

Phylum Hemichordata

(acorn worms & graptolites)

85 species

worm-like deuterostomes

hemichordates share characteristics with both
echinoderms and chordates

share 2 significant features with Chordates:

pharyngeal gill slits

dorsal nerve cord

Once thought they were chordates but defining
characteristic, notochord, not present as was originally
thought

widely distributed but secretive

most are sedentary or sessile bottom dwellers

usually in shallow waters

some are colonial in tubes

2 main classes, similar embryos but very different
adult forms:

Enteropneusts (acorn worms)

Pterobranchia (graptolites)

Enteropneusts (acorn worms)

mucus covered wormlike body divided into three regions:

tonguelike **proboscis**

most active part of the animal

short **collar**

long **trunk**

head and collar resemble acorn

trunk can be over 2 M long

very soft and easily broken

live in U – shaped burrows

some live under rocks and seaweeds

Movements

burrowers use hydrostatic proboscis to excavate a burrow

Feeding and Digestion

all are ciliary mucus feeders

proboscis probes sediment and collects food particles in mucous strands

cilia carry particles to groove at edge of collar

food is directed to mouth

some feed like earthworms

by ingesting mud or sand then gut extracts organic debris

water swallowed while feeding exits through

pharyngeal slits (=gill slits, but not really for respiration)

Respiration

paired row of **pharyngeal slits** (=gill slits) just behind collar

cilia keep a current of water flowing through slits

no gills but gas exchange occurs across skin as water is passed through **pharyngeal slits**

Circulation

open circulatory system

middorsal vessel

leads to networks of blood sinuses

colorless blood doesn't carry oxygen well

mainly seems to have excretory function

Nervous System

dorsal and ventral nerve cord

dorsal cord is partly hollow as in chordates

the skin contains a network of nerve fibers

Reproduction & Development

most species reproduce **only sexually**

only 1 species is known to reproduce asexually

separate sexed = **dioecious**

external fertilization

direct development in most

some produce **tornaria larva**

very similar to bipinnaria larva of echinoderms

Pterobranchia (Graptolites)

~20 living species

sedentary, colonial

small; individual zooids 1 - 7 mm

zooids live in colonies inside collagenous tubes

zooids not interconnected

external appearance they look more like
ectoprocts

tentacles with cilia for gathering = **lophophore**

graptolites are important index fossils for geologists

Body Form

body of **proboscis**, **collar** and **trunk**

Reproduction

some are **dioecious**

many are hermaphrodites