

# Poultry HEALTH REPORT

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Spring 2002 Issue

## U.S. Fights LPAI Outbreak

Disease could cost poultry industry more than \$150 million

A costly outbreak of low-pathogenic avian influenza (LPAI) seems to be winding down, but action to prevent further AI infections is heating up.

Pennsylvania and Maine dealt with LPAI in late 2001 and early 2002. But heavy economic losses to the poultry industry began with an infection in Rockingham County, Va., in mid-March.

Rockingham County is the turkey capital of Virginia, and by mid-May, 103 of 565 poultry farms in the county were positive for LPAI. The outbreak had reached 157 farms across the state by that time and nearly 3.8 million birds were set for depopulation. LPAI also hit a few North Carolina and West Virginia flocks.

Based on losses through mid-May, the National Turkey Federation estimated poultry industry losses in excess of \$150 million.



A task force of USDA personnel, including epidemiologists, veterinarians, animal health technicians and program staff from the Animal and Plant Health Inspection Service (APHIS) joined with state officials to help manage the LPAI outbreak. More than 200 state and federal officials were involved in the effort.

The LPAI virus is a close genetic relative of the high-pathogenic version of the virus, and recent research shows low-pathogenic viruses can mutate to the more deadly form. "If and when this virus were to change to high-path, the whole world would suddenly look at us differently," said Dr. Robert Eckroade, a University of Pennsylvania poultry scientist. "We would likely lose our poultry export markets for a year."

That's why USDA has opened discussions about possible options for better prevention and control of LPAI through regulatory changes (see page 6). "What we've been doing isn't working," said Dr. Eckroade, who also chairs the U.S. Animal Health Association's Transmissible Diseases of Poultry

Committee. "The industry needs to address a number of tough issues such as continued infection of the live-bird marketing system, use of AI vaccination and new strategies to use for eradication of H5 and H7 LPAI viruses from commercial poultry and live-market birds."

**The National Poultry Improvement Plan (NPIP)** took emergency action to help the turkey industry restore trade between states. Many states had placed restrictions on poultry movement in response to the LPAI situation.

The General Conference Council approved Proposal 17, a proposed change in the NPIP to be considered at the 2002 National Plan Conference, after discussing the matter via teleconference in early May. Dr. Bob Good, who chairs the NPIP's General Conference Council, said the action allows, on an interim basis, the establishment of a U.S. Avian Influenza Clean program for turkey breeding flocks.

"This program is based on the AI Clean broiler breeder program, which is widely accepted," Dr. Good said. Many states require baby poultry and hatching eggs come from NPIP-certified AI Clean flocks.

Delegates to the National Plan Conference in San Antonio in late May will have the opportunity to officially ratify the proposal. It

*Continued on page 2*

### Inside This Issue...

#### PAGE 3

Live-Bird Markets Close Briefly to Control LPAI

#### PAGE 4

Experts Discuss Future of Antibiotic Use for Poultry Production

#### PAGE 7

Research Offers New ELISA Test to Detect TCV Antibodies

#### PAGE 8

Poultry Scientist Wins Agricultural Research Service Rothbart Award

## Trade Disruptions Due to LPAI Have Been Burden to Industry

*continued from page 1*

calls for primary breeding flocks to test at least 30 birds of more than four months of age at 90-day intervals using the agar gel immunodiffusion (AGID) test to retain the AI Clean classification. Multiplier breeding flocks need to test 30 birds at 180-day intervals.

The Office International des Epizooties (OIE) defines high-pathogenic avian influenza (HPAI) as a

List A disease, which requires immediate notification to the organization when an outbreak occurs in a member country. Both the European Commission (EC) and USDA define HPAI as a disease for which a national stamping-out program would be implemented in case of outbreak.

But LPAI is not a reportable disease to OIE, and neither the EC nor USDA requires federal action against the disease.

Many U.S. trade partners, however, banned poultry products from affected states, if not the entire U.S. industry. Japan, China, Russia, the Philippines, Panama, Thailand, Chile and Columbia all placed some form of restriction on U.S. poultry. A significant tonnage of poultry transits Virginia ports, adding complexity to trade issues.

"The action taken by Japan and others over a mild strain of AI, without scientific merit, has been costly for our industry," said Toby Moore with the USA Poultry & Egg Export Council (USAPEEC). "Japan has refused to alter its stance, and other countries have followed its lead." Industry sources point out that Japan is extremely sensitive to potential risks to consumers after experiencing a recent BSE crisis. The U.S. has not even been allowed to send fully cooked poultry products into Japan.

The fact that LPAI is not subject to a federal stamping-out program has also clouded the issue of indemnity payments. A number of Virginia elected officials have lobbied USDA for indemnity payments, and industry officials say they expect an interim rule to be published soon in the Federal Register that will establish indemnity for the affected flocks.

Dr. Eckroade points out that hesitation for any reason at the start of an outbreak can be costly. He was

the first to diagnose AI in Pennsylvania in 1983, which was the first HPAI case in the U.S. since 1923. The 1983-84 outbreak of AI led to the destruction of 17 million birds at a cost to the poultry industry of more than \$200 million.

"You can't wait for the money to start a control program," he said. "The industry has to decide that it is in their best interest to do what has to be done, and hope you can get the money. You must act quickly."

Discussions of change in U.S. regulatory policy likely will involve some way to supplement current surveillance systems with a stamping-out policy for LPAI, coupled with federal indemnification.

The LPAI outbreak also reinforced the need for good biosecurity procedures on poultry operations. Movement of people and equipment between apparently healthy flocks may have helped spread the LPAI virus. Problems with disposal options also surfaced, as Virginia residents voiced concern about possible groundwater contamination from on-farm burial of large numbers of birds. Most were sent to landfills or incinerated.

## PSA Announces Annual Meeting

The Poultry Science Association (PSA) 2002 Annual Meeting is set for Aug. 11-14 in Newark, Del. More information about the event is available by visiting the [www.poultry-science.org/psa02/](http://www.poultry-science.org/psa02/) Web site, or by calling (217) 356-3182.

The meeting will include extensive sessions on environment and management; Extension and instruction; genetics; immunology; nutrition; pathology; physiology; and processing and products.

PSA is a professional organization consisting of approximately 3,500 educators, scientists, Extension specialists, administrators and producers who are committed to advancing the poultry industry.



## Poultry Health Report

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Glenn N. Slack, President & CEO

*Editor*

Dean Houghton  
[dhoughton@animalagriculture.org](mailto:dhoughton@animalagriculture.org)

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1910 Lyda Avenue  
Bowling Green, KY 42104-5809  
ph.: 270-782-9798 fax: 270-782-0188  
e-mail: [NIAA@animalagriculture.org](mailto:NIAA@animalagriculture.org)  
Web site: [www.animalagriculture.org](http://www.animalagriculture.org)

## Live-Bird Markets Close Briefly to Control LPAI

"We're really pleased with the outcome of the live-bird market closure," said Dr. John Huntley, director of animal industry for the New York State Department of Agriculture and Markets. "I can safely say the markets have never been cleaner."

Dr. Huntley is referring to a regional three-day closure of live-bird markets in the northeastern U.S. Teams of state and USDA personnel supervised the simultaneous closure of 123 markets in six states in an effort to control low-pathogenic avian influenza (LPAI).

The poultry industry has pointed to the live-bird markets as a reservoir of LPAI, since these markets rarely close and viruses have the opportunity to circulate. Research shows these LPAI viruses can mutate into more deadly forms, putting the entire eastern U.S. commercial industry at risk.

In June 2001, USDA approved the use of \$925,000 of APHIS

Contingency Funds to support the LPAI control program developed by the Live Bird Market Working Group. Funds were used for epidemiology studies as well as the market-closure program.

New York City is home to 80 of these live-bird markets. Officials closed all 80 New York markets for the three-day period, as well as five wholesale suppliers who voluntarily closed. These firms thoroughly cleaned and disinfected their facilities under the watch of state and federal officials.

New York epidemiologist Dr. Susan Trock said the project was scheduled for April 8 through 10. "Some locations actually began the process of cleaning up Sunday, April 7," Dr. Trock said. "They got rid of all birds and other animals. They took all cages out, and cleaned their facilities top to bottom, floor to ceiling. It was a complete cleaning and disinfection."

All market locations were

inspected by 5 p.m. April 8, as officials checked to make sure all markets had performed a thorough cleaning. Nine of the 80 markets had to be reinspected. Inspectors checked facilities each of the next two days as well, and did environmental sampling by taking swab samples. These samples were sent to the National Veterinary Services Laboratory, Ames, Iowa, for virus isolation.

Each market was down a full three days, ready for business by Thursday, April 11. Businesses that did not pass



Photo: Dr. Susan Trock

*Live-bird markets were closed for three days in April so that workers could do a thorough job of cleaning and disinfecting cages and equipment.*

Monday's inspection were not allowed to open until Friday, April 12.

Dr. Trock said that results from 63 of the 80 environmental samples had returned by press time, and all samples to date were negative.

Officials went back to the markets to collect samples from birds and environment after the markets were restocked. Those results are pending.

Dr. Huntley said the results seen from cultures so far "show that we were able to get flu out of the markets." He's keeping an eye on USDA discussions about new regulatory approaches to control LPAI viruses (see page 6). "I'm hoping we can establish an integrated regional program that will help us address future threats," he said.

## Boosting Biosecurity Management

North Carolina did not escape the avian influenza outbreak, having discovered three commercial poultry operations that tested positive for AI. The state's animal health officials reminded growers that basic biosecurity measures can help prevent and control the spread of AI. Recommended biosecurity management practices include:

- Keep traffic to a minimum.
- Require vehicles entering a poultry farm to stop at the entrance and fill out a visitor log. Include name, date, time, company affiliation, reason for visit and farms visited previously that day.
- Disinfect tires of all vehicles

before entering. Vendor vehicles must be kept clean at all times.

- Rubber or plastic boots must be worn at all times on the farm. If duties require moving a vehicle, boots must be sprayed with disinfectant before the driver gets out of the vehicle.

- Entry to poultry houses is forbidden unless approved by grower or poultry company.

- Maintenance workers must wear clean coveralls, hairnets and clean boots and use disinfectant stations.

- If involved in a questionable disease situation on a farm, call supervisory personnel before going to other farms.

# Experts Discuss Future of Antibiotic Use for Poultry Production

Scientific studies have not yet proven that drug-resistant bacteria, found in poultry that have been fed antibiotics, can permanently colonize in the human body. That's according to Dr. Dennis P. Wages of the North Carolina State University College of Veterinary Medicine.

He addressed the future of antibiotic use for poultry at an industry seminar during the International Poultry Exposition.

Poultry is a reservoir for strains of drug-resistant bacteria, he said, "but we've not documented the swap" of resistance between animals and humans.

Dr. Wages noted that the use of antibiotics for food animals is the subject of a polarized debate that has been going on for decades. Public health authorities fear not only the development of antibiotic resistance in humans due to the widespread use of these drugs in animals but also the transfer of resistance genes from the bacteria of animals to the bacteria of humans.

**Experts fear that resistance** from one drug in the streptogramin class, such as virginiamycin, might confer resistance to others in that class, such as the new and powerful antibiotic Synercid. This drug is used to treat serious or life-threatening infections due to vancomycin-resistant *Enterococcus faecium* bacteremia.

Reviewing published studies on streptogramin resistance, Dr. Wages said data indicate transient passage of the bacteria but no evidence of colonization in humans or transfer of resistance genes.

Still, if a resistant gene does appear in humans, the poultry industry will likely be blamed for its introduction, he warned the

audience. While it is unlikely that resistant bacteria in poultry would be the driving force toward development of resistance in humans, it would be impossible to rule out some degree of involvement, he added.

**Poultry producers use** antibiotics in various ways, and their role in growth promotion should be carefully considered, Dr. Wages said. "In the court of public opinion, I can defend using something to control necrotic enteritis, but I can't defend it just because it makes



Photo: USDA

the chicken have a little more breast meat," he said.

Noting that the Food and Drug Administration has proposed the withdrawal of several therapeutic antibiotics used in poultry, another scientist outlined a series of scenarios that could affect the industry.

The fluoroquinolone poultry product sarafloxacin was voluntarily removed from the market by the manufacturer, while the status of another such product, enrofloxacin, is still under consideration. Dr. John Smith of Fieldale Farms in Baldwin, Ga., warned about a "potential chilling effect" of these actions.

**A ban on fluoroquinolones** could lead to withdrawal of other

categories of antibiotics and discourage research, development and approval of new drugs, he said.

Other outcomes could include outbreaks of severe disease, production losses, increased downtime, lower density, environmental problems, and greater animal suffering.

**However, loss of therapeutic** antibiotics could place more pressure on the poultry industry to develop ways to prevent rather than treat disease and spur the development of better vaccines and increased vaccine usage, Smith said.

He added that while a shift in emphasis to prevention would be good, it also would be expensive.

Another possible scenario is the loss of prophylactic antibiotics, particularly injectable drugs in the hatchery. The loss of growth-promoting drugs could occur as well, although this is less likely. Even more unlikely are prospects such as the loss of ionophores used to

control coccidiosis and the ban of all antibiotics and chemical agents in poultry production, Smith said.

**The loss of hatchery** antibiotics would increase early mortality and require costly efforts to improve sanitation, Smith predicted. Long-term consequences could include more health problems among the birds and the intangible effects on grower and supervisor morale.

The consequences of the removal of growth promoting drugs would be "measurable but probably survivable," Smith said.

Scientists said these changes could include moderate increases in feed conversion ratios and other changes that would lead to higher production costs.

# Biotech Reveals Keys to Poultry Bursal Virus

## Molecular clues may help fight Gumboro disease

Scientists at the University of Maryland Biotechnology Institute (UMBI) and the Virginia-Maryland Regional College of Veterinary Medicine have discovered molecular keys to Gumboro disease.

Virologist Dr. Vikram N. Vakharia and colleagues at UMBI's Center for Agricultural Research report finding specific amino acid residues in the Gumboro-causing viruses that are responsible for its infection, virulence and disease development in poultry.

Concern was heightened in the poultry industry on the Delmarva Peninsula in the late 1980s when researchers found new strains of infectious bursal disease virus (IBDV) that causes serious disease. The Delmarva region produces more than 600 million broiler chickens annually.

The IBDV strains found there caused wasting away of the bursa, which is the major immunological organ of chickens, but did not cause the hemorrhaging condition and high death rates of classic strains found in the United States in the 1960s.

In the 1990s, however, strains of IBDV emerged in Europe and Asia that killed up to 70 percent of some flocks.

Dr. Vakharia has recently created new, cost-effective recombinant vaccines to fight IBDV. Unfortunately, the unpredictable nature of the Gumboro outbreaks, from mild to severe, is due to the ability of the virus to mutate and adapt in chicken tissues and continue to threaten the U.S. poultry industry.

The discovery of the virus amino acids responsible for severe outbreaks will now help Dr. Vakharia to more rapidly respond to new strains of the virus with even more effective genetically engineered vaccines that can be administered to

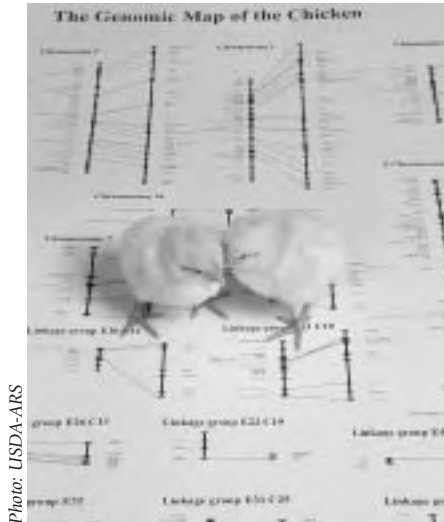


Photo: USDA-ARS

the chicken but will not cause the disease, while producing a strong protective immune response.

The scientists reported in the December 2001 issue of the *Journal of Virology* that three amino acid residues in the major coat protein of IBDV are responsible for its virulence and infection to the precur-

sors of antibody-producing B-cells of the bursa. The malady leads to severe immuno-suppression and death of young chickens. "The experiments were carried out using reverse-genetics systems that have only recently become available," Dr. Vakharia said.

The University of Maryland Biotechnology Institute was mandated by the state of Maryland legislature in 1985 as "a new paradigm of state economic development in biotech-related sciences." Five UMBI research and education centers are dedicated to leading and partnering to advance biotechnology. The centers are Center for Advanced Research in Biotechnology in Rockville; Center for Agricultural Biotechnology in College Park; and Center of Marine Biotechnology, Medical Biotechnology Center, and the Institute of Human Virology, all in Baltimore.

## Crawford Named to FDA Position

A person familiar to the poultry industry has been named deputy commissioner of the Food and Drug Administration. Dr. Lester M. Crawford Jr., DVM, Ph.D., also will serve as the senior FDA official pending installment of a permanent food and drugs commissioner.

Dr. Crawford takes over from Dr. Bernard A. Schwetz, DVM, Ph.D., a career FDA executive who has served as acting principal deputy commissioner since Jan. 21, 2001. Dr. Schwetz, senior advisor for science, will continue to work on public health and FDA issues.

Dr. Crawford most recently served as head of the Center for Food and Nutrition Policy at Virginia Tech. He also served as administrator of the U.S.

Department of Agriculture's Food Safety and Inspection Service from 1987 to 1991 and as director of the FDA's Center for Veterinary Medicine from 1978 to 1980, and again from 1982 to 1985.

He received a Doctor of Veterinary Medicine from Auburn University in 1963 and a Ph.D. in pharmacology from the University of Georgia in 1969.

During his career, he has also served as executive director of the Association of American Veterinary Medical Colleges, executive vice president of the National Food Processors Association, as chairman of the University of Georgia's Department of Physiology-Pharmacology and as a practicing veterinarian.

# USDA Considers Regulatory Changes To Help Prevent and Control AI

USDA officials have opened discussions with the poultry industry about regulatory options to help prevent and control low-pathogenic avian influenza (LPAI). According to a report by USDA scientists T. J. Meyers, Michael David, Andrew Rhorer and John Clifford, LPAI viruses can mutate into high-pathogenic (HPAI) viruses, as evidenced in several recent examples around the world.

The report points out that persistence of an H7N2 LPAI virus in the live-bird marketing system in the northeastern U.S. has raised concerns about the possibility of an LPAI virus mutating to the HPAI form. USDA is looking at options for regulatory response to H5 and H7 LPAI viruses in order to better protect domestic poultry flocks as well as to ensure that any interruption in trade can be supported scientifically. USDA officials were set to open discussions in conjunction with the National Poultry Improvement Plan (NPIP) National Plan Conference in San Antonio, Texas, in late May.

**The paper described two systems, or "compartments," to serve as a regulatory framework for the industry.** One is the live-bird marketing system, which includes producers, dealers, auction markets, wholesalers and retail markets engaged in the sale of live poultry, or poultry slaughtered on demand for the consumer. The other is the commercial poultry system, which includes broiler, layer and turkey breeder and production flocks, from which meat and eggs are derived for commercial sale.

The poultry industry currently conducts active AI surveillance in three settings. NPIP has established an Avian Influenza Clean certification program for AI surveillance in chicken breeding flocks to facilitate

export of hatching eggs and chicks from the U.S. All flocks tested under this plan since 2000 have been negative.

A second program involves broiler and turkey meat producers who test for AI just prior to slaughter in order to meet requirements for export to Mexico. All flocks tested to meet this requirement also have been negative to date.

Individual states also have established AI programs. "Taken together, the current system of AI surveillance in the U.S., while not centrally coordinated, provides a risk-based and needs-based approach," the report said.

**Officials listed for discussion** four changes that would help provide long-term control of LPAI in the live-bird marketing system.

1. *Prohibit live, or slaughter-on-demand sale of poultry to consumers.* While this may be an effective way to control AI, USDA officials said they believed it would only create an underground market for such poultry.

2. *Prohibit interstate movement of AI-positive poultry.* This option would establish a federal requirement for use of individual bird ID, AI testing and record-keeping in all production, distribution and retail operations of the live-bird marketing system, with trace-back and indemnification when AI positives are found. (Commercial poultry moving to slaughter would be exempt.)

3. *Establish an AI-certification program.* Live-bird market and supplier facilities could use NPIP model for certifying chickens free of AI.

4. *Encourage states to develop more aggressive H5 and H7 LPAI control programs.* Because LPAI currently is considered a state responsibility, "USDA must consider the options of leaving the current Federal regu-

lations unchanged," the report said.

For the commercial poultry system, the authors listed four items for discussion.

- *Supplement current surveillance system with stamping-out and indemnification.* What is lacking in the current surveillance system, the report says, is a clear course of action when LPAI virus is isolated in a commercial flock.

- *Create mandatory, nationwide surveillance system with stamping-out and indemnification.* Such a program would provide the best assurance to trading partners that U.S. flocks are free of AI, according to the report.

- *Establish voluntary certification program with stamping-out and indemnification.* This would be based on the NPIP model to certify a flock or facility as AI Clean, while stamping-out with indemnity any participating flock found positive.

- *Encourage individual states to set up surveillance and stamping-out programs.* The report pointed out that no state has established a standing LPAI stamping-out and indemnification program.

**The report also discussed vaccination programs.** Vaccine use could interfere with testing, and using vaccine to control LPAI could result in a poultry embargo on the part of trading partners, said the authors. The most likely use of AI vaccine would be to vaccinate flocks in a buffer zone surrounding an HPAI outbreak.

## Your input, please

USDA encourages you to participate in AI discussions. Send comments to:

Dr. Cheryl Hall  
USDA-APHIS-VS  
4700 River Road, Unit 46  
Riverdale, MD 20737  
[cheryl.i.hall@aphis.usda.gov](mailto:cheryl.i.hall@aphis.usda.gov)

## Research Offers New ELISA Test to Detect TCV Antibodies

North Carolina State University researcher Dr. James S. Guy recently reported results of efforts in serological detection of Turkey Coronavirus (TCV) using an enzyme-linked immunosorbent assay (ELISA) and a baculovirus-expressed antigen. Dr. Guy is with the Department of Microbiology, Pathology, and Parasitology at NCSU.

Turkey coronavirus (TCV) is the cause of an acute, highly contagious enteric disease of turkeys that may result in severe economic losses due to increased mortality, impaired growth, and poor feed conversion. TCV control currently is based on serological detection, quarantine, and elimination of infected flocks.

Dr. Guy pointed out that serological detection presently is accomplished using indirect fluorescent antibody (IFAT) procedures. However, IFAT procedures are labor-intensive, time consuming, and

require an antigen that is difficult and expensive to produce. A TCV-specific ELISA test would be an improved method for serological diagnosis. The development of the ELISA procedure, however, has been hampered by an inability to grow the virus in cell culture.

The objective of this study was to develop and validate a TCV-specific ELISA procedure utilizing TCV nucleocapsid (N) protein as the antigen. "TCV nucleocapsid protein was produced from a recombinant baculovirus that had been developed in our laboratory," he said.

A competitive ELISA (cELISA) was developed using TCV nucleocapsid protein derived from recombinant baculovirus. The cELISA was validated by comparison with the IFAT procedure using 1,270 references, experimental and field-origin sera.

Sera with discordant cELISA and IFAT results were further evaluated

by western immunoblot analyses. The cELISA detected antibodies specific for TCV and infectious bronchitis virus, a closely related coronavirus, but did not detect antibodies specific for other avian viruses.

"A high degree of concordance was observed between the cELISA and IFAT," Dr. Guy said. "Sensitivity and specificity of the cELISA relative to IFAT were 92.9 percent and 96.2 percent, respectively."

Western immunoblot analyses provided additional evidence of cELISA specificity.

The findings of the study indicate that the recombinant TCV N protein-based cELISA is a rapid, sensitive, and specific method for detection of TCV-specific antibodies in turkeys. "The cELISA represents an alternative to the more cumbersome IFAT for screening large numbers of turkey sera for TCV-specific antibodies," Dr. Guy concluded.

## Scientists Discover Protein That Could Monitor Poultry Health

A previously little-understood protein could be used to monitor poultry health, according to studies by scientists with the U. S. Department of Agriculture's Agricultural Research Service (ARS).

When chickens and turkeys become infected with different bacterial and viral diseases, the resulting inflammation causes physiological changes, including decreases or increases in concentrations of some serum proteins called acute phase proteins (APPs).

These amplify immune response by recruiting other cells to the inflammation site to provide early infection resistance. APP concentrations remain detectable in the

blood until recovery, offering potential for diagnostic or prognostic tools for poultry producers.

Ovotransferrin, an iron-binding protein, is abundant in poultry blood and eggs. Scientists at the Poultry Production and Products Safety Research Unit in Fayetteville, Ark., found that blood concentrations of ovotransferrin (OTF) increase in chickens with infections. They determined that OTF is a major APP in chickens.

OTF was characterized by Hang Xie, a former graduate student working in the ARS laboratory.

The researchers developed a test, called an enzyme-linked immunoassay, to detect and meas-

ure the levels of OTF in the blood. They believe these OTF levels can be used as an indicator of health problems in poultry, according to Narayan Rath, a research physiologist at the Fayetteville lab.

A better understanding of the roles of disease-modifying APPs in serum could lead to new approaches for improving natural disease resistance in poultry. For example, it might be used in developing genetic markers that breeders can use to select poultry able to more effectively fight disease.

Companies have shown interest in working with the laboratory to license the enzyme-linked test. Other potential collaborations involve developing a diagnostic marker based on OTF to determine the health of birds during meat inspections, either before or after slaughter.

## Poultry Scientist Wins Agricultural Research Service Rothbart Award

Dr. David L. Suarez, a researcher at the Southeast Poultry Research Laboratory, Athens, Ga., has won the Herbert L. Rothbart Outstanding Early Career Research Scientist Award presented by the USDA's Agricultural Research Service.

Dr. Suarez has been involved in research on the genetic mechanisms by which mild avian influenza strains become more virulent and cause disease in poultry.

"We have been involved in

molecular epidemiology of outbreaks in the U.S. and Hong Kong," Suarez said. "We sequence influenza viruses, and determine the relationship of different viruses to each other. That lets us track where the outbreak comes from, whether it was an extension of a previous outbreak, or a new introduction of virus from wild birds," he said.

Such sequencing can be important in controlling a virus outbreak, allowing scientists to know whether

they are dealing with a single virus or multiple viruses being introduced from various places.

The technology is being used as officials attempt to eradicate the H7 virus from the live bird market in the northeast U.S., where the virus has been active since 1994.

Dr. Suarez holds a DVM degree from Auburn University, and a doctorate from Iowa State University. He has been on the SEPRL staff for six years.

### Booklet Details Judicious Use of Antimicrobials

A booklet is now being offered by the U.S. Food and Drug Administration/Center for Veterinary Medicine that helps poultry producers follow proper guidelines in using antibiotics.

*Judicious Use of Antimicrobials for Poultry Producers* is a booklet that outlines principles of best use of therapeutic antimicrobials, developed and approved by the American Veterinary Medical Association.

AVMA defined "therapeutic use" as the treatment, control and pre-

vention of bacterial disease.

Antibiotic resistance is a global problem, according to the booklet, and development of resistance is a consequence of the use of antimicrobials. "It is imperative that everyone involved in food animal production, veterinarians and producers, as well as human health care providers work together in minimizing the development of antibiotic resistance," it suggests.

Discussed in the publication are preventive disease strategies such as hygiene, routine health monitoring and immunization. It also details the need for a valid veterinarian-client-patient relationship when prescription antibiotics are used, or

when used outside the printed label directions.

The publication also outlines the need for accurate records of treatment and outcome so that therapeutic regimes can be evaluated. "The producer and veterinarian should work closely when antibiotic therapy is needed in a flock, and both must continue to work toward ensuring a safe food supply for consumers," the booklet concludes.

**Free copies** are available by contacting Joanne Kla, USFDA/CVM, 7500 Standish Place, Rockville, MD 20855. Call (301)827-3806, or send e-mail to [jkla@cvm.fda.gov](mailto:jkla@cvm.fda.gov) to receive the booklet.

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