Retrovirology

Poster presentation

Development of a Quantum Dot-based Assay System for Detection of Specific HIV-1 LTR Sequence Variants

Asiedua Asante*‡[1], Michael Nonnemacher[1], Aikaterini Alexaki[1], Elisabeth Papazoglou[2], Peter Lelkes[2] and Brian Wigdahl[1]

Address: [1]Department of Microbiology and Immunology and Institute for Molecular Medicine and Infectious Disease, Philadelphia, PA, USA and [2]School of Biomedical Engineering, Science, and Health Systems, Drexel University College of Medicine, Philadelphia, PA, USA

* Corresponding author ‡Presenting author

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Analysis of human immunodeficiency virus type 1 (HIV-1) long terminal repeat (LTR) sequence variation within the CCAAT/enhancer binding protein (C/EBP) and stimulating protein (Sp) transcription factor binding sites has identified variants that correlate with HIV-associated dementia (HIVD). CdSe/ZnS nanocrytsals have facilitated the investigation of nano- and peco-scale biological components. Quantum dot-conjugated oligonucleotides homologous to specific variants of Sp site III and C/EBP site I, were utilized to quantitate the relative abundance of specific LTR variants. Quantum dot-conjugated oligonucleotides containing the Sp site III 5T binding site variant (C-to-T change at position 5) or the C/EBP site I 3T site variant, were reacted with plasmid DNA containing increasing concentrations of plasmid with the homologous LTR sequence variant. The results suggest that quantum dot-conjugated oligonucleotides specific for sequence variants within the LTR can be used as reporter molecules for identification and quantitation of HIV-1 genetic variation.