

Abstract

Broadly neutralizing antibodies (bNAbs), which develop over time in some HIV-1-infected individuals, define critical epitopes for HIV vaccine design. Using a systematic approach, we have examined neutralization breadth in the sera of about 1800 HIV-1-infected individuals, primarily infected with non-clade B viruses, and have selected donors for monoclonal antibody (mAb) generation. We then used a high-throughput neutralization screen of antibody-containing culture supernatants from about 30,000 activated memory B cells from a clade A-infected African donor to isolate two potent mAbs that target a broadly neutralizing epitope. This epitope is preferentially expressed on trimeric Envelope protein and spans conserved regions of variable loops of the gp120 subunit. The results provide a framework for the design of new vaccine candidates for the elicitation of bNAb responses.