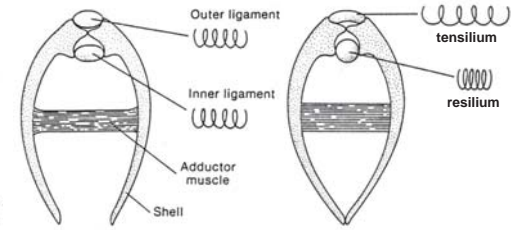
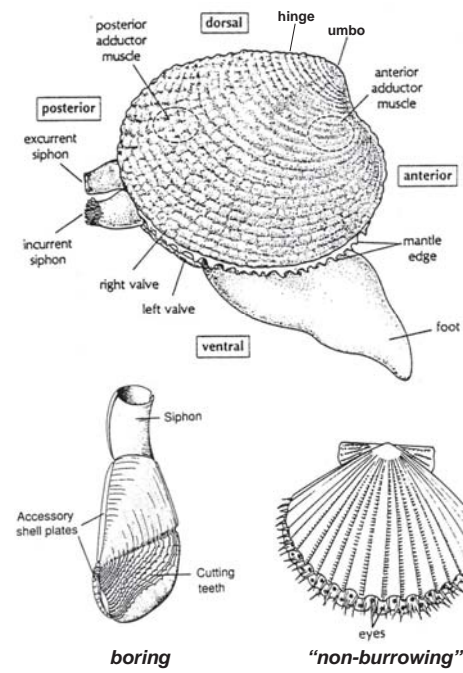
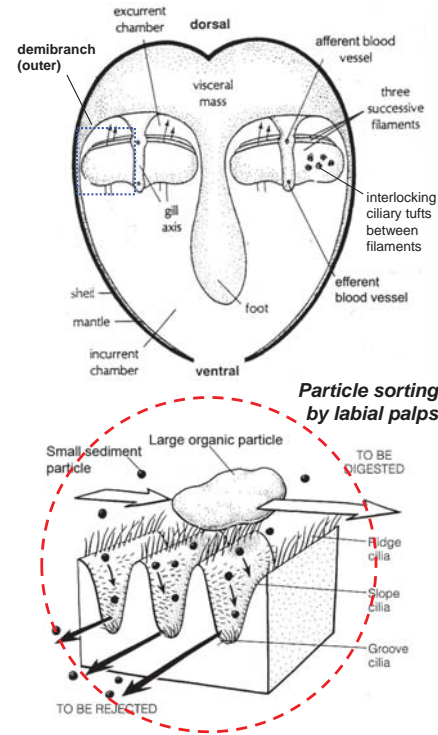
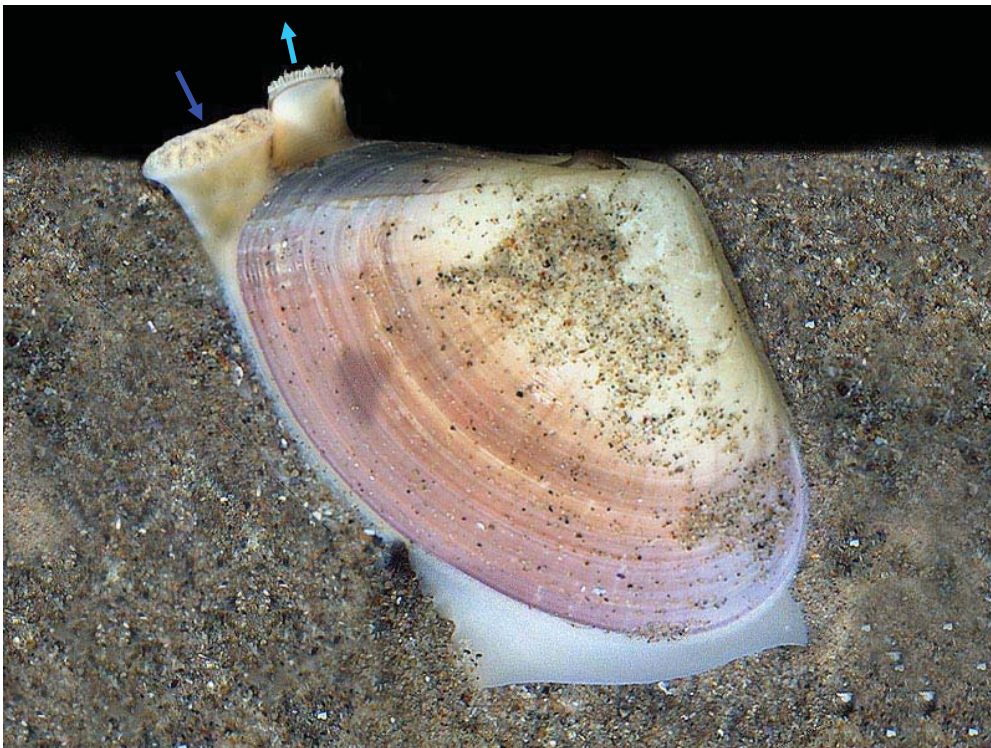
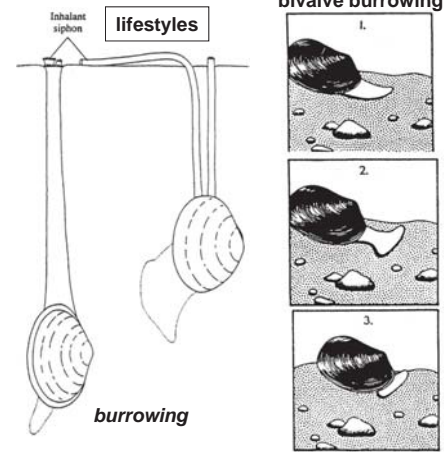




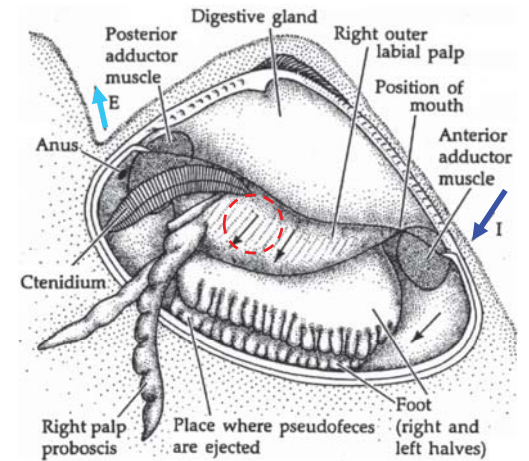
Cl. Bivalvia: body orientation



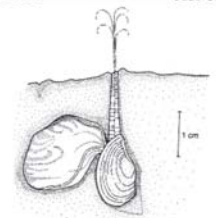
Use of an anchor in bivalve burrowing

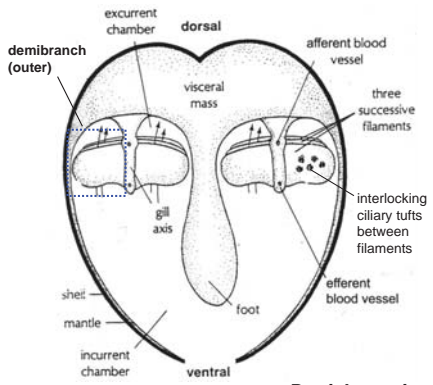


Bivalve "subclasses": Protobranchs

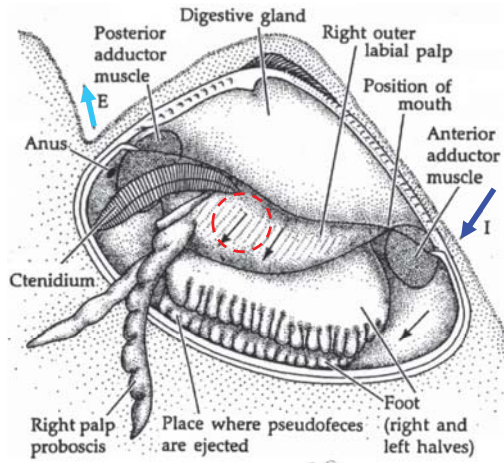


Separate feeding and respiratory functions

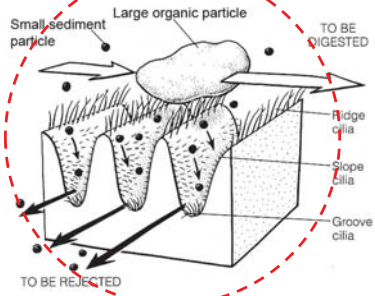




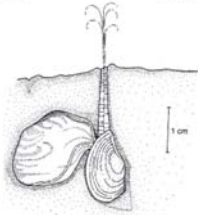
Bivalve "subclasses": Protobranchs



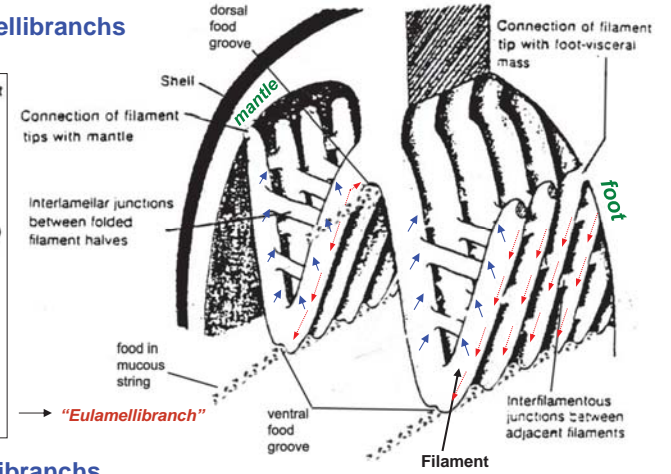
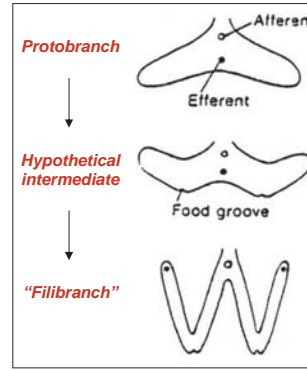
Particle sorting by labial palps



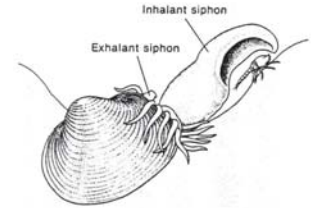
Separate feeding and respiratory functions



Bivalve "subclasses": Lamellibranchs



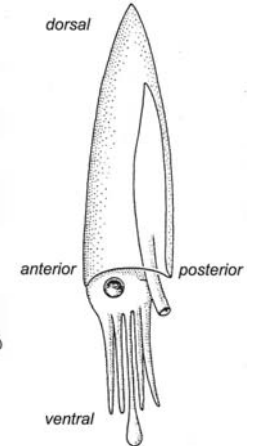
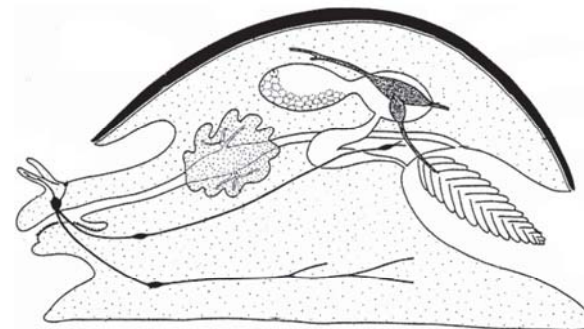
Bivalve "subclasses": Septibranchs



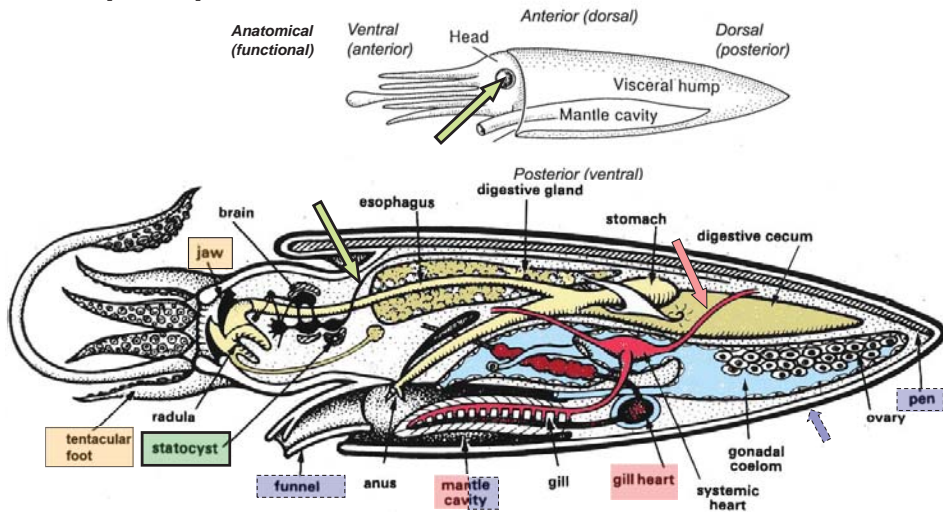
Cl. Cephalopoda



Cl. Cephalopoda



Cl. Cephalopoda



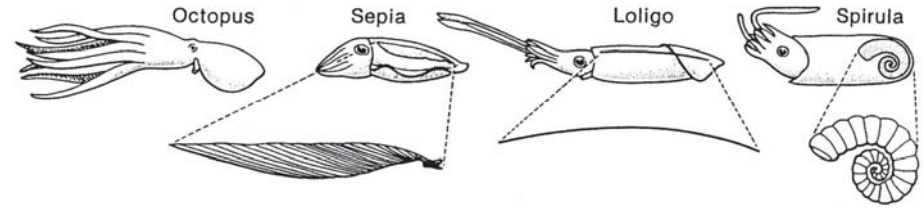
Circulatory/Respiratory: closed circulation, branchial hearts, muscular ventilation

Locomotory: shell reduction, fusiform shape, mantle fusion, funnel, (mantle fins)

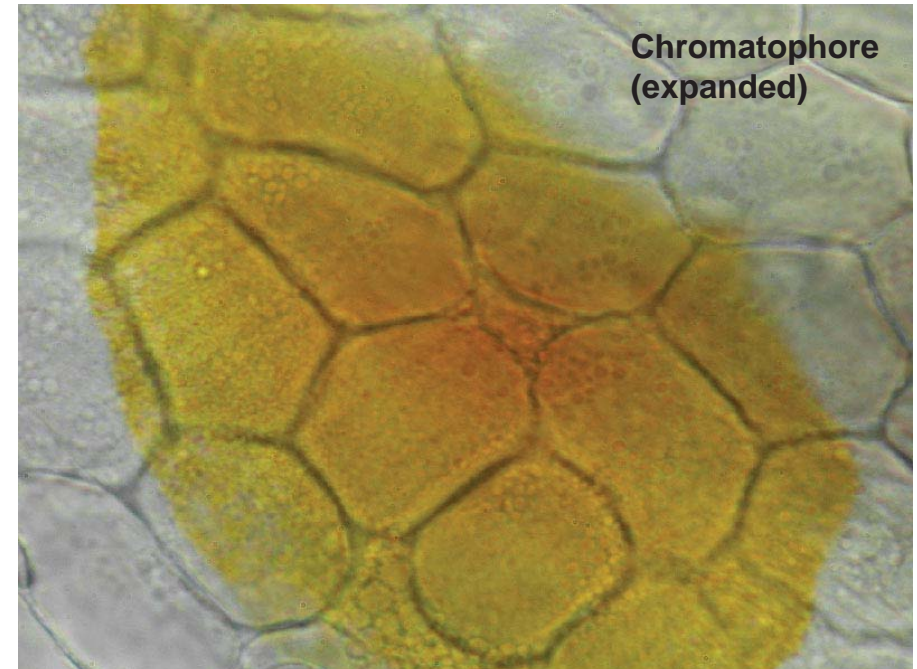
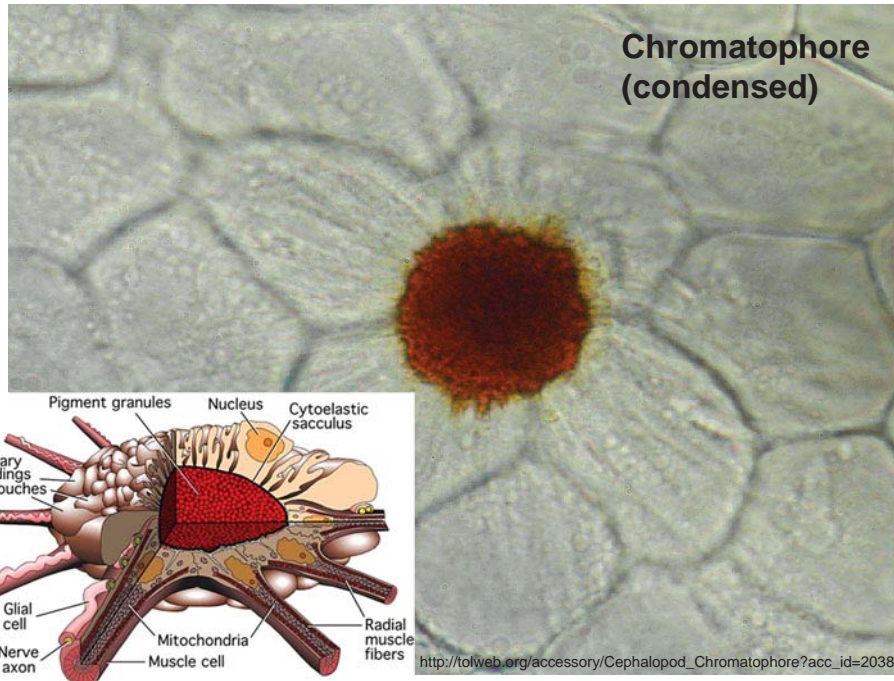
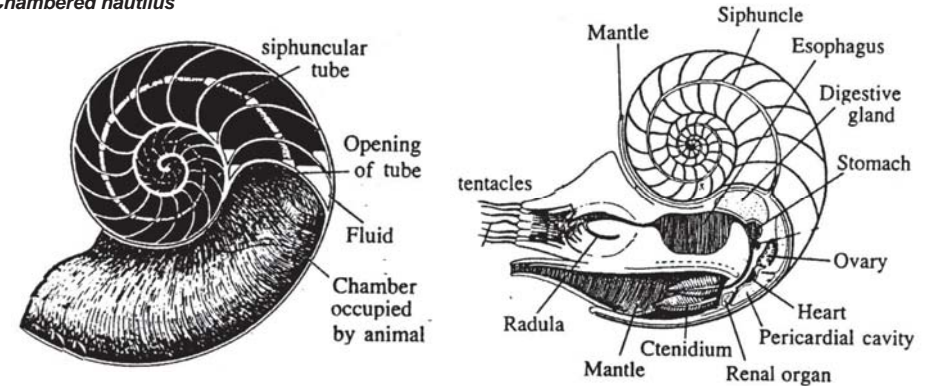
Feeding: beak, tentacular foot

Nervous: giant axons, statocyst, (camera eye)

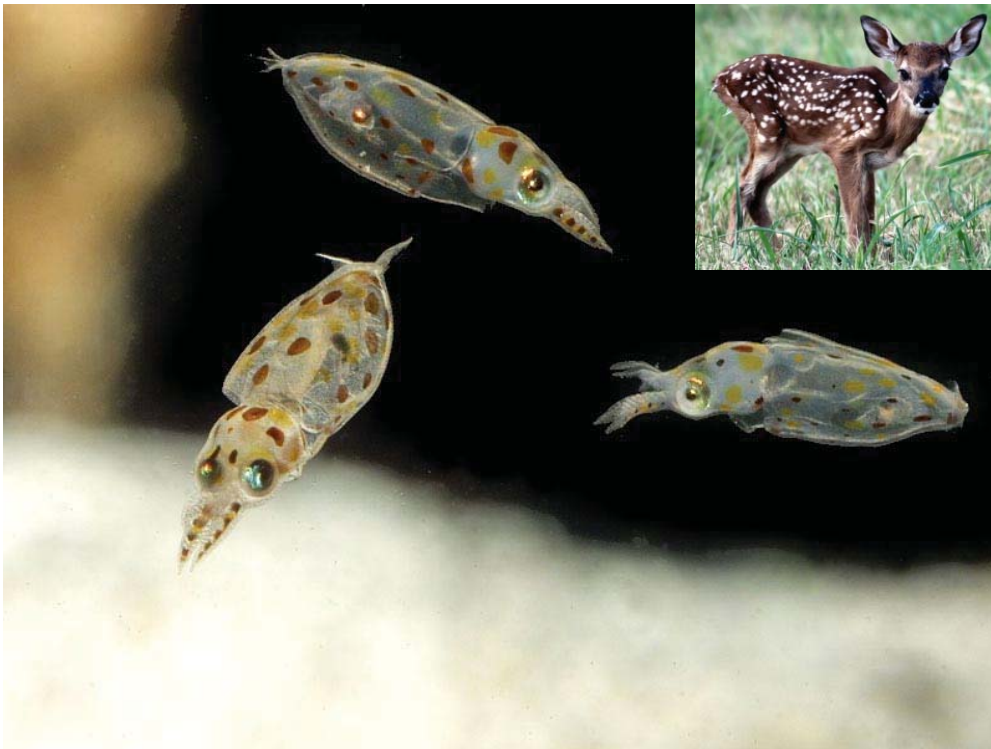
Internalization and reduction of the cephalopod shell



Chambered nautilus



http://tolweb.org/accessory/Cephalopod_Chromatophore?acc_id=2038



Plasticity of skin appearance

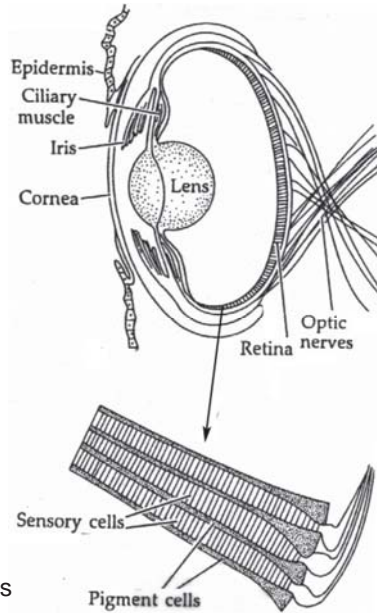
Chromatophores (pigment) reflection

Iridophores (polarization) refraction

Photophores (light) production

through polarizing filter

The cephalopod eye: an example of convergence?



Some differences from vertebrate eye:

- position of optic nerves relative to photoreceptors
- focusing mechanism
- polarized vision—orientation of pigment and sensory cells

Mollusc giants!



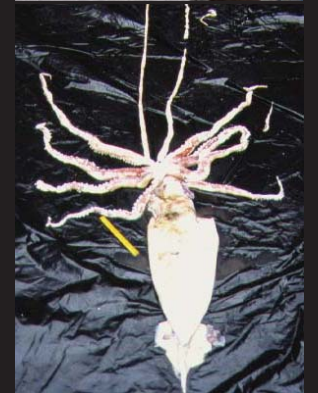
Cryptochiton stelleri
14", 4 lbs.



Tridacna maximus
50", 750 lbs.



Mesonychoteuthis hamiltoni
1000 lbs.



Architeuthis princeps
40', 600 lbs.
15 lb. eyeball (volleyball-size)



Syrinx auranus
40", 40 lbs.



Modern-day nautilus



Extinct ammonites
(up to 4.5 m-diam!)

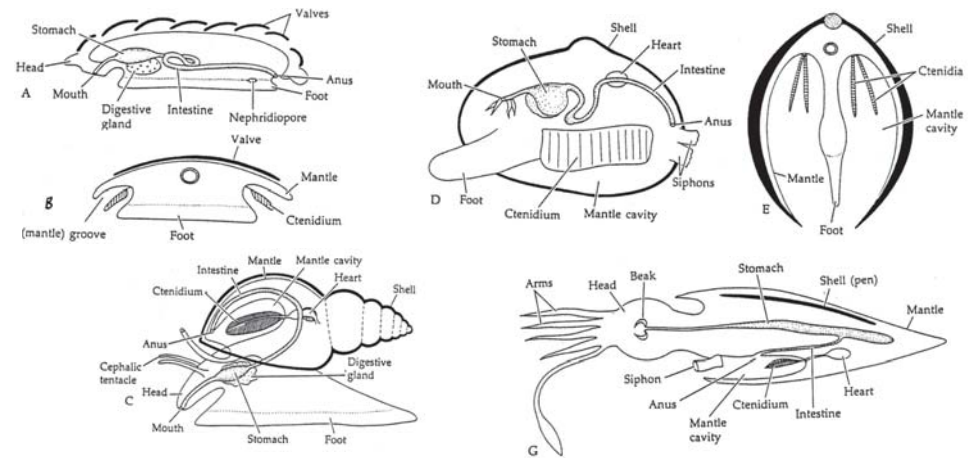


Figure 13
Modifications of the shell, foot, gut, ctenidia, and mantle cavity in five classes of molluscs. A-B, Lateral and cross sections of a chiton (class Polyplacophora). C, Side view of a small clam (class Gastropoda). D-E, Cutaway side view and cross section of a clam (class Bivalvia). F, Lateral view of a trunk shell (class Scaphopoda). G, Lateral view of a squid (class Cephalopoda). In cephalopods the foot is modified to form the siphon and at least parts of the arms.

Bivalve subclasses (=grades of construction): (A) Protobranch, (B) Lamellibranch, (C) Septibranch.

