Date: 18/02/...

MON TUE WED THR FRI SAT SUN

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Q.:- Write notes on SOURCES OF HEREDITY VARIATION?

Answer:- For a given population, there are three sources of variation: mutation, recombination, and immigration of genes..... Similarly, immigration cannot provide variation if the entire species is homozygous for the same allele. Ultimately the source of all variation must be mutation.

Heredity :-

Heredity, also called inheritance or biological inheritance, is the passing on of traits from parents to their offspring; either through asexual reproduction or sexual reproduction, the offspring cells or organisms acquire the

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genetic information of their parents. Through heredity, variations between individuals can accumulate and cause species to evolve by natural selection. The study of heredity in biology is genetics.

Overview :-

In humans, eye color is an example of an inherited characteristic: an individual might inherit the "brown-eye trait" from one of the parents. Inherited traits are controlled by genes and the complete set of genes within an organism's genome is called its genotype.

The complete set of observable traits of the structure and behavior of an organism is called its phenotype. These traits arise from the interaction of its genotype with the environment. As a result, many aspects of an organism's phenotype are not inherited. For example, sunburned skin comes from the

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interaction between a person's genotype and sunlight, thus, suntans are not passed on to people's due to differences in their genotype: a striking example is people with the inherited trait of albinism, who do not tan at all and are very sensitive to sunburn.

Heritable traits are known to be passed from one generation to the next via DNA, a molecule that encodes genetic information. DNA is a long polymer that incorporates four types of bases, which are inter-changeable. The Nucleic acid sequence (the sequence of bases along a particular DNA molecule) specifies the genetic information: this is comparable to a sequence of letters spelling out a passage of text. Before a cell divides through

mitosis, the DNA is copied. so that each of the resulting two cells will inherit the DNA sequence. A portion of a DNA molecule that specifies a single functional unit is called a gene; different genes have different sequences of bases. Within cells, the long strands of DNA form condensed structures called chromosomes. Organisms inherit genetic material from their parents in the form of homologous chromosomes, containing a unique combination of DNA sequences that code for genes. The specific location of a DNA sequence within a chromosome is known as a Locus. If the DNA sequence at a particular locus varies between individuals, the different forms of this sequence are called alleles.

History :-

scientists in Antiquity had a variety of ideas about heredity: Theophrastus

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proposed that male flowers caused female flowers to ripen. Hippocrates speculated that "seeds" were produced by various body parts and transmitted to offspring at the time of conception, and Aristotle thought that male and female fluids mixed at conception.

See also :-

- Hard inheritance
- Lamarckism
- Heritability
- Particulate inheritance
- Non-Mendelian inheritance
  - extranuclear inheritance
  - Uniparental inheritance
- epigenetic inheritance
  - Transgenerational epigenetics

Major controversies in the history of inheritance
- Inheritance of acquired characteristics
- Structural inheritance
- Blending inheritance

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