

## Annelids ANNEIDS THEORY —

Dohrn (1875) Semper (1876)  
and Mimot (1897) were of view that  
the primitive evidenced from the  
annelids.

1. Both have common type of body.
2. Both ingest mud during burrowing.
3. Parapodia of annelids are comparable with the paired appendages of the vertebrates.
4. The collar is comparable to clitellum.
5. Both are coelomates.
6. Both have closed type of circulation with longitudinally blood vessels and red coloured blood.

But these differs in some  
aspects such as :-

1. Nerve cord in annelids is mid-ventrally placed solid but in chordates mid dorsally hollow tube.
2. The nature of segmentation is differ.
3. Notochord and gill slits are absent in

annelids.

4. Blastopore forms mouth in Annelids but ~~and~~ anus in ~~the~~ vertebrates.
5. The Coelom is Schizocoelic but in Chordates enterocoelic in origin.

Assemblage ~~results~~ suggest the origin of chordates either from annelids or from the common stock. But differences advocate that these do not constitute a solid basis to establish chordate ancestry.

### e. INSECT THEORY →

Hizaire (1818) put forward following arguments in favour of this theory:

1. The segmented ~~wing~~ <sup>body</sup> ~~parts~~ of insects are vertebral column and legs formed ribs in vertebrates.
2. The dorsal plate of primitive fishes can be compared with the tergum of insects.

3. Cephalization is comparable.

Insects are very specialized in vertebrates. Hence the emergence of vertebrates from such well formed organisms looks to be unjustified.

### f. ARCHANID THEORY →

This was proposed by Gaskell (1908) and ~~Pat~~ Pattern (1912). Limulus is considered as the oldest member of Arch Arachnid. It resembles structurally

Eurypterid (primitive Arachnid) which is resemble cephalopods of the Devonian period. The probable path of ancestry is thought to be :-

Limulus — Eurypterids → Crustaceans (Cephalopoda)

- (i) The fused cephalothoracic ganglionic mass of arachnid can be compared to the brain and cranial nerve of vertebrates.
- (ii) The endocranium of Limulus resembles the primitive vertebrates cranium. Eye are also comparable.

Gaskell assumed that the digestive system of Arachnid has been converted into the nervous system.

Due to lack of adequate evidence in favour of this theory, it is not taken into consideration.

### g. ECHINODERM THEORY →

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Many workers are of view that the chordates have originated from the echinoderms. Both has nervous system, mesodermal skeleton. Embryological level by taken Tornaria larva and Bipinnaria larva are same. MULLER and GATESON suggested that these two evolved from a common stock.

- (i) Both are pelagic and transparent.
- (ii) Ciliated bands are identical in both.
- (iii) Gut is divisible into foregut, midgut

and hind gut in both.

(iv) In both blastopore forms anus.

(v) In both cleavage and gastrulation follow by same way.

But presence of apical plate and eye spot in *Terraria* larva raises the doubt.

g) b) NEOTENOUS THEORY →

Gastang and DeBeer were of view that chordates evolved from ~~echinoderm~~ <sup>DeBeer</sup> larva i.e. auricularia larva. But there is no convincing evidence to prove.

BIO-CHEMICAL EVIDENCE →

Energy rich compounds found in the muscles which supply energy ATP called phosphogenes. They are found in the two forms :-

In invertebrates - In the form of Arginine phosphate

In vertebrates - In the form of Creatine phosphate.

For this evidence echinoderms supports the concept of derivation of chordate from the echinoderms.

~~But~~

Due to Bairington (1965) → the chordates don't evolved directly from the echinoderms. However, there are a view that member of Deuterostomia

(Echinoderms, invertebrate chordates and chordates) originated from a common ancestor having -

1. Bilateral symmetry
2. Triploblastic coelomate body.
3. Coelome with coelomopores
4. External food collections.
5. Free swimming ciliated larval forms

At ~~the~~ present there is a general trend to accept the echinoderm theory means chordata evolved from echinodermata.

TIME OF ORIGIN → on the basis of fossil records it can be stated that the vertebrates originated not later than the beginning of Ordovician period if not long before.

PLACE OF ORIGIN →

there is not direct evidence about the exact site of origin. It is assumed that invertebrate chordate evolved in sea from echinoderm as both are marine with all possibilities that the place of origin lies in the river system very near to the sea. This fact is based on the thinking that the effective locomotory power has enable in tadpole larvae to make an invasion in the river system.

Conclusion → However the origin of the Chordates is doubtful and definite conclusion has up to the present time been concluded. As such no single theory is finally accepted due to lack of fossils of ancient forms of pre chordates.