



جامعة الإمارات العربية المتحدة  
United Arab Emirates University

The College of Graduate Studies and the College of Science Cordially Invite You to a

**Master Thesis Defense**

Entitled

*STUDY OF AUTOSOMAL STR MARKERS IN UNITED ARAB EMIRATES POPULATION*

by

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Abstract

A study of the United Arab Emirates (UAE) population is important due to high consanguineous marriage, which may affect the power of discrimination of some loci. The genetic polymorphisms of 23 autosomal short tandem repeat (STR) loci including D3S1358, vWA, D16S539, CSF1PO, TPOX, D8S1179, D21S11, D18S51, D2S441, D19S433, TH01, FGA, D22S1045, D5S818, D13S317, D7S820, D10S1248, D1S1656, D12S391, D2S1338, D6S1043, Penta D and Penta E were evaluated in 571 random unrelated UAE Arabs population. Blood samples were collected on FTA cards. Targeted loci were amplified using Verifiler® Express PCR Amplification Kit. PCR products were run on the ABI 3500 Genetic analyzer. Arlequin and Forstat softwares were used to determine the forensic parameters and population structure analysis for 23 autosomal STRs. A total of 305 alleles were observed with the corresponding allelic frequencies ranging between 0.000876 and 0.49387. Data of forensic statistical parameters such as locus diversity ranged from 0.67406 (TPOX) to 0.9149 (Penta E). The most variable autosomal STR loci observed was Penta E (observed heterozygosity: 0.90368, match probability: 0.0147). Results suggest that the 23 STR loci had a relatively high genetic variation, which was suitable for forensic personal identification and paternity testing in the UAE population. The significance of this work is to build an allelic frequency database for the latest and most powerful amplification kit using current forensic workflow aiding statistical evaluation of generated STR profiles in the corresponding populations.

**Keywords:** short tandem repeat, allele frequency, genetic polymorphisms, power of discrimination, forensic personal identification.