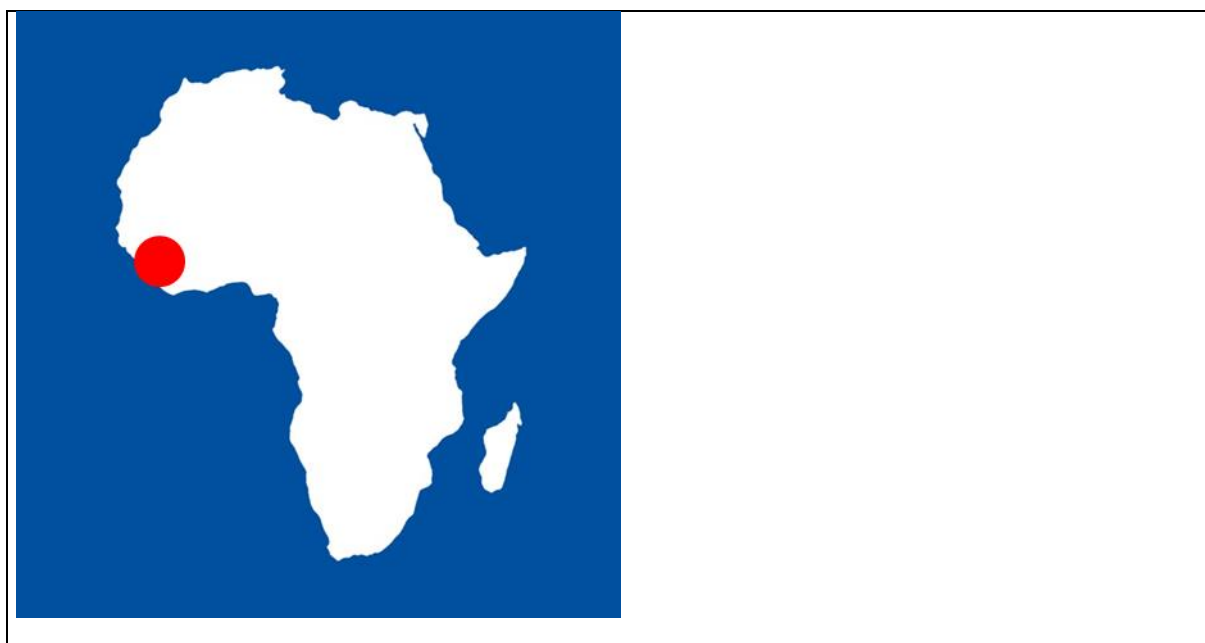


Project fact sheet

Geographical focus:	West Africa (Sierra Leone, Guinea)
Call reference:	2815FSEBOL
Project titel:	The relevance of livestock, domestic animals and wildlife as a source of Ebola virus infection – a cooperation project between the Friedrich-Loeffler-Institut, the Institut Pasteur in Conakry, Guinea, the Sierra Leone Agricultural Research Institute and the Njala University in Sierra Leone
Cooperating partners:	Sierra Leone Agricultural Research Institute (SLARI) Njala University (NU), School of Agriculture in Sierra Leone Institut Pasteur Conakry (IPG), Guinea
Duration:	01.03.2016 – 30.09.2019
Budget:	1.680.000 €



Aim of the project:

In a close collaboration between the FLI, the Institut Pasteur in Guinea (IPG), the Sierra Leone Agricultural Research Institute (SLARI) and the Njala University (NU) in Sierra Leone, the project aims to study the role of livestock, domestic animals and wildlife as potential hosts in filovirus infections. To this end it is planned to develop serological assays and novel sequencing techniques for the detection of filovirus infections in relevant animal species. In a capacity building approach, all of these techniques will be implemented in the respective African partner laboratories and will allow rapid and targeted responses to future outbreaks of zoonotic diseases.

Results:

The year 2018 started with a 7-week training of our African PhD students in molecular biology and cutting-edge sequencing techniques at the Friedrich-Loeffler-Institut in Germany (**Figure 1**). Aim was to teach the students in the most important molecular methods for later implementation in their laboratories in West Africa. Besides laboratory standard techniques special focus was put on the training with a novel sequencing device, the so-called MinION, which has in the recent years greatly improved sequencing abilities during disease outbreaks under field conditions due to its small size (**Figure 1**).



Figure 1 Impressions from the training stay of the African PhD students at FLI. Left: Group picture. Middle: MinION. Right: Student loading samples onto the MinION device.

Following the stay at FLI, the PhD students attended a PhD workshop in Berlin that was organized by the Federal Office of Agriculture and Food as well as the Leibniz Centre for Agricultural Landscape Research (ZALF). During that workshop, seminars to improve scientific presenting and writing skills were attended and highly appreciated. Furthermore, the students were encouraged to connect with other African as well as German PhD students in order to build their own scientific network.

At the end of May 2018, three scientists from FLI, Dr. Thomas Hoenen, Andreas Müller and Dr. Kerstin Fischer, organized two on-site workshops in molecular biology and sequencing in Guinea as well as in Sierra Leone with a number of participating local students and technical staff (**Figure 2**). A talented group of young and highly motivated students as well as the improved laboratory infrastructure on-site turned these workshops into a memorable experience for everyone involved.



Figure 2 Impressions collected during the molecular biology workshops in Guinea and Sierra Leone. Top left: Loading the MinION device. Top Middle: Participants of sequencing workshop in Guinea. Top right: Lecture by Dr. Hoenen. Bottom left: In the lab in Sierra Leone. Bottom middle: Group picture of workshop participants in Sierra Leone. Bottom Right: Preparing a PCR run.

In addition to this capacity building, first serum samples collected from pigs from Sierra Leone were analyzed. In 3 out of 400 samples, we found serological evidence for the exposure of these pigs to ebolaviruses or ebola-like viruses. Importantly, our analyses indicated that the pigs were most likely exposed to viruses that are only antigenically related but distinct to highly pathogenic Ebola viruses which had caused the Ebola virus disease epidemic in West Africa. Interestingly, affected pigs were reported to be free-ranging with the opportunity for contact to surrounding wildlife including bats, which are discussed as a potential natural virus reservoir. However, the definite route of exposure remains unclear. In September 2018, Juliet Jabaty gave a first overview of the obtained results concerning the role of pigs in the ebolavirus ecology at the International Tropentag in Ghent, Belgium. Her talk was highly appreciated resulting in lively discussions.

In order to gain further insight into the significance of our findings, 300 swine serum samples from Guinea were collected and are currently being analyzed. Furthermore, sampling activities in Sierra Leone are on-going and were extended to serum collection from dogs to assess their potential role in ebolavirus biology.