OVERVIEW OF VZV STUDY DESIGN

This study aims to assess immunological aspects of Varicella-Zoster virus (VZV) in preparation of its use as a vector for a future HIV vaccine. Twenty three million Africans including 1.6 million Kenyans are infected with HIV, the causative agent of acquired immune deficiency syndrome (AIDS). Despite global efforts to control the spread of HIV, millions of new infections still occur annually. In 2012 alone there were 2.3 million new HIV infections worldwide, most of these occurring in sub-Sahara Africa [1,2]. It is generally accepted that an effective and accessible preventative HIV vaccine is the best hope for ending the AIDS epidemic.

A protective HIV vaccine most likely will have to induce an effector HIV-specific immune response at the mucosal site (the portal of entry of HIV), blocking the spread of the virus to lymphoid tissues and controlling the infection at the mucosal or tissue level [3,4]. HIV vaccine candidates to date have not been able to induce such immune response; however, the use of a persistent replicating viral vector has huge potential to assemble this specific response. The only persistent replicating virus currently approved to be used as a vaccine in humans is Varicella-Zoster Virus (VZV), also known as chickenpox.

Attenuated varicella vaccines have been used worldwide for over 25 years and have a well-described safety profile. The epidemiology of varicella differs in temperate and tropical climates being more prevalent in the former one [5-7]. VZV infection is considered a childhood disease however, when the primary VZV infection occurs at later ages, there is an increased risk of complications such as lower respiratory infections, viral pneumonitis, and more rarely encephalitis [8]. VZV infection imposes a special risk for immunocompromised patients, representing an important cause of morbidity and mortality in this population. The risks associated with VZV infection in adulthood, especially in the HIV-positive individuals, justify the use of this vaccine in tropical countries such as Kenya.

Although these vaccines have been widely used worldwide, there is a lack of information on their immunogenicity in the African population. In this study we aim to evaluate the immune response induced by the VZV-vaccine Zostavax® in Kenya. A detailed analysis of the effector immune response and immune activation profile at the mucosal tissues induced by VZV vaccination in VZV-seropositive individuals is our primary goal. Understanding these components is a key step in evaluating the potential of VZV as a vector in an HIV vaccine.