Retrovirology

BioMed Central

Poster presentation

P19-58 LB. Comparison of the immunogenicity in humans and rhesus macaques of vaccines consisting of DNA priming and MVA boosting and MVA priming and boosting

HL Robinson*[1], RR Amara[2], L Lai[2], Y Xu[1], S De Rosa[3], O Defawe[3], A Sato[3], GD Tomaras[4], L Qin[5], B Moss[6], LS Wyatt[7], C Hay[8] and P Goepfert[9]

Address: [1]GeoVax Inc., Atlanta, GA, USA, [2]Yerkes National Primate Research Center and Emory Vaccine Center, Atlanta, GA, USA, [3]Fred Hutchinson Cancer Research Center, HVTN Laboratory Program, Seattle, WA, USA, [4]Duke University Medical Center, Durham, NC, USA, [5]Fred Hutchinson Cancer Research Center, HVTN SCHARP, Seattle, WA, USA, [6]National Institutes of Health, Bethesda, MD, USA, [7]National Institutes of Health, NIAID, Bethesda, MD, USA, [8]University of Rochester, Rochester, NY, USA and [9]University of Alabama at Birmingham, Alabama Vaccine Research Clinic, Birmingham, AL, USA

* Corresponding author

from AIDS Vaccine 2009
Paris, France. 19-22 October 2009

Published: 22 October 2009

Retrovirology 2009, **6**(Suppl 3):P422 doi:10.1186/1742-4690-6-S3-P422

This abstract is available from: http://www.retrovirology.com/content/6/S3/P422

Background

We compare immune responses in humans and rhesus for two popular concepts for an AIDS vaccine, DNA priming and MVA boosting vs MVA priming and boosting.

Methods

Identical doses of HIV and SIV Gag-Pol-Env-expressing DNA (3 mg) and MVA (1 × 108 TCID50) vaccines were tested in humans (HVTN 065) (n = 30) and rhesus (Yerkes M11) (n = 8), respectively. Two protocols were used: DNA at weeks 0 and 8, followed by MVA at weeks 16 and 24 (DDMM) or MVA at weeks 0, 8 and 24 (MMM). Assays for T cells (ICS) and anti-Env Ab (ELISA) were conducted at HVTN (human) or Emory Vaccine Center (macaque) labs at one or two weeks post immunizations.

Results

Whereas rhesus had 100% response rates for all parameters, all human response rates were <80%. In both species, DNA priming resulted in both higher and more CD4-biased T cell responses. Humans had higher CD4 than CD8 response rates (77% vs. 42%) and macaques, greater magnitudes of elicited CD4 than CD8 cells (medians of 1.57% vs 0.19%). In both species, DNA-primed CD4 responses had >2.4-fold greater breadth than MVA-primed CD4 cells. Interestingly, both species, for both regimens, had similar peak magnitudes (medians of ~0.15% of total CD8 cells) and breadths of responding CD8 T cells (2 out of 5 tested pools in humans and 5 out of 24 pools in macaques). In both species, MVA-only immunizations elicited the highest anti-Env Ab responses. In humans, MMM elicited more frequent responses (75% vs 27%) and in both species, >2-times higher titer responses than DDMM. Macaques were much more permissive (~50-times) for Ab responses than humans achieving median titers of ~14 μg per ml for the MMM regimen.

Conclusion

(i) DDMM and MMM immunization elicit distinctive patterns of responses and (ii) immune responses in rhesus are only partial predictors for those in humans.