Modernization at Ames

New era in animal health research is at hand

Known for its farming and as the home of Iowa State University, Ames, Iowa, is also recognized globally as the site of breakthrough research on animal diseases.

This community of 50,000, located about 35 miles north of Des Moines, is the site of three vital U.S. Department of Agriculture scientific facilities dedicated to animal health: the National Animal Disease Center (NADC), the National Veterinary Services Laboratories (NVSL), and the Center for Veterinary Biologics (CVB).

Now, work is well under way on an all-encompassing, state-of-the-art research center where the Ames scientists will continue their research on diseases of livestock and poultry.

"Protection against emerging diseases depends on maintaining disease-free animals and ensuring that systems are in place to respond to outbreaks," says Ronald L. Horst, acting director of NADC, which is part of the Agricultural Research Service (ARS).

"This new center will boost USDA's abilities to help breeders and producers meet the challenges ahead, and it will increase Ames's already high stature in the animal-health field. An important result will be an improvement in American livestock's competitiveness in world markets."

Horst says the updated center will enhance the highly fruitful cooperation NADC already enjoys with the two other labs, which are part of the Animal and Plant Health Inspection Service (APHIS).

"More communication and sharing of facilities will be the main advantages. Being located in one center will make each laboratory more efficient." He adds that one of the most important facets of this push is replacement of facilities that are fast becoming antiquated.

All in One Place

Evident at this new center will be the full range of USDA's commitment toward protecting the nation's farm animals and ensuring a safe and healthy food supply.

NADC's focus is on selected diseases of economic importance to U.S. livestock and poultry industries. Its scientists study the most closely watched animal diseases, including mad cow disease, brucellosis, leptospirosis, and porcine reproductive and respiratory syndrome. They also research how microbes that can sicken humans—such as *Salmonella, Campylobacter,* and *Listeria*—infect poultry and livestock.

In December 2003, NADC scientists helped confirm APHIS's diagnosis of the first case of mad cow disease found in the United States. (See "TSEs Touch Off ARS Research," *Agricultural Research,* December 2004, p. 4.)

And, using genomic sequencing technology, researchers there have broken new ground in understanding some of the pathogens livestock producers fear most. For example, they've totally sequenced strains of several species of pathogenic bacteria, including ones that cause brucellosis, Johne's disease, and bovine leptospirosis.

To the new center, NVSL will contribute expertise in animal disease diagnosis, which is necessary for effective disease control and eradication programs. The CVB will ensure that farmers and producers have access to safe and effective vaccines and diagnostics through implementation of an efficient national regulatory program.

Artist's rendering of the new Ames, Iowa, center that will house three of USDA's most valuable animal-health research facilities: the National Animal Disease Center, the National Veterinary Services Laboratories, and the Center for Veterinary Biologics.

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James A. Harp, who is NADC's research program representative for the modernization project, says more than $460 million in federal funding has been approved for the new center. He adds that the final $58.8 million needed for completion was included in the 2006 presidential and congressional budgets.

Work is well under way on a state-of-the-art research center where Ames scientists will continue their research on livestock and poultry diseases.

The center will include four new buildings, encompassing more than 700,000 square feet, and will house biosafety level-2 and -3 research facilities, which allow for safe handling of infectious agents that may cause serious or potentially lethal diseases.

All NADC research units will be moved there, continuing their work on diseases of pregnant and lactating cattle; preharvest food safety and intestinal diseases; and bacterial, viral, and prion diseases of livestock.

Construction is expected to be complete by December 2008.

Readying for New Challenges

In the meantime, there will be no lull in NADC's cutting-edge research, and many immediate plans are linked to recent, separate funding for research on emerging animal diseases.

According to Robert A. Heckert and Cyril G. Gay, ARS national program leaders for Animal Health, this funding will allow NADC to lead a national collaborative program to identify new pathogens and predictors of emerging diseases of livestock. Partners in this effort will include the National Animal Health Monitoring System's Center for Epidemiology and Animal Health in Fort Collins, Colorado, NVSL, other USDA agencies, and private-sector diagnostic laboratories.

Heckert says this new Emerging Mammalian Diseases program will integrate ARS research on infectious diseases, virology, bacteriology, disease complexes, microbial genomes, pathology, disease detection, and epidemiology.

Gay adds that access to new genetic tools will allow scientists to identify unique gene sequences. With these, they can isolate, identify, and characterize pathogens associated with new diseases of unknown cause and to study how infections develop.

Other program goals include determining prevalence of new diseases and identifying predictors of emergence and outbreaks.—By **Luis Pons,** ARS.

This research is part of Animal Health (#103) and Food Safety (#108), two ARS National Programs described on the World Wide Web at www.nps.ars.usda.gov.

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