Emerging infectious diseases pose a significant burden on human and animal health and global economies. Conventional approaches to epidemic control have most often been reactive. However, explosive human population growth, dramatic changes in land use, and increased global trade and travel require a shift toward a proactive, predictive approach. The PREDICT project aims to prevent, detect, and rapidly respond to the spillover of novel infectious pathogens from wildlife to humans.

While the linkage of human, animal, and environmental health is at the heart of our One Health approach – an increasingly important and recognized lens through which governments, NGOs, and practitioners view public health – the global health community still has three critically important needs:

1) Broader and deeper knowledge of pathogens that have the potential to emerge from animals;
2) Targeted surveillance to maximize available resources;
3) Tools to characterize organisms that could be pathogens of significance and to predict where and how they might spillover to susceptible hosts.

**Challenge:** Develop a strategic framework for identifying pathogens of pandemic potential that have not yet emerged.

**Opportunity:** Current infrastructure improvements and technological advances have dramatically and rapidly improved our ability to identify high-risk interfaces for disease transmission and to detect novel pathogens before widespread spillover occurs. These advances include improvements in information technology, molecular diagnostics, and risk modeling.

PREDICT has built a broad coalition of partners to discover, detect, and monitor pathogens at the wildlife-human interface using a risk-based approach. Our efforts integrate digital sensing and on-the-ground surveillance at critical points for disease emergence. PREDICT is at the cutting-edge of recent technological advances allowing rapid detection and diagnosis of high-risk viral families, even in settings where resources are limited.
The goal of the PREDICT project in Cameroon was to enhance capacity to prevent and respond to the emergence of infectious diseases in Cameroon through improved surveillance and response at the human-animal interface. PREDICT-Cameroon was a collaboration between Metabiota and the Global Viral Cameroon laboratory based at the Cameroon Ministry of Defense’s Army Health Research Centre in Yaoundé.

Background

Hunting of wildlife is an important cultural and economic activity, and pathogens originating from wildlife have been detected in people who engage in this activity in Cameroon. Understanding the range of pathogens present in Cameroon’s diverse wildlife is key to preventing disease outbreaks and emergence of new diseases, especially as infrastructure projects expand in previously remote areas and increase the opportunities for contact between wildlife, domestic animals, and people.

Disease Surveillance

In Cameroon, PREDICT collected samples from over 11,000 animals in areas where there are human-animal interactions that might lead to disease transmission, such as ecotourism, bushmeat markets, areas with hunting, peri-domestic settings, and wildlife sanctuaries.

PREDICT completed over 16,000 diagnostic tests on samples collected from bats, rodents, nonhuman primates, and bushmeat, and detected both known and novel viruses.

Disease Outbreak Response

An outbreak response team was established by the PREDICT Cameroon laboratory. The team is included in the Ministry of Public Health (MINSANTE) outbreak committee and has been deployed regionally.

Deployable equipment for sample collection, processing, and testing has been assembled and stands ready for assistance during an outbreak.
Making a Difference for One Health

PREDICT has played an important role in the development of the National Plan for the Prevention and Control of Zoonotic Disease and the National One Health Strategy. PREDICT and other EPT partners in Cameroon provided technical support to the Cameroon government for development of the plan.

A series of meetings with technical experts from multiple government agencies presided by the Ministry Livestock, Fisheries and Animal Industries, were held to formulate elements of the plan, and PREDICT Cameroon staff provided ongoing technical advice on the formulation of the plan – in particular to include consideration of wildlife disease surveillance and research components.

The plan was validated by four ministries: the Ministry of Scientific Research and Innovation; the Ministry of Livestock, Fisheries and Animal Industries; the Ministry of Forestry and Wildlife; and the Ministry of Public Health. During this process, the various ministries also nominated focal points for zoonotic diseases and one health issues.

Partnerships for Sustainability

- Centre de Recherche de Sante des Armées
- Ministry of Defence
- Ministry of Public Health
- Ministry of Scientific Research and Innovation
- Ministry of Livestock, Fisheries and Animal Industries
- Ministry of Forestry and Wildlife
- Ape Action Africa
- Limbe Wildlife Centre
- Projet Grands Singes
- University of Maroua
- University of Douala

Contact:
Ubald Tamoufe
Global Viral Cameroon
Carrefour Intendance/BP 7039; Yaounde;
Cameroon
Telephone: +237 2222 9175
Email: utamoufe@globalviral.org
Local website: www.globalviral.org

Capacity Building

- In coordination with central government staff and government field staff, our hands-on training complemented theoretical trainings in One Health and expanded participation in and understanding of the process of wildlife disease surveillance.
- Provided field training for over 60 personnel from Ministry of Livestock, Fisheries, and Animal Industries (MINEPIA), Ministry of Forestry and Wildlife (MINFOF), and Ministry of Environment and Protection of Nature and Sustainable Development (MINEPDED) during field surveillance activities.
- Transferred technology and capability to the PREDICT Cameroon laboratory to test samples for more than 17 viral families, including novel viruses.


