

Phylum Brachiopoda (Lamp Shells)

335 living species; 30,000 fossils

filter feeders with hard protective shell

some resemble ancient roman lamp

mostly, sessile, bottom dwelling animals (benthos)

not colonial like other lophophorates

most prefer shallow waters; a few deeper forms

most live attached to rocks or firm substrate

some (eg. *Lingula*) live in vertical burrows in sand and mud bottoms

also an ancient group with extensive fossil record
→ flourished in palaeozoic seas

were one of the dominant phyla after the Cambrian explosion

→ had hard protective shell as the number of predators were increasing

most died out in great Permian extinction

only 1% of species alive today

[outcompeted by bivalves?]

one genus, *Lingula*, alive today, dates back to Ordovician (450MY ago)

→ may be oldest "living fossil"

modern forms are usually 5 - 80 mm

some fossils up to 30 cm

most live specimens are dull yellow or gray
a few are orange or red

resemble bivalve molluscs

→ until mid 1800's was classified with them

have calcareous shell and mantle

but resemblance is only superficial:

→ the two valves are dorsal/ventral

→ ventral valve is typically larger

→ prominent lophophore as feeding organ

→ most are attached to substrate by thick **pedicel** on ventral valve

Shell

shell is secreted by mantle

the smaller dorsal valve fits over larger ventral valve

valves may be ornamented with growth lines, fluting, ridges, spines

has hole for **pedicel**

pedicel attaches animal to substrate

is long, fluid filled

muscular in some; not muscular in others

a few species have completely lost pedicel

Mantle

secretes shell

often bears long chitinous **setae**

may be for defense

Feeding and Digestion

brachiopods are **filter feeders** like other lophophorates

Most of the **body** is in the posterior part of shell while **lophophore** fills anterior

tentacles of lophophore capture food collected by ciliary water currents

ciliated groove brings food to mouth

feed on algae and organic detritus

complete digestive tract

among lowest rates of metabolism of all animals

→ can survive long periods without oxygen

→ minimal food requirements

Circulation

circulatory system with heart

some cells in "blood"; function uncertain

may be to move nutrients around

Excretion

system of **metanephridia**

Nervous System and Senses

most sensory receptors are on mantle margins

Reproduction and Development

almost all are dioecious

produce temporary gonads

gametes discharged through nephridia

most fertilization is external

only a few species brood their eggs

direct development in some, free-swimming larvae in other species

eg. *Lingula*

eg. *Terebratula*