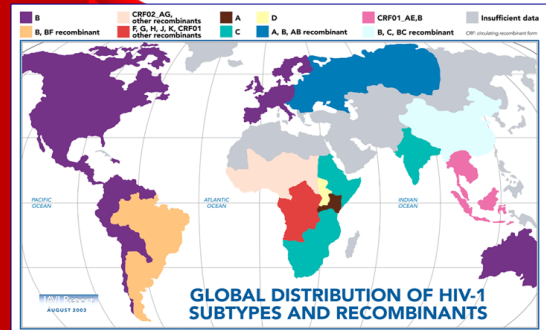


Characterizing Clade Specific Virus-Host Interaction In HIV Infected Clinically Asymptomatic And AIDS Presenting Subjects

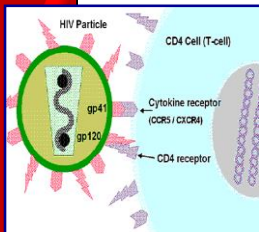
Abhilasha Mathur
(University of Delhi, India)



Global Distribution of HIV-1 Subtypes



HIV - Attachment & Fusion

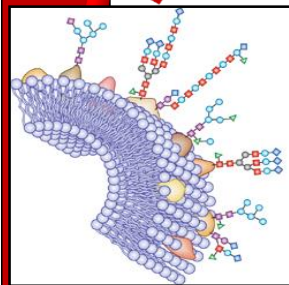


- **CD4 : Primary receptor (Attachment)**
- **CCR5/CXCR4: Co-receptors (Fusion and Entry)**

Co-receptor switch occurs with disease progression



N-Glycosylations & HIV Progression



- Glycosylation refers to **Addition of Glycosyl Group** to N atom of asparagine residue.
- Helps virus to **escape immune response**.
- Number of these sites **increases with progression to AIDS**.

Objectives

- Determine the **utilized co-receptor in clades A, B, C and D**.
- Determine number of **N-glycosylation sites** with disease progression.



Are these changes clade specific?

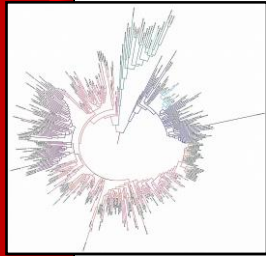


Methodology

- HIV sequence retrieval from **Los Alamos Database** (1539 sequences from clades A,B,C and D)
- Conversion of nucleotide to amino acid sequence using **EMBOSS tool**.
- Clade Confirmation by Phylogenetic Analysis
- Co-receptor prediction using **PSSM tool**
- Determination of N glycosylation sites using **N-Glycosite tool**.
- Data Analysis in Excel.



Phylogenetic Analysis

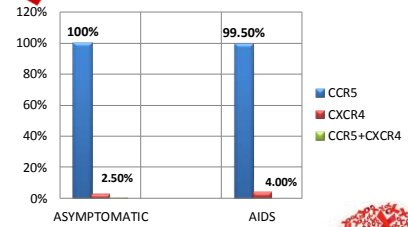


1539 sequences from four clades of HIV

Clade A : 400 sequences
 Clade B : 389 sequences
 Clade C : 348 sequences
 Clade D : 402 sequences



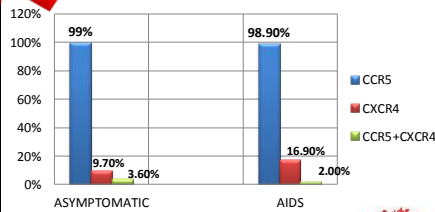
RESULT: Clade A



• **CLADE A:** 100% OF ASYMPTOMATIC USED CCR5 AND 2.5% USED CXCR4. 99.5% AIDS PATIENTS USED CCR5 AND 4% USED CXCR4.



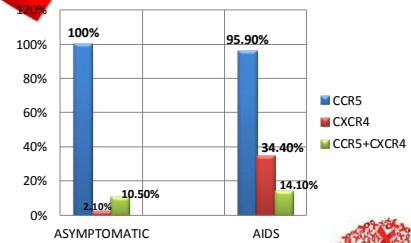
Clade B



• **CLADE B:** 99.4% OF ASYMPTOMATIC PATIENTS USED CCR5 AND 9.7% USED CXCR4. 98.9% OF AIDS PATIENTS USED CCR5 AND 17% OF AIDS PATIENTS USED CXCR4. 3.6% OF THE ASYMPTOMATIC PATIENTS SHOWED DUAL TROPISM WHILE IN AIDS ONLY 2%.



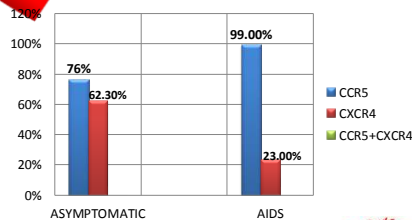
Clade C



• **CLADE C:** 100% OF ASYMPTOMATIC PATIENTS USED CCR5 AND 96% AIDS PATIENTS USED CCR5. 2.10% ASYMPTOMATIC PATIENTS USED CXCR4 AND 34% AIDS PATIENTS USED CXCR4. DUAL TROPISM SHOWN BY BOTH CATEGORIES.



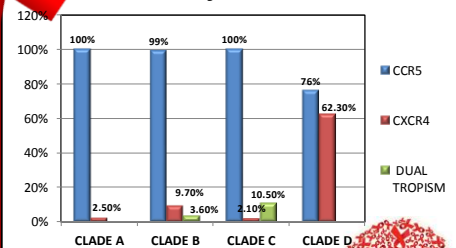
Clade D



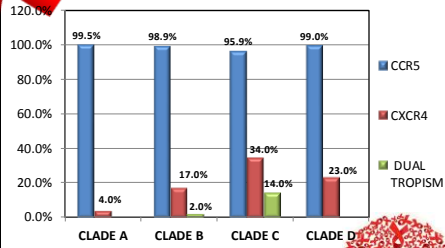
• **CLADE D:** 76% OF ASYMPTOMATIC PATIENTS USED CCR5 AND 99% OF AIDS PATIENTS USED CCR5. 62.3% OF ASYMPTOMATIC PATIENTS USED CXCR4 AND 23% OF AIDS PATIENTS USED CXCR4.



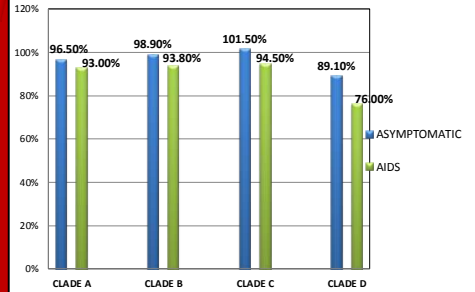
Co-receptor Usage in Asymptomatic Subjects



Co-receptor Usage in AIDS Subjects



N-glycosylation sites



Conclusion

- Co-receptor switch and addition of N-linked glycosylation sites **does not occur universally** in all clades.
- The number of **N-glycosylation sites does not increase** with progression of disease.



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THANK YOU!