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Molecular and Morphological Study of Ear Print in AL- Muthanna Population Province

A Thesis Submitted to the Council of College of Science /Al-Muthanna University as Partial Fulfillment of the Requirements for the Degree of Master of Science in Biology

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Abstract:

An individual's ear is a body organ that has a personal external structure. Similar to fingerprints and other physical traits, the ear maintains some individualistic qualities that make it distinct.

The aim of this study was to examine six ear characteristics (lobe size, lobe attachment, helix rolling, shape of the ear lobe, shape of ear, and tragus), knowing the extent to which these characteristics are associated to each other on the one hand and evaluating their correlation with the parameters of gender, age, and weight on the other hand., we attempted to provide a database of the external ears of a normal Iraqi population, Six ear characteristics are predicted using SNP-based genotypes of three SNPs (rs263156, rs1619249, and rs10212419).

During the study period, a total of 200 participants were from both sexes (100 males and 100 females), aged 18–68 years, and from two sources (ear photographs and blood), collected these samples from the city of Samawah from October 2022 to February 2023.

The current study examined the association between the ear's phenotypic characteristics and revealed a strong association between the shape of the earlobe and the shape of the ear, a moderate association between the helix shape and the ear shape at statistical significance ($P<0.05$), as well as a moderate association between the earlobe attachment and the shape of the earlobe at statistical significance ($P<0.05$).

This study showed correlation ranging among medium, and weak between the morphological trait and (age, gender and weight), there was a moderate correlation between the thickness and gender at statistical significance ($P<0.05$).

In this study, the correlation between the three SNPs (rs263156), which is located within Chromosome 6, and (rs1619249), which is located within Chromosome 18,

and the six ear traits was evaluated. There was no correlation observed in our study between these genetic loci and ear characteristics, while the CT genotype of the SNPs (rs10212419) located on chromosome 3 was correlated to ear shape, and the CC genotype was correlated to earlobe attachment.