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**A One-Health Rapid Diagnostic Pipeline for Emergency Transboundary Infectious Diseases**

Arianna Ceruti1\*, Olga Makarova2, Sarah Bonnet3, Luisa Barzon4, Sara Savic5, Xavier Rodo6, Tobias Lilja7, Tarja Sironen8, Nazif Elaldi9, Zati Vatansever10, Manfred Weidmann11, Andy Wende12 Kostas Delakouridis13 Wendelin Stark14 Tobias Schindler15 André Streck16 Julius Boniface Okuni17, Oumar Faye18, Dinesh Mondal19, Gabor Foldvari20,Ahmed Abd El Wahed1, Martin Pfeffer1, Uwe Truyen1

1[arianna.ceruti@uni-leipzig.de](mailto:arianna.ceruti@uni-leipzig.de) Institute of Animal Hygiene and Veterinary Public Health, Leipzig University, Leipzig, Germany

2Veterinärmedizinische Universität Wien, Wien, Austria

3Institut Pasteur, Paris, France

4Università degli Studi di Padova, Padova, Italy

5Scientific Veterinary Institute Novi Sad, Novi Sad, Serbia

6Instituto de Salud Global Barcelona, Barcelona, Spain

7Swedish Veterinary Agency, Uppsala, Sweden

8University of Helsinki, Helsinki, Finland

9Sivas Cumhuriyet University, Sivas, Türkiye

10Kafkas Universitesi, Kars, Türkiye

11midge medical GmbH, Berlin, Germany

12Xpedite Diagnostics GmbH, München, Germany

13Repado Software Technical Research and Development Services, Athens, Greec

14ETH Zürich, Zürich, Switzerland

15diaxxo AG, Zürich, Switzerland

16Fundação Universidade de Caxias do Sul, Caxias do Sul, Brasil

17Makerere University, Kampala, Uganda

18Institut Pasteur de Dakar, Dakar, Senegal

19International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh

20Centre for ecological research, Budapest, Hungary

**Abstract:**

**Background/Objective:** It has become apparent that the ease of travelling, global warming, and changes in the environment accelerate the spread of infectious diseases of zoonotic origin. International collaboration is essential to impact on the control of disease epidemics, and as the COVID pandemic has shown rapid diagnostics are one of the main pillars. The Pipeline for Rapid Diagnostics of Emergency Transboundary Infectious Diseases (PREPARE-TID) project targets infectious agents of three types: an ongoing neglected epidemic, an ongoing emerging epidemic, and an ongoing elimination drive. The aim is to develop the necessary in vitro diagnostic tools for preparedness needed in case of the emergence of infectious agent X.

**Methods:** PREAPRE-TID is a multidisciplinary research consortium drawn from 16 European and 4 international research organisations and enterprises. Biomedical researchers are working alongside epidemiologists, clinicians, veterinarians, and software engineers to implement a pipeline from a mobile suitcase sequencing laboratory with a simple bioinformatics to a fieldable rapid nucleic acid extraction procedure, a mobile smartphone linked molecular point-of-care and a multiplex PCR one-health surveillance platform, and a one-health digital platform. These are providing innovative diagnostic solutions for cross-border health threats at international level. PREPARE-TID increases the accessibility to novel diagnostics for detection of pathogens with pandemic potential.

**Results:**

The project is delivering the following:

* Rapid POC molecular tested linked to smartphone App for diseases of epidemic potential
* One Health Pod Platform for multiplex PCR for diseases surveillance
* Suitcase lab/nanopore sequencing diagnostic sensitivity and specificity
* Design improved system for digital One Health surveillance.
* Strengthen the capacities of identification and development of rapid diagnostics for pathogen X

**Conclusion:** The consortium delivers point-of-care and mobile diagnostics, which can be easily deployed within advanced surveillance programs based on a comprehensive digital “One Health” platform, and mass produced in case of an epidemic or pandemic.

**Keywords:** agent x, transboundary infectious diseases, emergency Epidemic and pandemic preparedness