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In vitro HIV-1 selective integration into the target sequence and decoy-effect of the modified sequence

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Although there have been a few reports that the HIV-1 genome can be selectively integrated into the genomic DNA of cultured host cell, the biochemistry of integration selectivity has not been fully understood. We modified the *in vitro* integration reaction protocol and developed a reaction system with higher efficiency. We used a substrate repeat, 5'- (GTCCCTTCCCAGT) n(ACTGGGAAGGGAC)n-3', and a modified sequence DNA ligated into a circular plasmid. CAGT and ACTG in the repeat units originated from the HIV-1 proviral genome ends. Following the incubation of the HIV-1 genome end cDNA and recombinant integrase for the formation of the preintegration (PI) complex, substrate DNA was reacted with this complex. As a result, it was confirmed that the integration selectively occurred. CAGT motif and DNA secondary structure in the target sequence were cardinal factors for the selective In conclusion, there is a considerable selectivity in HIV-integration into the specified sequence; however, similar DNA sequences can interfere with the integration process, and it is therefore difficult for in vivo integration to occur selectively in the actual host genome DNA.

Biography

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