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Evaluation of the Full-sibling Kinship Regarding Attendance of Multiple Full-siblings

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ABSTRACT The Identity By Descent (IBD) method and Identity By Sharing (IBS) scoring methods implement individual-to-individual comparison based on statistical data. Here, the researchers used the integrative information of known-siblings to evaluate the identity of a suspect-the Multi-participants retro-genetic (MPR) method. MPR uses the genetic laws to deduce the possible alleles of offspring from the same ancestor. The full-sibling relationship was ruled out if 3 or more STRs disobey the genetic laws. To compare the MPR and IBS method, the calculation of 100 unrelated individuals and the pairs of 2 or 3-known full-siblings were performed using 15 or 19 STR. The exclusion rate of MPR method was much higher than the IBS method. Those STRs offering the exclusion allele patterns were termed efficient STRs, and the number of efficient STR is crucial in determining the exclusion power of the system. The MPR method may serve as a valuable adjuvant tool for handling ambiguous results of the IBS method.