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MON TUE WED THR FRI SAT SUN

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Q:- Write Notes on MACRO EVOLUTION?

Ans:- Macroevolution:-

Macroevolution in the modern sense is evolution that is guided by selecting among interspecific variation in microevolution. This modern definition differs from the original concept, which referred macroevolution to the evolution of taxa above the species level (genera, families, orders etc).

Origin and changing meaning of the term:-

Philiptschenko distinguished between microevolution and macroevolution because he refe-

cted natural selection in the sense of Darwin as an explanation for larger evolutionary transitions that give rise to taxa above the species level in the Linnean taxonomy. Accordingly, he restricted Darwinian "microevolution" to evolutionary changes within the boundary of given species that may lead to different races or subspecies at the most. By contrast, he referred "macroevolution" to major evolutionary changes that correspond to taxonomic differences above the species level, which in his opinion would require evolutionary processes different from natural selection. An explanatory model for macroevolution in this sense was the "hopeful monster" concept of geneticist Richard Goldschmidt, who suggested saltational evolutionary changes either due to

mutations that affect the rates of developmental process-es or due to alterations in the chromosomal pattern. Particularly the latter idea was widely rejected by the modern synthesis and is disproved today, but the hopeful monster concept based on evo-devo explanations found a moderate revival in recent times. As an alternative to saltational evolution, Dobzhansky suggested that the difference between macroevolution and microevolution reflects essentially a difference in time-scales, and that microevolution changes were simply the sum of micro-evolutionary changes over geologic time. This view became broadly accepted, and accordingly, the term macro-evolution has been used widely as a neutral label for the study of evolutionary changes that take place over a very large time-scale.

Macroevolutionary processes

Speciation :-

According to the modern definition, the evolutionary transition from the ancestral to the daughter species is microevolutionary, because it result from selection (or, more generally, sorting) among varying organisms. However, speciation has also a macroevolutionary aspect, because it produces the interspecific variation species selection operates on. Another macroevolutionary aspect of speciation is the rate at which it successfully occurs analogous to reproduction success in microevolution.

Research topics :-

Subjects studied within macroevolution include.

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- Adaptive radiations such as the cambrian explosion.
- Changes in biodiversity through time.
- Genome evolution, like horizontal gene trasfer, genome fusions in endosymbioses, and adaption changes in genome size.
- Mass extinctions.
- Estimating diversification rates, including rates of speciation and extintion.
- The debate between punctuated equilibrium and gradualism.
- The role of development in shaping evolution, particularly such topics as heterochrony and phenotypic plasticity.