

July 2017



## ReNuAL+: Enhancing the Capabilities of the FAO/IAEA Animal Production and Health Laboratory



### The Challenges in Animal Production and Health

Climate change, the growing global population and its increasing dietary demands for products from animals (meat and milk) are straining resources and putting significant pressure on the agricultural sector and livestock industry to increase output to support food security. Making this increased production more sustainable and resource efficient is a key challenge. With regard to economic development, livestock also play a critical role as they contribute to the livelihoods of 70% of the world's rural poor and serve as an entry point to improve the living conditions of many of the world's poorest people.

As animal production increases, however, so do the risks presented by transboundary animal diseases that can endanger livestock, and zoonotic diseases, which are animal diseases that can endanger humans. More than 70% of human diseases originate from animals. Emerging and re-emerging zoonotic diseases include Ebola, Marburg, MERS-Corona, Avian Influenza and Crimean Congo Haemorrhagic Fever, while well-known animal and zoonotic diseases such as rabies, brucellosis and various parasitic diseases continue to be threats. These diseases threaten food and economic security, and they represent a biothreat to Member States.



### Solutions from the FAO/IAEA Animal Production and Health Laboratory

The IAEA, jointly with FAO, manages five food and agriculture laboratories in Seibersdorf, Austria that provide technical assistance and support to Member States. One of these is the Animal Production and Health Laboratory (APHL), a designated Collaborative Centre of the World Organization for Animal Health. The APHL assists Member States in several ways, for example, by developing, testing and validating nuclear and related techniques to improve animal nutrition, reproduction, breeding and health.

These techniques help Member States breed more robust livestock that have greater tolerance for adverse environmental conditions and stronger resistance to disease, producing more meat and milk at a lower cost. They also help to reduce animal feed expenses by assessing and improving dietary regimes.

## By the Numbers

MORE THAN

**100** MEMBER STATES

HAVE REQUESTED SUPPORT FROM THE ANIMAL HEALTH SUBPROGRAMME



Animal Production and Health supports

**102** TECHNICAL COOPERATION PROJECTS

Animal Production and Health leads

**6** COORDINATED RESEARCH PROJECTS

**ReNuAL** ■■■

Renovation of the Nuclear Applications Laboratories



Joint FAO/IAEA Programme  
Nuclear Techniques in Food and Agriculture

# By the Numbers

IN 2015 AND 2016, THE APHL RESPONDED PROMPTLY TO ZONOTIC DISEASE OUTBREAKS BY PROVIDING TRAINING TO SCIENTISTS FROM:

29

MEMBER STATES DURING THE LUMPY SKIN DISEASE OUTBREAK

25

MEMBER STATES DURING THE EBOLA OUTBREAK

For example, in Myanmar, dairy farmers are benefiting from techniques developed with the support of APHL scientists to artificially inseminate cattle with higher quality sperm. The results of this assistance are:

- ✓ Farmers breed more productive dairy cows at lower cost;
- ✓ Consumers have greater access to more affordable and nutritious dairy products, and;
- ✓ Dairy farmers' income rise.

The APHL also helps Member States control animal and zoonotic diseases more effectively by developing, improving and transferring technologies and methods for early and rapid diagnosis. This enhances Member States' diagnostic capacities and enables them to screen for and identify the presence of pathogens very quickly, even before the onset of disease and the start of an outbreak. This helps Member States to more quickly and effectively limit the spread of diseases and avoids unnecessary culling of herds. For zoonotic diseases, such as avian influenza, a more rapid and effective response to outbreaks offers clear public health benefits.

In 2015 and 2016, the APHL responded promptly to the Ebola outbreak in West Africa by providing:

- ✓ Training to 177 scientists from 25 Member States;
- ✓ Expert technical advice, and;
- ✓ Emergency equipment.

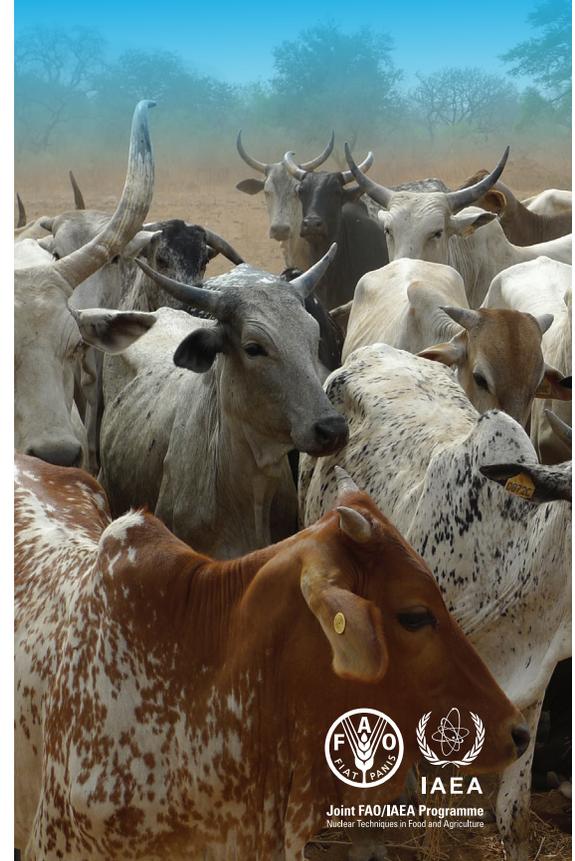
This increased Member States' capacities to implement high biosafety and biosecurity conditions, sample processing and early and rapid detection and differentiation. During a 2016 outbreak in Central and Eastern Europe of lumpy skin disease, which severely debilitates cattle, the APHL responded quickly by providing support to 85 scientists from the designated veterinary laboratories of 29 European Member States. This contributed to:

- ✓ Rapid and effective local containment of the outbreak;
- ✓ Prevention of the disease's further spread into Europe, and;
- ✓ Reductions in livestock losses.

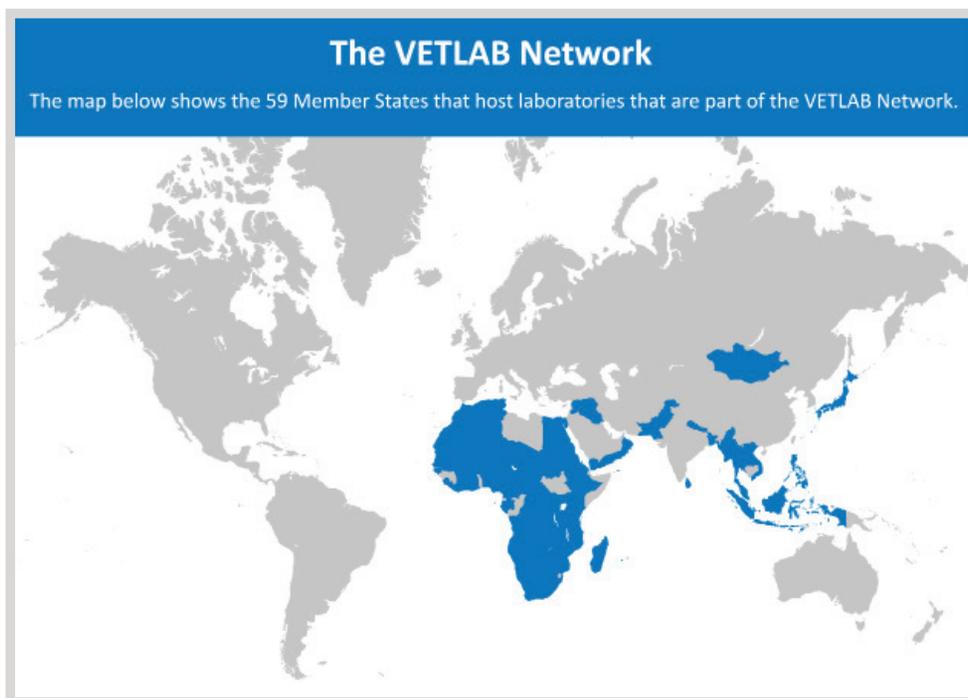


## The VETLAB Network

The contagious nature of transboundary animal and zoonotic diseases makes them a threat to all Member States in a globalized world. Therefore, an increase in the number of Member States that can effectively control and handle pathogens in a safe and secure way increases the collective biosecurity of all Member States. The veterinary diagnostic VETLAB laboratory network, established in 2012 and coordinated by the APHL, provides a platform for Member States to work together

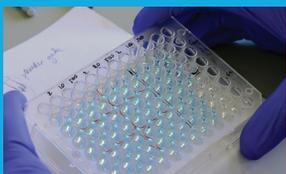


using harmonized and standardized approaches for the early and rapid diagnosis and control of animal and zoonotic diseases. The network began in Africa and recently expanded to Asia. Laboratories in 59 Member States are members of the network.



The APHL ensures that VETLAB laboratories have the necessary expertise and capacities to respond in a coordinated manner to disease threats. In doing so, the APHL ensures that these laboratories have the necessary facilities and expertise to store, handle and diagnose an expanding array of pathogens in a safe, secure manner. The network, therefore, helps to protect vital food and economic resources at the national level, and agricultural trade at the international level by preventing the spread of these diseases. The network's expansion to date has been supported by funds provided through the IAEA's Peaceful Uses Initiative and the African Renaissance Fund. The APHL has plans to extend the network to other regions of the world.

## APHL Hosts Middle Eastern Respiratory Syndrome (MERS) Training Course



The APHL, in collaboration with the IAEA Technical Cooperation Department and FAO, in April 2017 conducted a training course in Seibersdorf on nuclear and nuclear-related techniques to quickly and effectively detect the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in camels. MERS is an emergent and potentially fatal virus reported primarily in Saudi Arabia and the wider Gulf region that causes severe respiratory illness in humans, with a mortality rate above 35%, according to the World Health Organization (1,955 human cases confirmed, including 742 fatalities since 2012). As camels carry the virus without presenting any clinical signs, or only very mild signs, humans can be infected without warning. Camels are usually only detected as carriers after MERS-CoV has been identified in a human. The techniques that were presented in the APHL's training course can be used for active and passive surveillance of camel populations to identify the presence of the virus before humans are infected. Sixteen scientists from Bahrain, Iraq, Kuwait, Lebanon, Saudi Arabia, and the United Arab Emirates took part in the training course.



## The APHL's Needs in ReNuAL+

At a time when demands by Member States of the APHL are rising, this laboratory is struggling with space constraints and impeded workflows in its existing laboratory building. The building is over 50 years old and has never received a comprehensive upgrade, restructuring or renovation.

Therefore, as part of two ongoing initiatives to modernize the laboratories in Seibersdorf with new and improved space, equipment and infrastructure — known as the Renovation of the Nuclear Applications Laboratories (ReNuAL) and the ReNuAL Plus (ReNuAL+) projects — the APHL will be rebuilt as part of the planned Flexible Modular Laboratory (FML) building. The FML will accommodate three of the FAO/IAEA laboratories, with construction of the first two laboratories already funded under ReNuAL. The APHL will be built as part of ReNuAL+.

The new APHL will provide additional space and a quality-assured environment to enable more efficient workflows and enhanced biosafety. This will enable the APHL to provide broader and more focused assistance to Member States, including the further expansion of the VETLAB network, and improve its contributions to the collective food, economic and biosecurity of all Member States. It will also enable the APHL to serve as a model laboratory for Member States planning their next generation of veterinary diagnostic and service laboratories.



*The start of excavation works for the FML*

Construction of the FML began in April 2017. The estimated cost for construction of the APHL is €6.7 million. To date, €2 million has been contributed and an additional €4.7 million in extrabudgetary funds is now urgently required to reach this goal. The remaining €4.7 million is needed by September 2017 for the interior outfitting to proceed on schedule. Delays in obtaining these funds will result in cost increases.



*A rendering showing the completed FML*

# By the Numbers

Funds Raised for the New APHL to Date:

**€2.0 MILLION**

Additional Funds Required by September 2017:

**€4.7 MILLION**

