# RAPID HLA TYPING WITHIN FAMILY MEMBERS, USING 42 NOVEL AND HIGHLY INFORMATIVE MICROSATELLITES MARKERS IN MULTIPLEX PCR

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***Objective:*** HLA typing is needed for transplantation and pre-implantation genetic diagnosis (PGD). In transplantation HLA matched donor has to be verified by using low or high resolution typing which are cumbersome and expensive. In this regard we used STR markers linked to the HLA genes region.

***Design & Method:*** We picked STRs linked to different genes in the HLA classes using a contig for the "HLA" region. Mostly tetra-nucleotide repeats were selected from HLA classes I, II, III and telomeric and centromeric regions of chromosome 6. Primers were designed and labeled with fluorescent dyes to be optimized for multiplex PCR. In total 42 STR markers (25 being novel) were used in this study. We used blood samples from families who had undergone BMT and control sample. In total, 60 trios (father, mother and the affected child) were tested for the selected STRs.

***Results:*** Thirty-six STRs (94.73%) were heterogeneous enough in the population and were used for HLA typing in transplantation purpose. In more than 95% of families about 79% of STRs were informative. Allele frequencies were calculated for the STRs. We also used these STRs for HLA match selection in PGD.

***Conclusion:*** STR based linkage analysis can be helpful for rapid and inexpensive HLA typing in family members when donor sib or relative is available, especially in Iran with high frequency of consanguineous marriage. These markers can aid HLA typing for PGDs. Our multiplex mix has proven to be very useful for this purpose as well.

***Key words:*** Human Leukocyte Antigen (HLA), Short Tandem Repeats (STRs), Pre-implantation Genetic Diagnosis (PGD), bone marrow transplantation (BMT)