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Phylum Arthropoda

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General characters of the Phylum Arthropoda

The Phylum Arthropoda includes spiders, scorpions, ticks, mites, crustaceans, millipedes, centipedes and insects.

This is the most successful phylum of animals both in diversity, distribution and in number of species and individuals.

They show remarkable adaptive features and are successfully adapted to life in water, land and in air.



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About 80% of all known animal species are represented in this phylum.

This phylum includes 800,000 extant species and recent estimates put the total number of species in this phylum at about 6 million.

They are found in a greater variety of habitats than any other phyletic group of animals; on top of mountains, at great depths in the ocean and in the icy wilderness of Antarctica.

They can survive great extremes of temperature, toxicity, acidity and salinity.



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General characters

1. Bilaterally symmetrical animals with metameric body split in to tagmata.
2. Body divisible into head, thorax and abdomen. The exoskeleton of arthropods in general hard and strong with flexible outer covering composed mainly of carbohydrate chitin. The exoskeleton functions in protection, attachment for muscles, locomotion and prevention of desiccation. Further, the exoskeleton of cuticle shed at various intervals in some species.
3. Appendages jointed and in some species (crab, lobsters and shrimps) appendages get specialized for walking, swimming and reproduction.
4. The muscular system complex with exoskeleton for attachment.
5. Reduced coelom and most of the body cavity consists of haemocoel filled with blood (Haemolymph).
6. Appendages around the mouth get modified for different methods of feeding.
7. Digestive system complete with mouth, esophagus, stomach, intestine and rectum with associated glands for digestion



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Open circulatory system with dorsal heart, arteries and haemocoel. Body cavity contains blood sinus and is a haemocoel, in which the different organs of the body lie bathed.

9. Specialized respiratory system having a variety of respiratory organs in accordance to the habitats of animals. Marine arthropods (crabs, shrimps) utilize vascularised gills for respiration. Terrestrial forms have book lungs (e.g. spiders) or trachea (e.g. insects).
10. Paired excretory glands (green glands) seen in aquatic crustaceans (shrimps and lobsters) while terrestrial forms have malphigian tubules as excretory organs.
 11. A typical invertebrate nervous system with a brain connected to a ventral solid nerve cord with ganglia. Various sense organs are seen around the head region.
 12. Sensory organs comprising simple eyes (Ocelli), compound eyes (made up of a large number of individual units or Ommatidia), chemoreceptors and tactile receptors.
 13. Sexes separate with internal fertilization, reproduction by oviparous or ovoviviparous; parthenogenesis seen in few forms.



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During development, larval stages seen in most of the arthropods. The free swimming larva undergoes metamorphosis to become an adult.

15. Moulting or ecdysis, a common feature seen in arthropods. Moulting takes place from very young larval stages onwards. After the moult, the inner body increases in size and is able to adjust its expansion due to the softness of the cuticle.



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The Phylum Arthropoda is classified into four sub-phyla as below:

1. Sub-phylum 1 - Trilobitomorpha
2. Sub-phylum 2 - Chelicerata
3. Sub-phylum 3 - Mandibulata
4. Sub-phylum 4 - Arachnida



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Among the above four sub-phyla, only the sub-phylum Mandibulata consists of the organisms of our interests. This sub-phylum is classified into 6 classes as below:

1. Class 1 - Crustacea
2. Class 2 - Diplopoda
3. Class 3 - Chilopoda
4. Class 4 - Symphyla
5. Class 5 - Pauropoda
6. Class 6 - Insecta



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Among the above six classes, only the class Crustacea is primarily marine with few freshwater species. Moreover, this is one of the most important classes as it consists of many commercially important species.