

The four forces of evolution and speciation

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The Processes of Microevolution and Macroevolution Introduction Evolution refers to a change in a population's genetic composition over time. It is something measured at the population and not individual level. This process is a complex one with different interrelated processes and mechanisms involved. There are two main classifications of this process; there is microevolution and macroevolution. The only difference in these two is the time difference making macroevolution to be massive and easily recognized and microevolution to be small (Maiti & Maiti 252). This essay will describe the micro and macro evolution processes and terms, explaining how they are interconnected. The ones focused on are; Species, Population, the four forces of evolution, the variation within and between populations, isolating mechanisms and speciation.

Microevolution: This describes the significant changes that occur in a species over time, to give it traits or groups of traits classifying it differently from its original species, for example, as a sub-species, a variety or a race (Maiti & Maiti 252).

Macroevolution: This describes the significant changes in a species over time that makes it into a totally different species. An example is the evolution of earlier tetrapods into mammals. The results of this process are cumulative that is, the species form after an evolution for over millions of years (Maiti & Maiti 254).

There are the four forces of evolution;

Mutation: Mutation is the alteration of the DNA sequence in the chromosome of a gene of an organism. This results in a change in a trait because of the affected function of a gene or a chromosome.

Gene flow: This is the transfer of gene alleles from one population to the other. Populations are different from species. A population is defined as the number of a specific species of an organism, found in a specific geographic region. A species is a population of organisms defined by their ability to interbreed naturally among themselves, and produce offspring that can also interbreed. The transfer of alleles, therefore, causes changes in the genetic make-up of the population, hence their traits (Maiti & Maiti 256).

Natural selection: This is a process where the environment forces species to compete for resources by limiting them. The species with best-suited genes and traits survives.

Genetic drift: This refers to the random changes in the population's genetic frequencies (Maiti & Maiti 257).

There are other issues that take part in the evolution, but differently. One of such factors is the isolation mechanisms. Species have similar genes and a common ancestry, yet still, there are those of similar genes and a common ancestry, but are unable to reproduce. This is explained by the isolation mechanisms. Isolation mechanisms are functional, structural, and behavioral characteristics that prevent species from reproducing. Isolation mechanisms, therefore, play a role in maintaining particular species and creating new ones. The development of a new species from an evolutionary process is known as speciation that is influenced by all the above evolutionary processes (Darpan 1653). One last important process is the variation within and between populations. This is the difference in organisms of the same species, and of different species in a population. These differences are caused mainly by the four forces of evolution that change the genes and

traits differently.

Conclusion

Evolution is a complex process with a variety of other processes guiding it. Evolution leads to speciation that is maintained and even furthered by isolating mechanisms. An organism has to come from the same ancestry, have similar genes and be able to reproduce and produce offspring that can interbreed, for it to be considered of the same species. This is gradually changed by forces such as mutation, genetic drift, gene flow, and natural selection. Isolation further maintains a species by preventing same species from reproducing, and furthers evolution by allowing change on the species in one particular isolated population. Although organisms vary naturally, these forces can help explain why some organisms develop certain traits in a population.

Works Cited

Darpan, Pratiyogita. " Speciation". Competition Science Vision. 8. 96 (2006): 1653-1697.

Maiti, Prabodh K. and Maiti, Paulami. Biodiversity: Perception, Peril And Preservation. PHI Learning Pvt. Ltd. 2011. Print.