



USDA APHIS NBAF SCIENTIST TRAINING PROGRAM

TERMS AND CONDITIONS

The purpose of the USDA APHIS NBAF Scientist Training Program is to build the necessary technical and subject matter expertise to support stand-up of the Foreign Animal Disease Diagnostic Laboratory (FADDL) at the new National Bio and Agro-Defense Facility (NBAF) in Manhattan, KS. In addition to serving as an international reference laboratory for foot and mouth disease virus (FMDV) and as a national reference laboratory for other foreign animal diseases such as classical swine fever and African swine fever viruses, at NBAF, FADDL's mission will expand to including emerging and zoonotic diseases, including BSL-4 pathogens. NSTP fellows will receive full tuition and supplementary support to complete a MS, PhD or DVM/PhD program in target laboratory-based fields of study: microbiology, virology, molecular biology, diagnostics, bioinformatics, etc.

AMOUNT OF FELLOWSHIP TRAINING

APHIS NSTP fellows will receive funding to cover the following for a maximum of 5 years:

- Tuition and fees
- Stipend (Up to \$50,000 annually) and health benefits
- Materials and supplies (\$20,000 annually)
- Travel (\$5,000 annually)
- Publication costs (\$1,000 annually)

APPLICATION REQUIREMENTS

Successful candidates must:

- Be a US citizen
- Meet all requirements of the University graduate program and have been accepted into an approved graduate training program (MS, PhD, DVM/PhD) at time of application to NSTP.
- At time of enrollment, must have **three or less years remaining in program (MS); 4 years or less (PhD); 5 years or less (DVM/PhD)**.
- Identify a faculty mentor supportive of enrollment in NSTP.
- Exhibit a strong interest in emerging, zoonotic and/or foreign animal diseases.
- Demonstrate a desire to work at the National Bio and Agro-Defense Facility (NBAF) in Manhattan, KS, after degree completion.

PROGRAM REQUIREMENTS

NSTP fellows must meet the following requirements:

- Maintain a minimum 3.25 GPA to ensure continued funding.
- Support development of NBAF standard operation procedures and work instructions.
- Participate in meetings with the NSTP advisory committee and provide biannual process reports.
- Continuation of funding is dependent on satisfactory progress through program.
- Upon successful completion of program, fellows will be guaranteed a federal position.

SERVICE COMMITMENT

All NSTP fellows must fulfill service commitment in federal position at NBAF and/or Plum Island at completion of the program.

- Length of commitment is determined by the number of years of funding received:
 - o 4 years of service at target position for 2 years of funding; 5 years for 3 years; 6 years for 4 years; 7 years for 5 years. Failure to complete service commitment will require fellow to repay funding (prorated) to APHIS NSTP program.

USDA APHIS National Veterinary Services Laboratories (NVSL) Foreign Animal Disease Diagnostic Laboratory (FADDL) Mission

Upon successful completion of the NBAF Scientist Training Program (NSTP), each fellow will be guaranteed a permanent federal position within the Animal and Plant Health Inspection Service (APHIS) that is appropriate relative to their degree, training, and experience obtained during the NSTP fellowship. Fellows will be required to serve in this position for the duration of their service commitment. For this reason, the NSTP office has prepared this overview of the APHIS mission and vision of functionality upon the opening of the National Bio-and Agro-defense Facility (NBAF).

Within the broader APHIS mission to protect United States agriculture, there is a specific focus on the prevention, and detection and response to foreign animal disease (FAD) outbreaks in our livestock populations, that is supported by both field- and laboratory- based personnel. The APHIS National Veterinary Services Laboratories (NVSL) Foreign Animal Disease Diagnostic Laboratory (FADDL) serves as the national and international reference laboratory for which is composed of multiple functional groups. While there are elements of diagnostic development and applied research components within APHIS, it is important to recognize that pure research in the disease pathogenesis, vaccine development and efficacy, epidemiological study etc., is performed largely by our sister agency, the Agriculture Research Service (ARS). ARS will also have a large presence at the NBAF and will work closely with APHIS in fulfilling the grand overarching mission of the USDA. Below is an overview of the functional units within FADDL.

The **Diagnostic Services Section (DSS)** serves as an International Reference Laboratory for foot and mouth disease virus (FMDV) for the World Organization of Animal Health (OIE) and the United Nations Food and Agricultural Organization (FAO). Nationally, it is the reference and confirmatory laboratory for foreign animal diseases (FAD), such as FMD and classical and African swine fevers. This section houses broad diagnostic capabilities and techniques for the identification of more than 30 animal diseases. Disease surveillance programs are also housed in this section, involving high throughput serological testing of samples submitted from across the nation. This section also provides national and international trainings for visiting laboratorians, oversees laboratory set-ups and inspections, and other activities in support to the global One Health mission. Additionally, DSS supports the Foreign Animal Disease Diagnosticians (FADD) course in which federal, state, and military veterinarians are trained in the diagnosis of FADs.

The **Reagent and Vaccine Services Section (RVSS)** develops, produces, and tests standard diagnostic reagents. This section also conducts material safety treatment, and prepares animals for FAD demonstrations for the FADD courses. This section also functions as the national transboundary animal disease biorepository, including the collection and characterization of FAD agents and maintenance of stocks of Tier 1 Select Agents (FMD, rinderpest) as well as acting as the sole Rinderpest Virus Holding Facility of FAO-OIE for North America. In addition, RVSS conducts diagnostic assay development/optimization to support DSS diagnostic activities.

The **North American FMD Vaccine Bank (NAFMDVB)** serves as the stockpile of North America's FMD vaccine in the event of a re-introduction of FMDV to Canada, the United States, or Mexico. This section is tasked to identify and procure target vaccine antigen concentrate based on the FMD global epidemiologic activity, and to optimize testing protocols, and conduct potency and stability testing of their stock selection to enhance APHIS' outbreak preparedness. Additionally, as subject matter experts in FMD and vaccines, the NAFMDVB belongs to a global network of vaccine banks, known as the International FMD Vaccine Strategic Reserves Network. It is an integral part of domestic FAD outbreak readiness and response plans, coupling traditional and NGS methods for vaccine matching to select the most appropriate serotype for finished vaccine formulation and deployment.

The **National Animal Vaccine and Veterinary Countermeasures Bank (NAVVCB)** is a new USDA APHIS initiative, funded through the successful passage of the 2018 Farm Bill. The NAVVCB will act as an additional stockpile of FMD antigen for the United States, as well as provide an opportunity

for the United States to stock countermeasures for a variety of transboundary diseases, including diagnostic kit components and other available vaccines or therapeutic interventions.

The **Proficiency and Validation Service Section (PVSS)** is a newly organized section within FADDL. Four functional teams in PVSS include Proficiency, Validation, Import Export Domestic Transfer Safety (IEDTS), and Calibration. The Proficiency team has important mission to support the National Animal Health Laboratory Network (NAHLN) laboratories via production of proficiency panels and controls for diagnosis of FAD as well as diagnostic proficiency tests for NAHLN laboratory personnel. The Validation team mission is to verify and validate FAD diagnostic tests for use by internal (FADDL DSS) and external stakeholders such as NAHLN laboratories, foreign and international organizations. IEDTS team functions as the liaison for risk analysis and coordination on FAD safety testing for animal origin import and export materials. The Calibration team is in charge of calibration, maintenance and repair of laboratory equipment.

The **Scientific Liaison Services Section (SLSS)** is a newly created section that carries out a cross-cutting function by providing scientific and technical support to other FADDL sections. SLSS activities include pathogen surveillance and discovery through application of state-of-the art metagenomics and detection technologies through engagement in national and international collaboration. SLSS priorities include application of Computational biology, Bioinformatics, Artificial intelligence and Machine learning approaches to infectious disease investigations, including pathogen discovery. Specifically, the section engages laboratories in endemic countries in development and field validation of novel diagnostics, pathogen discovery, outbreak investigations, molecular epidemiology and surveillance of emerging infectious diseases.