

## **THE STUDY OF A SNP-MULTIPLEX FOR THE ANCESTRY INFERENCE OF FIVE CONTINENTAL POPULATIONS**

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This research was aimed to develop a single-tube multiplex assay of 28 autosomal SNPs to validate its ability of differentiating population from 5 continents and estimate its value in cases. Methods: We select 28 SNPs from The Global AIMS Nano set to develop the single-tube multiplex assay using SNaPshot technique system. Using this system, we detect 712 individuals from 16 populations in our lab. We combine these results and data we collect from 1000 genomes and HGDP-CEPH(total 2804 samples,38 populations) together and use Structure cluster analysis and frequency PCA analysis to evaluate this panel. Result: Not only can this multiplex assay of 28 SNPs differentiate the population from 5 continents but the admixture of South Asia and Eurasian population. The ancestry component and MP value of some known origin samples are consistent with the sample information. Conclusion: This multiplex assay can differentiate the population from 5 continents and the admixture Eurasian successfully and differentiate the ancestry origins of individuals correctly; This multiplex assay is applicable for criminal investigations in the forensic practice.

Keywords : forensic genetics; AIMS; compound amplification; genetics structure analysis; ancestry inference