ANCESTRY ANALYSIS IN PATERNITY TRIOS USING AIM-INDEL AND ID-INDEL MARKERS

Juliana Gozi de Aquino[1], Luz Adriana Pérez[2], Helena Groot[2], Maria Claudia Lattig[2,] Elizeu Fagundes de Carvalho[1], Leonor Gusmão[1,3]

[1]DNA Diagnostic Laboratory (LDD), State University of Rio de Janeiro (UERJ)
[2]Departamento de Ciencias Biológicas, Universidad de los Andes
[3]IPATIMUP (Institute of Patology and Molecular Imunology from Univ.of Porto)

The study of genetic variation based on different polymorphisms that are present in the genome has contributed to a better understanding of human populations' history by disclosing aspects related to the ancestry of different groups throughout the world. Markers with moderate mutation rates are more likely to present higher differences between populations, being suitable Ancestry Informative Markers (AIM). The AIMs can be used to determine the ancestry of individuals and contributions from each ancestral group to an admixed population. In the present study, the admixture proportions from three continental source populations were investigated in father-mother-son trios, in order to compare the results obtained when using markers with low *versus* high values of inter-population diversity. A total of 30 trios were included in this study, 15 from individuals living in Rio de Janeiro, Brazil, and 15 living in Bogotá, Colombia. The genetic polymorphisms utilized were autosomal Indels, and all the trios were genotyped using two multiplexes including (i) 38 Indels described for human identification (ID-Indels) and (ii) 46 ancestry informative Indel markers (AIM-Indels). According to the results, the parents from Colombia showed a lower African ancestry than the Brazilian ones, which has a lower Native American ancestry. In all parents' samples, the African, European and Native American ancestry values were always more similar when calculated for the ID-Indels than for the AIM-Indels. When comparing the observed values of ancestry in each child with the expected values considering the ancestry of the parents, similar differences were obtained for the two set of Indels. In average, we observed a trend to larger errors in ancestry components of smaller proportion: the African component in Colombia and the Native American component in Brazil, for both AIM-Indels and ID-Indels.