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Differences of the T-Cell Functional Profile in Two Vaccine Regimens Using Flow Cytometry

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DIFFERENCES OF THE T CELL FUNCTIONAL PROFILE IN TWO VACCINE REGIMENS USING FLOW CYTOMETRY

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Ebola hemorrhagic fever is a severe, often fatal disease in humans and nonhuman primates that is found primarily in central Africa. With a mortality rate between 50% and 90%, and no known cure available, it is necessary to develop a vaccine for protection.

Previous studies have shown that DNA vaccine only regimen does not provide protection against Ebola in Macaques whereas the regimen of DNA vaccine priming with the addition of recombinant Adenoviruse (DNA/rAdv) boosting does. Since the antibody titers in the DNA only animals are comparable with those in the DNA/rAdv regimen, this suggests it is a T cell, and not a B cell, response deficiency that leads to failed protection. Thus, by examining the profiles of T cell responses from the same animal before and after rAdv boosting, we can determine the threshold between protective and nonprotective immunity, and provide better insight into vaccine design for Ebola virus.

To carry out these aims, we used multiparameter flow cytometry, looking for an antigen specific response. We then used the programs SPICE and FlowJo to analyze the data. Our data reveals a higher T-cell response with the DNA/rAdv regimen, although one can see from this study that the quality of immune response differs in ways other than the number of T cells generated.