PEVIA Pan-Ebola Vaccine Innovative Approach

The WHO has announced that **Ebola is now one of the most dangerous diseases to threaten the human race on a global scale.** Ebola virus (EBOV) is a member of Filoviridae family of viruses, which have been associated with large outbreaks of hemorrhagic fever in human and nonhuman primates with high case fatality. The severity of the recent outbreak of Ebola in Western Africa, caused by the Zaire Ebola virus (ZEBOV), has reached historic proportions and underscores the vulnerability of populations worldwide to pathogens.

Ebola vaccines are urgently needed

Despite the promising ring vaccination approach of Merck in Congo in 2018, **no vaccines or antiviral drugs are currently approved** for prevention or treatment of Ebola infections in humans. However, the severity of the recent Ebola outbreak in West Africa, caused by Zaire Ebola virus (ZEBOV), and failure of the health care system to contain the infection rates in West Africa, point out the **need for the rapid development of safe and effective preventive vaccines**. Such vaccines, effective against all main EBOV strains and that can be readily produced and deployed in the field, are needed **to protect people in endemic regions in an event of an outbreak but also to protect healthcare workers** caring for Ebola patients, who are at the highest risk of infection even before an outbreak can be identified.

PEVIA Objectives

The IMI-funded PEVIA project aims **to develop and to bring to the clinics** (Phase Ia in Europe and Phase Ib in Africa) **innovative pan-Ebola preventive vaccines, safe and effective against multiple Ebola virus strains and readily deployable in endemic regions.** PEVIA's cutting-edge strategy is based on **two complementary and synergistic approaches** based on the Ebola surface glycoprotein (GP) and nucleoprotein (NP) from the Zaire Ebola virus (ZEBOV).

This includes **i/ a native-like recombinant Ebola GP (recGP)-based vaccine** to generate robust anti-EBOV neutralizing antibodies and long-term humoral responses, and **ii/ a Long Synthetic Peptides(LSP)-based vaccine** containing multiple overlapping $CD4^+$ and $CD8^+$ T-cell epitopes derived from ZEbola GP and NP, to generate strong and long-lasting cellular responses.

PEVIA's strategy aims to improve vaccine efficacy against various strains of a mutating virus to give a long lasting protection against multiple exposures to Ebola virus. PEVIA's vaccines are expected to overcome the issues of stability, storage and deployment in endemic regions, making them **fully adapted for large-scale vaccination in the event of a future outbreak**, for people at high-risk early post-exposure to the virus as well as the healthcare workers and volunteers caring for Ebola patients.

PEVIA consortium also aims **to provide innovative functional analysis tools and *in vitro* methods** to help with preclinical and clinical development of new Ebola and Filovirus vaccine candidates as well as novel diagnostic tests that can be readily deployed in the field.

PEVIA Impacts

PEVIA's innovative approach and functional analysis tools aim to expand the scientific knowledge regarding the immunological correlate of protection against Ebola infections in human, and aim **to increase the readiness to respond to future outbreaks of Ebola and other filoviral hemorrhagic fevers**. PEVIA project thus expects to have a significant impact on global health, both at the individual and the public health levels. The knowledge accumulated by the consortium may further be extended to develop effective vaccines against other virus infections. Finally, PEVIA technologies will be disseminated worldwide for a **better management of Ebola infections** and will help to strengthen European competitiveness and industrial leadership in the field of vaccine research and innovation.

PEVIA project details

Full project title: Pan-EBOLA Vaccine Innovative Approach

Project Number: 116088

Start date: 01/06/2017

Duration: 72 months

Total budget: €11.7 million

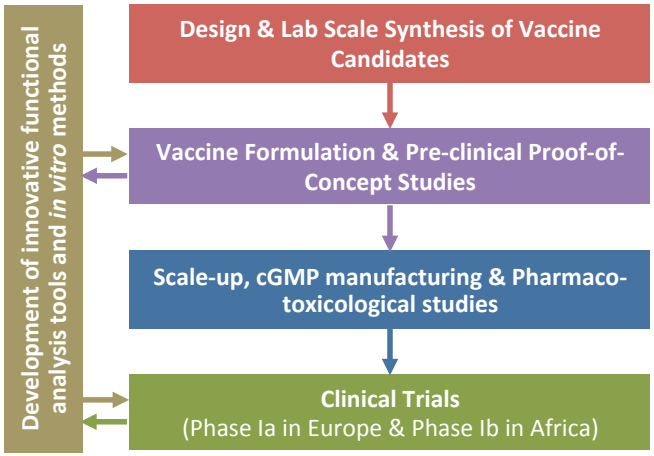
Project coordinator: AP-HP (Pr O. Launay)

Scientific coordinator: VAXEAL (Dr A. Bouzidi, Dr J. Kerzerho)

Partners: 13 from 6 countries

Project website: www.PEVIA-Ebola.eu

Project Organization



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PeV IA Pan-Ebola Vaccine Innovative Approach

The Assistance Publique - Hôpitaux de Paris (AP-HP, CIC Cochin Pasteur 1417) – France
www.aphp.fr

Le Commissariat à l'Energie Atomique et aux énergies alternatives (CEA) –France
www.cea.fr

Centre Hospitalier Universitaire Vaudois (CHUV) – Switzerland
www.chuv.ch

Centre National De La Recherche Scientifique (CNRS) – France
www.cnrs.fr

Bernhard-Nocht-Institute for Tropical Medicine (BNITM) – Germany
www.bnitm.de

Centre Hospitalier Regional et Universitaire de Lille (CHRU Lille) – France
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FINANCING

IMI funding	€6.2 million
VAXEAL (Associated member to EFPIA)	€6.1 million
Other contributions (SERI)	€5.4 million
Total project cost	**€17.7 million**

Ifakara Health Institute (IHI) – United Republic of Tanzania
www.ihi.or.tz

Istituto Nazionale Malattie Infettive Lazzaro Spallanzani (INMI) – Italy
www.inmi.it

Université D'abomey-Calavi – Benin
www.uac.bj

Istituto Superiore Di Sanita (ISS) – Italy
www.iss.it

Small and medium-sized enterprises (SMEs)

VAXEAL Research – France
www.vaxeal.net

ExcellGene SA – Switzerland
www.excellgene.com

Oligovax SAS – France
www.oligovax.com