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New Service to Poultry Producers

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Each week Dr. Sherrill Davison travels more than 400 miles making visits to poultry farms in Pennsylvania. Dr. Davison, a lecturer in Avian Medicine and Pathology, specializes in flock health problems. Her visits to poultry farms are part of a flock health program initiated by the Center of Animal Health and Productivity at the New Bolton Center campus of the University of Pennsylvania School of Veterinary Medicine. The Center for Animal Health and Productivity, funded by the Commonwealth of Pennsylvania, is the only one of its kind in the area.

Dr. Davison graduated from the University of Pennsylvania School of Veterinary Medicine in 1983. After two years in small animal practice, she returned to the University in 1985 for a residency in avian medicine and pathology and a masters degree in epidemiology through a training grant in epidemiology and health economics. This program, funded since 1984 by the Pennsylvania Department of Agriculture, currently has three fully funded and three partially funded participants. Five veterinarians, including Dr. Davison, have completed the program so far.

In Dr. Davison's new position, a major portion of her time will be devoted to field investigation of new or serious disease problems of poultry. "Routine visits to poultry farms are a new service offered by our laboratory," explained Dr. Davison. "In the past, producers would bring sick birds to the laboratory and based upon the findings in these birds a diagnosis and treatment plan was suggested. Often, this did not get to the root of the problem because the veterinarian at the laboratory could not observe the birds in their normal environment. By visiting the farm and observing the birds and management practices, one can better assess the problem so preventive measures may be taken at once."

Pennsylvania, a major poultry producing state has a geographically mixed population of 17 million



Dr. Davison

layers, 115 million broilers, 7.6 million turkeys and 850 thousand commercial egg and meat type breeders. The state ranks 3rd in table egg, 12th in broiler, and 9th in turkey production in the United States. Pennsylvania's poultry population is concentrated in five contiguous south-central counties (Lancaster, Lebanon, York, Adams and Berks) with approximately 50 percent of the flocks in Lancaster County.

The birds are kept in large houses with flock size ranging from 25,000 to 100,000 birds. Watering,



Chicken with L.T.

feeding and ventilation are automated. These buildings are off limits to anyone who is not wearing protective clothing (hats, boots, and coveralls) to minimize the risk of people introducing disease into the flock.

The broiler industry varies from other livestock production farming in that many producers raise birds under contract for large feed companies. The feed company, not the producer, owns the birds. The trend in the poultry industry, especially the broiler segment, has been toward vertical integration. A company will own from the hatchery to the processing plant. Feed companies employ servicemen who monitor daily health and management problems in the flocks. If a problem arises, they diagnose it and treat it, or if further assistance is needed, birds are submitted to a poultry diagnostic laboratory.

Dr. Davison may be contacted when a new or serious disease is suspected. One disease that has recently caused outbreaks in Pennsylvania as well as in other states is laryngotracheitis (LT). LT is a respiratory disease of chickens caused by a herpes virus. Pennsylvania has experienced two severe outbreaks over the past four years. In 1984-1985, 38 flocks consisting of approximately 1.8 million chickens were affected with LT. In 1987-1988, 86 flocks consisting of over 5 million chickens have been confirmed with LT. The majority of affected flocks were unvaccinated broilers, however, pullets, layers, breeders, roasters and backyard flocks were also diagnosed with LT.

Dr. Davison has coordinated the control program for LT in Pennsylvania and has organized a network of producers who meet with her to discuss the status of the LT outbreak. "We now have 25-30 representatives from various companies who meet and coordinate their vaccination program for LT." She keeps industry personnel informed about the current status of LT through a weekly newsletter.

Dr. Davison has done extensive research on LT. These include assessment of vaccination programs, transmission studies and the role of maternal antibody protection. There are still many unanswered questions concerning LT. The Laboratory of Avian Medicine and Pathology will continue to do research on LT focusing on the characterization of field isolates using challenge work and restriction endonuclease studies.

LT is hardly the only disease affecting poultry. Other diseases commonly seen at our laboratory include *E. coli* and other bacterial infections, Marek's disease, and *Mycoplasma gallisepticum* and more recently, adenovirus infections. Marek's disease is caused by a virus which affects the nervous system by the formation of tumors. *Mycoplasma gallisepticum*, a bacteria-like organism, causes respiratory disease and a moderate to severe drop in egg production.

Dr. Davison explained that there is a shortage of veterinarians trained in poultry medicine. "There are many opportunities for veterinarians in the poultry industry. Positions are available in diagnostic laboratories, academia, research, extension, government as well as in biologic manufacturing companies."

Grant to Support New Training Programs

The Robert J. Kleberg, Jr. and Helen C. Kleberg Foundation has provided a \$431,164 grant over four years to support the development of a postdoctoral research training program in medical genetics for veterinarians.

"The objective of this program is to attract and train talented veterinary scientists in genetics research, emphasizing those fields which provide the greatest potential to advance the understanding, treatment, and prevention of diseases in which genes play a major role," said Dr. Donald F. Patterson, Charlotte Newton Sheppard Professor of Medicine and chief, section of medical genetics. "It is expected that the program will produce a cadre of outstanding young scientists who will not only advance knowledge, but through their influence on the profession and related fields, will serve as leaders in the further development of veterinary medical genetics. We anticipate that during the four years of the initially funded program four veterinary scientists will complete the training." Fellowships will be offered to veterinarians with outstanding academic records and demonstrated talent in areas basic to the field of genetics.

Because of their broad education in the biological medical sciences and their direct involvement in the health and productivity of animals, veterinarians are ideally suited to play a major role in research into the basic mechanisms involved in genetic diseases, gene therapy, and in the identification and engineering of genes that will be important in producing disease

resistant livestock. It is important to recognize that the structure and function of genes in animals have a fundamental homology to those in humans. Thus the genetic diseases that occur in animals are essentially the same as those in man, and new knowledge gained through research in animals will be of direct benefit to human as well as animal health.

The powerful tools of recombinant DNA technology are opening up exciting new possibilities for correcting genetic defects and for producing disease-resistant animals. Although the veterinary profession, particularly here at Penn, has made some important contributions to this field, nationally fewer than ten veterinarians are skilled in the research methods of modern genetics. Biomedical science needs many more young investigators who have both the special perspective of veterinary medicine and the training in modern genetics to lead the profession in this new field of research.

If the veterinary profession can attain a critical mass of research scientists trained in modern genetics, not only will their individual contributions to animal and human health be great, but a whole new area of research will be opened up to veterinary medicine. Once established, the contributions of veterinarians to genetics research will stimulate further opportunities in schools of veterinary medicine and medicine, animal science departments, government research laboratories, and in the pharmaceutical and livestock industries.