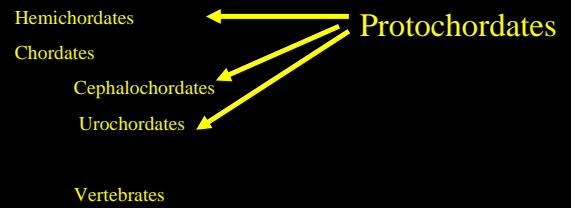
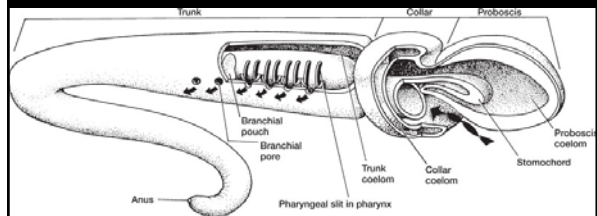


PROTOCHORDATES

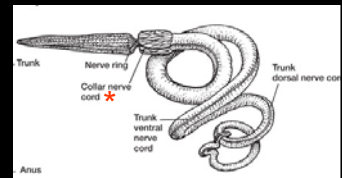
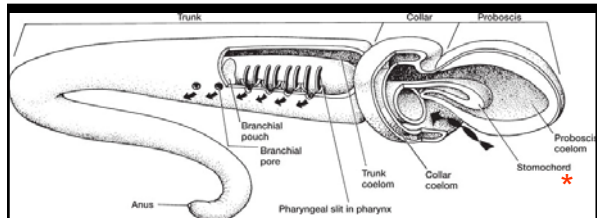
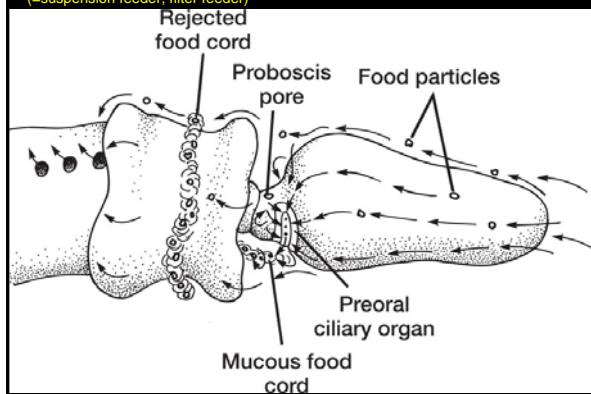


- 1) Notochord
- 2) Dorsal, hollow nerve cord
- 3) Pharyngeal slits
- 4) Postanal tail
- 5) other

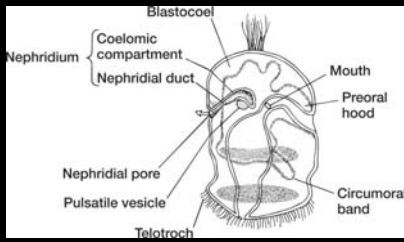
Hemichordate—acorn worm



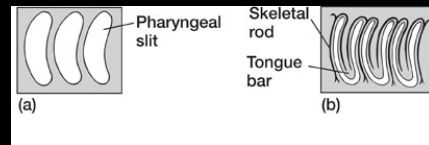
Ciliary Mucous Feeder (=suspension feeder, filter feeder)



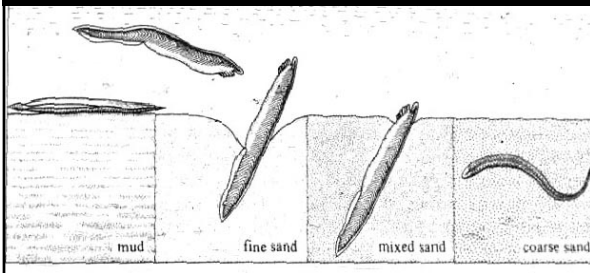
Hemichordate—tornaria larva



Hemichordate



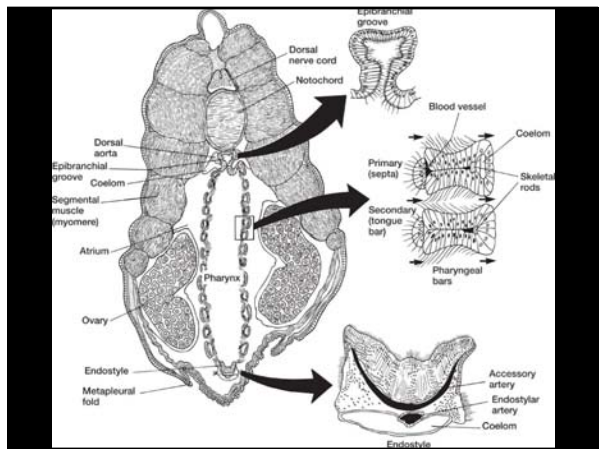
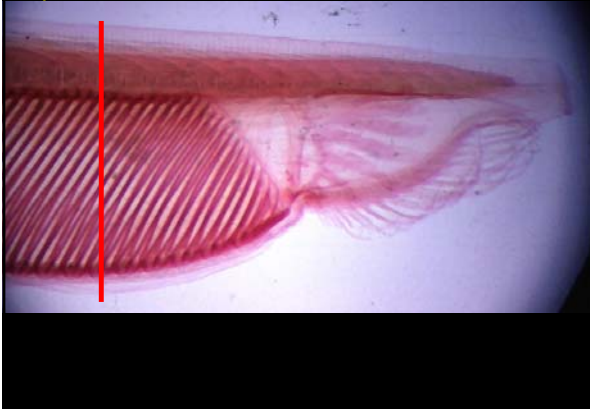
Cephalochordate—amphioxus

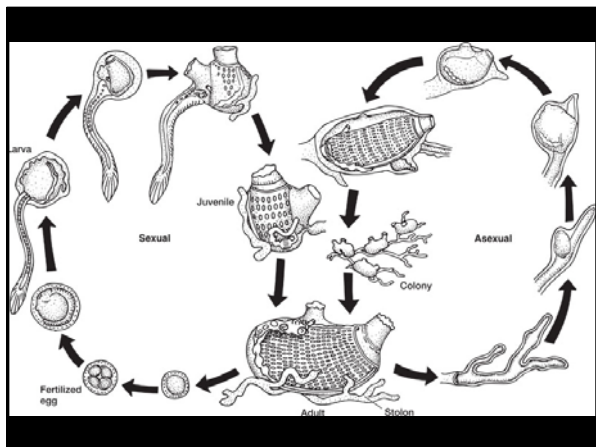
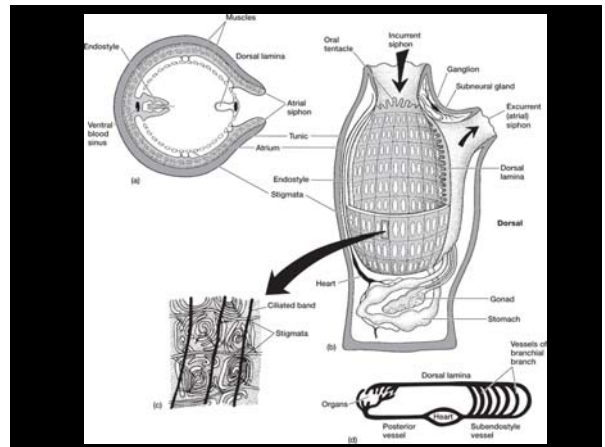
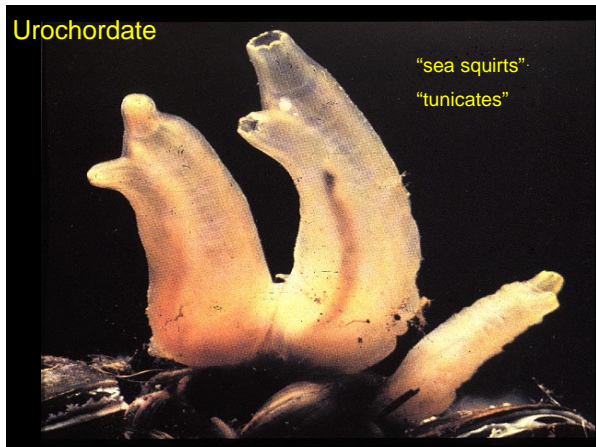
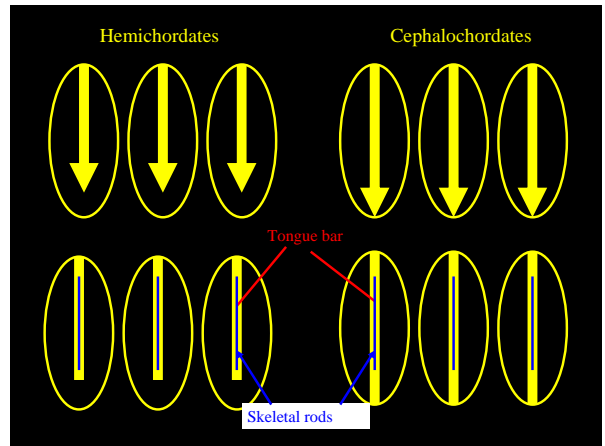
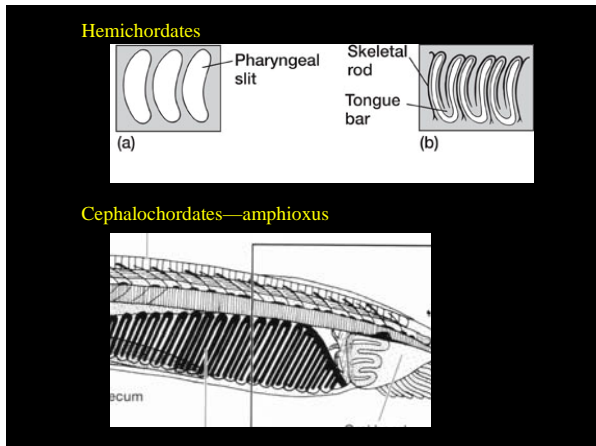


Cephalochordate—amphioxus



Cephalochordate—amphioxus

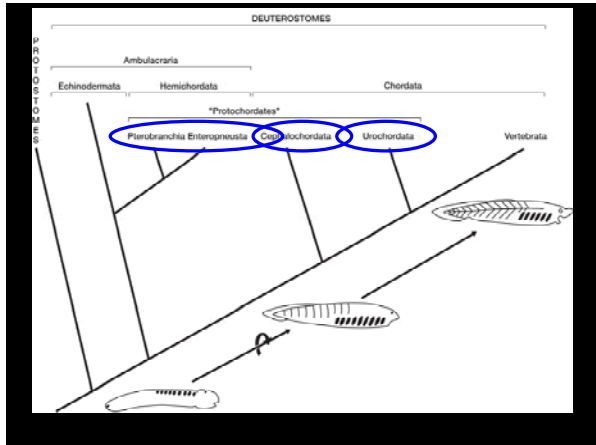
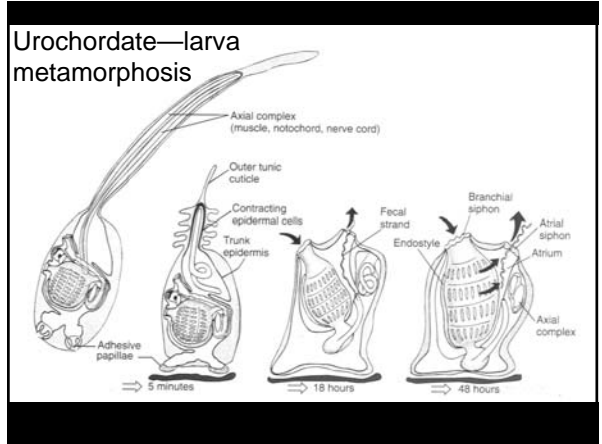




Urochordate—larva

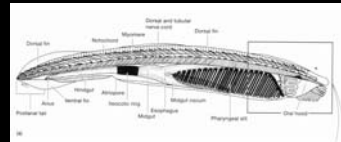


Urochordate—larva metamorphosis

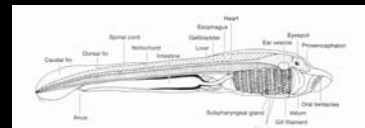


Amphioxus related to vertebrates?

Amphioxus



Ammocoetes larvae (Lamprey)



Vertebrate—lamprey



Lamprey larva—ammocoetes



Lamprey larva—ammocoetes



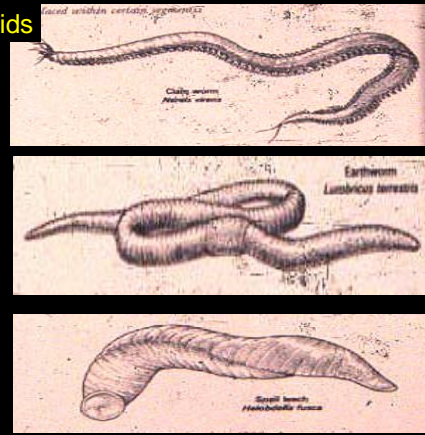
Origin of Chordate Body Plan

Origin of Chordate Body Plan



Hubrecht (1883)

Annelids



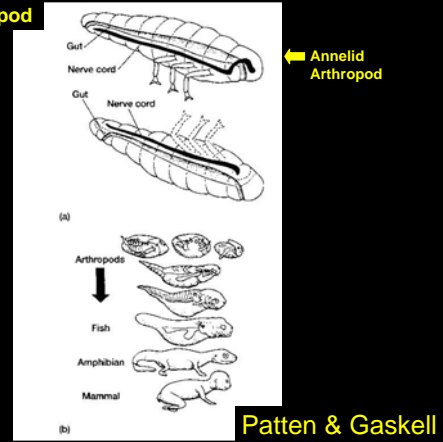
Arthropods



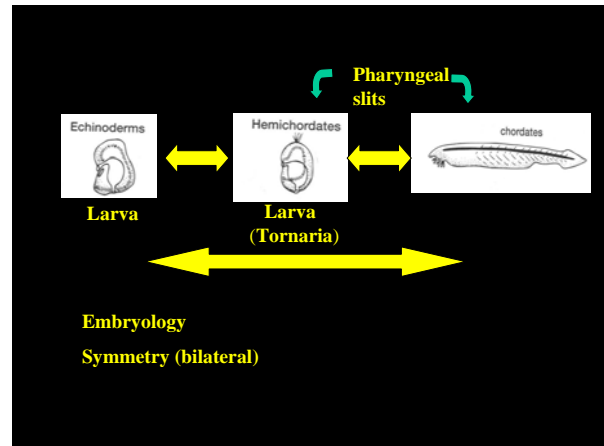
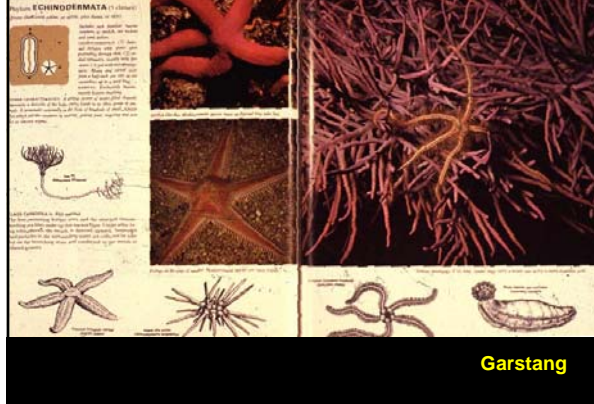
Annelid/arthropod



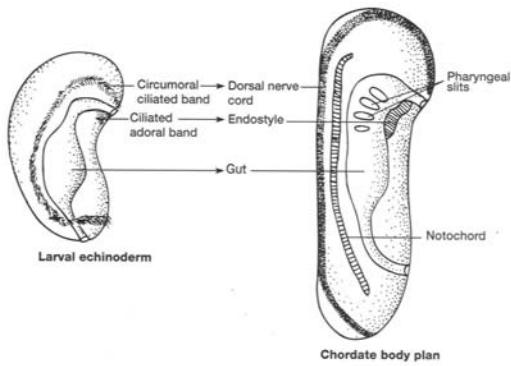
Vertebrate



Echinoderms



Garstang's Mechanism



Selective Advantages

If larva gets BIGGER,

Mode of Locomotion

- 1, 2, 4 Cilia
- 1, 4, 16 Segmental muscles, notochord
- 1, 8, 64

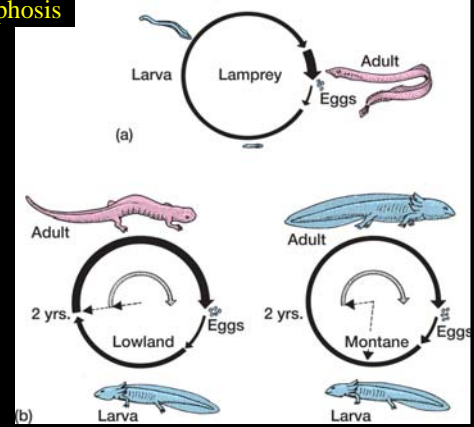
Mode of Feeding

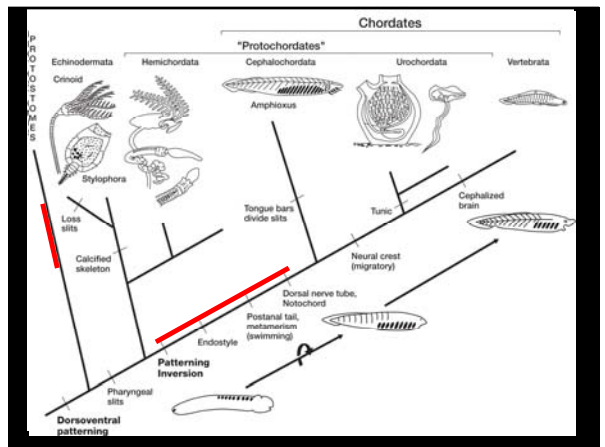
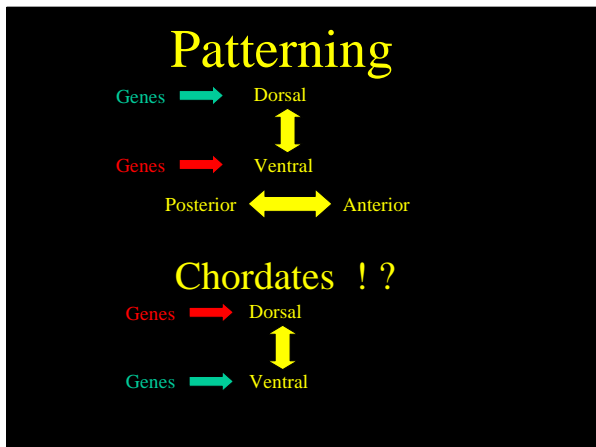
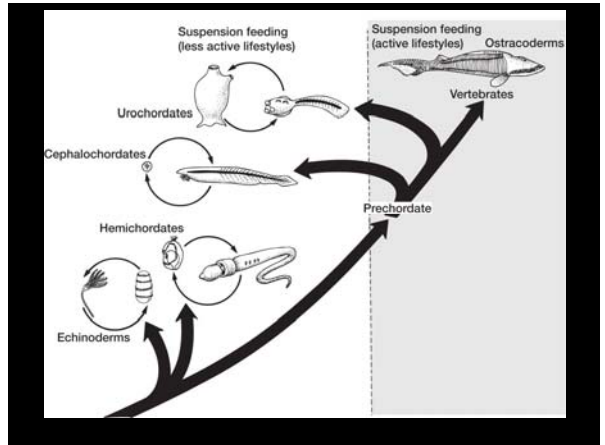
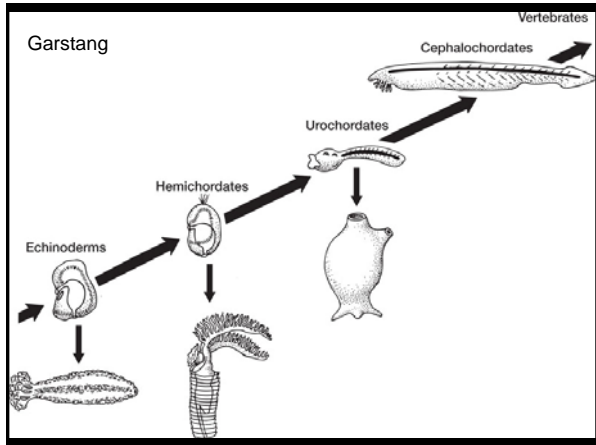
- Adoral band → Endostyle
- Water → Pharyngeal slits

But,
Larval stage

Paedomorphosis
Juvenile + form

Paedomorphosis





Footnote

Paedomorphosis

