



The New England Regional Biosafety Laboratory (NE-RBL)

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

The Mission of the NE-RBL:

- 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, GLP compliant environment.
- Implement an emergency preparedness plan (EPR) for effective crisis response, including both immediate outbreak planning and training for public health responders.
- Provide training and educational opportunities to graduate students and scientists conducting biomedical research on BEID under BSL3 conditions.
- Provide service and research support 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 laboratory (BSL2 and BSL3) and animal accommodations (ABSL3)
- Provide secure laboratory and animal accommodation space for Select Agent work
- Provide enhanced BSL3 and ABSL3 facilities for study of insect vector-borne and aerosol-delivered BEID agents.

Capabilities:

- Safe and secure laboratory handling of BEID pathogens and toxins
- Small animal models (rodents, rabbits and avian species)
- Gnotobiotic or SPF piglet models
- Aerosol delivery of pathogens, vaccines, and therapeutic agents
- Vector-borne infection transmission and challenge studies with BEID pathogens

Current Scientific Areas of Expertise:

Investigators at the NE-RBL have expertise in multiple BEID agents. In particular, the biology, pathogenesis, immunopathology, pathophysiology, transmission, prevention, treatment and diagnosis of enteric infections and toxin-mediated diseases associated with food and waterborne diseases.

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:

- 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 bienersi* and *encephalitozoon intestinalis*)
- Enteric viruses (astrovirus, rotavirus, norovirus)
- *Clostridium difficile* and related toxins
- Schistosomiasis
- Tularemia
- Tick-transmitted infections
- Arboviruses

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