

Examrace

Synthetic Polymers, Heredity, Gene, Animals, Characteristics of Genes

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Synthetic Polymers

- Polymers are composed of very large molecules (macromolecules) formed by linking together many smaller, more simple units called monomers. There can be as few as five or as many as several thousand monomers units in a polymer.
- There are a large number of synthetic polymers prepared and in use. Some of these are polyamides (nylon), polyethylene, propylene, polyvinylchloride, synthetic rubber, cellulose acetate, cellulose nitrate and silicones.

Heredity

Terminology of Genetics

- Gene: The basic unit of hereditary material which is responsible for development of a trait.
- Alleles: Alternatives forms of genes are called alleles, e.g. tall versus dwarf.
- Dominant: The dominant alleles are those traits which show complete expression even in heterozygous state. Dominant alleles dominate the recessive alleles in heterozygous state.
- Recessive: Recessive alleles or traits are those which fail to express themselves in heterozygous state. For example r and y are recessive alleles for wrinkle and green seeds.
- Homozygous: Homozygous is a condition in which an individual possess similar alleles for a particular trait. For example TT for tallness and tt for dwarfness.
- Heterozygous: Heterozygous is a condition in which an individual possess dissimilar alleles for a particular trait. For example Tt for tallness.
- Genotype: Genetic make of an organism is called genotype.
- Phenotype: External appearance or expression of genotype is called phenotype. For example, roundness, wrinkleless of seeds and tall or dwarf plants represent different phenotype.

Gene

Definition: The fundamental unit of heredity, formed as a sequence of bases in DNA.

Characteristics of Genes

- Each gene has a definite position at the chromosome and may occur as alleles.
- The name gene was introduced by Johannsen in 1909 and the structure of DNA was elaborated by Watson and Crick in 1953.
- Genes determine all the structural and functional characters of an individual, like eye colour, skin colour, height, weight, blood group, hair, intelligence, temperament and all others.
- The characters from one generation to other are taken by genes.
- They sometimes change through the process of mutation. This gives variety in characters.
- The accurate structure of the proteins and enzymes in the body is determined by genes.

Chromosomes

- A chromosome is a rod-like portion of the chromatin of a cell nucleus, performing an important part in meiotic cell division, and in the transmission of heredity characteristics. Normally they are constant in number for any species; there are 22 pairs of chromosomes and two sex chromosomes in the human.
- **Types Of Chromosomes:** in higher animals and plants, there are two fundamental types of chromosomes, which are classified on the basis of sex determination these are:
 - Autosomes
 - Sex Chromosomes:
- **Autosomes:** These are paired somatic chromosomes that play no part in sex determination of organisms. These chromosomes are similar in males and females.
- **Sex Chromosomes:** The chromosomes that determine sex in organisms are called sex chromosomes. There are two types of sex chromosomes.
 - X- chromosome
 - Y- Chromosome

Animals

Types of Animals

- **Invertebrates:** Animals having no backbone or vertebral column.
- **Vertebrates:** Animals with backbone or vertebral column.

Classification of Invertebrates: The invertebrates are classified into following categories:

- Phylum Protozoa
- Phylum Porifera

- Phylum Coelentrata
- Phylum Platyhelminthes
- Phylum Nematode
- Phylum Annelida
- Phylum Mollusca
- Phylum Arthropoda
- Phylum Echinodermata

Following are the most common examples of invertebrate animals with their relative phyla:

- Euglena: Phylum Protozoa
- Paramecium: Phylum Protozoa
- Amoeba: Phylum Protozoa
- Sponges: Phylum Porifera
- Hydra: Phylum Coelenterata
- Jelly fish: Phylum Coelenterata
- Tapeworm: Phylum Platyhelminthes
- Ascaris: Phylum Nematode
- Hookworm: Phylum Nematode
- Filaria: Phylum Nematode - Snails: Phylum Mollusca
- Squids: Phylum Mollusca
- Cockroach: Phylum Arthropoda
- Honey bee: Phylum Arthropoda - Mosquito: Phylum Arthropoda
- Butter fly: Phylum Arthropoda

Classification of Vertebrates: Vertebrates have been divided into following five major classes:

- Fishes
- Amphibians
- Reptilian
- Birds
- Mammals

- Some Animals & Their Location
- Blue whale: Found in all oceans
- Panda: China
- Dolphin: In seas
- Porpoises:
- Kangaroo: Australia
- Snow Leopard: Central Asia
- Yak: Central Asia
- Llama: South America
- Ibex: Wild mountain goat
- Cobra: South Asia
- Alligator: N. America
- Tortoise: Water
- Rattle Snake: America
- Lizards:
- Crocodiles:
- Ostrich: Deserts of Africa
- Penguin: Antarctic Region
- Kiwi: New Zealand
- Rhea: South America
- Emu: Australia
- Shark: Found in all oceans
- Trout: Fresh water fish xxiii) Cod:

Scavenger

Scavengers are the animals that Clean up ‘after the other animals by consuming their leavings and sometimes prey on sick or dying animals or consume dead bodies. Scavengers are also called detritus feeders. Vultures, coyotes, jackals, hyenas and wild dogs are scavengers which eat the left over prey or dead bodies of hunted animals.