

Q:- write an essay on "origin and evolution of Chordates".

Ans:- The chordates are characterised by the presence of:-

- (i) Bilateral Symmetry and triploblasticity.
- (ii) Dorsal tubular nerve Cord.
- (iii) An elastic rod like structure called notochord composed of vacuolated cells.
- (iv) pharyngeal gill slits (atleast in embryonic stage).
- (v) enterocoelous Coelom.
- (vi) Ventral heart and postanal tail.

The anterior part of the dorsal tubular nerve Cord is modified into brain which is enclosed inside the Cranium and notochord is replaced by cartilaginous or bony vertebral Column (in adult). These are known as Vertebrates (higher Chordates). While rest are called invertebrates (proto-chordates or lower Chordates).

Almost all phyla of invertebrates have been suggested to be the possible progenitor of early Chordates by various workers.

The lower chordates (invertebrate chordates) originated from some non-chordates (invertebrates) have given origin to the vertebrates. The logic of the theories can be summarised as:-

Invertebrates → Invertebrate Chordates → Vertebrate Chordates.

Although these assumptions are not convincing yet they have historical significance. They are as follows:-

- (1) Coelenterate theory.

it is Masterman (1897) suggested this theory. The free swimming bilaterally symmetrical and triploblastic early embryo of Amphioxus has been derived directly from some bilaterally Circular Coelenterates.

<2> Nemertean worm theory:

it is Hubrecht (1887) was of view that the Chordates originated from nemertean worms in the fashion described.

<3> phoronix theory:

This is Masterman (1897) tried to relate the phoronoids with the Chordates on the basis of similarities existing between the Actinotrochea larva of phoronix and the Tornaria larva of Balanoglossus.

<4> Annelid theory:

Dohrn (1875), Semper (1876) and Minot (1897) were of view that the primitive Chordates evolved from the annelids. They based their idea on

<5> Insect theory:

Hilaire (1818) put forward in favour of this theory.

<6> Arachnid theory:

This theory was proposed by Gaskell (1908) and Patten (1912). Limulus is considered as the oldest members of Arachnida.

it resembles structurally Eurypterids which in turn resemble Cephalaspid (Ostracoderm) of the Devonian period. This way
Limulus → Eurypterids → Ostracoderm.