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A New View About Mendel's First Law of Inheritance

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Abstract

Since our phenotype are inherited from both parents such as color of skin and eyes, shape of the face, height, weight, …etc., there are some phenotypic features that are distinct in its inheritance which selectively follow the father more than mother such as morphology of the feet (and probably other feature not yet identified).

This study is done by observing the feet of about 100 families, through make a comparison between the morphology of the feet of the siblings with that of the parents. The results reveal that 62% of families have siblings who their feet are similar to their father, and less 29% of families have siblings who their feet are similar to their mother; the rest are either equal in similarity or not similar to both parents.

Keywords: foot morphology; Mendel's first law of inheritance; paternity testing

Introduction

The observation that living things inherit traits from their parents has been used since prehistoric times. The modern science of genetics, seeking to understand this process, began with the work of the *Gregor Mendel* in the mid-19th century. When a pair of organisms reproduce sexually, their offspring randomly inherit one of the two alleles from each parent. These observations of discrete inheritance and the segregation of alleles are collectively known as *Mendel's first law*[1].

The set of alleles for a given organism is called its genotype, while the observable traits of the organism are called its phenotype. When organisms are heterozygous at a gene, often one allele is called *dominant* as its qualities dominate the phenotype of the organism, while the other allele is called *recessive* as its qualities recede and are not observed. Some alleles do not have complete dominance and instead have *incomplete dominance* by expressing an intermediate phenotype, or *codominance* by expressing both alleles at once. These event occur independently between the chromosomes of both parents (figure 1) [2].

According to the *Mendel's first law* of inheritance, there is no difference in genes that come from either parents regarding dominant or recessive alleles, but obviously there are another unknown types of inheritance that mostly follow one parent such as foot shape (and probably other feature not yet identified) which mostly follows paternal side of inheritance.

Method

Foot morphology has several characteristics including the dimensions of foot, length of toes in relation to each other, especially the big toe. According to these parameters, feet can be classified according to the ancestry (figure 2) [3].

The study is done by observing the feet of about 100 families, through make a comparison between the morphology of the feet of the siblings with that of the parents through a questionnaire.

Note: Persons with congenital malformations such as Down syndrome are excluded from study as they have characteristic foot morphology.

Results

The results reveal that 62 families have more than half of their siblings with feet similar

father (figure 3); and 29 families have more than half of their siblings with feet similar to their mother; and 5 families have siblings with equal in similarity between both parents; and finally 4 families have more than half of their siblings with feet not similar to both parents. The results can be illustrated in the following table (Table 1).

Discussion

Since our phenotype are inherited from both parents such as color of skin and eyes, shape of the face, height, weight, …etc.; however, in addition to the classical mode of inheritance, the morphology of the feet is distinct in its inheritance that is mainly follow the father and less the mother.

This phenomenon cannot be explained by chance alone but may be explained by some of the alleles that are derived from father behave as a dominant traits. This may change our understanding about inheritance of other features of human beings which may follow only one parent rather than the other.

Note: This may be of some benefit in the paternity testing before genetic study.

In addition to the physical phenotypes, human beings are inherit behavioral and psychological phenotypes from their parents such as cleverness, idiocy, and even preference of certain foods; all are not known about their mode of inheritance.

Conclusion

According to the above results, there are some physical features of human beings have distinct mode of inheritance that may follow only one parent more than the other.

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