

**POSTER 11****RUNS OF GUANOSINE RESIDUES IN GAG HOT SPOT FOR RECOMBINATION IN HIV-1 FORM G-QUARTET AND PROMOTE STRAND TRANSFER *IN VITRO***

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HIV-1 recombines frequently between its two co-packaged RNA genomes to create viral diversity. A putative hot spot for recombination was previously located between 30 bases upstream *gag* AUG and 82 bases into the Gag protein coding region. Strand transfer experiments *in vitro* indicated correlation between several regularly spaced pauses and guanosine runs (nt 363–367, nt 382–384, and nt 405–409) in *gag* hot spot. We analyzed the relationship between these G-residues and the rate of strand transfer since RT pauses were known to promote transfer events. Strikingly, we observed a 3.8 fold decrease of transfer efficiency upon the disruption of G runs through base substitutions of only five G residues. Further studies demonstrated the formation of both intra-molecular and inter-molecular G-quartet with the template containing the G runs. Significantly, we noticed that the pauses related with the G runs exhibited a cation-dependent pattern in strand transfer assay. Pauses at G runs were observed with K<sup>+</sup>, which promotes the G-quartet formation; but not with Li<sup>+</sup>, which disrupts G-quartets. In all, these results showed the ability of G runs in *gag* hot spot in facilitating strand transfer events, and indicated a potential mechanism of pausing RT by G-quartet.