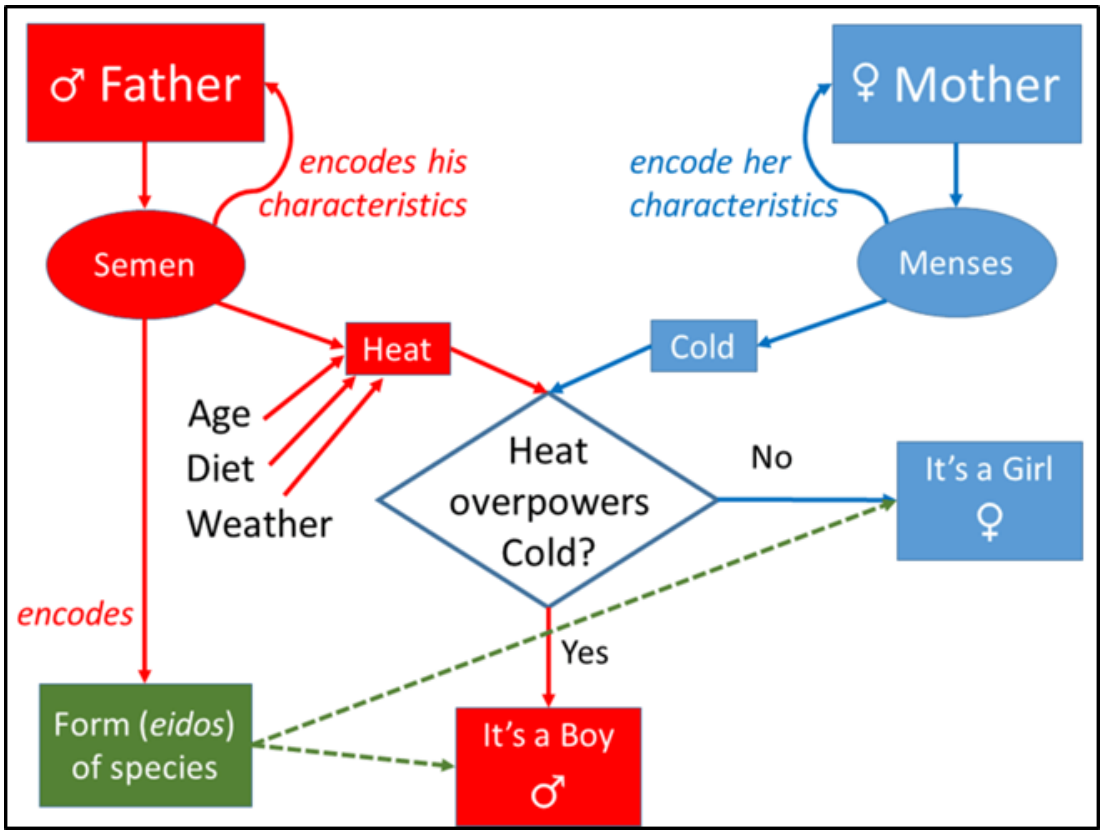
Heredity and Evolution: Definition and Meaning, Aristotle's Model of Inheritance

Definition and Meaning of Heredity

- Heredity can be defined as the transfer of traits from or characteristics from parents to their offspring.
- The passing of the traits occurs through either sexual reproduction or asexual reproduction.
- Heredity is also known as inheritance or biological inheritance.
- Genetics is the study of heredity in biology.
- It is the sum of all biological processes resulting in the genesis of a new organism.

Aristotle's Model of Inheritance

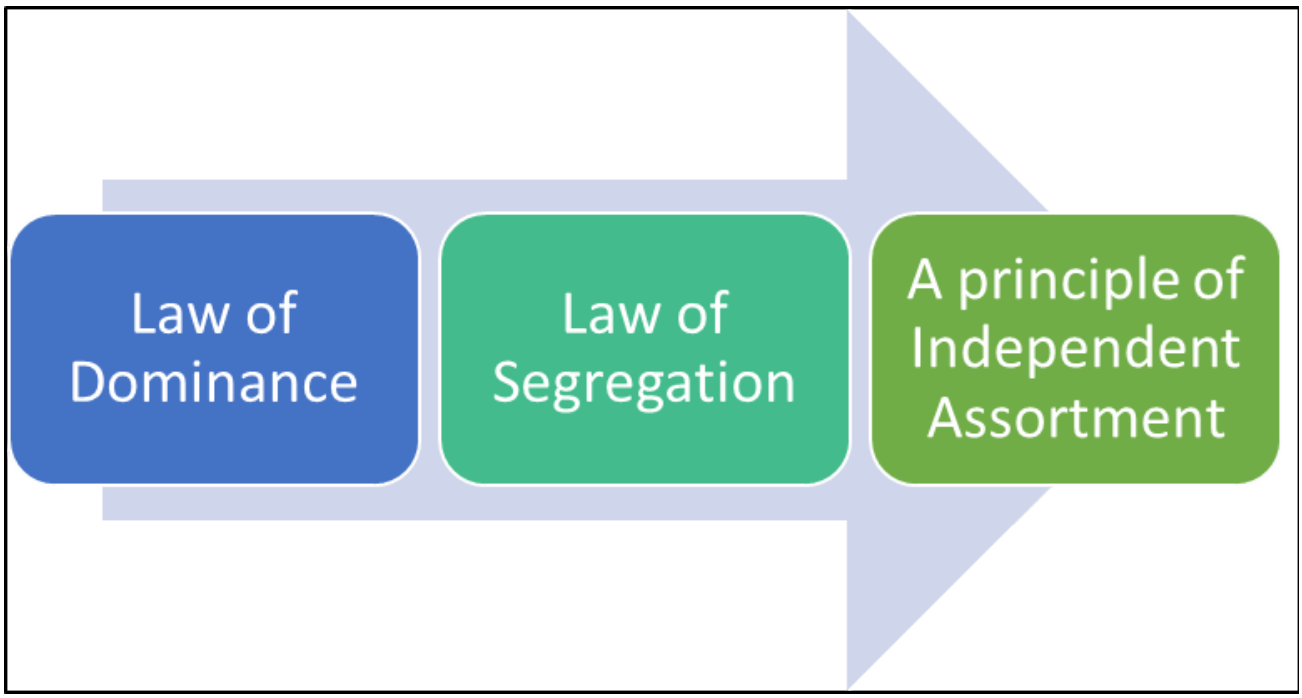


Passing of Traits from the Parents to Their Offspring

- During the sexual mode of reproduction, the traits are passed from both the parents to their offspring through the genes.
- The genetic information is carried out by DNA.
  - Found in the chromosomes of our cells.

Gregor Mendel- Laws of Inheritance

Gregor Mendel was a German Scientist.



Law of Dominance

- This law states that states that in a heterozygote, one trait will conceal the presence of another trait for the same characteristic.
- The dominant allele will be expressed exclusively.

Law of Segregation

- This law states that alleles segregate randomly into gametes.
- Each allele of one parent segregates randomly into the gametes once the gametes are formed.
- Half of the parent's gametes carry each allele.

The Principle of Independent Assortment

- This states how different genes independently separate from one another the moment reproductive cells develop.
- The pairs of homologous chromosomes are divided in half to form haploid cells.

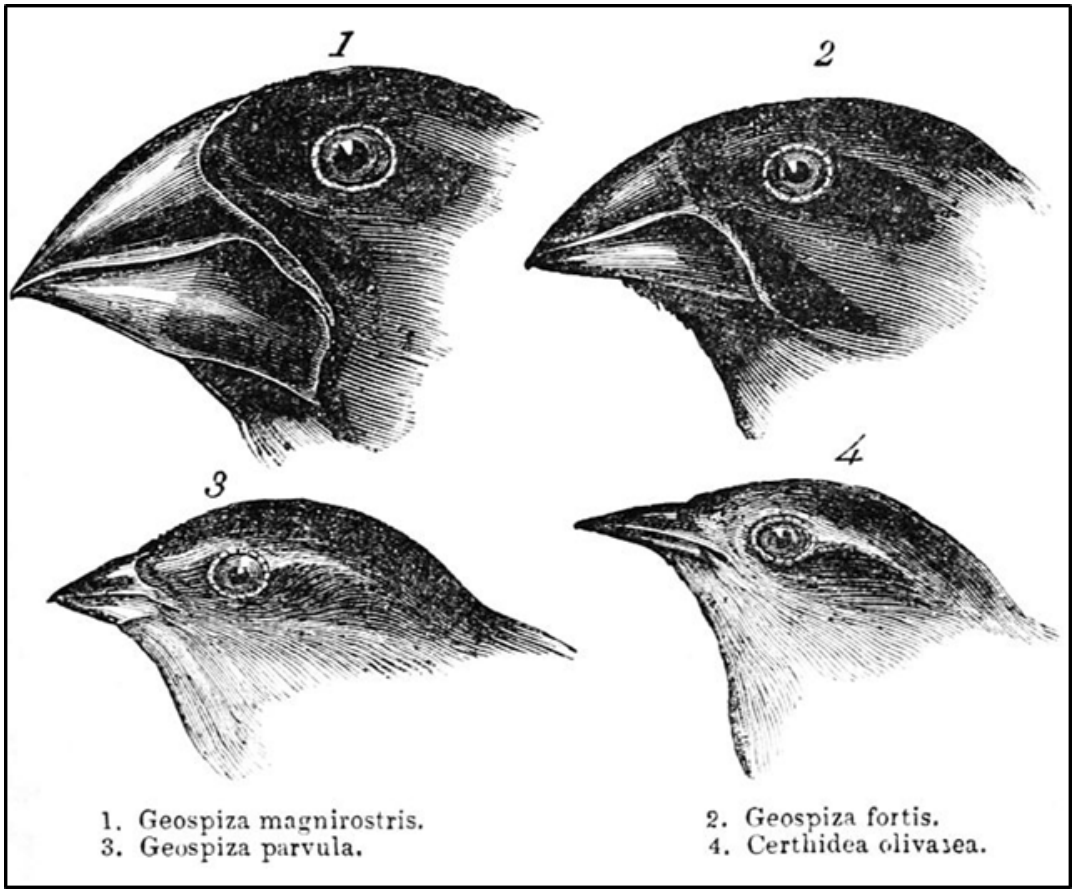
- The separation or assortment of homologous chromosomes is random.

Evolution

- It can be defined as the heritable characteristics of biological populations over successive generations.
- There is a possibility of having breast cancer based on family history.

Darwin's Theory of Evolution

- The theory of Evolution was described by the Charles Darwin, an English Biologist.
- Over a long period, all living organisms change their physical and anatomical structure.
- The change is by natural process and those organisms who do not adhere to it will eventually go extinct.
- The term "Survival of the fittest" was coined by Darwin.



Importance of Evolution

- It helps in understanding how a new species come into existence.
- The way species become extinct and various other aspects such as their habitats and behaviour.
- Helps in understanding an inbuilt tendency for variation during the reproduction process.

- This is caused due to the combining of genetic materials from two parents.

FAQs

Q 1. According to German Scientists, Gregor Mendel, what are the three laws of Inheritance?

Answer:

Three laws of Inheritance according to German Scientist, Gregor Mendel are:

i) Law of Dominance

ii) Law of Segregation

iii) A principle of Independent Assortment

Q 2. What is the study of Heredity in Biology called?

Answer:

Genetics is the study of Heredity in Biology.

Q 3. What is the importance of Evolution?

Answer:

Evolution has so much importance:

i) It helps in understanding how a new species come into existence.

ii) The way species become extinct and various other aspects such as their habitats and behaviour.

iii) It helps in understanding an inbuilt tendency for variation during the reproduction process.