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Q:- Write Notes on NEO DARWINISM

Ans:- Neo-Darwinism is generally used to describe any integration of Charles Darwin's theory of evolution by natural selection with Gregor Mendel's theory of genetics. The term "Neo-Darwinism" marks the combination of natural selection and genetics, as has been variously modified since it was first proposed.

Neo-Darwinism :-

Neo-Darwinism is generally used to describe any integration of Charles Darwin's theory of evolution by natural selection with Gregor Mendel's theory of genetics. It mostly refers to

evolutionary theory from either 1859 (for the combinations of Darwin's and August Weismann's theories of evolution) or 1945 ("modern synthesis"), but it can mean any new Darwinian - and Mendelian - based theory, such as the current evolutionary theory. The term "Neo-Darwinism" marks the combination of natural selection and genetics, as has been variously modified since it was first proposed.

Original use :-

Malthusian competition (geometric population growth, limited resources)

Variation (breeds, races, subspecies)

Mutation (small change in individual characteristics)

Natural selection ("survival of the fittest")

Genetic variation (alleles in individual genes, combining to give continuous variation)

Mendelian inheritance (2 copies of each gene, 1 from each parent)

Early 20th century

Modern synthesis

Several major ideas about evolution came together in the population genetics of the early 20th century to form the so-called modern synthesis, including genetic variation, natural selection and particulate (Mendelian) inheritance. This was at the time called neo-Darwinism.

Darwin's theory of evolution by natural selection as published in 1859, provided a selection mechanism for evolution but not a trait transfer mechanism. Lamarckism was still a very popular candidate for this. August Weismann and Wallace rejected the Lamarckian idea of inheritance of acquired characteristics that Darwin had accepted and later expanded upon in his writings on heredity. The basis for the complete rejection of Lamarckism was Weismann's germ plasm theory. Weismann realised that the cells that produce the germ plasm, or gametes (such

as sperm and eggs in animals, separate from the somatic cells that go on to make other body tissues at an early stage in development. Since he could see no obvious means of communication between the two, he asserted that the inheritance of acquired characteristics was therefore impossible; a conclusion now known as the Weismann barrier.

It is, however usually George Romanes who is credited with the first use of the word in a scientific context. Romanes used the term to describe the combination of natural selection and Weismann's germ plasm theory that evolution occurs solely through natural selection, and not by the inheritance of acquired characteristics resulting from use or disuse, thus using the word to mean "Darwinism without Lamarckism."

Current meaning :-

Biologists, however, have not limited their application of the term neo-Darwinism to the historical synthesis. For example, Ernst Mayr wrote in 1984 that:

The term neo-Darwinism [for the synthetic theory of the early 20th century] is sometimes considered wrong because the term neo-Darwinism was coined by Romanes in 1895 as a designation of Huxley's theory.

Publications such as Encyclopaedia Britannica use neo-Darwinism to refer to current-consensus evolutionary theory, not the version prevalent during the early 20th century. Similarly, Richard Dawkins and Stephen Jay Gould have used neo-Darwinism in their writings and lectures to denote the forms of evolutionary biology that were contemporary when they were writing.