Therapeutic vaccination reduces HIV sequence variability.

With HIV persisting lifelong in infected persons, therapeutic vaccination is a novel alternative concept to control virus replication. Even though CD8 and CD4 cell responses to such immunizations have been demonstrated, their effects on virus replication are still unclear. In view of this fact, we studied the impact of a therapeutic vaccination with HIV nef delivered by a recombinant modified vaccinia Ankara vector on viral diversity. We investigated HIV sequences derived from chronically infected persons before and after therapeutic vaccination. Before immunization the mean ± se pairwise variability of patient-derived Nef protein sequences was 0.1527 ± 0.0041. After vaccination the respective value was 0.1249 ± 0.0042, resulting in a significant (P<0.0001) difference between the two time points. The genes vif and 5’gag tested in parallel and nef sequences in control persons yielded a constant amino acid sequence variation. The data presented suggest that Nef immunization induced a selective pressure, limiting HIV sequence variability. To our knowledge this is the first report directly linking therapeutic HIV vaccination to decreasing diversity in patient-derived virus isolates.