



PUBLIC QUESTIONS & TESTIMONY

At the conclusion of the presentation we will take questions from attendees through the Q&A function or by clicking the HAND ICON.

Clicking the hand icon will signal to staff that you would like to ask a question. Staff will call on folks with their hand raised and allow you to unmute yourself. You will have 1 minute to speak.

Please note this meeting is being recorded

IF YOU ARE HAVING TECHNICAL DIFFICULTIES, PLEASE EMAIL erp@bu.edu or call 617-947-6130

**BSL-2, -3, -4 Laboratories
BSL-4 Training Simulator**

Emerging Infectious Diseases Research for the Local, National and Global Good

Agenda

- **Introductions** (Valeda Britton, Executive Director of Community Relations)
- **Val Shelley Recognition**
- **Update on Science** (Dr. Ron Corley, NEIDL Director)
- **Update on Safety** (Kevin Tuohey, NEIDL Chief Safety Officer)
- **Update on Facilities** (Scott Rusk, Facilities Engineering Operations Manager)
- **Update on Community Relations** (Valeda Britton)
- **Q&A**

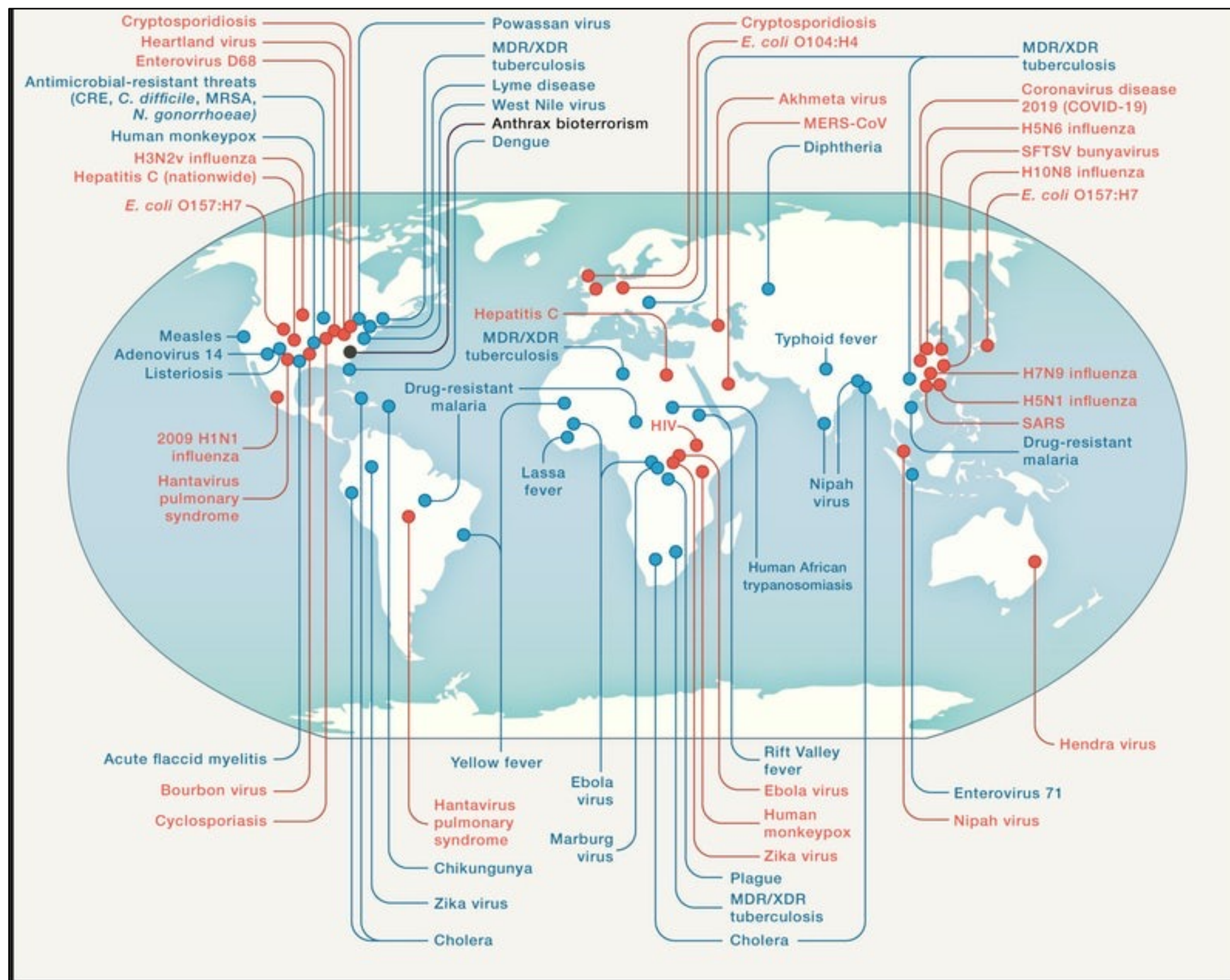
Mission of the NEIDL

- The NEIDL is a Boston University research facility which supports research to investigate and understand emerging pathogens and the diseases they cause
 - *Uses fundamental knowledge to develop and/or test diagnostics, vaccines, and therapeutics for EID to promote the public's health*
 - *Train the next generation of researchers for careers in EID*
 - *Operate a research facility with highest attention to community and laboratory safety and security*
- ❖ *No classified research*
- ❖ *Committed to transparency*

Emerging Infectious Diseases

- Newly emerging infectious disease
 - Diseases recognized in the human host for the first time
 - Often present with unpredictable and severe morbidity/mortality
- Re-emerging infectious diseases have historically infected humans but reappear:
 - In new locations, after apparent control, or in drug resistant forms
- A new emerging infectious disease is identified ~every 12 months
- We are globally connected: Wherever a pathogen emerges, it can “travel” anywhere

Emerging Pathogens, 2020



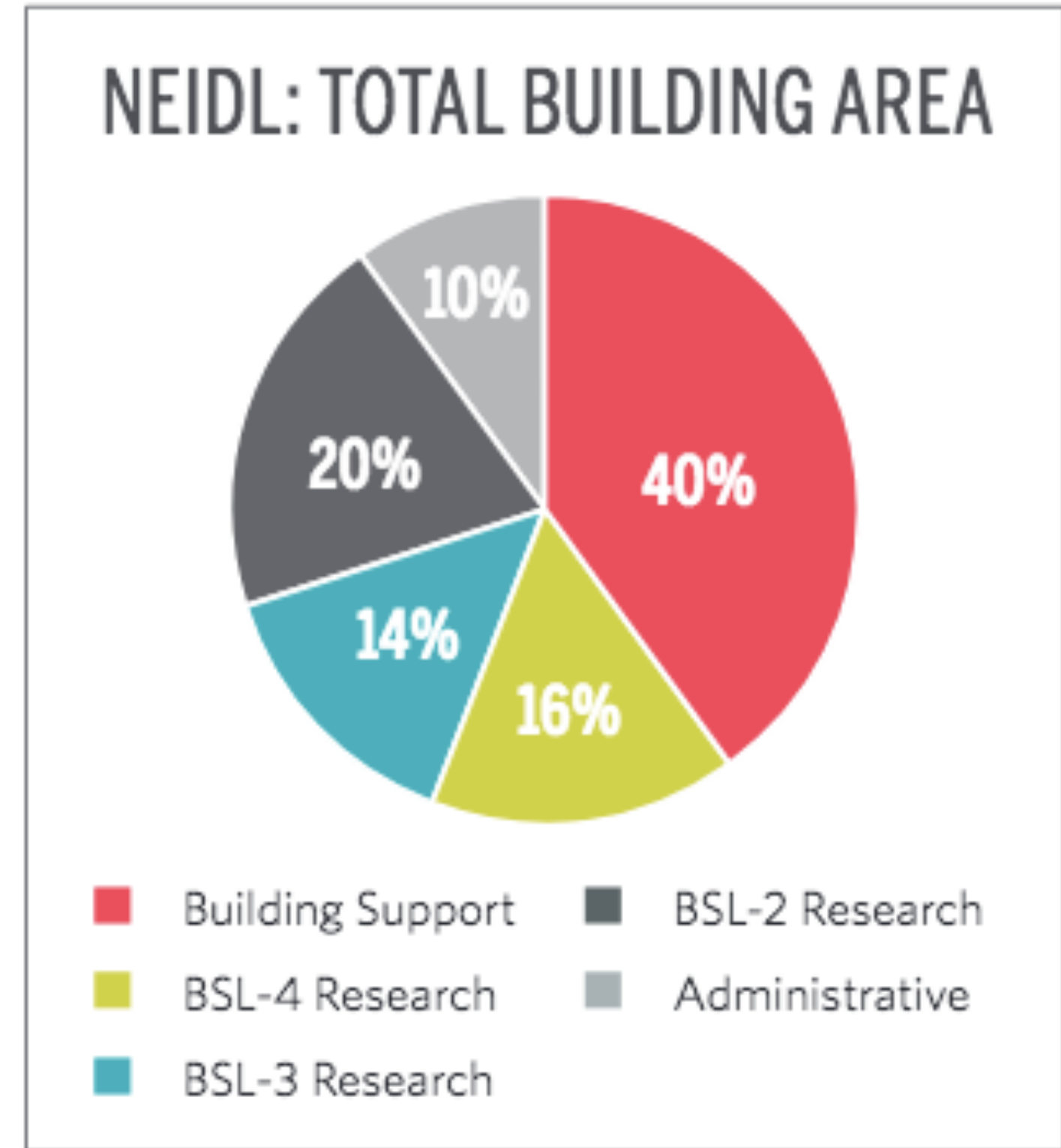
70% of emerging pathogens are RNA viruses

Zoonotic spillover events lead to human infection

- newly emerging
- re-emerging
- “deliberately emerging”

NEIDL Stats

- Faculty: 23 (14 core faculty)
- Faculty and Staff: ~ 180
- Laboratory and laboratory support space
 - BSL-2, BSL-3, and BSL-4 laboratories
 - ACL2/3 insectary (ACL4 insectary not yet active)
 - 40% of the space in the NEIDL is laboratory support space
- On site Facilities, Security, IT and Safety Professionals



NEIDL Research Programs

- Research is distributed across BSL-2, BSL-3, BSL-4, and incorporates:
- Basic science (*e.g.*, pathogen-host interactions: how do pathogens subvert innate immune responses, which host cell gene products are required for infection)
 - Disease pathogenesis in hosts
 - Vectors that transmit viruses (*e.g.* mosquitos)
 - Developing and testing diagnostics, therapeutics, and vaccines
 - Clinical research
 - Computational and public health approaches
 - Reservoir species
- All research goes through regulatory review before it begins

Examples of Viral Pathogens in NEIDL

- Flaviviruses: Dengue, Zika, Usutu, West Nile, Yellow Fever
- Alphaviruses: Mayaro, Chikungunya
- Bunyaviruses: LaCrosse, Snowshoe Hare, RVFV, CCHF
- Paramyxoviruses: RSV, Measles, Nipah, Hendra
- Arenaviruses: Lassa, Lujo, Guanarito, Junin, Machupo, Sabia

legend

BSL-2, BSL-3, BSL-4

Examples of Viral Pathogens in NEIDL

- Influenza virus: H1N1, H3N2 (“seasonal” flu viruses)
- Coronavirus: HCoV-NL63, HCoV-OC43, HCoV-229E (endemic coronaviruses), SARS-CoV-2, MERS-CoV (different isolates of each, including VOCs for SARS-CoV-2), SARS-CoV-1
- Filoviruses: Ebola, Marburg, Lloviu, Sudan, Bunibugyo, Reston
- Enterovirus: EV-D68, Coxsackievirus B3, Polio virus
- Orthopoxvirus: Vaccinia, Monkeypox

legend

BSL-2, BSL-3, BSL-4

Other Pathogens in the NEIDL

BSL-3 bacteria:

- *Mycobacterium tuberculosis*
- *Francisella tularensis* (select agent)
- *Yersenia pestis* (select agent)

Safety of the Environment

Annual Hazard Vulnerability Analysis / Risk Assessment
looks at

- Building systems and utilities
- Safety and security related incidents
- Naturally occurring (weather) related incidents
- Transportation and management of agents
- Accidents and injuries

Operational Safety

Starts with our people and our culture

- Personnel Suitability and Reliability Policy – provides a safe environment and includes
 - Options for opting out of work
 - Direction for reporting safety and behavioral concerns
 - Includes initial and annual clearances including credential, criminal records checks, medical, behavioral and drug test clearances, training compliance and competency.
- Personnel Suitability Review Team – meets regularly to address issues and ensure the culture of safety continues.

Operational Safety

Institutional
Biosafety
Committee

- Protocols require IBC review and approval. IBC includes members of the public.

Boston Public
Health
Commission

- Approved IBC protocols are submitted to the BPHC for review and approval

City of Boston

- Once approved by the BPHC, 30 days notice is provided to the BPHC Executive Director and the Boston City Council.

IBC review may result in additional reviews such as those related to Dual Use Research of Concern.

Transparency

- IBC Minutes at <https://www.bu.edu/researchsupport/compliance/ibc/about-the-ibc/ibc-meeting-minutes/>
- Agent Specific Information at <http://www.bu.edu/researchsupport/safety/rohp/agent-information-sheets/>
- Incident Reports at <http://www.bu.edu/researchsupport/safety/rohp/quarterly-incident-reports/>

Operational Safety

- Ongoing inspections and monitoring include
 - BPHC announced and unannounced inspections
 - CDC announced and unannounced inspections
 - Other local authorities having jurisdiction (AHJ)
 - Boston Fire Department
 - Boston Water & Sewer Commission
 - Massachusetts Water Resources Authority
 - Internal daily safety checks
 - Laboratory specific inspections

Community Safety

- CEMP includes commitment to perform three exercises a year and provide training to all internal and external responders.
- NEIDL exercise program requires that response to security, building and biosafety events be tested.
 - 2021 has included workplace violence/bullying/activation of response, utility failure to deliver (steam) and will include a lab based medical incident.
 - 2022 has included a security related IT system failure, a fire response incident and will include a lab based medical incident.

Community Safety

- Training Opportunities
- Presentations (at BU or elsewhere)
 - Laboratory Safety / Hazards / Response / Risk mitigation (bio, chem, rad, etc)
 - High and Maximum Containment facilities (BSL-3 and BSL-4) – unique design, safety features, risks and response.
 - NEIDL Specific – risk mitigations in design, operations, infrastructure, systems and personnel suitability processes.
- Tours (familiarization or with presentations)
 - General laboratory
 - NEIDL specific
- Customized (to address unique responses)
 - HazMat
 - Emergency Response (access, etc.)
 - Exposure and transport
 - Other

Facilities Maintenance and Operations Management

- Goals and Strategies
 - Be proactive and responsive to maintain the unique and essential environments that sustains the NEIDL science mission.
 - Maintain strong collaborations with EHS, Public Safety, Animal Research Services, Information Technology, and Research teams
 - Approach facility management with continuous monitoring and facility performance assurances that enables best practice and regulatory compliance
 - Hire and maintain quality staff who are highly trained
 - Establish staffing plans and schedules to provide 24/7 coverage

Facilities Operational Improvements

- 10 Facilities staff with Security Risk Assessments and training to meet Federal Select Agent Program requirements.
- Biocontainment & Biosafety Training of Maintenance Mechanics
 - BSL-4 training (unique in the industry) and BSL-3 training
 - Training of additional staff is necessary to keep up with increasing research activities.
 - Numbers of qualified staff is expected to increase in FY23.
- Converted laboratory space specific for BSL-3 training program support in collaboration with Environmental Health and Safety and the BSL-3 Laboratory Operations Manager.

Facilities Operational Improvements

- New strobes and alert beacons were installed, programmed and tested in BSL-3 and ABSL-3 spaces
 - Improves occupant notifications in the event of programmed sequence of operations change in ventilation for biocontainment assurances.
- Upgrade Building Automation System operating software to a next generation platform called Desigo.
 - designed to retain latest technology and technical support
 - Step 1: “sand box” designed for learning new platform (completed)
 - Step 2: begin transition to full scale use of new platform (ongoing)
 - Operate new platform in parallel with existing system prior to full transfer.
 - Improvements are
- Installed multiple floor liquid leak detectors in mechanical spaces on the 1st, 3rd and 7th floors.
 - Tied to Building Automation for real time detection and response.

Facilities Operational Improvements

- Streamline the Computerized Maintenance Management System (CMMS) for work requests and work order generation.
- Annual recertification and inspection of the Effluent Decontamination System (EDS).
- Office renovations completed for the Facility Mechanics on the 1st floor and for the ARS staff on the 6th floor.
 - Supports expanded staffing plans of 11 mechanics and 17 animal technicians.
- Maintenance Activities Risk Assessment
 - Revision to enhance communications and risk management
 - Provides ability to integrate early coordination with research activities
 - Aligns with principles of continuous improvement

Facilities Operational Improvements

- Annual BSL3 shutdown laboratory inspections were completed.
 - New pass through boxes were installed in Laboratories.
 - Room Pressure Monitors (RPM's) calibrated.
 - 5 autoclave sterilizers were rebuilt by the manufacturer.
- Identified and corrected code deficiencies for 2 emergency egress stairwells exit doors.
- Annual Biocontainment Systems Performance Verification
 - Inspection improvements through collaboration with BPHC
 - Preventive maintenance data, start-up and failure testing, instrument calibration schedules, systems performance trending data, etc. provided to regulators at each inspection.

Facilities Operational Improvements

- Daily Facility Rounds Enhancements
 - New Data Collection System
 - Alarm notification via email for out of parameter readings
 - Daily rounds performed on all 3 shifts including weekends.
- Capital Projects (Reinvesting in the facility's infrastructure)
 - Replaced domestic water pressure reducing valves and balanced domestic hot and cold-water systems.
 - Program Logic controller replacement for Paralleling Electrical Switch Gear
 - Replaced pedestrian guard house doors
 - Replaced exit turn style at security fence line
 - Replaced agitators on pH neutralization system and procured 2nd Program Logic controller
 - LN2 piping infrastructure assessment
 - Cooling Tower Re-builds
 - Replacing Pressure Reducing Valves on Back-up Breathing Air System



National Emerging
Infectious Diseases
Laboratories

NEIDL COMMUNITY INITIATIVES

We are the Community We serve



NEIDL COMMUNITY INITIATIVES

We are the Community We serve

- **PUBLIC PARTICIPATION**
 - Community Liaison Committee
- **INFORMATION**
 - Website
 - News sharing
 - Social Media
- **EDUCATION**
 - External program support
 - My Journey To... Speaker Series



PUBLIC PARTICIPATION

Community Liaison Committee (CLC)

The 13 member committee regularly meets with NEIDL leadership and staff members to facilitate communication and information flow between the NEIDL and the community.

Meetings are open to the public via zoom & meeting minutes are located on the NEIDL website.

Speakers this Year: Dr. Steve Niemi, Animal Health Science, Steve Taranto, NEIDL Public Safety
Dr. Anthony Griffiths, NEIDL Investigator and Professor of Microbiology, Sierra Downs, Emergency Planning & Incident Response at the NEIDL, John McCall, Director of NEIDL Information Technology and Telecommunications

www.bu.edu/neidl/clc-meeting-minutes/

The Members of the CLC are:

J. Kevin Fisher, South End
James Eliscar, Dorchester
James Keeney, South End +
Jean Lee, South End
Joe Lillis, South End
Kenneth Nwosu, Dorchester
Nefertiti Lawrence, Roxbury
Norman Stembridge, Roxbury
Olawumi Akinwumi, Roxbury
P.M. Scarlet Ford, Roxbury
Robert Francis, Milton
Robert Timmerman, South End +
Vanessa Hackett, Dorchester

+ Community Member of the Institutional Biosafety Committee (IBC)



INFORMATION

Website

Community Relations is responsible for keeping the NEIDL website up to date.

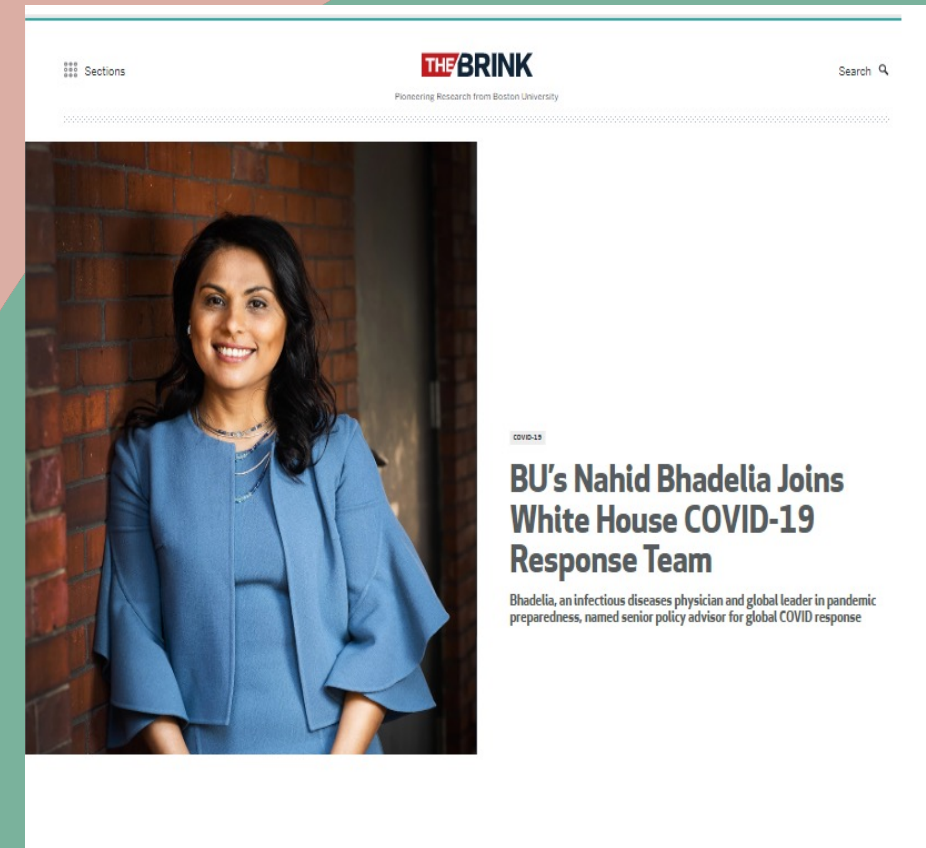
www.bu.edu/neidl

News Sharing

Community Relations frequently shares relevant news articles with neighborhood partners and other stakeholders. While most of these articles feature NEIDL personnel and live on the NEIDL website, other articles educate the community about BU research, events and activities on both campuses.

Social Media

@NEIDL is live on twitter and currently promotes news articles posted on the website...please follow, and we encourage you to share happenings from your lab that you believe are worth retweeting.



EDUCATION

External Program Support

NEIDL Personnel participated as judges and volunteers in the John D. O' Bryant School of Math & Science – 2022 Science Fair.

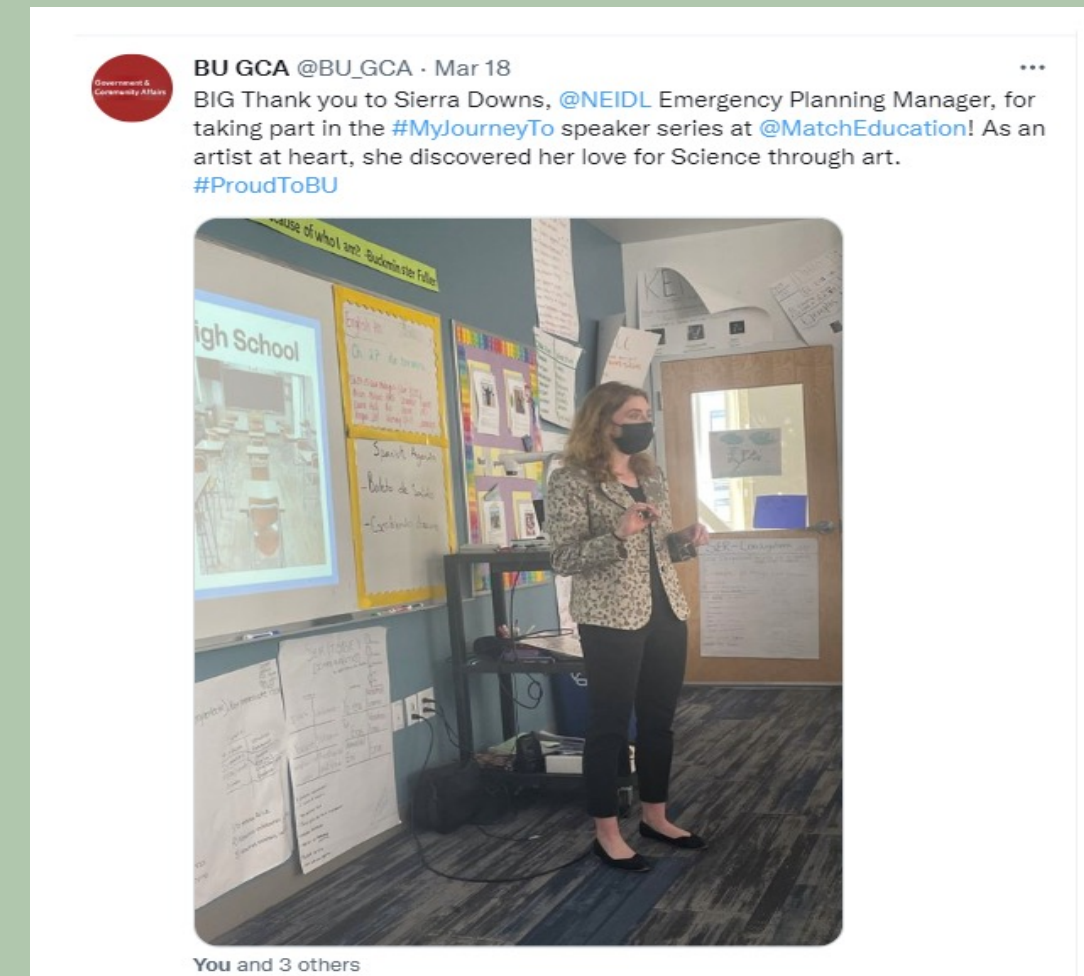
Tours

We have hosted over 3800 people for tours of the building. Most recently groups have included Greater Boston Women's Research Opportunities for Young Women (GROW) Pop Health Exchange and STaRS

My Journey To... Speaker Series

The Speaker Series is a virtual career exploration program with MATCH High School that exposes students to careers, and allows students to engage with BU professionals around college preparedness, job skills, and personal path to their career.

Sessions occur every third Wednesday of the month with MATCH.



THANK YOU

Thank you to all attending, including the CLC and the NEIDL professional staff that volunteer their time and expertise.





National Emerging
Infectious Diseases
Laboratories

PUBLIC QUESTIONS & TESTIMONY

At the conclusion of the presentation we will take questions from attendees through the Q&A function or by clicking the HAND ICON.

Clicking the hand icon will signal to staff that you would like to ask a question. Staff will call on folks with their hand raised and allow you to unmute yourself. You will have 1 minute to speak.

Please note this meeting is being recorded

IF YOU ARE HAVING TECHNICAL DIFFICULTIES, PLEASE EMAIL erp@bu.edu or call 617-947-6130