

Joint Action against zoonoses – The activities of the Friedrich-Loeffler-Institut in Sub-Saharan Africa in the framework of the German Biosecurity Programme

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Emerging infectious diseases are playing an increasingly important role in today's (global) world. More than half of these diseases have their origin in an animal reservoir and can be transmitted to humans as zoonotic diseases. People who depend on livestock for their livelihood and have close daily contact with their animals are particularly vulnerable. Especially regions where the livestock of local farmers can encounter wildlife can bear biosecurity hazards. Due to pasture areas often being situated on the edges or even within national parks, there is an increased likelihood of known and unknown pathogens being transmitted from wild animals to domesticated house animals and through this also to humans. Hence, it is vital to educate people about these risks and train them on site.

In this context, the Friedrich-Loeffler-Institut, Federal Institute for Animal Health (FLI), works in Sub-Saharan Africa in close collaboration with the Office National de Recherches et de Développement de l'Élevage (ONARDEL) from Mauritania in North West Africa, the University Njala (Department for Animal Science) from Sierra Leone in West Africa and the National Veterinary Laboratory (LANAVET) from Cameroon in Central Africa as a part of the German Biosecurity Programme. The Sub-Saharan region is characterised by a multitude of different climatic and geographical habitats, having a significant influence on virus and vector biology.

The main focus of the activities in the project is on strengthening biosafety and biosecurity aspects in the partner countries. This is done, for example, by shaping laboratory structures and implementing diagnostic methods on site to detect hemorrhagic fever viruses with zoonotic potential (Rift Valley fever virus (RVFV) and Crimean Congo hemorrhagic fever virus (CCHFV)). In addition to capacity building, another important aspect is the elucidation of epidemiological and biosecurity issues: In which areas are the viruses circulating? Which genetic variants are present? Are there certain mosquito or tick species (vectors) through which the virus is transmitted more effectively? Furthermore, the close scientific cooperation strengthens the networking possibilities of the partners.

Results are already visible: For example, the Mauritanian partners reliably recognised a Rift Valley fever outbreak last year and detected it using PCR diagnostics. Furthermore, with the help of FLI, a well-developed research network has now been established in Cameroon. These successes show that the project work of the FLI also has a lasting and sustainable positive effect on the partner countries.

One of the current goals is the introduction of the digital data management software Riems Data Net. Sample collections carried out in the respective countries have so far been individually documented by the project partners. In the past, this individual and partly analog data maintenance often led to considerable additional work and also to the loss of important information. The Riems Data Net software is now to be programmed to standardise and simplify the documentation, hereby also reducing the risk of the loss of data. It should be able to operate it directly via the mobile phone in order to enter important background information about the samples

while collecting them. In addition, MinION devices are to be introduced in the partner countries for sequencing. These are small, portable devices about the size of a tablet. So far, the commonly used devices are quite expensive and also very large. In addition, the technical infrastructure required for this is presently only available in a few African countries. The MinION devices can remedy this.

The current COVID-19 pandemic has increased awareness for the risks caused by zoonoses. In order to tackle these risks, the FLI welcomes the increased openness in communities for One Health approaches.

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