The Graduate School of Medical Sciences
Training and Educational Program for Eradication of AIDS Course

- Practice on AIDS VI -

Center for AIDS Research Seminar

Friday, 30 June 2017, 17:00-18:30

2F Seminar Room, Center for AIDS Research

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Vaccine-induced immune responses against both Gag and Env improve control of simian immunodeficiency virus replication in rectally challenged rhesus macaques

The ability to control lentivirus replication may be determined, in part, by the extent to which individual viral proteins are targeted by the immune system. Consequently, defining the antigens that elicit the most protective immune responses may facilitate the design of effective HIV vaccines. Here we vaccinated four groups of rhesus macaques with a heterologous vector prime/boost/boost/boost (PBBB) regimen expressing the following simian immunodeficiency virus (SIV) genes: *env, gag, rev, tat, nef,* and *vif* (Group 1); *env, rev, tat, nef,* and *vif* (Group 2); *gag, rev, tat, nef,* and *vif* (Group 3); or *rev, tat, nef,* and *vif* (Group 4). Following repeated intrarectal challenges with a marginal dose of the neutralization-resistant SIVmac239 clone, vaccinees in Groups 1-3 became infected at similar rates compared to control animals. Unexpectedly, vaccinees in Group 4 became infected at a slower pace than the other animals, although this difference was not statistically significant. Group 1 exhibited the best post-acquisition virologic control of SIV infection, with significant reductions in both peak and chronic phase viremia. Indeed, 5/8 Group 1 vaccinees had viral loads of less than 2,000 vRNA copies/mL of plasma in the chronic phase. Vaccine regimens that did not contain *gag* (Group 2), *env* (Group 3), or both of these inserts (Group 4) were largely ineffective at decreasing viremia. Thus, vaccine-induced immune responses against both Gag and Env appeared to maximize control of immunodeficiency virus replication. Collectively, these findings are relevant for HIV-1 vaccine design as they provide additional insights into which of the lentiviral proteins might serve as the best vaccine immunogens.

Organized by

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