

**Formal Consultative Meeting of the States Parties
to the Convention on the Prohibition of the
Development, Production and Stockpiling
of Bacteriological (Biological) and
Toxin Weapons and on Their Destruction**

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2022 Meeting

Geneva, 26 August and 5-9 September 2022

Item 6 of the agenda

**Respective outstanding questions by the Russian Federation
to the United States and to Ukraine concerning the fulfilment
of their respective obligations under the Convention in the context
of the operation of biological laboratories in Ukraine**

**U.S. Experts Technical Presentation for BWC Article V
Consultations, 6 September 2022**

Submitted by the United States of America



United States Presentation



**Biological and Toxin Weapons Convention
Article V Consultative Meeting**



United States Department of Defense Defense Threat Reduction Agency Presentation to The States Parties, BWC



Overview of the Biological Threat Reduction Program and Ukraine



Overview of the Biological Threat Reduction Program and Ukraine: Inheriting Soviet Infrastructure



Photographs from initial BTRP site visits to Soviet era diagnostic laboratories in Ukraine



Overview of the Biological Threat Reduction Program and Ukraine: Modernizing Laboratories



Before



After



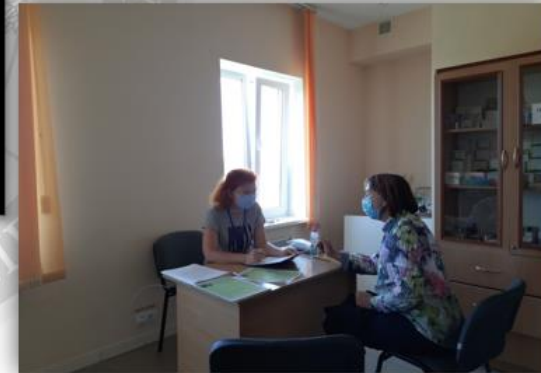


Overview of the Biological Threat Reduction Program and Ukraine: Fostering Transparency





Overview of the Biological Threat Reduction Program and Ukraine: Training Ukrainian Field Epidemiologists



BTRP Partners with U.S. CDC to provide advanced field epidemiology to staff of Ukraine's Ministries of Health, Agrarian Policy and Food, and Defense



Overview of the Biological Threat Reduction Program and Ukraine: Delivering COVID Assistance



Tunisia



Laos



South Africa



Morocco



Ukraine



...and many more

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Addressing the Specific Allegations: Agreements



Addressing the Specific Allegations: the “2005 Agreement”



Full title: “Agreement Concerning Cooperation in the Area of **Prevention** of Proliferation of Technology, Pathogens, and Expertise that could be Used in the Development of Biological Weapons”

This is a **public** document

Misrepresented elements

- Sample Storage, Transfer, and Data Sharing
- Sensitive Markings



Addressing the Specific Allegations: Sample Storage



assistance for improving biological material protection, control and accountability in order to reduce the risk of theft or unauthorized use of dangerous pathogens located at the facilities in Ukraine referred to in Article I, Paragraph 1.

3. Pursuant to the terms of this Agreement, the U.S. Department of Defense may, at its discretion, provide the Ministry of Health of Ukraine with other types of assistance subject to the written agreement of the Parties.

Article IV

1. The Ministry of Health of Ukraine shall assist the U.S. Department of Defense during the implementation of this Agreement.

2. The Ministry of Health of Ukraine shall coordinate with appropriate Ukrainian ministries and other government agencies and organizations in order to ensure that:

- (a) material provided under this Agreement is afforded priority processing to allow prompt delivery to its ultimate destination within Ukraine; and
- (b) appropriate security measures are provided for the U.S. Department of Defense representatives, contractors, and equipment at those facilities associated with activities under this Agreement.

3. The Ministry of Health of Ukraine shall facilitate the examination by the appropriate Ukrainian ministries and other government agencies and organizations of all material received pursuant to this Agreement and provide confirmation of the acceptability of such material to the U.S. Department of Defense within ten days of receipt of the results of such examinations. Material failing to conform to agreed specifications shall be returned, at the expense of the U.S. Department of Defense, to the U.S. Department of Defense through the Embassy of the United States of America in Kyiv within thirty days of receipt for replacement.

4. The Ministry of Health of Ukraine or its designated agent shall consolidate and store all dangerous pathogens at secure centralized laboratories designated in writing by the Parties that have received or are receiving the U.S. Department of Defense assistance under this Agreement (hereinafter centralized laboratories). The U.S. Department of Defense may provide molecular diagnostics capabilities, improved electronic communications, and equipment for the safe and timely transport of field pathogen samples to the centralized laboratories.

5. In order to support the joint efforts of the Parties to prevent the proliferation of dangerous pathogens and related expertise and to minimize potential

“The Ministry of Health of Ukraine or its designated agent shall consolidate and store all dangerous pathogens at secure centralized laboratories designated in writing by the Parties that have received or are receiving the U.S. Department of Defense assistance under this Agreement”

- Provides framework for infrastructure assistance
- Ensures use of investments
- Ensures safe storage



Addressing the Specific Allegations: Sample Transfer



5. In order to support the joint efforts of the Parties to prevent the proliferation of dangerous pathogens and related expertise and to minimize potential

biological threats, the Ministry of Health of Ukraine shall transfer to the U.S. Department of Defense requested copies of dangerous pathogen strains collected in Ukraine for cooperative biological research in the centralized laboratories in Ukraine and in U.S. Department of Defense-designated laboratories in the United States for prophylactic, protective or other peaceful purposes. Details of such cooperation shall be defined in annual Joint Requirements and Implementation Plans developed in accordance with paragraph 7 of Article IV of this Agreement or in an implementing arrangement in accordance with Article VI of this Agreement. The Ministry of Health of Ukraine shall share with the U.S. Department of Defense data generated by the infectious disease surveillance network of the Ministry of Health of Ukraine or its designated agents in order for the Parties to better detect, diagnose and monitor disease outbreaks in Ukraine.

6. Dangerous pathogens placed in centralized laboratories shall remain in those laboratories for the duration of the Umbrella Agreement. The Ministry of Health of Ukraine shall immediately notify the U.S. Department of Defense in writing about the temporary removal of dangerous pathogens from centralized laboratories due to emergency situations. The Ministry of Health of Ukraine shall return all pathogens removed from a centralized laboratory to that centralized laboratory or another centralized laboratory as soon as possible.

7. The Ministry of Health of Ukraine or its designated agent shall cooperate with the U.S. Department of Defense to develop annual Joint Requirements and Implementation Plans describing the underlying assumptions, requirements and responsibilities for implementation of this Agreement, and the Parties or their designated implementing agents shall sign these plans.

Article V

1. In accordance with Article X of the Umbrella Agreement, the U.S. Department of Defense has the right to audit and examine material, training of personnel and services provided in accordance with this Agreement to facilities in

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Addressing the Specific Allegations: Data Sharing



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Article V

1. In accordance with Article X of the Umbrella Agreement, the U.S. Department of Defense has the right to audit and examine material, training of personnel, and services provided in accordance with this Agreement to facilities in Ukraine for the duration of the Umbrella Agreement. Such audits and examinations may be conducted consistent with the Implementing Arrangements for the Conduct of Audits and Examinations of United States Assistance to Ukraine in Connection with the Agreement between the United States and Ukraine of October 25, 1993.

2. In addition to the rights provided by Article X of the Umbrella Agreement, the U.S. Department of Defense representatives shall also have the right to participate in all aspects of implementation of contracts and related activities at facilities in Ukraine pursuant to the terms of this Agreement.

“The Ministry of Health of Ukraine shall share with the U.S. Department of Defense data generated by the infectious disease surveillance network of the Ministry of Health of Ukraine or its designated agents in order for the Parties **to better detect, diagnose and monitor disease outbreaks** in Ukraine.”

- Framework to improve ability to comply with the World Health Organization’s International Health Regulations



Addressing the Specific Allegations: Sensitive Markings



Article VI

As appropriate, the Parties may enter into additional implementing arrangements or agreements to carry out the provisions of this Agreement. In the case of any inconsistency between this Agreement and any such arrangements or agreements, the provisions of this Agreement shall prevail.

Article VII

In order to facilitate the provision of assistance in accordance with the terms of this Agreement, and without prejudice to the U.S. Department of Defense's right to conduct audits and examinations in accordance with Article V of this Agreement:

1. The information transmitted under this Agreement or developed as a result of its implementation and considered by the U.S. Department of Defense as "sensitive" or by the Ministry of Health of Ukraine as "restricted information" (in Ukrainian: "конфідентіальна інформація") must be clearly designated and marked as such.

2. "Sensitive" information or "restricted information" shall be protected in accordance with the laws of the state of the party receiving the information.

A) According to the laws and regulations of the United States of America, such information shall be treated as "sensitive information of a foreign government", and shall be withheld from public disclosure to the extent permitted by the laws and regulations of the United States of America. Any such information transmitted by the Ministry of Health of Ukraine to the U.S. Department of Defense must be accompanied by a written declaration from the Government of Ukraine which states that it is withholding such information from public disclosure and that the information is provided to the Government of the United States of America on the condition that it not be released to the public without the approval of the Government of Ukraine. In this written declaration, the Government of Ukraine shall specify the date until which the information provided should be withheld from public disclosure by the Government of the United States of America. That date may be extended by the U.S. Department of Defense, to the extent permitted by the laws and regulations of the United States of America, in accordance with a request by the Government of Ukraine.

B) Information marked or designated by the U.S. Department of Defense as "sensitive" should be withheld from public disclosure by the Government of Ukraine.

"The information transmitted under this Agreement or developed as a result of its implementation **and** considered by the U.S. Department of Defense as "sensitive" or by the Ministry of Health of Ukraine as "restricted information" **must be clearly designated and marked as such.**"

- Requires parties to protect each other's sensitive or restricted information
- Common provision of commercial and intergovernmental agreements
- Does not make blanket determination that all information is sensitive



Addressing the Specific Allegations:

Plan to Provide Technical Assistance to Certain Recipients of the Ministry of Defense of Ukraine



Addressing the Specific Allegations: Plan to Provide Technical Assistance



Unofficial translation

PLAN TO PROVIDE TECHNICAL ASSISTANCE TO CERTAIN RECIPIENTS OF THE MINISTRY OF DEFENSE OF UKRAINE

In accordance with
Agreement between the Ministry of Health of Ukraine and the Department
of Defense of the United States of America Concerning Cooperation in the
Area of Prevention of Proliferation of Technology, Pathogens and
Expertise that could be Used during the Development of Biological
Weapons
Contract HDTRA1 - 08 - D - 0007-0004

Description

In accordance with the Agreement Between the United States of America and Ukraine Concerning Assistance to Ukraine in the Elimination of Strategic Nuclear Arms and the Prevention of Proliferation of Weapons of Mass Destruction of 25 October 1993, in order to further implement the provisions of the implementing Agreement between the Ministry of Health of Ukraine and the Department of Defense of the United States of America Concerning Cooperation in the Area of Prevention of Proliferation of Technology, Pathogens and Expertise that could be Used during the Development of Biological Weapons of 29 August 2005, the U.S. Defense Threat Reduction Agency, hereinafter referred to as the "Donor", signed a contract HDTRA1-08-D-0007-004 of 6 March 2015 under the "Cooperative Biological Engagement Program" (CBEP) with Black & Veatch Special Projects Corp. hereinafter referred to as the "Implementing Contractor", for the implementation of the Technical Assistance Project for the institutions of the Ministry of Defense of Ukraine, hereinafter referred to as the "Beneficiary".

Legislative Framework

The documents referred to below are continually revised and form the legislative framework of the Program once they are adopted or enacted:

- Standard legal document
- Defines key information to register and authorize a foreign agency to provide direct technical assistance:
 - Who provides and receives the assistance
 - Nature of the assistance
 - Goal of the assistance



Science in the Biological Threat Reduction Program



Basics of BTRP Science Funding



Announce Funding Opportunity



Organizations Apply



Expert Review



Award Project to Organization



Organizations Conduct Work



Scientific Projects



Migratory
Bird
Study

- Risk assessment of selected especially dangerous pathogens carried by migratory birds over Ukraine (Ukraine Project 4)

Native
Bat Study

- Emerging Infections from Insectivorous Bats in Ukraine and Georgia (Project-781)



Maps from Bio-Surveillance Studies

Nearly Identical Studies

Migratory bird pathways published in joint Russian-Chinese study

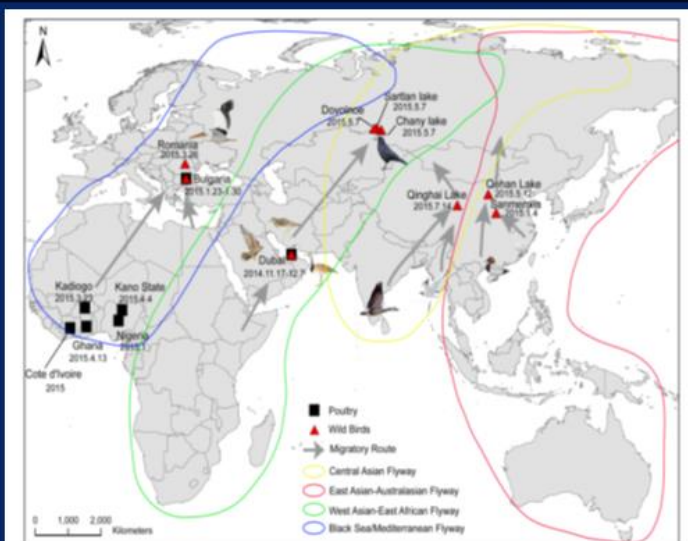
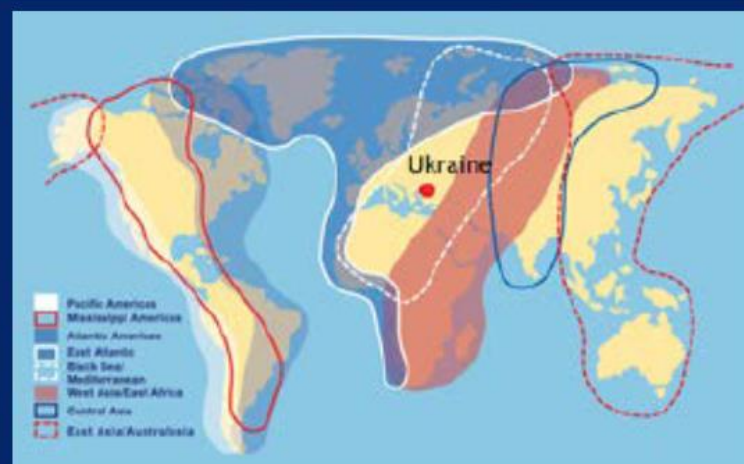


Figure 3. The spatio-temporal distribution of the novel reassortant Clade 2.3.2.1c HPAI A (H5N1) virus.

Bi et al. 2016 *Virology Sinica* 31(4): 300-305.

Migratory Bird Pathways cited in UP-4 Study



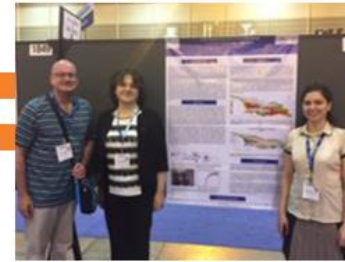
Muzyka 2019 Program Review.



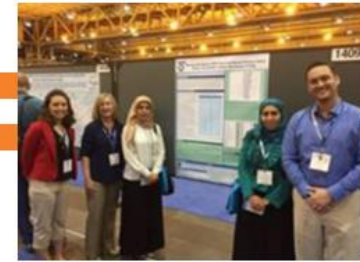
Studies Foster Collaboration and Engagement



- Studies connect scientists to collaborate and cooperatively address common problems
- Scientists from multiple countries work together and share results
- BTRP funding includes support to publish results and present findings at international conferences
- BTRP-funded studies required to have summaries publicly available



BTRP with the Armenia and Georgia delegations



Iraqi Fellows with BTRP delegation



Iraqi, Ukrainian, and Georgian researchers discuss collaborations and their work on Brucellosis



Broad Support for Science Transparency



Article

Structure of O-Polysaccharide and Lipid A of *Pantoea Agglomerans* 8488

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Abstract: The *Pantoea agglomerans* 8488 lipopolysaccharide (LPS) was isolated, purified and characterized by monosaccharide and fatty acid analysis. The O-polysaccharide and lipid A components of the LPS were separated by mild acid degradation. Lipid A was studied by electrospray ionization mass spectrometry (ESI-MS) and found to consist of hexa-, penta-, tetra- and tri-acylated species. Two-dimensional nuclear magnetic resonance (NMR) spectroscopy revealed the following structure of the O-polysaccharide repeating unit $\rightarrow 3)-\alpha\text{-L-Rhap-(1}\rightarrow 6)-\alpha\text{-D-Manp-(1}\rightarrow 3)-\alpha\text{-L-Fucp-(1}\rightarrow 3)-\beta\text{-D-GlcNAcp-(1}\rightarrow$. The LPS showed a low level of toxicity, was not pyrogenic, and reduced the adhesiveness index of microorganisms to 2:12, which was twofold less than the control. LPS modified by complex compounds of germanium (IV) and tin (IV) were obtained. It was found that six LPS samples modified by Sn compounds and two LPS samples modified by Ge compounds lost their toxic activity when administered to mice in a dose of LD₅₀ (105 µg/mice or 5 mg/kg). However, none of the modified LPS samples changed their serological activity in an Ouchterlony double immunodiffusion test in agar.

Keywords: *Pantoea agglomerans*; lipopolysaccharide; O-polysaccharide structure; lipid A; toxicity; pyrogenicity

1. Introduction

Pantoea agglomerans (formerly *Enterobacter agglomerans*, *Erwinia herfonia*) is a ubiquitous bacterial strain that belongs to the *Enterobacteriaceae* family [1]. It is primarily an environmental and agricultural organism that inhabits plants, soil, water, air and dust. However, *E. agglomerans* strains are frequently found in humans and isolated in hospitals. They might affect various organs in the body, ranging from non-life-threatening skin infections to fatal multi-organ systemic disorders [2,3]. However, *P. agglomerans* strains can also have a positive effect by stimulating the production of substances effective for the treatment of cancer and other diseases [3,4]. Bacterial lipopolysaccharide (LPS), a major component of the outer membrane of Gram-negative bacteria, is involved in both these positive and negative processes [5]. LPS also is known as a potent immunostimulator in both humans and animals.

The structural basis of *P. agglomerans* LPS is similar to other Gram-negative species, but some distinctive features have also been reported. Tsakalika et al. [6] determined the structure of lipid A

Scientific study of a bacterial strain that naturally inhabits the environment and are frequently found in humans.

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www.mdpi.com/journal/biomolecules



Summary and Conclusion



Summary of Biological Threat Reduction in Russia (2001-2013)



Biological Safety and Security (BS&S):

- Reduced proliferation risk of former BW facilities



Infrastructure Elimination:

- Consolidated or dismantled infrastructure



Collaborative Biological Research (CBR):

- Re-directed BW expertise to peaceful research projects.
- Prevented trained BW researchers from transferring their weapons expertise to terrorist groups or states seeking WMD capabilities.



Threat Reduction Projects implemented through the International Science & Technology Center (ISTC), based in Moscow.



Details of Biological Threat Reduction in Russia



Enhanced the safety and security at 6 key facilities in Russia:

State Research Center of Virology and Biotechnology (Vector; FY2011)	State Research Center for Applied Microbiology (Obolensk; FY2005)	All-Russian Research Institute for Phytopathology (Golitsino; FY2013)	Pokrov Biologics Plant (Pokrov; FY2013)	All-Russian Scientific Research Veterinary Institute (Kazan; FY2013)	All-Russian Research Institute of Animal Health (Vladimir; FY2013)
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BTRP spent over **\$100 million USD** in Russia to:

- Retrained thousands of Russian scientists to pursue **peaceful** biological research.
- Conducted hundreds of **collaborative biological research studies** at dozens of Russian facilities.
- Funded ISTC efforts **improve the safety and security** of former Russian biological weapons laboratories and manufacturing plants.
- **Joint Studies:** Monkey pox, Anthrax, Brucellosis, Yersinia Pestis (Plague), Marburg, Ebola, Smallpox, and Crimean Congo Hemorrhagic Fever.