National Veterinary Services Laboratories
Foreign Animal Disease Diagnostic Laboratory
Plum Island Animal Disease Center
DIAGNOSTICS SERVICES SECTION

OIE/FAO International Reference Laboratory for foot and mouth disease
National reference laboratory for foreign animal diseases
Supports National Animal Health Laboratory Network (NAH LN)

Ongoing and future priorities
• Assay validation for new sample types
• Comparison of commercially available assays
• Development of new diagnostic platforms
• International and national training
Characterization and consolidation of TAD biorepository in advance of move to NBAF, including Tier 1 select agents.

International capacity building:
Non-infectious Rinderpest PCR controls and proficiency testing (PT).

Provide support to the FADD School.

Resume production of reagent grade antisera used for vesicular disease viruses AgELISA.

Validation of inactivation methods
Stockpile of NA FMD vaccine (US, CA, MX)

Testing protocols
• Safety testing
• Potency testing
• Stability testing

Member
• International FMD Vaccine Strategic Reserves Network

FMD outbreak response
• Identification of appropriate VAC for formulation and deployment
• Coupling traditional and NGS methods for vaccine matching

Ongoing studies
• Evaluation of a serotype A trivalent vaccine
• Evaluation of NAFMDVB vaccine in swine
The NBAF, a new, state-of-the-art biosafety level (BSL) 3 & 4 facility located in Manhattan, KS, will enable the U.S. to conduct comprehensive research, develop vaccines and anti-virals, and provide enhanced diagnostic and training capabilities to protect our country from numerous foreign animal, emerging and zoonotic diseases to assist in protecting our food supply and the nation’s agriculture economy and public health.
A Modern Laboratory Facility for Bio and Agro-Defense to Mitigate Threats

**NBAF Drivers**

Homeland Security Presidential Directive 9

Over 70% of emerging diseases are zoonotic

United States has no capacity for large livestock research in a BSL-4 lab and is dependent on use of facilities in other countries

A pilot production capability is needed to accelerate existing countermeasure development efforts

A replacement is needed for the aging Plum Island Animal Disease Center (PIADC), which is over 60 years old and at the end of its useful life with limited capability
NBAF Laboratory Facility Plan Meets Mission Objectives

- **BSL-4**: High consequence zoonotic diseases
- **BSL-3E + BSL-3Ag**: Research and Development (R&D), diagnostics, and parallel vaccine trials for Foreign Animal Diseases (FADs), to include Foot-and-Mouth Disease (FMD)
- **BSL-2**: Assay, characterization, optimized throughput, and multi-agency use
- **BDM**: Vaccine development

NBAF will allow for research and operational efficiency gains compared to existing PIADC.
Ensure facilities capable of 24-7-365 operations to meet emergency response diagnostic testing needs

Provide needed capabilities for diagnostic testing of emerging, zoonotic and BSL-4 agents including Nipah, Hendra and Rift Valley fever virus

- Ability to work with samples of unknown zoonotic potential
- Ability to move seamlessly from BSL-3 to BSL-4 when risk to laboratory personnel requires this biosafety level

Ebola Reston diagnostic case

- Ability to meet international reference laboratory responsibilities and maintain protection of U.S. from FADs and emerging diseases including zoonotics – currently unable to accept samples from some countries due to known or unknown zoonotic disease risk of situation
APHIS
NBAF Diagnostic Enhancements

- Improve training/necropsy facilities for training increased number of veterinarians to detect FADs
- Expand capability to meet the increasing needs of the NAHLN
- Expand ability to develop and validate diagnostics for new and emerging diseases
- Increase epidemiologic capacity to monitor worldwide disease trends and prioritize threats to prepare for
- Establish a robust reagents program and stockpile – using as needed the Biologics Development Module
NBAF will have expanded capabilities and allows for a dynamic and flexible scientific program to be responsive to threats.
FADDL staff to increase at NBAF to ~78 from ~40 personnel
APHIS NBAF SCIENTIST TRAINING PROGRAM (NSTP)
Goal: mitigate SME gaps as FADDL transitions to NBAF

- Graduate training program to fund highly qualified applicants for up to 5 years
  - MS, PhD, DVM/PhD
  - Laboratory based research: molecular virology, microbiology, bioinformatics, infectious disease
  - Focus on foreign animal diseases and/or emerging BSL-4 agents
  - Funding will include tuition and fees, stipend, health benefits, travel, materials and supplies, publication costs

- Partner laboratories
  - CFIA, CDC, NVSL, K-State/BRI, others TBD

- Guaranteed federal position at completion of program
- Service commitment at NBAF (or PIADC) required
Prospective fellows MUST be accepted to NSTP approved University program before applying to NSTP.

Applications will be reviewed by University and NSTP program office (and partner laboratory, if applicable).

Coursework and Graduate research:
- Research project approved by NSTP Program Director, University advisor and laboratory mentor.

- Maintain minimum GPA.
- Contribute to development of NBAF-related SOPs.
- Biannual progress reports to NSTP program office
- Participate in annual NSTP research symposia.
- Payback required if fellow leaves program for any reason.

Federal position.

NSTP MUST BE ACCEPTED into an approved University program before applying to NSTP.

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Pending successful completion of program, NSTP fellows offered federal positions.
- Service commitment required
- If fellow fails to complete service commitment, prorated payback required.

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Inaugural NSTP class: October 2018
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