Odd-numbered posters will be presented in Poster Session 01 on Tuesday, 23 October from 17:30 – 19:30 in the Poster Hall.

Even-numbered posters will be presented in Poster Session 02 on Wednesday, 24 October from 17:30 – 19:30 in the Poster Hall.

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Optimizing Murine Vaccination Regimens to Elicit HIV-1 Neutralizing Responses Targeting Diverse Fusion Peptide Sequences

Hui Geng[1], Anita Changela[1], Jason Gorman[1], Li Ou[1], Mallika Sastry[1], Kai Xu[1], Michael Chambers[1], Gwo-Yu Chuang[1], S. Katie Farney[1], Sijy O'Dell[1], Guillaume B.E. Stewart-Jones[1], Jonathan Stuckey[1], Yaroslav Tsybovsky[2], Raffaello Verardi[1], Tongqing Zhou[1], Frank J. Arnold[1], Nicole A. Doria-Rose[1], Adrian B. McDermott[1], John R. Mascola[1], Peter D. Kwong[1]

[1]Vaccine Research Center, NIAID/NIH, United States, [2]Electron Microscopy Laboratory, Leidos Biomedical Research, Inc., Frederick National Laboratory for Cancer Research, United States

Background: A major challenge in HIV-1 vaccine research is the elicitation of broadly neutralizing antibodies targeting diverse HIV-1 isolates. We recently found the fusion peptide (FP), a key element of the HIV-1-entry machinery, to be a promising target for HIV-1 vaccine development. Immunization with FP-coupled to keyhole limpet hemocyanin (KLH) and boosted by HIV-1 Env trimer elicited cross-clade neutralization in standard vaccine test species. Here we optimize murine vaccination regimens to improve the breadth and potency of the FP-directed immune response.
Methods: C57BL/6 mice were immunized in two-week intervals with either prefusion stabilized HIV-1 Env trimers or FP conjugated either to KLH or to the heavy chain fragment of tetanus toxoid. Serum samples were collected one week after each immunization and assessed for neutralization against viruses containing three prevalent FP sequences. Top responders from each immunization regimen were selected for hybridoma creation and monoclonal antibody production.
Results: Over 90% of the mice immunized with FP-coupled conjugate followed by HIV-1 Env trimer boosts showed higher neutralization responses when compared to those of the HIV-1 Env trimer-only and FP carrier-only groups. Approximately 20% of mice immunized with a single FP sequence showed neutralizing activity against viruses containing diverse FP sequences. Characterization of the isolated monoclonal antibodies is ongoing.
Conclusions: FP-directed immunizations elicited robust immune response in mice, with serum neutralization of viruses containing three of the most prevalent FP sequences. Tested FP vaccination regimens suggest multiple avenues for improving the potency and breadth of FP-based HIV-1 neutralizing vaccine responses.

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Sequential Immunization Strategies to Elicit HIV-1 bNAbs in Animal Models With a Polyclonal B Cell Repertoire

Amelia Escolano[1], Harry B. Gristick[2], Rajeev Gautam[3], Julia Merkenschlager[1], Jovana Golijanin[1], Anna Gazumyan[1], Joy Pai[1], Jens Bauer[1], Thiago Yukio Kikuchi Oliveira[1], Kai-Hui Yao[1], Morgan E. Abernathy[2], Haoqing Wang[2], Alex Cohen[2], Jennifer R Keefe[2], Anthony P. West Jr[2], Malcolm A. Martin[3], Pamela J. Bjorkman[2], Michel Nussenzweig[1]

[1]The Rockefeller University, United States, [2]Caltech, United States, [3]National Institute of Allergy and Infectious Diseases, United States

Background: Immunization regimens that can elicit broadly neutralizing antibodies (bNAbs) in humans would be an effective vaccine against HIV-1. Our previous work showed that an immunization strategy involving a sequence of Env-based germline targeting immunogens that were gradually engineered to resemble the native Env protein, successfully elicited bNAb-like antibodies in a knock-in mouse carrying the inferred germline PGT121/10-1074 antibody. Despite this achievement, immunization protocols that elicit bNAbs in systems with a polyclonal B cell repertoire have not been reported to date. The low frequencies of germline bNAb precursors in polyclonal systems hinder their activation by immunization which therefore requires high affinity immunogens. In addition, competition between different epitope-specific B cells in polyclonal germinal centers may frustrate bNAb development.
Methods: Based on our previous results in knock-in mice, we have aimed to optimize sequential immunization strategies to elicit bNAbs in animal models with polyclonal B cell repertoires
Results: The results of immunization experiments in several animal models will be presented.
Conclusions: .