONAL SEMINAR ON POULTRY TO PROFESSIONAL AND BUSINESSMEN - *To be held November 10-13, 1992 at the Libertador Kempiski Hotel, Buenos Aires, Argentina. The official languages will be Spanish and English. Please contact Seminario Internacional de Ciencias Avicolas para Profesionales y Empresarios, Carlos Pellegrini 979 6to. piso, 1009 Buenos Aires, Argentina. Phone 54-1-312-7601. Fax 54-1-311-1511.*

JOINT CONFERENCE OF THE AMERICAN ASSOCIATION OF ZOO VETERINARIANS AND THE AMERICAN ASSOCIATION OF WILDLIFE VETERINARIANS - *To be held November 15-19, 1992 at the Parc Oakland Hotel in Oakland, CA. Individuals interested in submitting a manuscript or participating in the program should contact Janis Joslin, Woodland Park Zoo, 5500 Phinney Avenue North, Seattle, WA 98103. Phone (206) 684-4873. Or David Jessup, International Wildlife Veterinary Service, Inc., PO Box 1413, Orangevale, CA 95622. Phone (916) 355-0124. The deadline for selection of participants is April 20, 1992 and manuscripts are due by May 18, 1992.*

WVPA CONGRESS - *To be held in August **1993** in Sydney, Australia. It is not too early to mark your calendar. Plan your trip now to embrace this scientific occasion and take advantage of the opportunities for the vacation of a lifetime. For information contact the chairman of the congress organizing committee: Paul Gilchrist, Biological Technology Transfer Pty Ltd., 76 Shepherd St., Chippendale, NSW 2008, Australia. Phone 612-3192229, Fax 612-6901570.*

REPORT OF THE EDITOR

AVIAN DISEASES, REPORT OF THE EDITOR

David P. Anderson

Volume 35 (1991) of AVIAN DISEASES was 1030 pages that included 119 articles, 16 case reports, 14 research notes and 4 pet bird medicine case reports. This is approximately the same number of pages as Volume 34.

During the past year we received 228 new manuscripts which is a 20% increase over the preceding year. Our final acceptance rate remains at about 75%.

The editorial board continues to do an outstanding job of manuscript review and deserves support and recognition by the membership.

1991 - 1992 COMMITTEE REPORTS

HISTORY OF AVIAN MEDICINE COMMITTEE

Keith R. Rhoades, Chair

A major goal of the committee during the last few years has been the establishment of AAAP archives. The continued efforts of the previous chairman, Dr. Lee Grumbles, and other committee members led to recent completion of this goal. Archives have been established at the Parks Library of Iowa State University (ISU). ISU's Department of Special Collections is organizing and managing the archives. The initial contribution was historical material that had been maintained by the AAAP Secretary-Treasurer; additional contributions from individuals would be appreciated. Contributions considered appropriate include: correspondence, meeting minutes, bylaws, publications (when authored by the organization), information on conferences and symposia, and photographs (when individuals are identified). Contributions may be sent directly

to the Special Collections Department at the following address:

Manuscripts Curator
Department of Special Collections
403 Parks Library
Corner of Osborn and Morrill Streets
Iowa State University
Ames, IA 50010

A continuing objective of the committee is promoting the publication of articles of historic importance to the AAAP. In this endeavor, the committee requests suggestions for subject matter and authors.

DISEASES OF WILD BIRDS COMMITTEE

David H. Ley, Chair

Quarterly Wildlife Mortality Report. The following highlights mortality reported to the National Wildlife Health Research center (NWHRC) from April to June 1991. NWHRC received 53 epizootic reports this quarter.

Duck plague was confirmed as the cause of death in domestic waterfowl at six locations and was the suspected cause of death at five locations; outbreaks occurred in Indiana, Maryland, Pennsylvania and Virginia. Diagnostic findings in all cases included a typical history and clinical signs, characteristic gross lesions present at necropsy, intranuclear inclusion bodies seen on histopathology, and, at four locations, a positive fluorescent antibody test. Cases were confirmed only upon isolation of the herpes virus. Control efforts carried out at five sites included depopulation of remaining birds and clean-up and decontamination of the area. All the birds died at one site prior to control measures. Options carried out at the remaining four sites included draining and filling temporary ponds, lifetime quarantine on the premises including penning the remaining birds, and placing a net over an existing pond to deter use by wild birds. Landowners at sites where duck plague was not isolated were instructed about the risk of duck plague spreading to other birds and how to monitor remaining birds. Disease surveillance and control efforts were coordinated in each state by USFWS, USDA, State Conservation Agencies, State Agriculture Departments; additional assistance was provided in Virginia by SCWDS, in Pennsylvania by the University of Pennsylvania, and in Indiana by the Mesker Zoo and Purdue University.

Coccidiosis caused mortality for the third consecutive year in lesser scaup using Pheasant Lake in southeastern North Dakota. NWHRC is working with personnel from the Kulm WMD and the North Dakota Public Health Department to gain more information about the epizootiological factors associated with these outbreaks.

Emaciation was the primary diagnosis in 225 eared grebes found dead at Mono Lake in California. The cause of the emaciation is unknown; however, both heavy metal toxicity and starvation are being considered as contributing factors.

Two epizootics involving seabirds occurred on the Kenai Peninsula in Alaska. No evidence of infectious disease has been found in carcasses submitted to NWHRC. Local biologists are concerned that warm surface water temperatures may have kept prey species in deeper water away from surface feeding seabirds.

Nebraska Game and Parks personnel investigated a report of sandhill crane and white pelican mortality near Atkinson, Nebraska. Strong winds and golfball size hail caused trauma in the birds including broken backs, legs, wings and bills.

Carbofuran toxicity was confirmed by SCWDS in birds collected during a recent carbofuran monitoring program in Virginia. Documentation of carbofuran toxicity in wildlife has led to removal of granular carbofuran from the market in several areas.

In Maumee Bay near Toledo, Ohio, a ring-billed gull colony, which produces about 2,000 young per year, experienced a drastic reduction in production. Many chicks died during pipping and the remainder of the eggs never hatched. The same area also lost 9 young-of-the-year eagles this year (60% of state total). Exposure to PCBs is suspected and contaminant analysis is pending.

Avian cholera caused losses of Canada geese and domestic geese from April through June in Freemont, California. This is NWHRC's first confirmed case of avian cholera occurring during June in the western states.

Quarterly wildlife mortality report. The following highlight mortality reported to the National Wildlife Health Research Center (NWHRC) from July to September 1991. NWHRC received 66 epizootic reports this quarter with 52% of the cases being botulism.

Benton Lake NWR in Montana reported the largest botulism outbreak this summer; 3,743 birds died, primarily ducks and shorebirds. In California, Modoc NWR reported botulism mortality of an estimated 1,200 waterfowl on Goose Lake, a large, shallow lake on the northern border, and at Klamath NWR, botulism is suspected to be the cause of death of approximately 1,000 waterfowl, In the Central Flyway, losses were lower than in previous years. All combined, less than 1,500 birds died. Botulism losses were the greatest at Long Lake NWR and J. Clark Salyer NWR in North Dakota, Sand Lake NWR, Spring Lake, and Swan Lake in South Dakota, and Bowdoin NWR in Montana. Over 1,460 waterfowl were picked up on marshes associated with Beaver Dam Lake in Winnebago County, Wisconsin; this botulism outbreak was suspected to have followed an extensive algal bloom. In the Atlantic Flyway, botulism type C caused the death of 700 mallard and "city park" ducks along the Niagara River in Buffalo, New York.

Canadian Wildlife Service personnel observed mortality of thousands of geese nesting on Banks Island in the Northwest Territories, Canada, during a spring aerial survey. The snow goose population on the Banks island is about 100,000 and was the primary species present and affected. The University of Saskatchewan, Saskatoon, confirmed avian cholera. Banks Island is the farthest north that avian cholera has been diagnosed.

An estimated 750 colonial waterbirds, primarily young of the year, were found dead in a rookery on the Yazoo NWR in Mississippi. Carcasses were too decomposed for diagnostic evaluation but samples of fly larva and egg shells were sent to the forensics lab for analysis of residual organophosphorus compounds. Similar mortality occurred in this rookery last summer. The suspected source of the organophosphate is nearby catfish farms.

In Centerville, Maryland, over 6,000 mallards died on a mallard farm during August and September. Early in the outbreaK, <u>Erysipelothrix rhusiopathiae</u> was cultured from one dead duck by Maryland Department of agriculture; all other ancillary tests were negative. Penicillin was added to the ducks' drinking water with a subsequent reduction in mortality.

Mortality again escalated during September and botulism type C was confirmed in one duck sent to NWHRC. It is possible that initial mortality was due to erysipelas, then losses shifted to botulism through ingestion of maggots on carcasses.

An oil spill off the coast of Cape Flattery, Washington in August resulted in oiling of an estimated 4,000 seabirds, primarily common murres. During September, residents of Makah Indian Reservation reported seabirds were washing ashore dead or very weak and not obviously oiled; diagnostic examination by NWHRC showed all birds were emaciated, and some were oiled.

Seabird mortality occurred for the second consecutive year at Cape Yakatega, Alaska. Over 1,000 scoters died; the only consistent necropsy finding was emaciation. High levels of cadmium were found in samples from the 1990 dieoff. Also in Alaska, an estimated 500 shearwaters washed into Dutch Harbor on Unalaska Island. It is speculated that mortality occurs every fall when fish processing plants in the harbor close, thus reducing the available food supply. One bird, however, was found oiled.

Quarterly Wildlife Mortality Report. The following highlights mortality reported to the National Wildlife Health Research Center (NWHRC) from October to December 1991. NWHRC received 49 epizootic reports this quarter; 24% were reports of avian cholera outbreaks.

As of February, 1992, avian cholera continued to cause losses of Canada geese and ducks at Lac qui Parle Wildlife Management Area in Watson, Minnesota in what was reported to be the first epizootic of the disease this fall. Losses of over 6,700 birds have been reported at Lac qui Parle and the surrounding areas of Big Stone NWR, Marshall Lake, Big Stone Power Plant and several smaller lakes. In November, one month after mortality began at Lac qui Parle, avian cholera was confirmed in birds from several areas in northwest Missouri and southwest Iowa. A population of about 700,000 snow/blue geese appeared to be traveling daily between five management areas in the two states where a total of 5,119 geese were picked up. In the Riverton/Forney area of Iowa, a population of 35 eagles was eating the dead birds, however, no losses were reported. Losses remained relatively low this fall in the Central flyway. The Rice Belt area of southwestern Texas had the greatest losses where an estimated 2,200 birds died. Mortality in the area slowed after heavy rainfall and subsequent flooding provided alternate habitat. In the Pacific Flyway, two areas in California reported losses. The Sacramento NWR complex reported mortality of 3,132 in an estimated population of 214,000 geese and 410,000 ducks. Klamath basin NWR of northern California also reported low level losses in their duck population of 250,000.

Severe weather in northeastern South Dakota concentrated birds into the few remaining areas of open water. Medicine Lake in Codington County was one such area and within 24 hours of arrival, an estimated 2,500 snow geese were sick or dead. Mortality attributed to salt toxicosis and necrotic enteritis has occurred on this lake in previous years.

Several areas reported low levels of mortality due to aspergillosis this year. Early cold weather and snowstorms in Kansas and Nebraska forced waterfowl to feed in agricultural areas. Aspergillosis

was diagnosed in birds from an area in southwestern Nebraska where 380 birds were found dead. Mallards were also the primary species found affected in a sand pit near the Platte River. Snow geese and lesser Scaup were affected on sewage treatment lagoons in Elwood, Kansas. Mortality suspected to be caused by aspergillosis was reported from an area in Montana that had aspergillosis last year.

Thousands of migrating eared grebes "rained down" on houses, roads, and frozen fields in central Utah. The birds were concentrated in communities and lighted areas, and it is theorized that the migrating birds became disoriented when they hit a storm front and tried to land on areas that appeared to be water. It is estimated between 5,000-10,000 birds were affected, and hundreds died from trauma in the area from Holden to Cedar City. Many birds were found alive and transported to water in hopes they would survive. Diagnostic evaluation supported trauma as a cause of death.

An estimated 400 lesser and greater scaup were found dead in the debris collection bins within a nuclear power plant on Lake Michigan. It is speculated that the scaup were feeding on zebra mussels attached to the intake pipes. Upon examination, all birds were found to have recently ingested zebra mussels, and lesions consistent with trauma and drowning were seen.

A systemic protozoan infection was diagnosed as the cause of death for a minimum of 14 relocated trumpeter swans at Fish Springs NWR, Utah. Because of the potential detrimental effects the disease could have on the Rocky Mountain population of trumpeter swans, the remaining eight swans were euthanized, and subsequent necropsies showed lesions suggestive of infection for six of the eight.

WANTED FOR OWL BIBLIOGRAPHY

Reprints on Owls - Authors of articles or publications dealing with owls and wishing them to be listed in the second edition of a working bibliography of Owls of the World are asked to send reprints to Richard J. Clark, The Owl Bibliography, C/O Dept of Biology, York College of Pennsylvania, York, PA 17405-7199.

POSITIONS WANTED

Dr. Otis Miller, Jr., DVM is seeking a position in the poultry industry. After having worked for 13 years as a Supervisory Veterinary Medical Officer (SVMO) for USDA in poultry processing plants; He is now currently completing a Master's of Veterinary Medical Science in poultry at Mississippi State College of Veterinary Medicine. His thesis work research was conducted in the area of food safety using rapid diagnostic procedures with impedance microbiology in poultry processing to determine shelf-life, total microbial load, and identification of microorganisms. Through previous work and present course work Dr. Miller has a good background in broiler processing and has well developed field and hatchery capabilities. Dr. Miller can be contacted at Mississippi State College of Veterinary Medicine Drawer V Mississippi State, MS 39762, 601-325-3432, Ext. 1208.

Recent veterinary graduate with poultry specialty seeks employment in any area of the poultry industry, including corporate work, consulting, extension, teaching, or regulation. Experience includes production, field service, hatchery work, processing, breeding/genetics, teaching and laboratory work. Also have computer skills. Please contact Paul G. Miller, DVM. PO Box 183, Stillwater, OK 74076-0183. Phone (405) 744-4156 or (414) 798-1620.

POSITIONS AVAILABLE

Assistant/Associate Professor - Tenure Track Position *- At the Departments of Poultry Science and Veterinary Science, Louisiana Agricultural Experiment Station, LSU Agricultural Center Campus, Baton Rouge, LA. Qualifications: DVM and PhD in Immunology, Microbiology, Poultry Science or a closely related field. Applicants must have demonstrated abilities or potential for developing an active extramurally funded research program. Preference may be given to candidates with experience or interest in mucosal immunology. Application deadline is June 15, 1992 or until a suitable candidate is identified. The major responsibilities will be to develop a strong extramurally funded research program on diseases of poultry using modern molecular biological approaches relative to disease/host interactions; establish a liaison with the poultry industry; provide assistance in monitoring flock health; and contribute to the teaching program in poultry sciences. Qualified persons are encouraged to submit a letter of application and complete resume to the search committee chairperson. In addition, applicants should identify three references who can be contacted by the committee relative to their qualifications for the position. Submit all materials to Dr. Roger A. Teekell, Head, Dept of Poultry Science, LSU Agricultural Center, Baton Rouge, LA 70803-4606. Louisiana State University and the Louisiana Agricultural Experiment Station are equal opportunity/affirmative action employers.*

Poultry Veterinarian *- Applicants must be licensed and accredited in North Carolina or must pass the state boards following employment. Experience at the breeder and commercial level preferred. Responsibilities will include providing technical support to field personnel in optimizing performance at the breeder, hatchery and grow-out levels. Duties include extensive field work and the development/implementation of health-related programs. Send resume to Dennis Carter, Personnel Director, Prestage Farms, Inc., PO Box 438, Clinton, NC 28328. EOE.*

Veterinary Poultry Diagnostician *- Position available at the Georgia Poultry Laboratory, Dalton, Georgia. A DVM degree or equivalent is required with poultry experience desirable. However, recent graduates without poultry experience will be considered. Responsibilities will include clinical diagnoses of poultry diseases and recommendations for treatment and prevention. Some field work will be required along with a willingness to work closely with the poultry industry. All applicants must be United states Citizens. A Georgia veterinary license is required. All license examination fees will be paid by Georgia Poultry Laboratory. Salary commensurate with qualifications and experience. Please send resume and references to Dr. Thomas G. Dickson, PO Box 20, Oakwood, GA 30566. Phone (404) 535-5996.*

Avian Medicine Specialist *- The College of Veterinary Medicine at Mississippi State University is seeking nominations and applications for a tenure track, avian medicine specialist at the assistant or associate professor level. Primary duties include research and research in support of the poultry industry. Teaching responsibilities involve limited classroom participation with students in the DVM and veterinary graduate programs. Candidates should possess the DVM degree, with advanced degrees and/or equivalent training in avian medicine desirable. Candidates with experience in the poultry industry are preferred. Salary and academic rank will be commensurate with training and experience. Please send letters of nomination or applications including curriculum vitae, the names and addresses of three professional references, and a statement of career goals to Dr. H. Graham Purchase, Director, Veterinary Medical Research, College of Veterinary Medicine, Drawer V, Mississippi State, MS 39762. Applications will be accepted until August 15, 1992, or until a suitable candidate is found. Mississippi State University is an affirmative action/equal opportunity employer.*

PhD Virologist *- We need a PhD virologist to work in an R&D environment focused on vaccine production for poultry. Our client is strong in poultry and is developing a name for itself in small animals. This is a relatively small department and there is room for creativity and independence as well as an opportunity for growth into all phases of the business. The position was created by the promotion of the previous individual. There is minimal turnover here, and even in a poor economy, there has been consistent growth in this firm. The firm uses the latest techniques, provides world-class benefits, and is staffed with top-notch research talent. PSA also has openings in the Midwest and on the East Coast for scientists and chemists in animal health and other fields. For further information please contact Al Dagit at 215-647-5744.*

ADDRESS CHANGES

AMBRUS Sandy
02, 04, 10
5101 Leonard Road
#3
Bryan TX 77803
WORK (409) 260-9222

ARNOLD Ilene Debbie
02, 05, 02-12
327 Cricket Ave
North Hills PA 19038-2217

BARTON James T
02, 02, 02
Indian River International
PO Box 630828
Nacogdoches TX 75963
BUS (409) 569-8272
FAX (409) 569-0145

BLORE Pamela Jean
04, 05, 02
Cobb Vantress Inc
PO Box 1030
Siloam Springs AR 72761-1030
WORK (501) 524-3166 ext 154
HOME (501) 267-2242

CASTRO Anthony E
02, 02, 02
Animal Diagnostic Lab
Dept of Veterinary Science
Penn State University
University Park PA 16802
BUS (814) 863-0837

CASTRO ARIAS Jorge Miguel
02, 06, 01-12
PO Box 1859-1000
San Jose
COSTA RICA
WORK (506) 23-2076
FAX (506) 22-4431

DHILLON A. S.
02, -, -
Washington State University
Puyallup
Research and Education Center
7612 Pioneer Way E
Puyallup WA 98371-4998
BUS (206) 840-4536
FAX (206) 840-4544
HOME (206) 848-4165

DICKINSON E. M.
13514 E 28th Ave
Spokane WA 99216

DOBSON Kurt
02, 03, 12
1562 Cardinal Dr
Fayetteville AR 72703
HOME (501) 443-7236

DOMINGO Dan Torres
04, 05, 12
Central Soya
1200 North Second St
Decatur IN 46733
WORK (219) 724-2101
FAX (219) 848-7692

GILLESPIE Jack R
02, 06, 01
480 S Shore Road
Brownstone IN 47220
BUS (812) 358-2412
FAX (812) 358-3562
HOME (812) 358-2392

GILLINGHAM Scott L
02, 05, 01-09-11-12
Intervet Canada, Inc
1801 Wentworth St
Unit 1
Whitby Ontario L1N 8M2
CANADA
WORK (416) 728-5252
HOME (519) 763-4695

GRUMBLES L. C.
03, 07, -
9640 River Road
College Station TX 77845-9513
HOME (409) 846-5253

HART Wilfred Sandy
5 East Coma, Suite 12-612
Hidalgo TX 78557-2502

HATKIN Josh M
04
Fakieh Poultry Company
PO Box 160
Al Hawiya
Taif
SAUDI ARABIA

HITCHNER S. B.
03, 07, -
24110 Kinnairds Point Drive
Worton MD 21678
HOME (301) 778-3560

MANFREDINI F Roberto A
02, 03, 12
Rhodia-Merieux Veterinaria Ltd
Fazenda Sao Francisco-s/no
Caixa Posta 7
Paulinia SP 13140
BRAZIL

NERSESSIAN Bedros Nerses
26562 Roseland Road
Elkhart IN 46514

OLSEN Duane E
02, 05, 12
14519 Collier Road
Delhi CA 95315
BUS (209) 394-7901 Ext 4435
FAX (209) 394-6903

PUTNAM Marshall R
02, 03, 12
PO Box 460
Lewiston NC 27834

RAYA REYES Rafael
02, -, -
Jose Ma Rico 713-12
Colonia del Valle
Delegacion Benito Juarez
Mexico DF 03100
MEXICO

SHAPIRO David
02, 05, 12
5268 North Valentine, #104
Fresno CA 93711-2663
BUS (209) 276-1347
FAX (209) 485-1130

SHIVER Cheryl
02, 09, 13
Foster Farms
843 Davis Street
Livingston CA 95334
BUS (800) 227-0811

STEWART Robert (Gregg)
02, 05, 07
PO Box 174
Watkinsville GA 30677
BUS (404) 769-0132
HOME (404) 769-0132

NEW MEMBERS

AGUILERA Mario A
02, -, -
Ciba Geigy
Anillo Periferico 30-31
Zona 11
Guatemala City
GUATEMALA
BUS 737339-42
HOME 944138

ANSEDE Frank
07, -, -
110 Lincoln Green Apt 215
Starkville MS 39759
HOME (601) 324-5476

COFFMAN Leroy M
02, 09, 09
Oregon Dept of Agriculture
635 Capitol Street NE
Salem OR 97310
BUS (503) 378-4710
FAX (503) 378-6525

GONZALEZ S Otto F
02, 05, 07
Proteinas Nacionales C pro A
EPS A-105
PO Box 52-4121
Miami FL 33152-4121
BUS (809) 566-7211
FAX (809) 566-3224
HOME (809) 544-1328

GRAY Howard Dale
02, 03, 07-10
Poultry Health Laboratories
24711 County Road, 100A
Davis CA 95616
BUS (916) 753-5881
FAX (916) 753-8141
HOME (916) 753-5168

GRUBB Donald Wayne
02, 05, 02-07-12
American Selected Prod
ISa Group
575 Copeland Mill Rd #1B
Westerville OH 43081
BUS (614) 898-7500
FAX (614) 898-7505
HOME (614) 891-9518

JARECKI-BLACK Judy Catherine
04, 04, 10
Southeast Poultry Research Lab
934 College Station Road
Athens GA 30605
BUS (404) 546-3463
FAX (404) 546-3161
HOME (404) 742-8348

MCLEAN Donald Whitney
07, -, -
5860 SW West Hills Road
Corvallis OR 97333
BUS (503) 737-2141
HOME (503) 752-7609

MILLER Timothy K
02, -, -
Dept Microbiology Immunology
Parasitology
Cornell University
College of Veterinary Med
Ithaca NY 14850
BUS (607) 253-3406

MORGAN Robin
04, 02, 10
Dept of Animal Sci and Agri Biochem
040 Townsend Hall
University of Delaware
Newark DE 19717
BUS (302) 831-2524
FAX (302) 831-3651
HOME (215) 274-0115

PABLO Reyna
02, -, -
Avenida Aviacion 3308
San Borja
Lima
PERU
BUS 676729
HOME 371314

PALACIOS DE A Alejandra
02, 03, 11-12
Secreto 19 Col Chimalistac
Del Alvaro Obregon
Mexico DF 01070
MEXICO
BUS 6586377
HOME 6731607

RODAS Rolando
02, -, -
7a Calle 34-65, Zona 7
Guatemala City
GUATEMALA
BUS 502-2-911014
FAX 502-2-956755

ROSSI Alde Rafael
07, -, -
1879 Anamor St
Redwood City CA 94061
HOME (415) 368-7388

SEAWELL Betty W
04, 03, 10
Intervet Inc
PO Box 318
Millsboro DE 19966
BUS (302) 934-8051
FAX (302) 934-7497

VILELA Josue
02, -, -
Teodoro Valcarcel 999
Sta Lwonor
Trujillo
PERU
BUS 2044-231001

WILSON Catherine
07, -, -
Animal And Poultry Sci
C-106
University of Arkansas
Fayetteville AR 72703
BUS (501) 575-5846
HOME (501) 545-3402

WOJCINSKI Helen
02, -, -
Hybrid Turkeys Inc
9 Centennial Dr
Kitchener Ontario N2B 3E9
CANADA
BUS (519) 578-2740

AAAP FUNCTION LIST
BOSTON MARRIOTT - COPLEY PLACE

Friday, July 31, 1992

8:00 am - 7:00 pm	Board of Directors Meeting Cape Cod

Saturday, August 1, 1992

7:00 am - 7:00 pm	ACPV Exam Salon A-D
8:00 am - 7:00 pm	Board of Directors Meeting Cape Cod
9:00 am - noon	Diseases of Public Health Significance Hyannis
noon - 8:00 pm	Poster set-up Salon F
2:00 pm - 5:00 pm	Avian Section set-up Salon E
3:00 pm - 5:00 pm	Memorial Fund Committee Falmouth
4:00 pm - 6:00 pm	Respiratory Diseases Committee Regis

Sunday, August 2, 1992

7:00 am	*Coffee and Donuts* *Salon F*
7:00 am - 5:00 pm	Avian Poster Presentation Salon F
7:00 am - 7:00 pm	ACPV Board Meeting Orleans
8:00 am - 5:00 pm	Avian Medicine Symposium Salon E
5:00 pm - 6:00 pm	Reference Antisera Committee Tufts
7:00 pm - 8:30 pm	Biotechnology Committee Hyannis

Monday, August 3, 1992

7:00 am	*Coffee and Donuts* *Salon F*
7:00 am - 5:00 pm	Avian Poster Presentation Salon F
7:30 am - 9:30 pm	Drugs and Biologics Committee Vineyard
8:00 am - 9:30 am	Education Committee Hyannis
8:00 am - 9:30 am	Editorial Board Simmons
8:30 am - 9:30 am	Georgia MAM Alumni Group Suffolk
9:30 am - 5:30 pm	Avian Medicine Session 1 Salon E
9:30 am - 5:30 pm	Avian Medicine Session 2 Salon J/K
noon - 2:00 pm	***AAAP Awards Luncheon*** ***Salon G***
2:30 pm - 3:30 pm	Animal Welfare Reference Committee Hyannis
4:00 pm - 7:00 pm	Enteric Diseases Committee Suffolk
5:00 pm - 7:00 pm	Disease Reporting and Nomenclature Vineyard
5:00 pm - 6:00 pm	Pet Bird Diseases Falmouth
5:30 pm - 6:30 pm	Toxic, Miscellaneous and Infectious Dis Harvard
5:30 pm - 6:30 pm	Diseases of Wild Birds Hyannis
6:00 pm - 7:00 pm	Economics and Quantitative Epidemiology Tufts

Tuesday, August 4, 1992

7:00 am	*Coffee and Donuts* *Salon F*
7:00 am - 5:00 pm	Avian Poster Presentation Salon F
7:00 am - 8:30 am	Muscular Skeletal Disease Falmouth
7:00 am - 9:00 am	ACPV Board Meeting Salon A & B
9:00 am - 10:00 am	Tumor Viruses Yarmouth
9:30 am - 5:30 pm	Avian Medicine Session 1 Salon E
9:30 am - 5:30 pm	Avian Medicine Session 2 Salon G
10:30 am - 12:30 pm	***AAAP ANNUAL BUSINESS MEETING***
5:00 pm - 7:00 pm	Diseases of Poultry Editorial Committee Tufts

Wednesday, August 5, 1992

7:00 am	*Coffee and Donuts* *Salon F*
7:00 am - 12:30 pm	Avian Poster Presentation Salon F
7:00 am - 9:00 am	Board of Directors Meeting Hyannis
9:30 am - 12:30 pm	Avian Medicine Session 1 Salon E
9:30 am - 12:30 pm	Avian Medicine Session 2 Salon G

****** COFFEE, JUICE AND PASTRIES WILL BE AVAILABLE IN THE POSTER ROOM EACH MORNING AT 7:00 AM**

SYMPOSIUM
IMPROVED DIAGNOSIS OF AVIAN DISEASES USING MOLECULAR BIOLOGY
SUNDAY, AUGUST 2, 1992

8:00 am Welcome
H. John Barnes, President AAAP.

8:05 am Contributions of molecular biology to the diagnosis of avian diseases: An overview.
D. J. Jackwood

Session 1: Nucleic Acid Probes and Hybridization Techniques

8:15 am Introduction to nucleic acid probes and hybridization techniques.
R. F. Silva

8:30 am Diagnosis of avian pox viruses using nucleic acid probes.
D. N. Tripathy

8:45 am Dot blot and in situ hybridization for the detection of infectious bursal disease viruses.
D. J. Jackwood

9:00 am Use of nucleotide sequencing to design probes for the detection of infectious bursal disease viruses.
F. S. B. Kibenge

9:15 am DNA oligonucleotide probes: Identification of Newcastle disease virus and potential diagnostic application.
J. C. Jarecki-Black

9:30 am Use of DNA probes to detect enterotoxigenic strains of *E. coli* isolated from turkeys.
M. M. Jensen

9:45 am Development of ELISA and DNA based methods for diagnosing avian coccidiosis.
M. C. Jenkins

10:00 **BREAK**

Session 2: The Polymerase Chain Reaction (PCR)

10:15 am Introduction to the polymerase chain reaction.
M. W. Jackwood

10:30 am Diagnosis of Marek's disease virus using PCR.
R. F. Silva

10:45 am Diagnosis of avian influenza using the polymerase chain reaction.
M. L. Perdue

11:00 am Diagnosis of infectious bronchitis virus using the polymerase chain reaction.
M. W. Jackwood

11:15 am Use of PCR to detect Lyme Borreliosis in avian tissues.
M. I. Khan

11:30 am Mycoplasma detection by polymerase chain reaction.
L. H. Lauerman Jr.

11:45 am Recent advances in PCR diagnostic applications.
C. E. Beisel

12:00 n **LUNCH BREAK**

Session 3: Monoclonal Antibodies

1:30 pm Introduction to monoclonal antibodies.
Y. M. Saif

1:45 pm In situ detection of infectious bursal disease virus using immunoperoxidase staining.
J. J. Giambrone

2:00 pm Monoclonal antibodies to Newcastle disease virus and infectious bursal disease virus and their use in the diagnosis of disease.
D. P. Lana

2:15 pm The use of monoclonal antibodies specific for Salmonella enteritidis as diagnostic and research reagents.
L. H. Keller

2:30 pm Detection of avian mycoplasmas using monoclonal antibodies.
V. S. Panangala

2:45 pm Diagnosis of immune dysfunction and immune suppression with anti-lymphocyte monoclonal antibodies.
H. S. Lillehoj

3:00 pm **BREAK**

Session 4: Practical Applications of Molecular Techniques
The Industry Perspective

3:15 pm Implementation of PCR technology for the diagnosis of mycoplasma infections.
P. Anderson

3:30 pm Application of molecular techniques in the veterinary diagnostic laboratory.
F. J. Hoerr

3:45 pm Applications of biotechnology in avian medicine.
A. W. Graybeal

4:00 pm **Concluding Remarks**
R. L. Witter

SCIENTIFIC PROGRAM
AVMA/AVIAN MEDICINE SECTION - BOSTON, MA
ORAL PRESENTATIONS

MONDAY	SESSION 1	SESSION 2
9:30 am	*David Halvorson* Influenza in commercial broiler breeders	*Eva Wallner-Pendleton* An investigation of excessive mortality in young poults
9:45 am	*Max Brugh* Evaluation of the pathogenicity potential of type A influenza viruses isolated from poultry	*Donna Carver* Risk factors associated with early poult mortality
10:00 am	*Richard Slemons* Biological properties and pathogenicity of influenza viruses in a 1-day-old chick model: differences in A/Chicken/Alabama/75 and two waterfowl-origin low pathogenic influenza viruses	*Chris Hayhow* Scanning electron and light microscopy of gut changes in turkey
10:15 am	*David Swayne* Differences in pathogenicity of influenza virus A/Chicken/Alabama/75 (HN) in commercial laying-type, SPF laying-type and broiler-type chickens	*Mari Thouvenelle* The pathophysiology of astrovirus infection in hatching turkeys
10:30 am	**BREAK**	**BREAK**
11:00 am	*Jeffrey LeJeune* Molecular studies on infectious bronchitis virus	*Darrell Trampel* The effect of bacitracin on turkey poult performance in the presence and absence of stunting syndrome
11:15 am	*Ellen Collisson* Genomic analyses of the U.S. strains of infectious bronchitis virus	*Galestan Ghazikhanian* Streptococcus bovis infection in turkey poults
11:30 am	*Jack Gelb* Comparison of S-1 gene sequences of the spike peplomer of different infectious bronchitis virus serotypes	*Elie Barbour* Protection in turkeys against colisepticemia by enterotoxic and invasive virulence components of escherichia coli

11:45 am	*Richard Jones* Observations on trypsin-sensitive avian reoviruses	*Eric Gonder* Control of an F-strain Mycoplasma gallisepticum outbreak in a series of turkey breeder flocks
12:00 n	*Nahla El-Mahdy* Production of monoclonal antibodies against avian reoviruses and screening using suspension ELISA assay	*Dennis Wages* Eff production drop in turkey breeders
12:15 pm	*Terence Pertile* Immunohistochemical localization of T lymphocyte and macrophage subpopulations in viral arthritis	*James Guy* Characterization of a flavivirus-like virus isolated from turkeys experiencing egg-drop syndrome
12:30 pm	**AAAP AWARDS LUNCHEON**	**AAAP AWARDS LUNCHEON**
2:00 pm	*Pedro Villegas* Pathogenesis of the VG/GA strains of newcastle	*Jean-Pierre Vaillancourt* Cyanosis as a cause of condemnation in tom turkeys
2:15 pm	*Judy Jarecki-Black* Identification of NDV-infected avian tissue by an oligonucleotide probe	*Douglas Anderson* Actinomyces pyogenes as a primary etiology of osteomyelitis in commercial turkey operations
2:30 pm	*Jamil Ahmad* Characterization of a new modified live virus vaccine that protects chickens against newcastle disease by in ovo injection	*Karen Wright* Turkey osteomyelitis complex national survey
2:45 pm	*Deoki Tripathy* Specific genomic probes for differentiation of fowlpox and laryngotracheitis viruses	*Teresa Morishita* A prospective epidemiological study of pyogranulomatous typhlitis and hepatitis in market turkeys
3:00 pm	**BREAK**	**BREAK**
3:30 pm	*Richard Jones* Infection of chickens with turkey rhinotracheitis-like viruses	*Colin Baxter-Jones* A Mycoplasma iowae eradication programme in a primary turkey breeding operation
3:45 pm	*Martin Smeltzer* Case Report: An idiopathic Rhinotracheitis in chickens and turkeys	*Martine Boulianne* Sudden death syndrome of heavy turkeys: a cardiovascular disorder

4:00 pm	*Davis Myers* An overview of the serodiagnosis and epidemiology of avian pneumovirus infection, an emerging disease of poultry	*W. Peden* Immunoblot analysis of turkey response to multiple aspergillus fumigatus antigens
4:15 pm	*James Davis* Runting and stunting syndrome in North Georgia broiler chickens associated with an avian nephritis virus and an avian enterovirus	*Patricia Brown* Comparison of serology, antigen capture and culture for the diagnosis of avian chlamydiosis in turkeys
4:30 pm	*John Rosenberger* The frequency of isolation and characterization of chicken anemia agent (CAA) obtained from chickens produced in different geographical areas in the United States	*Bruce Homer* Comparison of immunological and cytochemical staining techniques for identification of chlamydia psittaci in formalin-fixed tissues
4:45 pm	*John Brown* Effect of so-called chicken anemia agent maternal antibody of chick serologic conversion to viruses in the field	*H. John Barnes* A longitudinal study of natural Mycoplasma synoviae infection of commercial turkey flocks prior to and following depopulation, clean-up and disinfection of the farms
5:00 pm	*Benjamin Lucio-Martinez* Immune tolerance in chickens infected with chicken infectious anemia virus (CIAV) through the egg	*Martin Blankfard* Interpretation of Mycoplasma Serologic Results
5:15 pm	*Mark Goodwin* Runting and stunting syndrome: Transmission of disease to broiler chickens, and diagnostic pathology	*David Ley* Antibodies to a membrane of Mycoplasma gallsepticum inhibit growth and attachment of the bacterium
TUESDAY	**SESSION 1**	**SESSION 2**
9:30 am	*Conrad Pope* The probable pathogenesis of increased mortality (to include "spiking") in young broiler aged chickens from the Delmarva peninsula during calendar year 1990	*John Dohms* Identification, cloning and sequencing of the pulative cytadhesin gene of Mycoplasma gallisepticum

9:45 am	*H. Shivaprasad* Neuromuscular disease associated with suspected lasolacid toxicity in broilers	*Lloyd Lauerman* Evaluation of primers selected from 16S rRNA for Mycoplasma synoviae polymerase chain reaction
10:00 am	*Frederic Hoerr* Comparative mycotoxicology of Fusarium moniliforme in broiler chickens	*Martin Ficken* Breeder turkey hens seropositive and culture negative for Mycoplasma synoviae
10:15	*Thomas Brown* Oral administration of purified Fumonisin B to broiler chicks pathology and performance data	*Arnold Rosenwald* Archives-searching the past to solve present or future
10:30	**AAAP BUSINESS MEETING**	**AAAP BUSINESS MEETING**
12:30 pm	**LUNCH**	**LUNCH**
1:30 PM	*Robert Goodhope* A description study of cellulitis in Saskatchewan broiler chickens	*M. Suresh* Effect of induced immunodeficiency on the pathogenesis of hemorrhagic enteritis (HE) in turkeys
1:45 pm	*Jean Sander* Case Report - A case of suspected arsenical keratosis in broiler breeders housed with pressure treated slats	*Jagdev Sharma* Protective efficacy and immunodepressive potential of cell culture-propagated and spleen homogenate hemorrhagic enteritis virus vaccines of turkeys
2:00 pm	*Daniel Weinstock* Study of squamous cell carcinoma in broiler chickens: An ecological approach	*Shantha Kodihalli* Avian influenza subunit vaccine for turkeys
2:15 pm	*Dennis Wages* Clinical efficacy of Danoflozacin in the therapy of E. coli airsacculitis in broilers	*Olufemi Fatunmbi* Influence of immunoregulin (propionibacterium acnes) on the efficacy of avian influenza oil-emulsion vaccine in turkeys
2:30 pm	*Lisa Nolan* Complement resistance as a virulence determinant in an Avian Escherichia coli	*Richard Witter* A search for novel pathotypes of Marek's disease virus

2:45 pm	*Cheryl Shiver* Efficacy of ts-11 Mycoplasma gallisepticum vaccination in broilers	*Mona Aly* Influence of serotype 2 Marek's disease vaccine virus on the development of reticuloendotheliosis virus-induced B and T cell lymphomas in chickens
3:00 pm	**BREAK**	**BREAK**
3:30 pm	*Richard Julian* Peripheral neuropathy causing "range paralysis" in leghorn pullets	*Lucy Volpini* Differential effects of various conditioned media on early and late stages of latency in Marek's disease
3:45 pm	*John Glisson* The carrier state of Pasteurella multocida in immunized chickens	*Martin Sevoian* The inhibitory influence (in vivo and in vitro of avian lymphokines (JMV-1)) on avian and mammalian pathogens
4:00 pm	*Charles Kelleher* Efficacy of an enzyme-linked immunosorbent assay (ELISA) to detect antibody to Pasteurella multocida	*Amrut Bhogle* Marek's disease virus antigens in JMV-1 transformed non-producer cell-line supernatant
4:15 pm	*David Rives* An outbreak of fowl cholera in commercial muscovy ducks	*Keyvan Nazerian* Expression of Marek's disease virus genes in fowlpox virus
4:30 pm	*Victoria Bowes* Muscovy duck mortality associated with an unidentified intracellular parasite	*Lucy Lee* Expression in Baculovirus of a major Marek's disease virus gene encoding proteins involved in transformation
4:45 pm	*Charles Howe Jr.* Case report - Salt omission from a layer diet	*Karel Schat* Detection of retrovirus sequences in budgerigars with tumors
5:00 pm	*Richard Meinersmann* Adjuvancy of toxin from vibrio cholerae in chickens	*A. Fadly* Role of contact and congenital transmission of endogenous virus-21 (EV21) in the susceptibility of chickens to avian leukosis virus infection and tumors

5:15 pm	*Amer Silim* Why use egg-yolk rather than serum for antibody monitoring: Our experience in the last four years	*Michael Ratcliffe* High frequency retroviral transformation of chicken T cells expressing either B or γδ T cell receptors
WEDNESDAY	**SESSION 1**	**SESSION 2**
9:30 am	*Roy Montgomery* A comparison of the Gland of Harder response and the histology of head associated lymphoid tissue (HALT) in chickens and turkeys	*Robin Morgan* A herpesvirus of turkeys recombinant vaccine expressing the Newcastle disease virus fusion protein protects chickens from Newcastle and Marek's Diseases
9:45 am	*Ching Ching Wu* Identification of infectious bursal disease virus by direct sequencing of amplified cDNA	*Hyun Lillehoj* Contrasting effects of dexamethasone on avian immune system and on disease susceptibility to E. acervulina
10:00 am	*Renee Fisk* Expression of a portion of the infectious bursal disease virus VP2 gene in E. coli	*Timothy Miller* Immune chicken splenocytes reduce Eimeria tenella development in in vitro culture
10:15 am	*David Snyder* Identification and characterization of the host cell receptor for infectious bursal disease virus	*Daryll Emery* Formic acid as a viable alternative to formaldehyde in poultry house disinfection
10:30 am	**BREAK**	**BREAK**
11:00 am	*Hashim Ghori* Screening for Salmonella SP from seven (7) egg type (commercial) breeder flocks: A three (3) year study	*David Shapiro* Control measures for Mycoplasmosis in an integrated poultry operation
11:15 am	*Robert Porter Jr.* Induced molting increases the severity of intestinal Salmonella enteritidis infection in adult laying hens of varying age	*Robert Owen* Some aspects of the pathophysiology of broiler pulmonary hypertension syndrome
11:30 am	*Linda Keller* Tracking Salmonella enteritidis through the ovarian tissue of laying hens with specific monoclonal antibodies	*Seyed Mirsalimi* Pathophysiology of pulmonary hypertension-induced ascites: Comparison of meat-type and egg-type chickens

11:45 am *Jubril Hassan*
The effects of breeder vaccination on the immunity of chicks against salmonella infection

Bryan Mayeda
Pathogenesis studies of 2 intractable osteoporosis episodes and of a cloacal prolapse episode on a 1 million hen capacity layer chicken farm in Northern California

12:00 n *Samuel Charles*
Immunogenicity of lipid-conjugated protein vaccines against Salmonella enteritidis infection

12:15 pm *Dennis Senne*
Composting of poultry carcasses: An economical and effective method for carcass disposal and disease control

POSTERS

Mark Bland
Monitoring poultry farm workers using formaldehyde disinfectant

Elie Barbour
Impact of different Salmonella enteritidis vaccines on levels of yolk antibodies and egg production in chicken layers

Donna Maslak
Cell mediated immune responses of the head-associated lymphoid tissues and peripheral blood lymphocytes of the chicken

Donald Waldrip
Coryza-like syndrome in broiler breeders

Cheong-up Choi
Quantitation of specific soluble antigens from hemorrhagic enteritis and marble spleen disease viruses

Alex Bermudez
Effects of Fumonisin B containing fusarium moniliforme culture material on turkey poults

George Rowland
Bone loss in leghorns associated with acute disuse

Lois Bichler
Control of salmonella infection in turkeys by the use of volatile fatty acids

Jean Petter
In vivo comparison of Salmonella enteritidis isolates in mature chickens

Lloyd Spencer
Studies on the salmonella carrier state in broiler chickens

James Davis
Virus isolation accuracy - An evaluation of nine laboratories involved in poultry diagnostics

Ping Ren
Growth factors in embryonal chicken bone and in tibial dyschondroplasia of broilers

Helen Anne Hudson
Skeletal dynamics of the white leghorn laying hen

James Davis
The establishment of normal blood chemistry reference values for specific pathogen free (SPF) leghorn and commercial broiler chickens using the Kodak ektachem DT system

James Andreasen
Heterophil chemotaxis in healthy chickens and in chickens with field infection of staphylococcal tenosynovitis/osteomyelitis

Christiane Soine
Detection of chicken infectious anemia by polymerase chain reaction

Ariel Ortiz
A comparison of the infectivity of live vs lyophilized "F" strain M. gallisepticum

Barbara Sneath
Use of a reporter gene to study transplantation of Marek's disease cell lines in chickens

Mark Goodwin
The changing rates of anemia and polycythemia in clinically ill Georgia broilers: 1988-89 vs 1990

Steven Palmieri
Molecular characterization of the Villegas-Glisson (VG/GA) isolate of Newcastle disease virus

Sherrill Davison
Evaluation of disinfectants against Salmonella enteritidis

John Latimer
Stability of the hemagglutinin gene from the A/ck/pa/1370/83 isolate of Avian influenza a mixed virus population

Hashim Ghori
A survey of Salmonella pullorum infection in backyard flocks in Arkansas: A two (2) year study

David Swayne
Experimental intestinal disease in chickens produced by oral inoculation with a chicken-origin cecal spirochete

Sandra Cloud
Correlation of alterations in the avian lymphoid cell subpopulations with in vitro and in vivo immune responses following inoculation with chicken anemia virus and/or infectious bursal disease virus

Lance Christensen
Immunogenicity of a fowlpox/bursal disease viral recombinant

Jean-Pierre Vaillancourt
Field study on airsacculitis in male turkeys during winter

Jean-Pierre Vaillancourt
Evolution of condemnation rates in turkeys in Ontario (1982-1992)

Jean-Pierre Vaillancourt
A multi-approach/multi-purpose learning system for the study of commercial poultry production and diseases

Masakazu Matsumoto
Maternal antibody against IBDV: Estimation of serum antibodies in chicks by determining egg yolk antibody in broiler eggs

Hyuk Moo Kwon
Restriction enzyme analysis of polymerase chain reaction amplified S1 glycoprotein genes of different infectious bronchitis virus serotypes

Robert Nordgren
Effect of complex carbohydrates on the efficacy of Herpes virus of turkeys vaccines following very virulent Marek's disease virus challenge

Douglas Anderson
Ischemic necrosis of the skin in commercial turkeys due to Mycoplasma synoviae

John Brown
What is the cost of CAA to the broiler industry in Georgia

William Derieux
Incidence, clinical signs and histopathological lesions in pen reared pheasants and chukar partridges infected with Eastern Equine Encephalitis

Marcel Elissalde
Comparison of the effect of the trichothecene mycotoxins diacetotoxyscirpenol (DAS) and T-2 toxin (T-2) on salmonella challenged broiler chicks

Billy Hargis
Bursal anti-steroidogenic peptide (BASP) - possible endocrine role for neonatal bursa of fabricius protection in the chick

Pamela Hargis
Effects of dietary manipulation of Omega-3 fatty acid content in table eggs on production parameters and hepatic lipidosis in leghorn hens

Kenneth Henderson
Characterization of VP2 epitopes from infectious bursal disease virus expressed in baculovirus

Calvin Keeler
A recombinant fowlpox virus protects chickens against challenge by infectious laryngotracheitis virus (ILTV)

Daniel King
Western blot analyses of antibody induced by Newcastle disease virus (NDV) whole virus or subunit vaccines or NDV infection

Elizabeth Laudert
Comparative tissue trophism pattern of avian influenza virus infections in turkey poults and mallard ducklings

Danny Magee
Reproducing a stunting condition in chickens

Sudhir Reddy
Infectious bursal disease virus: virus-lymphocyte interactions in vitro

Delin Ren
A simple immunological assay for detection of Marek's disease virus serotype-1 specific antibodies

Ridha Rekid
Phenotypic and genotypic characterization of avian reovirus isolates from Quebec

Jean Sander
Lactobacillus fermentation for the stabilization of field dead poultry prior to rendering

H. Opitz
Essentials of a successful Salmonella enteritidis control program

Teresa Sperry Tucker
Characterization of lymphocyte depletion in the thymus and spleen of chicken anemia agent infected chickens

Darren Straub
A new microwave detoeing procedure for domestic poultry

Dexin Sui
Marek's disease virus gene encoding a glycoprotein homologous to that of human herpes viruses

Thomas Toth
Dose/response relationship and duration of response in stimulating avian respiratory phagocytes by avirulent Pasteurella multocida

Daral Jackwood
Dot blot and in situ hybridization for the detection of infectious bursal disease viruses

Joseph Giambrone
In situ detection of infectious bursal disease virus using immunoperoxidase staining

Hyun Lillehoj
Diagnosis of immune dysfunction and immune suppression with anti-lymphocyte monoclonal antibodies

Marcus Jensen
Use of DNA probes to detect enteroloxigenic strains of E. coli isolated from turkeys

Frederick Kibenge
Use of nucleotide sequencing to design probes for the detection of infectious bursal disease viruses

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