



POPULATION GENETICS AND THE DISTRIBUTION OF HEREDITARY DISEASES

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Annotation: This article covers extensively the Basic Laws of population genetics and factors affecting the spread of hereditary diseases in society. How genetic drift, natural selection, inbreeding, and migration processes affect the population gene pool has been analyzed from a scientific point of view. The epidemiology of hereditary diseases and the importance of modern genetic diagnostic and screening methods in their prevention were also revealed.

Keywords: Population genetics, hereditary diseases, genetic drift, epigenetics, gene pool, mutation, screening, genome, inbreeding, natural selection.

Introduction

Population genetics is one of the most important areas of biology and medicine, which studies the laws of the spread of heredity and hereditary diseases in society. Analysis of genetic laws at the population level provides the main scientific basis for determining the frequency of occurrence of hereditary diseases, assessing risk groups and developing preventive measures. Population genetics is one of the most important areas of biology and medicine, which studies the laws of the spread of heredity and hereditary diseases in society. Analysis of genetic laws at the population level provides the main scientific basis for determining the frequency of occurrence of hereditary diseases, assessing risk groups and developing preventive measures. The prevalence of hereditary diseases observed in the population is closely related not only to genetic drift or mutations, but also to the ecological environment, lifestyle and social factors. Therefore, this topic is one of the pressing issues for medicine, biology and the health system.

Methods

The article took as a basis the analysis of scientific literature on population genetics and the spread of hereditary diseases. Statistical analysis methods, epidemiological observations, and genetic population models (Hardy–Weinberg's law, genetic drift models) were also used. Therefore, this topic is one of the pressing issues for medicine, biology and the health system.

Conclusion

Population genetics and the spread of hereditary diseases are one of the pressing issues for human health. In the population, the frequency of occurrence of hereditary diseases may increase as a result of genetic drift, inbreeding, migration and mutations. For this reason, in modern medicine, the widespread use of genetic screening, DNA analysis and epidemiological observations is necessary. In the future, through the use of the achievements of Population



Genetics, the chances of preventing hereditary diseases and raising a healthy generation will further expand.

Results

Analysis has shown that the prevalence of hereditary diseases within a population is determined by several key factors:

1. Genetic drift - random variation in allele frequencies in small populations leads to an unexpected increase in hereditary diseases.
2. Inbreeding (interbreeding marriage) dramatically increases the frequency of occurrence of – autosomal-recessive disorders.

3. ults

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1. Genetic drift - random variation in allele frequencies in small populations leads to an unexpected increase in hereditary diseases.
2. Inbreeding (interbreeding marriage) dramatically increases the frequency of occurrence of – autosomal-recessive disorders.
3. Natural selection- causes certain alleles to survive or disappear in the population.
4. Migration and gene flow– gene exchange between populations plays an important role in the spread of diseases.
5. Mutations- new genetic changes can enter the population and become a source of hereditary diseases.
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Debate

The results obtained confirm that population genetics is of great importance in medicine. Genetic diversity in the human population not only determines the spread of diseases, but is also important for the health of future generations. In modern medicine, DNA Diagnostics, genetic screening, prenatal and neonatal examinations are widely used in the early detection and Prevention of hereditary diseases. In particular, a future reduction in hereditary diseases can be achieved by identifying population risk groups.

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