

The Tufts New England Regional Biosafety Laboratory (RBL)

Cummings School of Veterinary Medicine, Tufts University, Grafton, MA

Mission of the Tufts New England RBL:

- Serve as a regional resource for conducting research to improve the means of detecting, preventing and treating infectious diseases that occur naturally in the environment and are transmitted among humans and between humans and animals.
- Investigate NIAID Category A-C Biodefense and Emerging Infectious Diseases (BEID) including the biology of disease, development of diagnostic tools, therapeutics and vaccines, in a safe, secure and GLP-compliant environment.
- Train and educate graduate students and scientists conducting biomedical research on BEID under BSL3 conditions.
- Support research and provide services in areas of relevant expertise to investigators from other academic institutions, the private sector in New England, and nationwide.

41,000 sq. ft. Facility Designed to:

- Provide safe and secure laboratory (BSL2 and BSL3) and animal accommodations (ABSL3) that are select agent approved by the US Center for Disease Control and AAALAC-accredited.
- Provide enhanced BSL3 and ABSL3 facilities for the study of insect vector-borne and aerosol-delivered BEID agents.

Capabilities:

- Safe and secure laboratory handling of BEID pathogens and toxins.
- Perform research studies compliant with Good Laboratory Practices (GLP) regulations.
- Small animal models (rodents, rabbits and avian species) and the mouse thigh model.
- Non-traditional animal models including gnotobiotic or SPF piglet, ferrets and calves.
- Aerosol delivery of pathogens, vaccines and therapeutic agents.
- Vector-borne infection transmission and challenge studies with BEID pathogens.
- Specialized equipment including live animal in vivo imaging, confocal microscopy, cell analyzer, clinical chemistry, hematology and telemetry.
- DOD BSAT compliant.

Current Scientific Areas of Expertise:

Investigators at the Tufts New England RBL have expertise in the biology, pathogenesis, immunopathology, pathophysiology, transmission, prevention, treatment and diagnosis of multiple BEID agents.

Additional specific expertise includes:

- Vaccine development and evaluation, including thermostable and needle-free delivery methods.
- Development of animal models for evaluation of vaccine candidates and therapeutics.
- Development and preclinical evaluation of therapeutic agents.
- Food and water security; development of sensitive detection methods for microorganisms.

Pathogens/Toxins Currently under Investigation:

- *Mycobacterium* spp (*M. tuberculosis* and *M. bovis*)
- *Bacillus anthracis*
- *Yersinia pestis*
- *Francisella tularensis*
- Shiga-toxin producing *E. coli* (STEC) and hemolytic uremic syndrome (HUS)
- *Shigella dysenteriae* type 1; *S. flexneri* spp; *S. sonnei*
- Botulinum toxins A-G
- *Cryptosporidium* spp (*C. parvum*, *C. hominis*, *C. meleagridis*)
- *Microsporidium* spp (*Enterocytozoon bieneusi* and *Encephalitozoon intestinalis*)
- Viruses including enteric viruses (astrovirus, rotavirus, norovirus), enteroviruses and arboviruses
- *Clostridium difficile* and related toxins
- *Schistosoma mansoni*
- Tick-transmitted infections
- Dengue virus
- Enterovirus 71

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