**Risk of new infections from insectivorous bats in Ukraine and Georgia.**  Denis Muzyka (IEKVM), Lela Urushadze (NCOZKZ) and Andres Velasco-Villa (CDC).

HDTRA1-14-24-FRCWMD-BAA

**Objectives:** Identification of new viral (coronavirus, filovirus, paramyxovirus, orthomyxovirus, lizavirus) bacterial (Brucella, Leptospira, Yersinia) pathogens significant for human health and bat animals in Ukraine and Georgia; Study of how changes in landscape biodiversity affect the composition of endemic viral and bacterial agents in bat populations , as well as evaluation of bat populations their eco-evolutionary relationship with the occurrence of diseases in humans and domestic animals; Building a stable and harmonious system for the early detection of dangerous agents from bat populations in Ukraine and Georgia and their further genomic description.

**Method:** Integration of a multidisciplinary interagency coalition of health and veterinary institutes and universities, which will contribute to the creation of a regional self-sufficient multinational group for early detection and typing of agents while creating a complex analytical base for their adequate assessment.

**Application:** This project will be implemented and integrated through coordinated work by the National Scientific Center "Institute of Experimental and Clinical Veterinary Medicine", the National Center for Public Health and Disease Control, the Center for Disease Control in cooperation with the Virginia Polytechnic Institute and the U.S. Geological Survey. The results of the scientific work will be useful for the evolution of bacterial and viral infectious diseases, early warning systems and human and animal health around the world, as well as for the environment.

**Personnel involved:** More than 60 scientists from the USA, Ukraine and Georgia with various scientific degrees and work experience will participate in field research, diagnostics, molecular typing, Sanger sequencing, next-generation sequencing, bioinformatics, modeling of ecological niches and data visualization.

**Publications and conferences:** We expect at least one peer-reviewed publication per year   
and active participation in two scientific conferences per year.

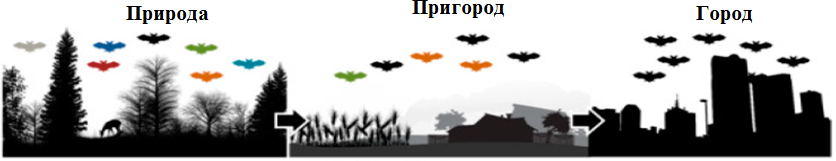
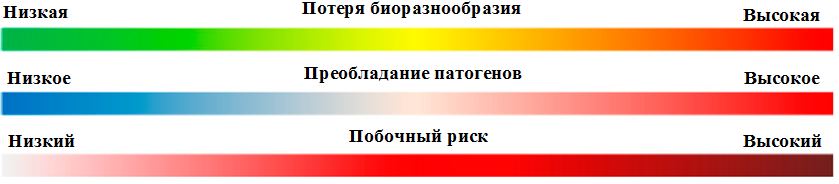
**First year:** Standard operating procedures for implementing a safe bat trap, sampling, preparation for identification, typing, sequencing and niche modeling; field and laboratory work.

**Second year:** Continuation of field and laboratory work; development of an analytical base for comparative genomic and environmental modeling of niches; quality assurance and quality control of implemented algorithms and problem solving.

**Third year:** Sustainability assessment and implementation completion phase, analysis of the final information and its visualization, presentation of the further direction of work.

**Financing:** Total for Ukraine and Georgia for the period 2020-2023 - 1.6 million US dollars, of which 207-398 thousand dollars per year for IECWM, 178-257 thousand dollars per year for NCPHZ, 53 thousand dollars per year for STCU, a total of 1,554,519 dollars for the CDC (512-527 thousand dollars per year).

**Contacts:** Dr. D. Music (dmuzyka77@gmail.com, +380673855798); Dr. L. Urushadze (lelincdc@gmail.com, +995599245434); Dr. Andres Velasco-Villa (dly3@cdc.gov, 404 639 1055).



Trainings, workshops, standard operating procedures, surveillance planning, biosecurity and safety techniques

Field expeditions for   
sample collection and geo-information

Data analysis , mapping, niche modeling, hypothesis testing, publishing results

NCPHPC /  
Georgia

NCPHPC /  
Georgia

IECVM

CCH

NCPHPC

NCPHPC

IECVM

CCH

IECWM/ Ukraine



GS and U.S. CDC

IECWM/ Ukraine

IECVM

NCPHPC

Complete genomic sequencing of PCR-positive samples

Primary laboratory testing to identify dangerous pathogens in PCR