



# MediLabSecure

## **A 10-YEAR DEDICATED CAPACITY-BUILDING PROJECT**

**TO IMPROVE PREPAREDNESS AND RESPONSE  
TO VIRAL VECTOR-BORNE DISEASES IN THE  
CONTEXT OF ENVIRONMENTAL AND CLIMATE  
CHANGE**



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**A DECADE OF COLLABORATIONS FOR PUBLIC HEALTH  
 IN THE MEDITERRANEAN: AN INSPIRING TRACK RECORD**

Our team at the Institut Pasteur Department of International Affairs supports the coordination of regional collaborative projects to achieve a positive impact on partner organizations as well as address the public health priorities of the countries concerned. MediLabSecure is a shining example of this success.

Inspired by Louis Pasteur’s belief that science and pathogens know no borders, a diverse team of European scientists with complementary expertise joined forces to build and develop a unique One Health network in the Mediterranean. This alliance, composed of the Institut Pasteur, French National Research Institute for Sustainable Development (IRD), Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Consejo Superior de Investigaciones Científicas (INIA-CSIC), Istituto Superiore di Sanita (ISS), Istituto Zooprofilattico Sperimentale dell’Abruzzo e del Molise «G. Caporale» (IZS-Teramo) and AVIA-GIS, a Belgian SME, was made possible through the unwavering support of the European Commission.

Bringing together 22 countries across the Mediterranean region (including the Balkans, Black Sea and Sahel regions), the program resonated deeply with the needs of partner national reference laboratories and public health institutions. With rising concerns about vector-borne diseases they called for efforts to strengthen expertise. The choice of topic served both as a practical application of the One Health approach and represented a major challenge for the future of public health given the still poorly understood impact of environmental changes, the rise in global flows (of goods, people, and vehicles), and climate change.

Guided by trust and mutual respect, we established a capacity-building program co-developed with partner institutions. This program, tailored to the specific needs of the countries and designed to optimize the sustainability of training initiatives, benefited from the EC’s regular and continuous support. This long-term approach fostered a cross-border network of individuals, experts, and institutions capable of collaborating both nationally and regionally, and across sectors. The network’s exemplary response to the COVID-19 pandemic serves as tangible proof of these efforts.

MediLabSecure is a testament to the power of collaborative science for the benefit of public health. It serves as a blueprint for future initiatives, reminding us of the progress made and the extraordinary possibilities that lie ahead.

As we commemorate a decade of achievements, we look to the future with optimism and determination. Empowered by experience gained and the spirit of collaboration that unites us, we are ready to face the challenges ahead and continue our mission to improve public health.

For our team, supporting and serving such a network is a source of immense pride and an invaluable privilege.

**Anne-Sophie Lequarré**

Project Manager  
 European Commission  
 Service For Foreign Policy Instruments  
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In our interconnected world, global health preparedness is no longer an option but a necessity. The recent pandemic underscored the critical importance of a coordinated, multisectoral approach. To address emerging threats, greater collaboration across human, animal, and environmental health sectors is paramount. Communication and cooperation between experts are key to early detection of outbreaks and swift and efficient crisis management.

Since 2014, MediLabSecure, funded by the European Centres of Excellence for CBRN risks mitigation Initiative, has promoted a genuine One Health approach through the development of a network of laboratories and health institutions to prevent vector-borne diseases in 22 countries surrounding the European Union. MediLabSecure also advocates for the integration of One Health strategies into all relevant national policies to ensure maximum impact.

We must be ready to mitigate future pandemics and MediLabSecure acts as a beacon for the building of a more resilient and interconnected health system. Its work benefits not only the participating countries but also the international community as a whole. As we reflect on the past decade, the European Union takes pride in celebrating the remarkable progress achieved. Together, let us continue striving towards a healthier, more secure future.

# MediLabSecure

**Since the end of the 20<sup>th</sup> century, the world has witnessed a rise in the number of infectious epidemics due to the disruption of the human-animal-environment interface. Globalization (trade, animals, and humans), climate change, proliferation of industrial densely populated livestock farms and rapid urbanization offer new opportunities for the emergence and spread of diseases. COVID-19 demonstrated how a pandemic can abruptly disrupt societies and trigger a global crisis.**

Since then, there are rising concerns about vector-borne diseases whose incidence and spread are affected by these factors, allowing pathogens to re-emerge or invade new territory. This is particularly true for the Mediterranean region, which lies at the crossroads of several continents, resulting in intense trade, tourism and migration. More than ever, epidemic preparedness is the cornerstone to prevent a pandemic from happening again.

How do we contain diseases transmitted by vectors that don't know borders? The answer lies in our capacity to detect unusual events at an early stage and implement control measures rapidly, and this requires efficient cooperation from the human and animal health sectors as well as the medical entomology sector.

To address these issues, the CBRN Center of Excellence launched the MediLabSecure project in 2014 to mitigate these emerging biological risks in countries around the Mediterranean region. Coordinated by the Institut Pasteur, the project is jointly implemented by a consortium of European partner institutions, each recognized experts in their field: Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Consejo Superior de Investigaciones Científicas (INIA-CSIC, Spain); Institut Pasteur (France); French National Research Institute for Sustainable Development (IRD, France); Istituto Superiore di Sanità (ISS, Italy); Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise (IZS-Teramo, Italy) and AVIA-GIS (Belgium).

Since its inception in 2014, the MediLabSecure network has been successfully growing and currently targets 22 countries from the Balkans, Black Sea, North Africa, and Sahel regions. The network has been built by inviting, in each targeted country, partner national organisations from 5 complementary sectors concerned by the vector borne diseases surveillance, to join forces. The main lines of action are capacity building, multisectoral networking, and the promotion and advocacy of the added value of implementing an integrated surveillance at national scale.

The project's goal is the reinforcement of a multisectoral network of national reference laboratories and public health institutions to strengthen their preparedness and response capacities in tackling vector-borne diseases.

The outcome of the project is the reinforcement of a unique One Health network of 111 national reference laboratories and public health institutions, gathering more than 200 experts aiming to strengthen their preparedness and response capacities to face vector-borne diseases threats.

This unique well-established One Health network is now ready to transition to the next phase – member empowerment – by promoting in-country initiatives and supporting One Health advocacy to national stakeholders to leverage political engagement.

# ALL ABOUT MEDILABSECURE PROJECT

A network of more than 110 members' institutions in 22 countries, composed of 5 complementary sectors per country, bringing together more than 200 experts. Since 2018, the main achievements of the projects are:

## ONE HEALTH PREPAREDNESS AND RESPONSE

54

trainings courses including 23 multisectoral training programs

+800

participants

297

experts trained

technical assistance to

28

local events (suspicion or local epidemic)

50%

of countries have 5 sectors trained

5

vectors identification tools



+20

operating procedures

+90%

of countries have 4 sectors trained

2

external quality assessment programs for vector identification

25

external quality assessment programs for arbovirus detection

## FOCUS ON COVID-19 ACTIVITIES

17

laboratories benefited from technical support

6

training courses

1

external quality assessment

1

multicenter surveillance study

## ONE HEALTH SURVEILLANCE RISK ASSESSMENT & EARLY WARNING

2

strategic documents: recommendations to improve multisectoral risk assessment and integrated surveillance

6

multisectoral exercises

+175

participants since 2018

## ONE HEALTH NETWORK

# 111

National laboratories and public health institutions

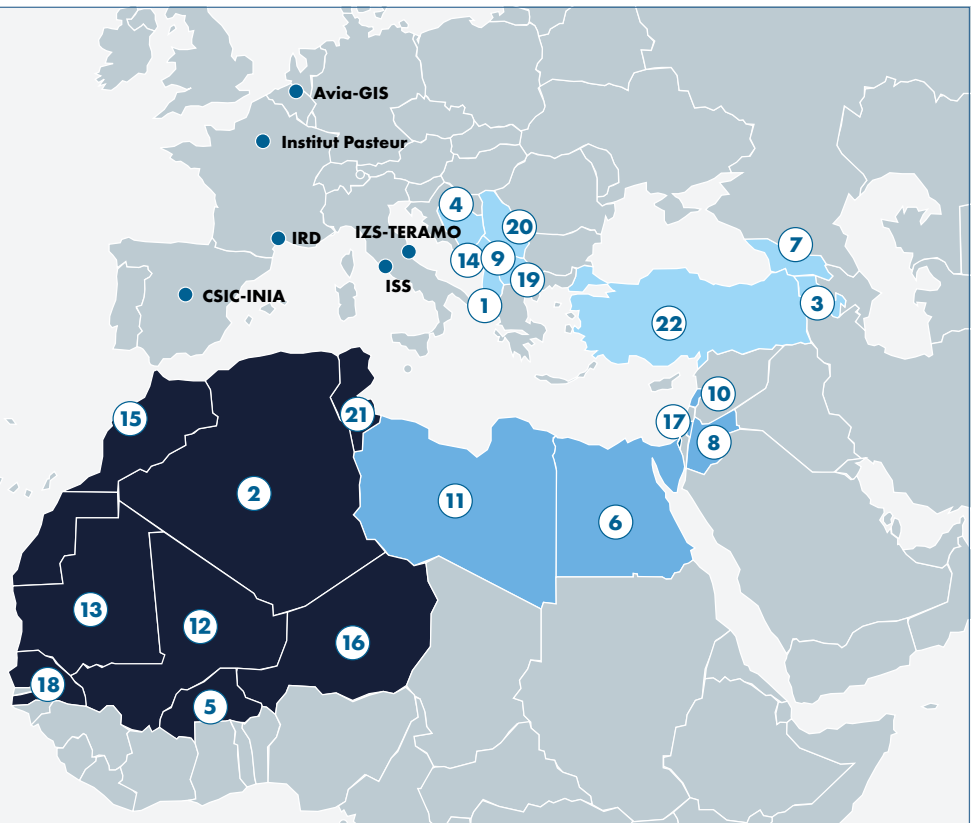
# 5

Sectors per country

# 3

Regions

● Implementing Partners



### BALKAN & BLACK SEA

### MIDDLE EAST

### SAHEL & MAGHREB

- |                          |                                |                 |                |            |
|--------------------------|--------------------------------|-----------------|----------------|------------|
| 1 Albania                | 14 Montenegro                  | 6 Egypt         | 2 Algeria      | 15 Morocco |
| 3 Armenia                | 19 Republic of North Macedonia | 8 Jordan        | 5 Burkina Faso | 16 Niger   |
| 4 Bosnia and Herzegovina | 20 Serbia                      | 10 Lebanon      | 12 Mali        | 18 Senegal |
| 7 Georgia                | 22 Turkey                      | 11 Libya        | 13 Mauritania  | 21 Tunisia |
| 9 Kosovo *               |                                | 17 Palestine ** |                |            |

## NETWORKING

# 11

regional and plenary meetings

# +550

participants

## PROMOTION

# 19

scientific publications

## MEDILABSECURE NETWORK EMPOWERMENT

# 6

local initiatives funded in 7 countries

# 2

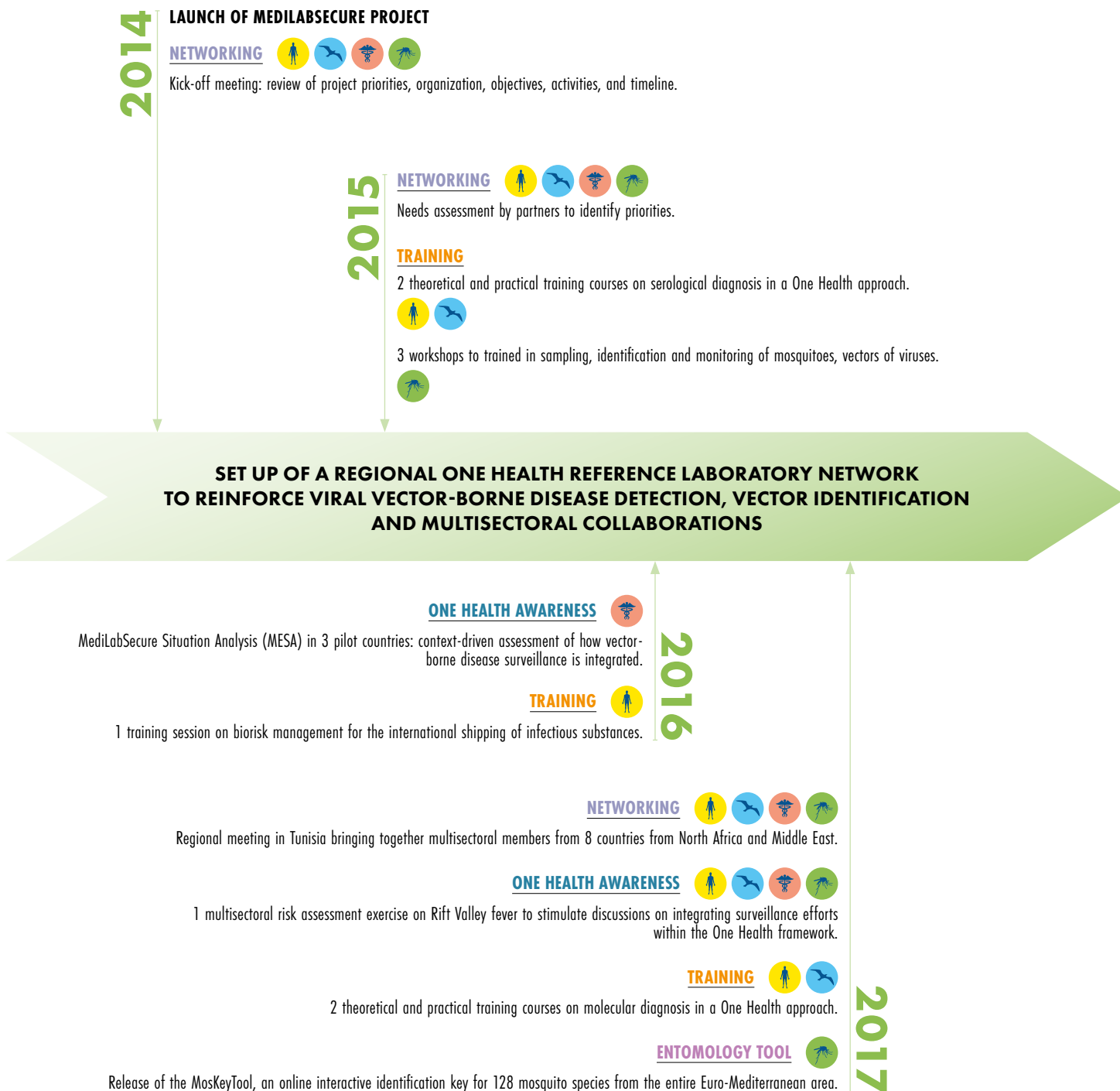
2 trainee-led training sessions for trainers

\*This designation is without prejudice to positions on status and is in line with UNSCR 1244 and ICI Advisory opinion on the Kosovo declaration of independence.

\*\*This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of EU Member States on the issue.

# 10 YEARS OF DEDICATED EFFORTS AND ACHIEVEMENTS IN VECTOR-BORNE DISEASE PREPAREDNESS

The past decade of MediLabSecure’s work and achievements has shown a great improvement in the ability of laboratories and institutions in the human and animal health sectors to detect and monitor viral vector-borne diseases.





Throughout its course, the project has been characterized by four pivotal phases: Set-Up, Consolidation, Application, and Empowerment. In its **Set-up** phase, the project engaged a network of national reference laboratories and public health institutions from the human and animal health sectors and identified capacity requirements through a bottom-up approach. The **Consolidation** phase saw network capacity building through enhanced integrated surveillance, improved diagnostic capabilities, and comprehensive training initiatives involving multisectoral experts. As the project advanced to the **Application** phase, the impact of previous







training and ties between members became tangible especially in response to the COVID-19 pandemic, during which the network sought to build SARS-CoV-2 diagnostic capacity within the countries. The network is now initiating the **Empowerment** phase to ensure sustainability, illustrated by MediLabSecure-funded initiatives such as the Leadership Initiative and the Twinning Program where members can put expertise gained in local initiatives into practice or share knowledge acquired with other members. This review shows how a collaborative regional One Health project can successfully impact national health strategy.

**Network expansion to 5 Sahel countries: Burkina Faso, Mali, Mauritania, Niger and Senegal to strengthen the geographical continuum sharing common public health concerns with North Africa.**

**2 expert capabilities added:**

-  Spatial modeling and risk mapping in vector and vector-borne disease surveillance and control including climate and environmental data.
-  Veterinary Services to strengthen the One Health approach involving animal health authorities.



**2019**

**NETWORKING**      

1 Plenary meeting to introduce new country members and 2 new expert capabilities.







**ENTOMOLOGY TOOL**

Release of “Mosquito factsheets”: a practical toolkit for rapid mosquito identification in the field, detailing characteristics of 10 species of interest.




- 
- Release of a roadmap on mosquito-borne virus transmission risks for harmonizing entomological surveillance systems in targeted countries.
- 

**TRAINING**


2 theoretical and practical workshops on GIS fundamentals and vector species mapping at national level.

-      

2 training courses on next-generation sequencing technology and data analysis.

-   

1 workshop on biorisk management and outbreak response strategies.

- 

**CONSOLIDATION OF THE ONE HEALTH NETWORK**

**2018**







**NETWORKING**    

Plenary meeting in France to consolidate network membership and strengthen ties with international stakeholders and related project representatives.







**ONE HEALTH AWARENESS** 

Strategic document “Integrated Surveillance and Risk Assessment for Arbovirus Infections: recommendations for enhancing One Health in the Mediterranean Region” from the outputs of MediLabSecure MESA studies.


**2020**

**NETWORKING**      

North Africa and Sahel regional meeting focusing on Rift Valley Fever following the One Health approach.

**ONE HEALTH AWARENESS**      

1 Rift Valley Fever multisectoral risk assessment exercise to strengthen collaboration between all sectors from North Africa and Sahel countries.

**TRAINING** 

Launch of GIS program: a series of individual tailored training sessions to strengthen risk mapping capacities.





2020-2022

RETROSPECTIVE

NETWORK IN ACTION ADDRESSING THE COVID-19 PANDEMIC

As soon as the pandemic began, the consortium quickly mobilized to address the needs of the targeted countries within the network. They focused on strengthening pandemic response capacities in line with the project's core missions. The project supported the setup of SARS-CoV-2 and its variants' detection and improved sequencing capacities. Support was promptly provided to the countries highlighting the value of a well-established network.

1 COVID-19 multicenter study to strengthen surveillance and protection capacities of healthcare workers in African health settings.

Support to the "WHO Global Referral Laboratory for COVID-19" for the Africa region.

2021

NETWORKING



Online Balkan & Black Sea regional meeting focusing on the detection of potential outbreaks.

ONE HEALTH AWARENESS



1 multisectoral case study on emerging zoonosis detection and outbreak investigations.

TRAINING



1 vector control training session emphasizing community-based efforts against invasive Aedes mosquitoes.

ENTOMOLOGY TOOL



Release of PhlebKeyTool: a co-developed sandfly identification tool covering 84 species/subspecies.

MULTISECTORAL APPLICATION FOR VECTOR-BORNE DISEASE PREPAREDNESS

NETWORKING



1 Middle East regional meeting focusing on Rift Valley Fever following the One Health approach.

ONE HEALTH AWARENESS

1 multisectoral case study on emerging zoonosis detection and outbreak investigations.



MediLabSecure Situation Analysis (MESA) in 2 pilot countries: context-driven assessment of how vector-borne disease surveillance is integrated.



TRAINING

1 field diagnostics training session on biological sample handling in a BSL3 containment laboratory in close collaboration with Institut Pasteur de Dakar capitalizing on their emergency mobile laboratory equipment.



1 Metagenomics webinar to present and raise awareness of the importance of metagenomic technology for efficient surveillance.



1 training course on insecticide resistance in testing procedures for monitoring and managing insecticide resistance.



2 EPI-training courses on "Basic epidemiology and risk assessment" focusing on control strategies and rapid risk assessment.



1 offline eLearning course on Rift Valley Fever disease in sheep, goats, camels and humans for the veterinary services sector.



2022



2023

**TRAINING**

2 technical metagenomic workshops from sample preparation to results interpretation.



1 policy brief training course aimed at improving skills to translate scientific evidence to decisions maker.



2 urban vector mapping & modeling training courses in Albania and Tunisia for Aedes albopictus risk mapping in urban settings.



1 community-based intervention webinar on controlling VBDs with field actions, focusing on community awareness and engagement.



**NETWORKING**



Balkan & Black Sea regional meeting in Montenegro involving members from 9 countries on One Health vector-borne disease preparedness.

**ONE HEALTH AWARENESS**



1 multisectoral exercise to design an integrated surveillance system for rimean-Congo Hemorrhagic Fever (CCHF) and devise a transborder action plan.

**EMPOWERMENT OF THE ONE HEALTH NETWORK TO ENSURE SUSTAINABILITY**

**TRAINING**

1 leadership initiative to support implementation of "Tick Surveillance and Tick-Borne Disease Monitoring in Montenegro through a One Health approach"\*



1 twinning activity: genomic surveillance capacity building within the Serbian Institute of Veterinary Medicine by the Sarajevo Veterinary Faculty.



1 regional workshop on Multidisciplinary Field Outbreak Investigation focusing on West Nile virus in connection with the leadership initiative.



**NETWORK SUSTAINABILITY**

Call for Twinning Program applications within the network to support cooperation and knowledge transfer between MediLabSecure members. Four programs were selected for funding.



Call for leadership initiative encouraging members to develop activities related to vector-borne diseases in their respective countries. Two initiatives were selected for funding.



2024\*

**NEXT-STEPS**

- enlarge the One Health network with an environmental expertise.
- empower members by promoting in-country initiatives.
- empower the network by supporting the One Health advocacy to national stakeholders to leverage the political engagement.

\* Activities are still ongoing; the most recent ones may not be mentioned..

# Success story: implementing One Health in country

## WEST NILE VIRUS HAS BECOME OVER THE YEARS A HOT TOPIC FOR COUNTRIES TARGETED BY THE MEDILABSECURE PROJECT

Birds are the reservoir hosts of West Nile virus, especially migratory birds, that transport the virus from Africa to temperate areas in Europe, playing a crucial role in its spread. Birds usually remain asymptomatic. The pathogen is maintained in nature in a mosquito-bird-mosquito transmission cycle and is mainly transmitted to humans and horses via mosquito bites. *Culex pipiens*, commonly referred to as the "house mosquito", is considered as the principal vector of this virus.

Since West Nile virus outbreaks in animals precede human cases, the WHO recommends the establishment of an active animal health surveillance system to detect new cases in birds and horses. This is essential in providing early warning for veterinary and human public health authorities.

[www.who.int/en/news-room/fact-sheets/detail/west-nile-virus](http://www.who.int/en/news-room/fact-sheets/detail/west-nile-virus)  
[www.pasteur.fr/en/medical-center/disease-sheets/west-nile](http://www.pasteur.fr/en/medical-center/disease-sheets/west-nile)

# A ONE HEALTH COLLABORATIVE APPROACH TO BUILD A NATIONAL WEST NILE VIRUS SURVEILLANCE SYSTEM IN LEBANON

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MediLabSecure focal point for medical entomology in Lebanon

**Lebanon has never reported any West Nile virus (WNV) cases within its territory, despite the country being located along the migratory flyways of birds from and to the Middle East, an area endemic for the pathogen. How did a multisectoral study implementing a One Health approach provide evidence of virus circulation, prompting the Lebanese health authorities to establish West Nile virus surveillance?**

LEBANON



## CONTRIBUTION OF THE MEDILABSECURE PROJECT IN LEBANON

Until 2015, Lebanon did not prioritize West Nile virus surveillance. However, aware that WNV was endemic in the region, the Laboratory of Immunology and Vector-Borne Diseases (LIVBD) within the Faculty of Public Health at the Lebanese University has closely monitored the situation over the past two decades. The goal was to build the entomological and epidemiological knowledge base needed to implement efficient surveillance of West Nile virus and other mosquito-borne viruses of interest circulating in the country.

The MediLabSecure project, launched in Lebanon in 2014, enhanced laboratory capacities and expertise through training in serological and molecular diagnostic techniques to detect a large panel of mosquito-borne viruses. This training enabled LIVBD and central human and veterinary laboratories to apply and standardize these procedures. Moreover, entomology training in mosquito and larva identification and the development of the interactive MosKeyTool facilitated scientists' learning and improved identification skills.

Building on their new skills shared belief in the added value of a One Health approach, and the connections established through MediLabSecure's regional meetings, Lebanese human and animal virologists, entomologists, and public and animal health representatives now collaborate more effectively.

## MULTISECTORAL STUDY ON ANIMALS, HUMANS, AND MOSQUITOES

This collaboration enabled LIVBD to conduct a large-scale, multisectoral serological study in 2017 to collect evidence of West Nile virus circulation nationwide, and report back to health authorities in order to raise awareness of the potential threat of arboviruses in Lebanon.

LIVBD analyzed human, horse, and chicken samples from key geographic areas countrywide to detect West Nile virus-specific antibodies. Local mosquito populations were also tested for viral RNA using conventional RT-PCR to determine whether they carried West Nile virus.

The results for horses and humans showed seroprevalence rates indicating local circulation of WNV in Lebanon. Serological data also revealed exposure to other viruses, including Usutu and Dengue. This serological evidence was used to provide risk data to health authorities to support the utility of implementing national

West Nile virus surveillance. Since severe cases in humans may give rise to neurological disorders, the pathogen's surveillance has been integrated into the existing (aseptic) meningitis surveillance program. Thus, since 2016, all patients with neurological symptoms due to non-bacterial meningitis are also screened for West Nile virus. MediLabSecure's contribution was crucial to the provision of training, SOPs, positive controls and the implementation of external quality assessment.

For more comprehensive disease surveillance, Lebanon still needs to develop integrated surveillance. The animal sector has not yet implemented West Nile virus surveillance and there is currently no national vector surveillance system in place despite ongoing monitoring studies. A surveillance system of this kind would enable health authorities to prevent or, failing this, to respond swiftly to an outbreak of this virus which is already endemic to the Eastern side of the Mediterranean basin.



## WEST NILE VIRUS SURVEILLANCE IN HUMANS AND VECTORS IN TUNISIA

DR. WASFI FARES

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Institut Pasteur de Tunis  
MediLabSecure focal point for Human virology in Tunisia

As the national reference laboratory for West Nile virus (WNV) surveillance in Tunisia, the *Institut Pasteur de Tunis* has significantly enhanced its monitoring capabilities through training to master technological advancements fostered by the MediLabSecure program. The *Institut Pasteur de Tunis* has now formed a regional collaborative network with Algeria and Libya to share expertise, produce standardized surveillance data and support each other in the case of outbreaks. We look back at the decade-long partnership forged under the MediLabSecure program and the key role it has played in enhancing surveillance of the West Nile virus in Tunisia.

Tunisia has suffered West Nile virus epidemics for decades, experiencing outbreaks causing fatalities, notably in 1997, 2003 and recently in 2018 and 2023. To combat this persistent threat, the country integrated West Nile virus into its national surveillance system. Initially, the *Institut Pasteur de Tunis* used molecular diagnostic techniques available in the

national reference laboratory for this pathogen. However, these methods had their limitations, particularly the potential degradation of RNA in virus samples, entailing a risk of non-detection of virus in samples that were actually positive.

### STRENGTHENING SURVEILLANCE CAPABILITIES

Since the inception of the MediLabSecure project in 2014, the Clinical Virology Laboratory of the *Institut Pasteur de Tunis* has received top-up training in molecular and serological diagnostics to mitigate the above-mentioned limitation. During the COVID-19 pandemic, the project was expanded to improve genomic surveillance. The *Institut Pasteur de Tunis* received a Next-Generation Sequencer (NGS) to boost its sequencing and data analysis capacities in a bid to support the COVID-19 response.

The team received specialized training by the Emergency Biological Intervention Unit (CIBU) at the *Institut Pasteur* (Paris), using the same equipment and actual samples to be tested, which enabled them to sequence and analyze the samples effectively, as they would in routine practice.

With this strengthened capacity and MediLabSecure support, the *Institut Pasteur de Tunis* has adapted and streamlined procedures for more effective West Nile virus surveillance. The donation of a mobile laboratory and MediLabSecure training in field diagnostic techniques now allow the *Institut Pasteur de Tunis* to provide a direct onsite response in the event of an outbreak.

### REGIONAL COLLABORATION AND TRAINING INITIATIVES

With MediLabSecure's support, the team from the Clinical Virology Laboratory is currently developing a West Nile virus regional surveillance network involving Libya and Algeria. These three neighboring countries share similar environmental conditions, face the same outbreak risks, and have comparable West Nile virus data. The goal is to standardize their data and pool resources if an outbreak arises. With funding from a Call for Leadership Initiative launched by the MediLabSecure program for its network, the *Institut Pasteur de Tunis* organized a regional Multidisciplinary Field Outbreak Investigation workshop involving Tunisia, Algeria, and Libya. The primary goal was to collectively enhance the understanding of arbovirus epidemics and establish standardized surveillance mechanisms following a One Health approach. Using the West Nile virus model, the initiative aimed to strengthen the regional surveillance network, including entomological surveillance and human case monitoring. The workshop featured demonstrations of field-deployed diagnostic tools.

The workshop also provided a unique opportunity for training of trainers: beneficiaries of previous MediLabSecure training shared knowledge gained from mobile laboratory training in Dakar and a metagenomics workshop in Paris. This collaborative effort promoted the adoption of best practices and enhanced regional capacity to respond to West Nile virus outbreaks.





# APPLYING THE ONE HEALTH CONCEPT: DEVELOPMENT OF MONTENEGRO'S VECTOR SURVEILLANCE AND CONTROL ACTION PLAN FOR 2023-2025

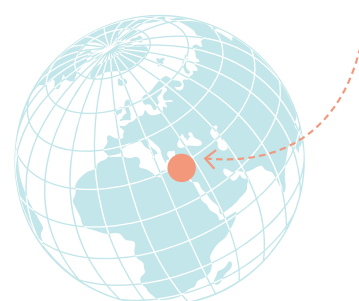
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MONTENEGRO



**In 2012, Montenegro reported its first West Nile virus case, prompting enhanced vector-borne diseases surveillance due to persistent regional threats and greater tourism. Thanks to capacity-building activities and One Health awareness supported by the MediLabSecure project over the past decade, in 2023 Montenegro adopted and is currently implementing an integrated national vector surveillance plan. The plan emphasizes real-time reporting across sectors and public education to mitigate biological threats.**

Neighboring countries had been reporting cases of West Nile virus every year from early 2000s. This is a big threat for Montenegro which is the leading tourist destination for citizens of these countries. Montenegro's population doubles in the summer months, which can represent a threat with potential imported cases of vector-borne diseases. In 2012, Montenegro faced its first case of West Nile virus.

This potential threat has prompted the health authorities to scale up surveillance of vector-borne diseases. A national passive system for surveillance of infectious diseases including vector-borne diseases was launched in Montenegro and is still ongoing. It consists of a real-time database where all physicians from every municipality in Montenegro have the obligation to report any suspicious or confirmed human case infected with vector-borne pathogens electronically. It is coupled with an active collaboration system between clinical centers, epidemiological units and health authorities to intervene faster in the event of an outbreak. Regarding vector surveillance, Montenegro started mosquito monitoring on a voluntary basis in 2012 through two national projects to ensure the widest possible vector control coverage.

## **MEDILABSECURE, A STEP TOWARDS INTEGRATED VECTOR-BORNE DISEASE SURVEILLANCE**

Since the launch of the MediLabSecure

project 10 years ago, Montenegro has strengthened the preparedness and response capacities of 5 complementary sectors involved in the surveillance of vector-borne diseases. This was possible through training, external quality assessments, multisectoral workshops, situational analysis of integrated surveillance, etc.

Montenegrin MediLabSecure members from human, animal, and medical entomology sectors were encouraged to work together in a move towards the implementation of an integrated surveillance. The MediLabSecure project empowered them to monitor pathogens hitherto unknown in the country, such as Zika, Chikungunya and Dengue. With globalization and climate change, surveillance of these three diseases has become more crucial than ever as exemplified in 2022, with Croatia reporting imported cases of dengue. In 2023 Montenegro reported its first imported case of dengue and four imported cases of malaria, demonstrating the success of this capacity-building project to increase laboratory expertise.

## **FROM ADOPTION TO IMPLEMENTATION OF THE NATIONAL VECTOR SURVEILLANCE PLAN**

The three MediLabSecure expert focal points from the entomology, veterinary laboratory,

and public health sectors collaborated to monitor these pathogens in a bid to provide their authorities with risk data evidence, demonstrate the added value of working hand-in-hand across sectors, and develop integrated surveillance.

This culminated in a national vector surveillance plan for 2023-2025 based on the knowledge gained through the MediLabSecure project. In 2023, the health authorities adopted this plan, which mainly targets mosquitoes, but can be adapted to other vectors such as ticks and sandflies in the coming years.

This plan provides for the introduction of sentinel sites to trap mosquitoes and larvae, primarily in urban areas where 40% of the population lives. It also aims to develop an integrated database where the main sectors (human, animal and entomology) can report cases in real time following the One Health approach. Lastly, the plan also aims to i) educate the population through massive public health campaigns to raise citizens' awareness of prevention measures against mosquitoes as well as ii) to develop a trained workforce to implement this vector plan. Montenegro is a small country facing brain drain and this could interfere with the implementation of vector surveillance.

In the past 10 years, Montenegro has strengthened its integrated national vector-borne disease surveillance by launching a surveillance vector plan developed by multisectoral experts (from the Veterinary, Public health and Entomology sectors) implementing a One Health approach. Montenegro, a country already facing the consequences of climate change is aware of the potential spread of vector-borne diseases by sailors, tourists, and transport, and is taking the lead to mitigate these biological threats.

## SERBIA LAUNCHES THE CENTER OF EXCELLENCE “ONE HEALTH – VECTORS AND CLIMATE” TO TRAIN THE ONE HEALTH WORKFORCE OF THE FUTURE

PROF. ALEKSANDRA IGNJATOVIĆ ĆUPINA

Head of the Center of Excellence “One Health Vectors and Climate”  
MediLabSecure expert for medical entomology, in Serbia

SERBIA



**Due to permanently abundant populations of the mosquito *Culex pipiens*, Serbian scientists initiated mosquito and bird sampling in the Vojvodina province, confirming the virus’s presence several years before the first human infection in 2012. A collaboration between experts in human health led to the first national surveillance program. The MediLabSecure pro enhanced multisectoral efforts, resulting in an integrated surveillance in Vojvodina. The launch of the Center of Excellence One Health, Vectors and Climate marks a significant step, with hopes for broader implementation and continued advancements in integrated surveillance.**

*Culex pipiens* is a widespread mosquito species that produces highly abundant populations in Serbia, especially in the Vojvodina province (northern Serbia), every year. With shared geographical and climatic conditions with neighboring Romania, where the first West Nile virus fever outbreak occurred in 1996, medical entomologists from the Faculty of Agriculture at the University of Novi Sad became aware of the high risk of West Nile virus circulation in Serbia many years ago.

In 2005 some patients residing in the Novi Sad region presented with symptoms of undiagnosed meningoencephalitis. Re-tested in 2009, samples were found serologically positive to West Nile virus. This was the first indication of the virus’s circulation in Serbia.

This situation triggered the start of multisectoral collaboration between experts from the Institute of Public Health of Vojvodina, the Scientific Veterinary Institute of Novi Sad and the Faculty of Agriculture. At first, the suspected West Nile Virus infections among humans were mapped: medical entomologists focused on mosquito sampling in hotspot localities, while veterinarians started checking for West Nile virus in birds and horses. This close cooperation resulted in the first detection of West Nile virus in horses, mosquitoes, and wild birds in 2009, 2010 and 2012, respectively.

Based on this evidence, in 2012 the Ministry of Health launched the first West Nile virus national surveillance program in

humans. Concomitantly, the first West Nile virus outbreak occurred in Serbia, with 71 confirmed human cases and 9 deaths. The following year, with 303 human cases and 35 deaths, Serbia became the European country most affected by West Nile virus. In 2014, the Ministry of Agriculture, Forestry and Water Management implemented a national surveillance program for West Nile virus in animals. Unfortunately, the two national surveillance systems were so different that the data could not be compared between the animal and human sectors.

### **MEDILABSECURE: A CATALYST FOR SURVEILLANCE THROUGH THE ONE HEALTH APPROACH**

Since its launch in 2014, MediLabSecure has significantly contributed to the capacity building of young scientists through the provision of training courses and development of vector identification tools. Moreover, the project has strengthened multisectoral collaboration between experts from the “Institute of Public Health of Serbia”, the Institute of Veterinary Medicine of Serbia” and the Faculty of Agriculture at the University of Novi Sad. Appointment as the Serbian MediLabSecure focal point laboratory for medical entomology provided the opportunity to convince their authorities of the added value of implementing integrated surveillance of arboviruses.

In 2018 a major step towards integrated surveillance of vector-borne diseases was achieved in the Vojvodina province

as a pilot. A multisectoral program was launched, gathering participants from various sectors, including public health, veterinary medicine, medical entomology, medical physics, meteorology, and IT. This led to a comprehensive surveillance program and the development of a platform to register multisectoral data. These initiatives are still active but are yet to be deployed on a national scale.

### **A STEP FURTHER TOWARDS A QUALIFIED ONE HEALTH WORKFORCE: LAUNCH OF THE CENTER OF EXCELLENCE “ONE HEALTH – VECTORS AND CLIMATE”**

In a bid to strengthen and promote a multidisciplinary approach in both scientific research and education, the Center One Health – Vectors and Climate was launched at the Faculty of Agriculture in 2021. The same year, the center was accredited by the Ministry of Science and Education and proclaimed a Center of Excellence. Its all-important mission is to train a new generation of One Health experts, as well as establish a network of focal points at national universities to advocate for One Health integration into academic programs. The first steps toward this ambitious goal were taken in collaboration with the Faculty of Medicine of the University of Belgrade in 2023 within the project “Assessment on One Health Approach in Higher Education in Serbia” supported by the World Health Organization office in Belgrade.

## WORDS FROM MEMBERS



**MediLabSecure** is more than a successful project and interactions with a network of institutions. I am really convinced that MediLabSecure offers opportunities to learn, to share experience and develop new ideas.

**DR ALEKSANDRA CUPINA**

DIRECTOR OF CENTER OF EXCELLENCE "ONE HEALTH, VECTORS AND CLIMATE" - SERBIA

**MediLabSecure** has been an opening towards specialists in their fields, forming friendships that have endured, and establishing reference contacts for us for specific problems. With all my love and friendship for MediLabSecure.

**DR NABIL HADDAD**

PROFESSOR- DEAN OF THE FACULTY OF PUBLIC HEALTH, LEBANESE UNIVERSITY - LEBANON

Through connecting with experienced experts, **this project** provides various training opportunities & activities, well designed to engage & benefit our young colleagues.

**DR ROENA SUKHIASHVILI**

SENIOR RESEARCHER AND MEDICAL ENTOMOLOGIST, NATIONAL CENTER FOR DISEASE CONTROL AND PUBLIC HEALTH - GEORGIA

**The project** has enabled me to apply One Health principles & effective diagnostic methods for viral diseases, especially vector-borne diseases. The strong network remains highly valuable in my daily work.

**DR ARMAN GEVORGYAN**

DIRECTOR OF LABORATORY, REPUBLICAN VETERINARY-SANITARY AND PHYTO-SANITARY CENTER FOR LABORATORY SERVICES – ARMENIA

**MediLabSecure's** focus on scientific attitude in pandemic management & preparedness planning has been very valuable. Their technical advice proved highly helpful, especially during the SARS-CoV-2 pandemic.

**DR MOHAMED ALI**

DIRECTOR OF THE CENTER OF SCIENTIFIC EXCELLENCE FOR VIRUS RESEARCHES AT THE NATIONAL RESEARCH CENTRE OF EGYPT

**MediLabSecure** is more than just a financial matter; it's a cohesive team, almost like a family.

**DR. WASFI FARES**

BIOLOGIST ASSISTANT, INSTITUT PASTEUR DE TUNIS – TUNISIA

Our laboratory became a go-to destination for students across Libya. We help them with mosquito identification by organizing trainings using Moskeytool, which was created by **MediLabSecure**.

**DR AHMED ELGRARI**

DIRECTOR OF ZOOLOGIC DISEASE CONTROL ADMINISTRATION, NATIONAL CENTER FOR DISEASE CONTROL - LIBYA

The greatest benefit of **MediLabSecure** is the holistic perspective it fosters in understanding the complete cycle of vectors and pathogens.

This approach elevates the quality of our work by recognizing the interconnectedness and roles within different fields.

**DR ELIZABETA JANCHESKA**

HEAD OF LABORATORY FOR VIROLOGY, INSTITUTE OF PUBLIC HEALTH – REPUBLIC OF NORTH MACEDONIA

I want to extend my gratitude to the whole **project team** that helps countries like Georgia at improving their capabilities in the many fields covered by the project.

**DIANA TSUTSKIRIDZE**

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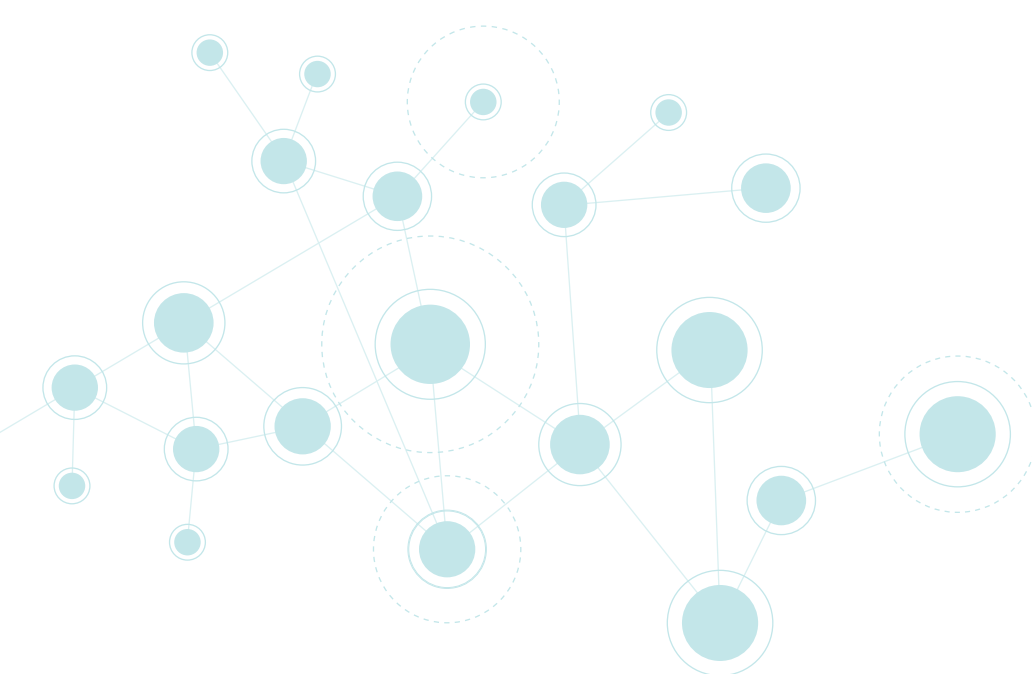
Redaction: Coordination team of the MediLabSecure project: Maud Seguy, Vanessa Lagal, Magali Lago, Alice Henry-Tessier, Sarah Michel-Anfray

Photos: MediLabSecure, Nebojsa Sekulic/billboard\_campaign\_montenegro

Interviews: Dr. Wasfi Fares, Dr. Nebojsa Sekulic, Prof. Aleksandra Ignjatović Čupina, Dr. Nabil Haddad

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