

## Abstract

Because increasing numbers of HIV vaccine candidates are being tested globally, it is essential to differentiate vaccine- from virus-induced antibodies. Most of the currently tested vaccines contain multiple viral components. As a result, many vaccine recipients give positive results in FDA-licensed HIV serodetection tests. We have identified conserved sequences in Env-gp41 and Gag-p6, which are recognized soon after infection but are not included in most HIV vaccine candidates. A new HIV serodetection assay, the HIV-SELECTEST, was established that distinguishes between vaccine-induced antibodies and seroconversion due to true HIV infections. It is important to make this assay globally relevant, because many clinical trials are conducted around the world where most HIV infections are due to non-B subtype HIV-1. Therefore, the current study examined the reactivity of plasma samples from >3,000 infections with diverse HIV subtypes worldwide. The HIV-SELECTEST performed at >99% specificity and sensitivity. Both recent and established infections with clades A, B, C, D, E, F, G, J, and CRFs were detected. Antibodies elicited by other vaccinations or infections endemic to the clinical trial sites did not react in this assay. Therefore, HIV-SELECTEST could be an important differential diagnostic tool for HIV vaccine trials, blood banks, and population screening worldwide