



# IMPLEMENTATION OF RAPID METAGENOMIC IDENTIFICATION OF EMERGING VIRUSES FOR PUBLIC AND ANIMAL HEALTH LABORATORIES

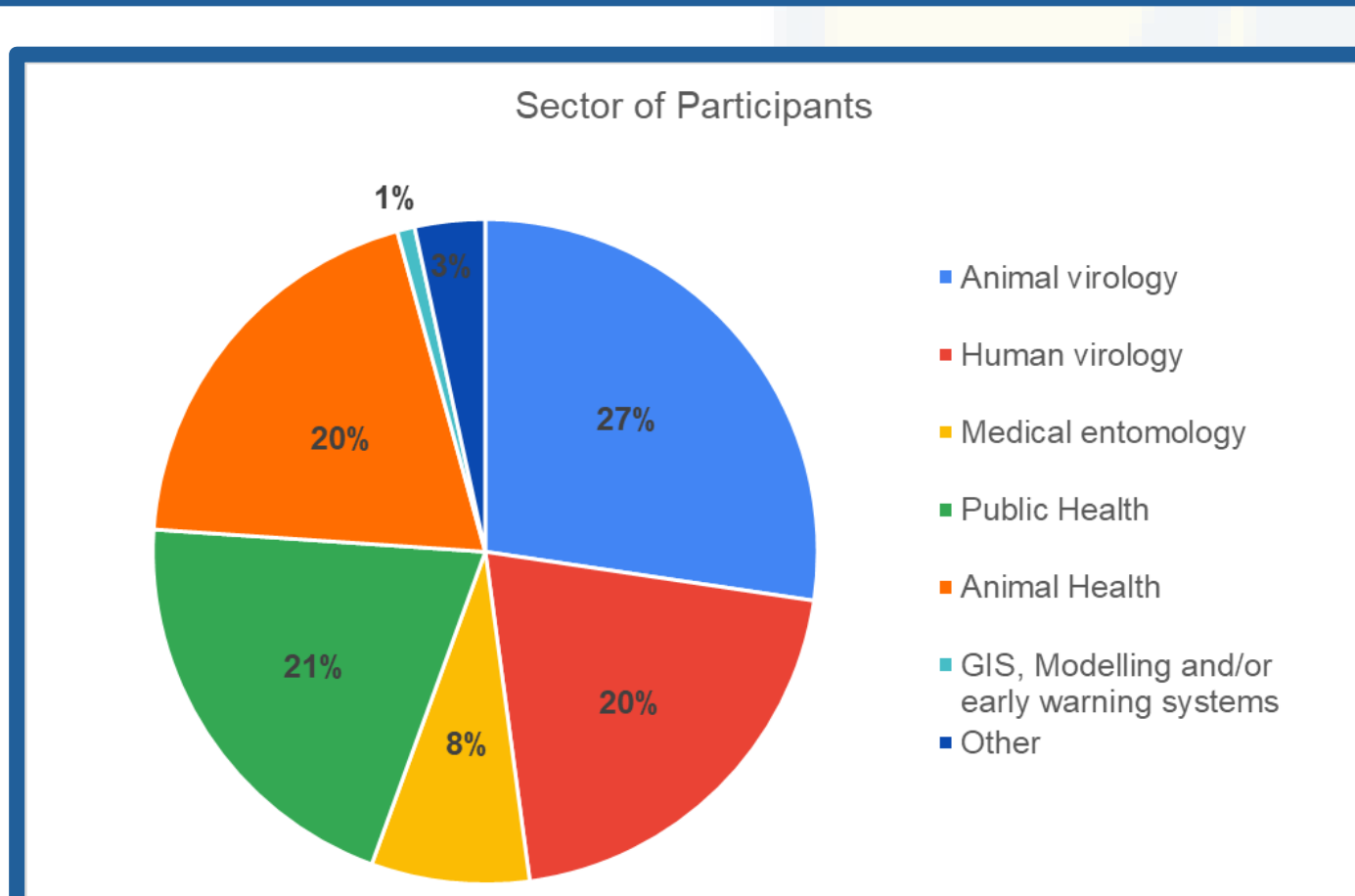
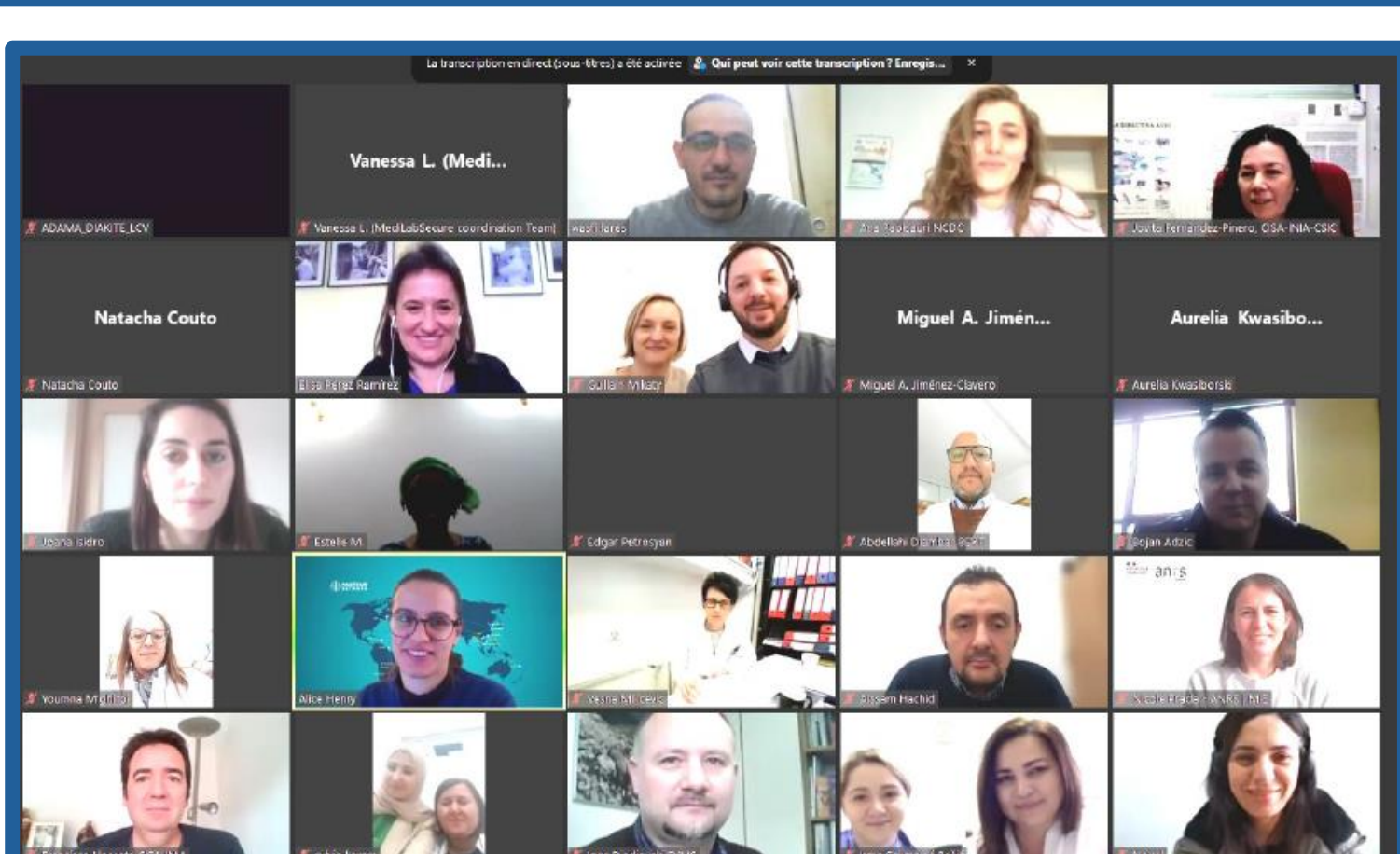


## Purposes

The implementation of an efficient and coordinated One-Health response to survey and detect emerging pathogens relies on the people composing it. They must be aware of the One-Health strength and necessity; they must know and trust each other; they must use a common language and common tools.

Metagenomics is an extremely useful tool with unlimited applications in all fields of biology. The interest in metagenomics technologies has increased tremendously in the last years, especially during the COVID-19 pandemic. From 2022 to 2024, the MediLabSecure project decided to implement a training curriculum in three phases destined for medical and veterinary laboratories, and medical entomologists using NGS sequencing technologies.

## 1. Webinar : Introduction to Metagenomic Technologies



**Objectives:** To provide a comprehensive overview of the metagenomic applications in the field of microbiology, from microbiome studies to outbreak tracing or pandemic preparedness.

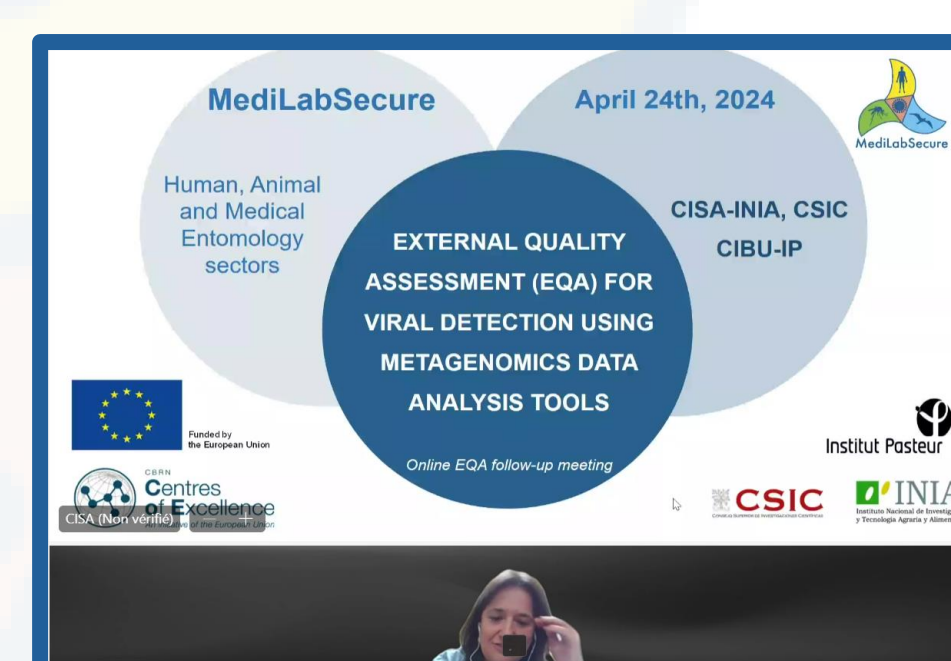
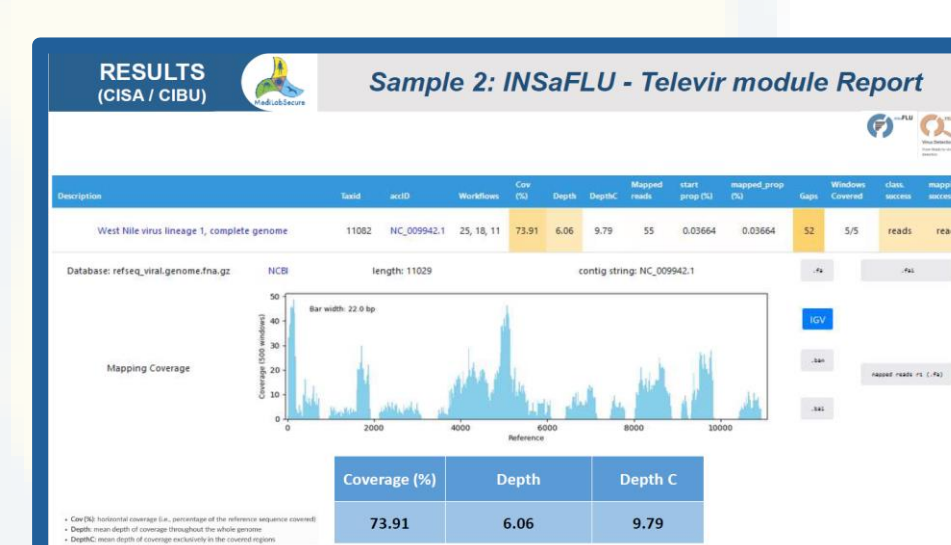
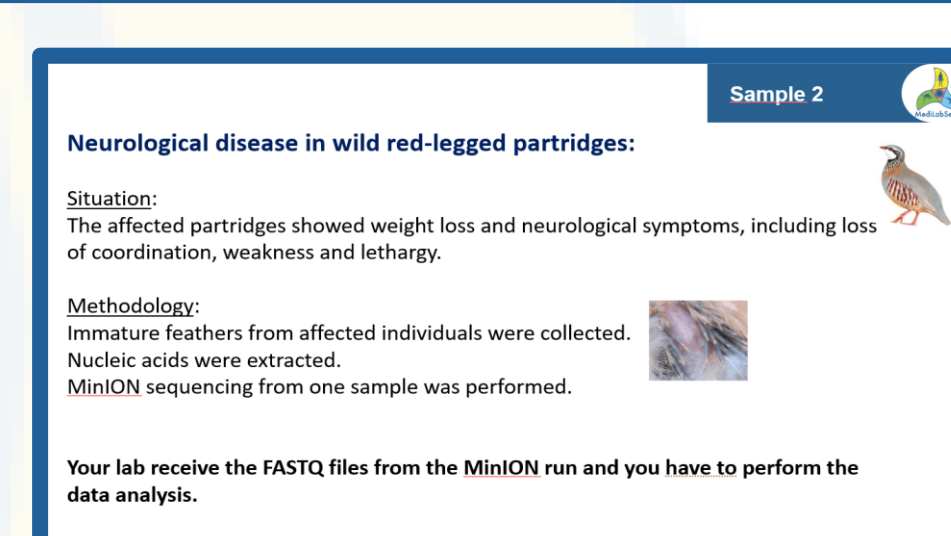
**Target:** public and animal health institutions representatives, medical and veterinarian virologists, medical entomologists, researchers, etc.

**Date:** Dec 14<sup>th</sup>, 2022.

**Participants:** >95

**Countries:** 27 (MediLabSecure Network + coordination + speakers)

## 3. External Quality Assessment : Viral Detection using Metagenomic Data Analysis Tools



**Objectives:** To evaluate the assimilation of the training on basic data analysis for Metagenomics, and the readiness to implement the Metagenomic tools in the beneficiary laboratories.

**Target:** Laboratory experts who participated to the workshops on Metagenomics organized previously. Any scientist wanting to evaluate his/her capacities in data analysis.

**Dates:** EQA: March 14<sup>th</sup> to April 3<sup>rd</sup>, 2024. Webinar for results: April 24<sup>th</sup>, 2024.

**Participants:** EQA: 19 (6 animal virology, 10 Human virology + 3 Medical Entomology). Webinar: >30

**Success rate:** global 95% ; participant to the workshops: 100%

**Countries:** EQA: 14. Webinar: 19

## 2. Workshops on Metagenomics for Rapid Viral Surveillance



**Objectives:** To train experts in NGS technologies, from sample preparation to result interpretation, applied to Metagenomics. To train experts in basic data analysis for Metagenomics. To promote networking between experts from different fields.

**Target:** Laboratory experts planning on working on Metagenomics in their laboratories from human virology, animal virology, and medical entomology sectors.

**Date:** April 17<sup>th</sup>-21<sup>st</sup> and May 22<sup>nd</sup> -26<sup>th</sup>, 2023.

**Participants:** 24 (2x12: 10 animal virology, 10 Human virology + 2 Medical Entomology - 14M/10 F).

**Countries:** 16 (MediLabSecure Network)

## Conclusions

During this training program, the MediLabSecure project trained 24 scientists from three relevant sectors to use Metagenomic tools for the rapid detection of viral pathogens in medical, veterinarian, or environmental samples. The EQA validated the approach and demonstrated the acquisition of the techniques after 1 year. At the same time, the scientists acquired some awareness of the common problematics present in the different sectors, they met each other and worked together, and they shared tools and information.

For the past ten years, the MediLabSecure project promoted One-Health and strengthened institutional and laboratory capacities to fight the emergence of viral pathogens in the Mediterranean, Black Sea, and Sahel region.



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