

**Building Confidence within the Biological Weapon  
Convention  
NCDC / Lugar Center Capacities in Georgia**

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# NCDC

**Is a central public health and research institution under the authority of MoLHSA**

**Established in 1996 on the basis of CDC / Atlanta Structure**

- 1937** Establishment of the Anti-Plague Station in Georgia
- 1992** Research Center of Especially Dangerous Pathogens (*EDPs*)
- 1996** National Center for Disease Control
- 2003** Integration of Center of Medical Statistics
- 2007** Large-scale reorganization: Integration of MoH Public Health Department into the NCDC
- 2013** Integration of R. Lugar Center for Public Health Research into the NCDC



**Ministry of Internally Displaces Persons from the  
Occupied Territories, Health, Labor, and Social Affairs**

**Multi-sectoral Supervisory Board:  
MOIDPOTLHSA, MoEP&A, MoES, MIA, MoD, MoF**

**National Center for Disease Control and Public Health**

**Lab Part  
Richard G. Lugar Center  
“One World – One Health”**

**Non-Lab/Office  
Part of NCDC&PH**

**Immunization  
Cold Chain Infrastructure**



**Vision:** Our Knowledge – for Public Health

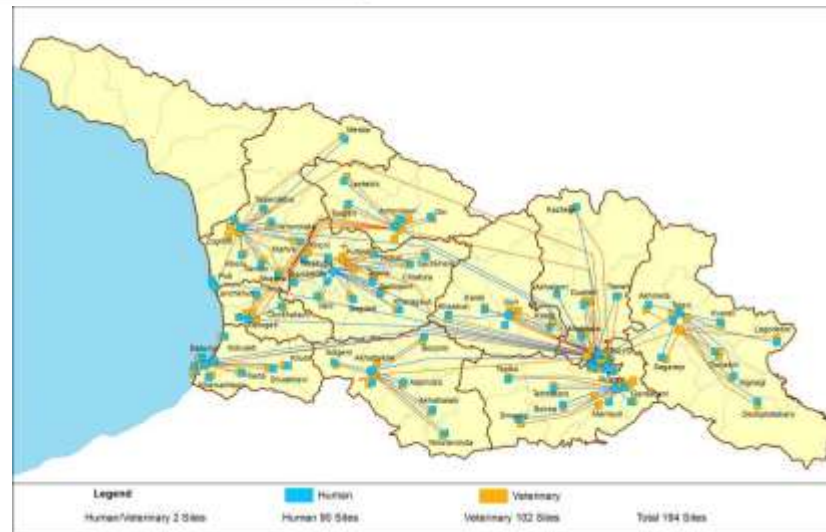
**Mission:** Protection and improvement of the health of Georgia's population through scientific evidence-based prevention of diseases, preparing for and timely responding to threats of public health



# Unified Laboratory Network



**EIDSS**  
200 entry points





## Non-Laboratory Part of NCDC

### State Public Health Programs:

- Immunization
- Blood Safety
- TB
- HIV/AIDS
- Screening
- Surveillance
- MCH
- Occupational diseases
- Health promotion
- HCV Screening

### Epid-surveillance of Infectious Diseases:

- VPD
- Diarrheal
- Vector borne
- Air borne
- EDP - Zoonoses
- STI/HIV/TB

### Surveillance of NCD:

- CVD
- Cancer
- Diabetes
- CRD
- Risk factors
- Health promotion
- Behavioral Health

GF Programs Recipient

Environmental Health

Public Health Preparedness and Response

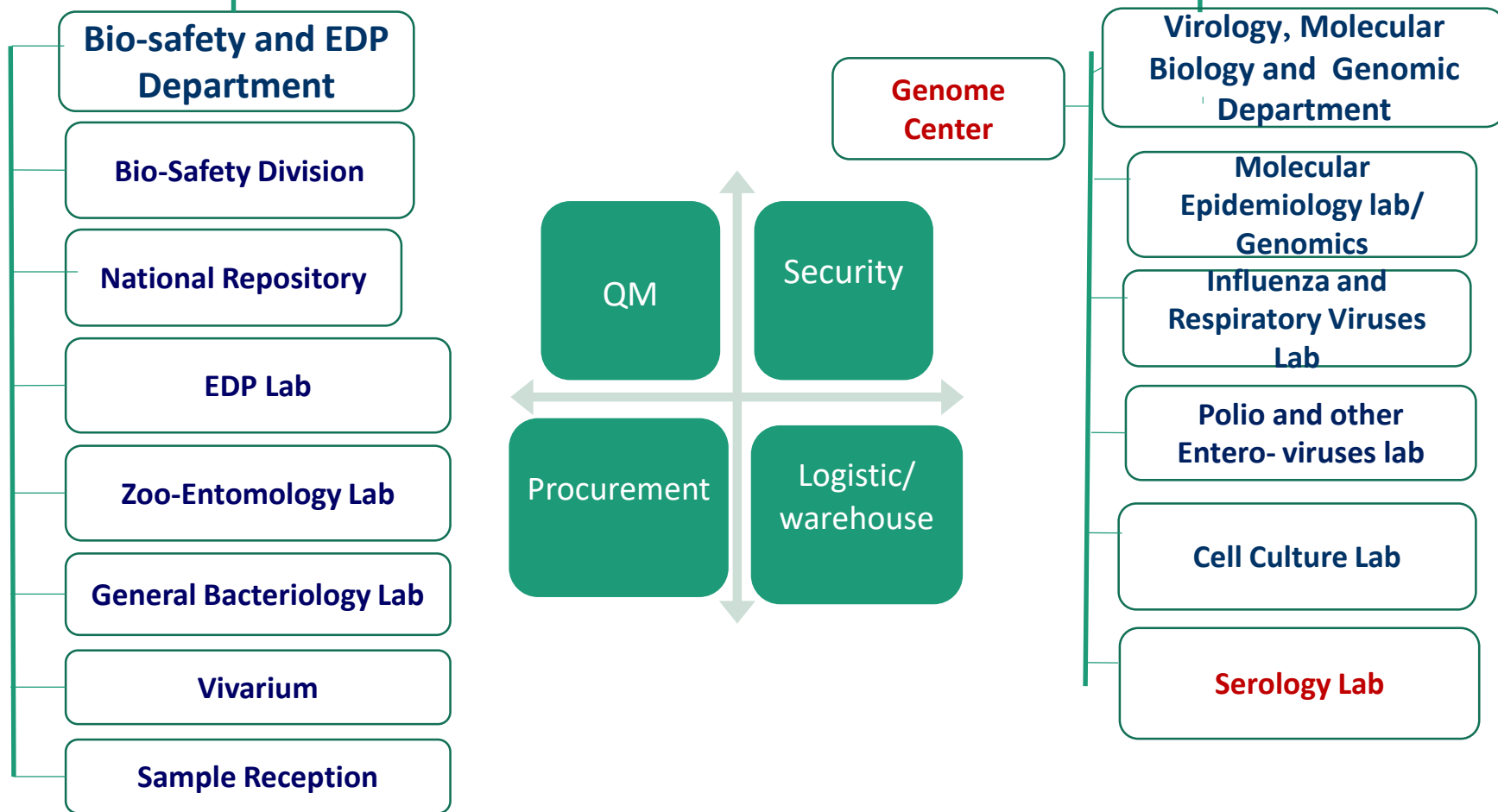
Medical Statistics

Training Center





# R. Lugar Center for Public Health Research



# Laboratory and human Capacity

- **2-floor building with total laboratory floor area - 2119 sqM**
  - BSL2 labs – 1727 sqM
  - BSL3 labs – 392 sqM
  
- **Total number of personnel - 75 employees, including:**
  - Scientists – 61
  - Engineers and technicians – 11 (1 engineer; 10 technicians)
  - Administrative and support staff – 3
  
- **Outsource services:**
  - Facility engineering and technical support provided by LLC Industrial Commercial Residential Systems Service (ICRS). Total 21 staff, among them: 14 bio-engineers, 5 technicians and 2 administrative and support staff
  - Facility physical security provided by the State Security Police of Georgia. Total number of staff - 33 security guards.



# Additional Spaces Designed as a BSL 3

## ❑ Vivarium / Animal BSL 3

- Did not pass certification due to: Cage washing facility; Joints on the floor; Walls covers; Containment seals;
- Needs additional re-constructions for BSL 3
- Is used for: Serology and Field material preparation

## ❑ Block C, 1st floor rooms

- Facility is used for: General bacteriology; Rotavirus serology; Field material DNA/RNA extraction; PCR rooms for Polio / Influenza labs

❖ **No need in additional BSL 3 space in the nearest future**

# Funding level for programme areas 2017

Distribution of funds allocated for the NCDC/Lugar centre are on:

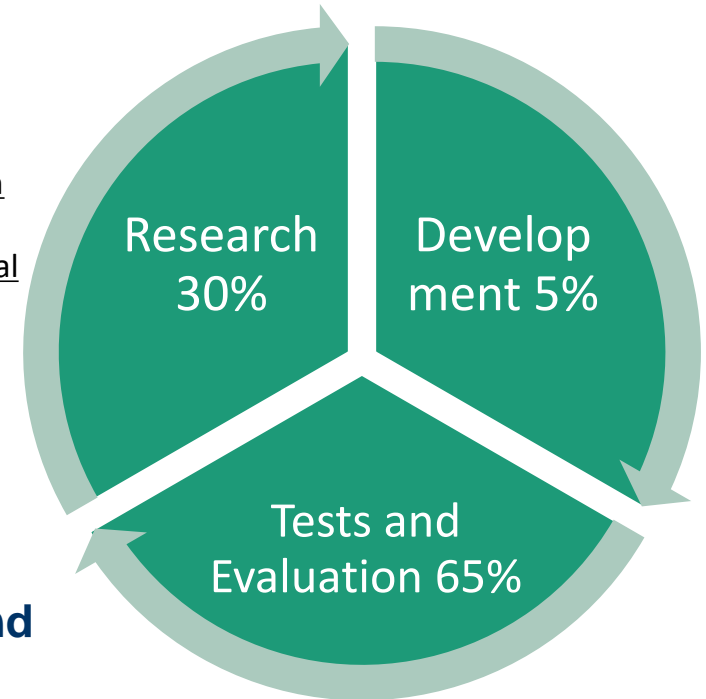
➤ **Research – scientific and research work**

More than 45 collaborative programs/projects are running currently under the different donor organizations such as:

US CDC, US DoD Defence Threat Reduction Agency (DTRA), EU projects, German Federal Foreign Office- GIZ, International Science and Technology Center (ISTC), Science and Technology Center in Ukraine (STCU), GRDF, Shota Rustaveli National Science Foundation, etc

➤ **Development – new methods on testing and diagnostics**

➤ **Tests and Evaluation - routine bacteriological and molecular diagnostics, reference testing**



In 2017 total amount of annual funding of CPHRL is 3 790 885,5 USD.

Funds and costs	GEL	USD
Security Service	420 000,00	168 000,00
Laboratory Supply	394 565,88	157 826,40
Operational cost	1 412 400,00	564 960,00
Salary	1 613 894,00	645 557,80
Projects funds	5636350,91	2 703 552.5
<b>Total</b>	<b>9477211,00</b>	<b>3 790 885,5</b>



# Accreditation & Certification – NCDC/Lugar Center

## 3 Labs accredited by WHO

- Polio
- Influenza
- Measles/Rubella

## 5 Labs Connected to WHO Lab Network with EQA

- Rota
- Invasive Meningitis
- Malaria
- Salmonellosis
- AMR



ISO15189:2012  
Issued in  
5 Jan 2018

ISO 9001:2008  
Issued in May  
2015 and in  
May 2018



National Center for Disease Control & Public Health

www.ncdc.ge

# Mission and Main Functions of the Lugar Center

- Provision of laboratory-based surveillance in compliance with IHR and GHSA
- Rapid detection of biological threats, confirmation and respond
- Lead facility responsible for biological safety and security
- *EDPs* consolidated in a secure place
- Zooentomological surveillance
- Provision of lab support to Public Health State Programs
- Participation in Global Health Security Agenda (GHSA) - real-time bio-surveillance, laboratory and zoonotic diseases action packages
- Development of bio-medical research potential in the country



# Exclusive Capacity

- Diagnostics of especially dangerous pathogens (**Anthrax, Tularemia, Brucellosis, Botulism, Plague, Crimea Congo, Ebola, Hanta and other hemorrhagic fever**), as well as rare and exotic diseases (etc.) **Diphtheria, Malaria, Bartonella, Leptospirosis, Pertussis, Zika, Dengue, Chikungunya**
- **Influenza** – Virology and Molecular Surveillance
- **Respiratory, diarrheal and enteroviruses** surveillance with Multiplex PCR
- **Polio** - virology and molecular surveillance; referral for Armenia
- **Rotavirus**- surveillance and genotyping
- **Measles, Rubella** – surveillance and genotyping
- Full Genomic Sequencing



# National Repository of Bacteria and Viruses

**The National Repository of Bacteria and Viruses was established on 27 September 1971 on the basis of the Anti-plague Station of Georgia.**

The repository stores EDP and Non-EDP Strains on regularly inspection-audit basis.

The inventory audit of EDP strains are performed once in a year and Non-EDP strains twice in a year.

Last inventory audit on non-EDPs was performed in September 2018.

✓ total number of microorganisms - 1857 (2423 cryovials)

Inventory Audit on EDP collection was conducted in February, 2018. Among them are:

- ✓ *Y. pestis*-46 (250 cryovials)
- ✓ *F. tularensis* - 104 (351 cryovials)
- ✓ *B. anthracis* - 580 (1461 cryovials)
- ✓ *Brucella* - 119 (419 cryovials)
- ✓ *C. botulinum* - 96 (192 vials)



# National Repository of Bacteria and Viruses

- All Data on Pathogens Are Registered
- In logs
- In the Pathogen Asset Control System (PACS)

*The Pathogen Asset Control System (PACS) is an electronic system designed for accounting and control of the biological agents' collections.*

*PACS provides a secure, reliable, and timely method of accounting and monitoring the movement of biological agents, and provides ample opportunities for data auditing and reports' generating.*



# Achievements (1)

## First time:

### In the World:

- A new specie of Orthopox virus discovered ( Published in New England Journal of Medicine)
- Brucellosis pathogens were found in bats
- *Bartonella taylorii* was detected as a human pathogen in patients with HIV / AIDS
- *Janibacter hoylei* PVAS-1 isolated from endocarditis clinical sample

### In Georgia:

- Cowpox detected in West Georgia
- The Results of the suspected but unconfirmed samples 41% of Anthrax turned out to be caused by the viral infection of Parapox
- Data on AMR was processed and published on the CAESAR and GLASS
- Gram-negative bacteria was detected as high resistant (CRE, ESBL)
- The mechanism of resistance was studied of Neisseria gonorrhoea and revealed resistant strains
- Unknown Etiology pneumonia cases turned out to be caused by the Bacterial infection of Streptococcus pneumonia in 50% of samples by molecular method





# GHSA Action Packages

## Prevent

1. Antimicrobial Resistance
2. **Zoonotic Disease – Georgia contributing**
3. Biosafety and Biosecurity
4. Immunization

## Detect

1. **National laboratory System – Georgia contributing**
2. **Real-Time Surveillance – Georgia together with Norway Leading**
3. GHSA Reporting
4. Workforce Development

## Respond

1. EOC
2. Linking Public Health Law and Multisectoral Rapid Response
3. Medical Countermeasures and Personnel Deployment





**Universities & Research Centers:**  
**University of Florida, University of Maryland, Emory University, Johns Hopkins University, North Arizona University, University of Oslo, etc.**



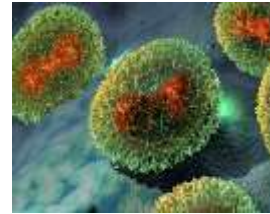
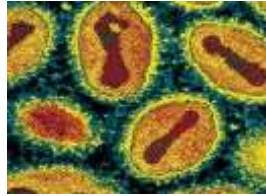
# Research projects and collaborative scientific work in 2018

- Establishment of a Western Asian Network for the Improvement of Biosecurity in the Caucasus Region
- Mycobacterium bovis infection in South Caucasus and its Health Burden, ISTC # 2312
- Epidemiology of Carbapenem-resistant Enterobacteriaceae in Georgia. ISTC/G-2229
- Evaluation study of Rapid Diagnostic Tests (RDTs) detecting antibodies against hepatitis C virus
- Evaluation of the diagnostic performance of the Xpert® Fingerstick HCV Viral Load (VL) Assay
- Molecular Epidemiology and Ecology of Yersinia Species in the Transboundary Plague Endemic Territory in Georgia and Azerbaijan
- Understanding the Risk of Bat-Borne Zoonotic Disease Emergence in Western Asia (DTRA)
- Characterization of NCDC Strain Repository by Next Generation Sequencing (DTRA/BAA) HDTRA1-15-1-0062
- Collaborative Genetic Characterization of NCDC Collections of Bacillus anthracis, Francisella tularensis, Yersinia pestis and Brucella species CBM.DIAGB.03.10.WR.002

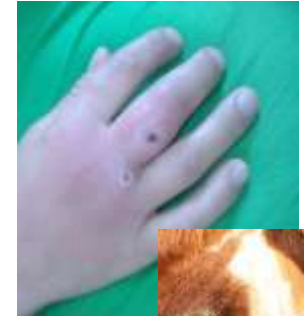


# Outstanding Finding

Poxvirus project: HDTRA1-15-1-006



- In 2013, first time in Georgia, in Akhmeta region orthopox virus infection was identified in human and animal; Modern molecular diagnostic tools (virus isolation, Whole Genome Sequencing) revealed novel, genetically different virus that does not belong to any known OPXV species. Virus is named as Akhmeta virus.
- In 2016, in Abasha region another case of Orthopoxvirus in human and animal (cow) was confirmed. For species differentiation gene sequencing was applied; as a result, first human cowpox virus infection was determined in Georgia



# Training Capacity

## Training of Interns from Georgian Universities 2016-18

- 47 students were trained at Lugar Center and more advanced ones prepared their Bachelor / Masters thesis using data generated at the Lugar Center
- 9 of them were hired under scientific projects, had trainings at different international institutions and attended international conferences



# Training Capacity

## International Trainings and Workshops

- Pathogen Detection Capability Development Collaboration and Training Workshop had a place in August 2017 for the colleagues from different institutions of Egypt organized by Los Alamos National Laboratory, USA



# Training Capacity

## International Trainings and Workshops

- Bacterial Meningitis PCR Detection and Serotyping new method demonstration workshop organized by WHO had a place at Lugar Center in 2017. Colleagues from the laboratories involved in meningitis surveillance from Kirgizia, Ukraine, Armenia, Russia, Azerbaijan, Belorussia, Uzbekistan and Georgia participated in the workshop



# Training Capacity

## Biosafety and Biosecurity Trainings for local as well as for foreign lab personnel

- Training and Resource Center in Biosafety and Biosecurity established under the EU/UNICRI funded project (2013-2015) more than 35 lab officers from Armenia, Azerbaijan Georgia and Turkey were prepared on the basis of Lugar Center.
- In October 2017 under the TB Myanmar program 3 laboratory personnel passed ToT training in Biosafety and Biosecurity (10 days).





# Peer Review Transparency Exercise under BWC Compliance Building

- On 14-15 November 2018 Georgia hosted 17 UN member States by opening the door of state of art laboratory “Lugar Center for Public Health Research”
- Participating countries: Austria, Bosnia, Cameroon, Columbia, Chile, Hungary, Iraq, Italy, Germany, Malaysia, Mali, Myanmar, Montenegro, Kazakhstan, Uganda, UK, US.
- Total 23 delegates took part in the exercise, from which 12 were Subject-matter experts, 10 – diplomats, 2 from EU and BWC ISU, and one from Civil Society representative from the King College London.
- The event was conducted under the Auspices of MFA and MOH of Georgia and by support of German Government.
- Experience shared by Bundersweher Military Institute of Microbiology during the preparation phase greatly assisted in well organization and performance.
- PRE visit was publicly announces by local and international Media.



# Thank you!

R. Lugar Center for Public  
Health Research



New Administrative  
Building

