



Department of Tropical Medicine, Medical
Microbiology and Pharmacology



ORAL DEFENSE SEMINAR

Characterizing Protective Antibody Responses to Recombinant Ebola Virus Subunit Vaccines in Non-Human Primates



Ebola virus (EBOV) causes lethal hemorrhagic fever with case fatality rates of up to 90%. Vaccination has been key to controlling outbreaks. However, due to limited stocks of approved vaccines and stringent requirements of ultracold storage and distribution, there is a need to continue developing new vaccines with more appropriate product characteristics. Although all vaccine candidates use the surface glycoprotein as the main antigen, the method of protection induced by the EBOV glycoprotein remains unclear. We have developed a recombinant subunit vaccine that shows improved safety and thermostability profiles, allowing easier deployment in endemic regions. Our vaccine has shown high efficacy in the gold standard non-human primate model of cynomolgus macaques. However, characterization of these protective antibody responses is ongoing with an aim to define correlates of protection. We find that a combination of protective antibody qualities including GP targets, neutralization, and effector function can

be used to predict vaccine efficacy. Ability of antibodies to bind virus despite the presence of the mucin-like domain was also correlated with higher vaccine induced protection against EBOV with the majority of neutralizing and Fc effector functioning antibodies binding regions beneath the mucin-like domain. Post-challenge kinetics are also a relatively unexplored aspect of vaccine induced protection. Here we find that rapid antibody responses are needed to confer protection in sensitive NHP models and increases in antibody function later in infection, likely stemming from IgM, are not sufficient for protection in non-survivors. Currently, mechanisms of protection do not have a clear consensus between vaccine platforms. Our findings will be used to guide further vaccine development and provide insights into correlates of protection that are still unknown for Ebola and other filoviruses.

Aquena Ball

Ph.D. Candidate

Department of Tropical Medicine, Medical Microbiology and Pharmacology

John A. Burns School of Medicine, University of Hawaii at Manoa

Friday, May 12, 2023

2:30 – 3:30 P.M. HST

JABSOM, Kakaako Campus

Medical Education Building, Room 315

Zoom Details

Link: <https://zoom.us/j/97962975142?pwd=aFdJZmhrbjdDOGQ2UFZHZTYyeDhUZz09>

Meeting ID: 979 6297 5142

Passcode: 306033

For further information, contact Dr. Vivek R. Nerurkar - Tel. 808-692-1668; email: nerurkar@hawaii.edu

Seminar Schedule @ <http://manoa.hawaii.edu/tropicalmedicine>