

# Veterinary Student Participates in Foreign Animal Disease Course at Plum Island

*Lisa De Nault†*

During the summer of 1997, I was fortunate to represent the Iowa State University College of Veterinary Medicine at the Smith-Kilbourne Foreign Animal Disease Course, held at Plum Island Animal Disease Center (PIADC). The course was created to enhance awareness among tomorrow's veterinarians of the potential threats that foreign animal diseases pose to domestic livestock populations. The curriculum is a series of lectures and discussions covering fourteen major exotic animal diseases along with hands-on training. The objectives of this program are to 1) train students how to make a differential diagnosis (including foreign animal diseases where appropriate) when presented with an animal showing clinical signs, 2) define bio-security, explain its importance, and what measures should be taken to prevent disease spread, 3) describe the processes Animal & Plant Health Inspection Service (APHIS) uses to prevent the introduction and control the spread of foreign animal diseases, 4) train students how to necropsy chickens, cattle, or swine; identify pertinent post-mortem lesions; take samples for submission to a laboratory; and make a tentative diagnosis, and 5) broaden awareness of the PIADC by requiring students to deliver two presentations on their experience at the course.

Plum Island Animal Disease Center is a unique, high level bio-containment laboratory facility dedicated to the protection of the U.S. animal industries and exports against catastrophic economic losses caused by a foreign animal disease (FAD). Plum Island is located off the north fork of Long Island, New York, and was established in 1954. It was originally established to research Foot and Mouth Disease (FMD). Since this virus may not be brought onto the mainland, this island was an ideal location to study the disease. This disease is studied nowhere else in the world,

with the exception of endemic areas. Plum Island Animal Disease Center is a working team comprising scientists from Agricultural Research Services (ARS), who are responsible for research, and scientists from APHIS, who are responsible for diagnosis of foreign or emerging animal diseases. In 1984, the Foreign Animal Disease Diagnostic Laboratory (FADDL) was established on the island. The FADDL performs diagnostic tests and detects the presence of FAD agents. Samples that are tested come from several sources, including APHIS field veterinarians suspecting a FAD outbreak in a domestic livestock population, animal import testing, and other countries needing assistance with a diagnosis. The sister labs to Plum Island are National Veterinary Services Laboratory (NVSL) for APHIS and National Animal Disease Center (NADC) for ARS, both located in Ames. As of 1994, ARS and APHIS have had joint control over this research and diagnostic facility. Plum Island also contains a bank of various viral strains that can be used to quickly prepare vaccines in case of an outbreak.

One student is selected from each veterinary college to spend one week during the summer at this course and to return and share the gained knowledge. It is a good opportunity to network with fellow students from all over the U.S., and now I know one student from each veterinary school, as well as veterinarians working in non-traditional fields. Our group was fortunate to be at Plum Island at the same time as the Quadrilateral Contingency Group, a group of leading veterinarians



Lisa De Nault, ISU

**The Plum Island Animal Disease Center was originally established to study Foot and Mouth Disease at a remote locale off the mainland U.S.**

†Lisa De Nault is a second-year veterinary student at the Iowa State University College of Veterinary Medicine.



**Lisa De Nault participated in the Smith-Kilbourne Foreign Animal Disease Course at Plum Island Animal Disease Center during her**

from Canada, New Zealand, and Australia. Their group was looking at the U.S. Emergency Programs Division as part of a learning process on how to improve the four countries' emergency preparedness in light of a foreign animal disease outbreak. They were just as excited as we were to be there. Several of the veterinarians had never seen an animal with foot and mouth disease. When we changed into our lovely white coverall biohazard suits and boots before going back into the animal containment area, one of the veterinarians seemed as giddy as a school girl. I asked him about his experience and he replied, "I am 55 years old and have been a veterinarian for 20 years and have never seen a pig or cow with foot and mouth disease." Upon arrival to the FMD room, his face lit up with excitement, as did mine. We inspected the oral ulcers and interdigital vesicles of the Holstein calf experimentally inoculated with FMD virus and shared our amazement and excitement at the discovery of more and more lesions.

Plum Island is a short ferry ride across Long Island Sound from New York or Connecticut. Each day, we rode the ferry boats owned and operated PIADC and entered the animal containment area where calves and piglets had been inoculated with four different diseases: Rinderpest, African Swine Fever, Hog Cholera, and Foot and Mouth Disease. We observed the progression of each disease and noted clinical signs such as, goose stepping, a CNS sign associated with Hog Cholera; excessive salivation from vesicular disease in a calf experimentally inoculated with FMD; and cyanosis of the ear

tip of piglets inoculated with African Swine Fever. Subsequent to natural death or euthanasia, our group posted each animal. The biggest impression made upon me was observing the gross lesions and extremely severe effects on various organ systems. Hogs were inoculated with FMD and placed in the same room as calves to demonstrate aerosol transmission. FMD produced few gross lesions beside the vesicular development in the oral cavity and interdigital area. The main impression with regard to clinical signs in these piglets were the ulcers and abraded skin on the hocks because their feet were too sore to stand. The calves would not move even when prodded. Foot and mouth disease appeared extremely painful, and it was obvious why this disease is such a concern to the U.S. The most memorable incident was posting one of the calves inoculated with Rinderpest. The image of a fibrinonecrotic intestinal epithelium will forever remain in my mind; no normal intestinal epithelium was observed at any location in the small and large intestines.

The focus for the future should be on effectively preventing future foreign animal disease outbreaks through the cooperation of all veterinarians. Awareness leads to a better early warning system to help minimize repercussions of major economic, environmental, and cultural upheaval as a result of a foreign animal disease outbreak. The Smith-Kilbourne Program that I attended is the first step to training and enhancing awareness among future veterinarians. The program is not just a fun, all-expense paid trip to Long Island, but is also an incredible, once-in-a-lifetime learning opportunity. ♦



**Course participants necropsy a pig inoculated with African Swine Fever and discuss their findings.**