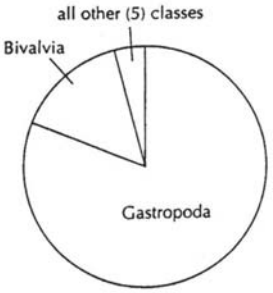
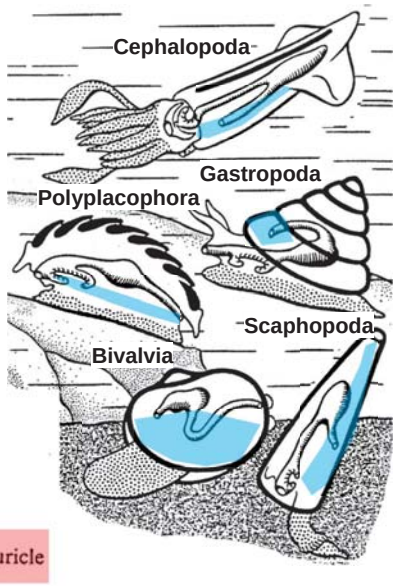
Ph. Mollusca

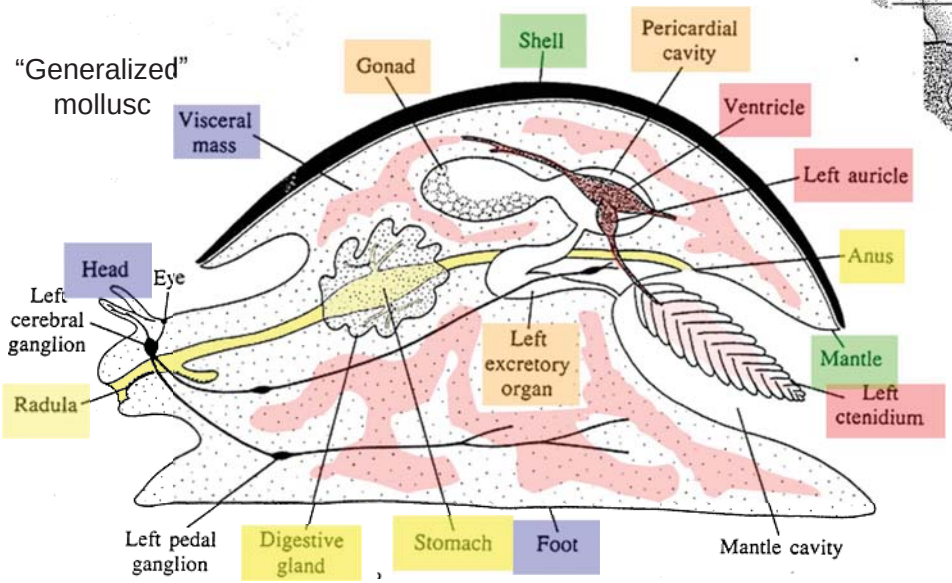


The molluscan body plan has been modified in the various groups. In this diagram, the digestive tract is shaded, the foot is stippled, and the shell is marked by a heavy black line. The squid is most readily compared to the other molluscs when oriented with the head and foot down.

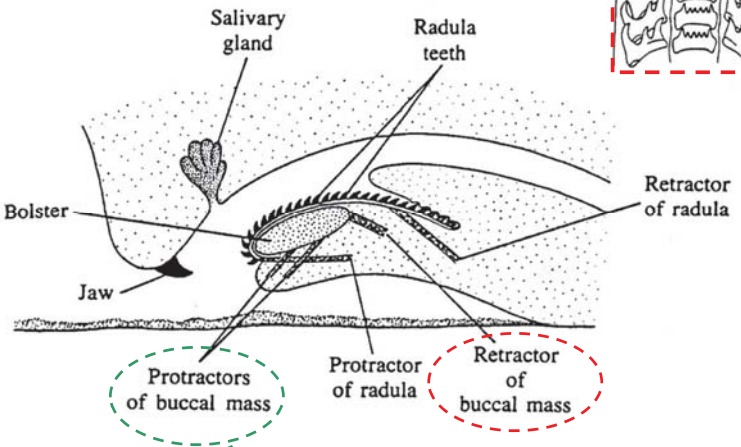
- digestive tract
- foot
- shell
- mantle cavity

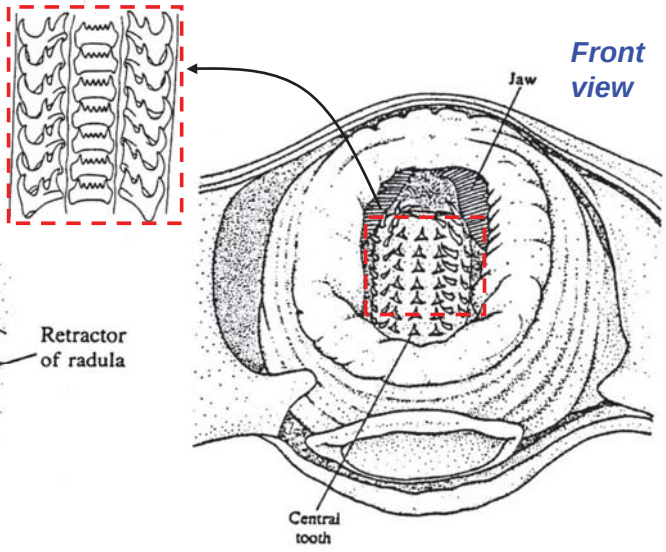


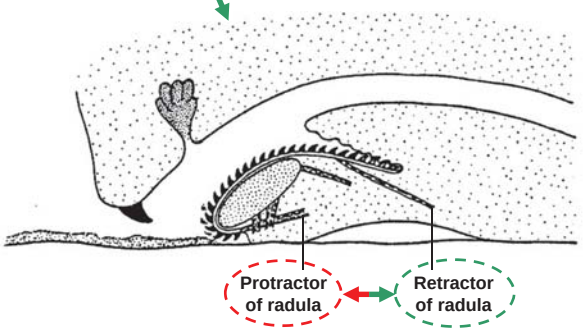
"Generalized" mollusc

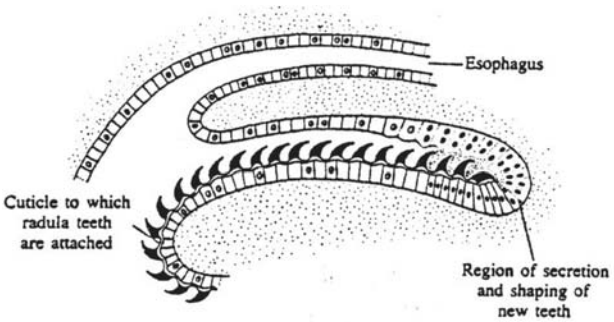


The molluscan radula



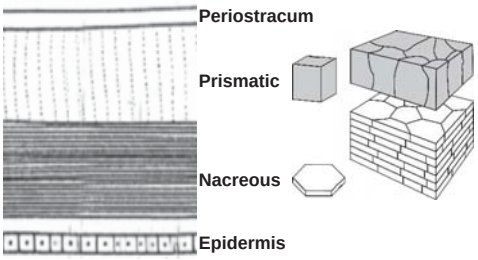




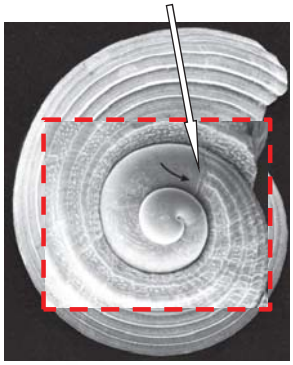


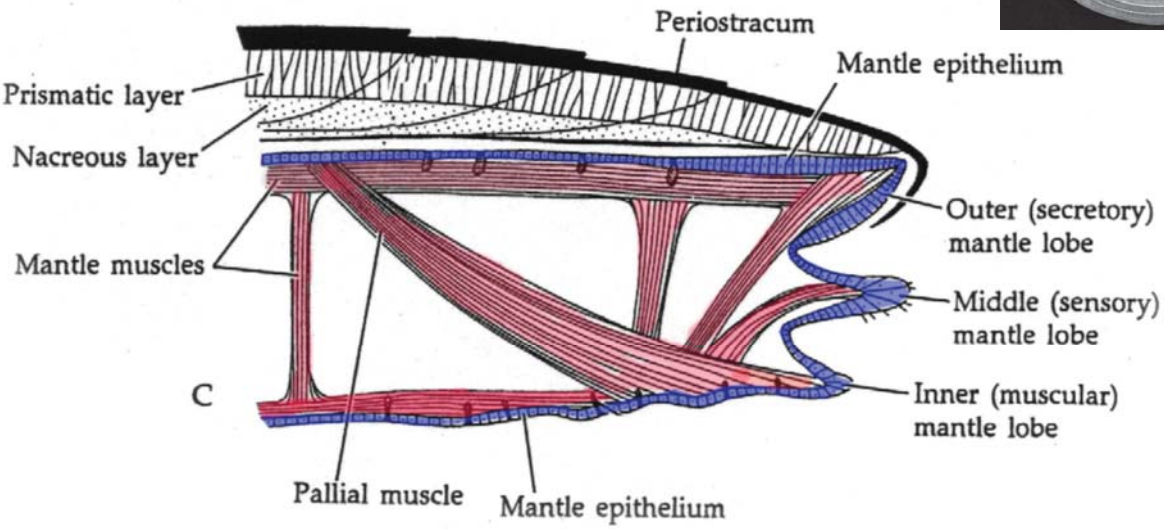
The molluscan shell

$CaCO_3$ and conchiolin

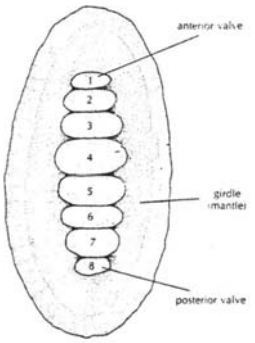


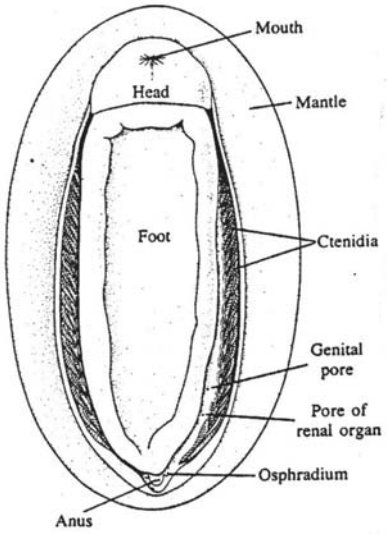
larval-to-juvenile transition!

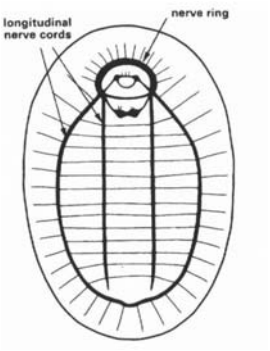


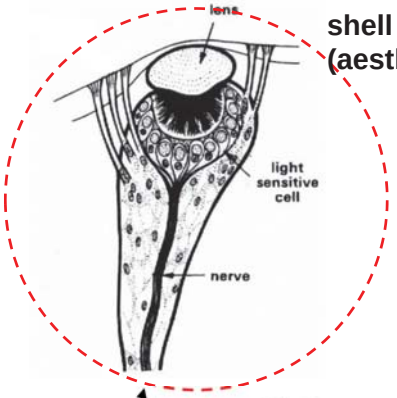


Cl. Polyplacophora

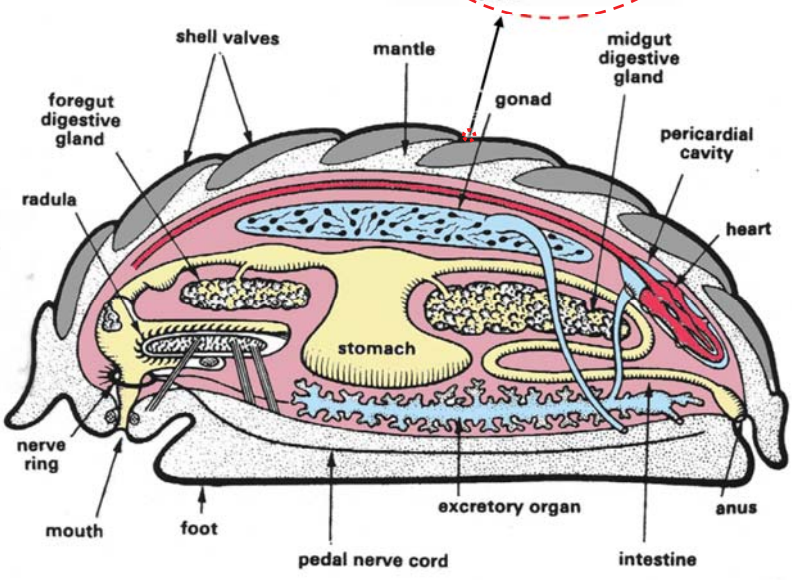




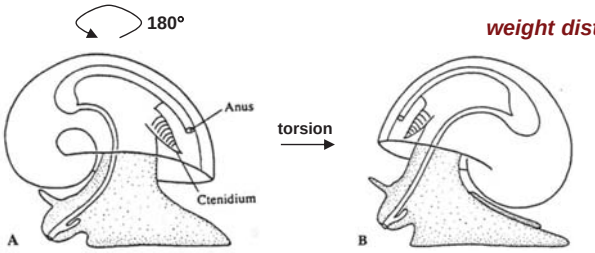




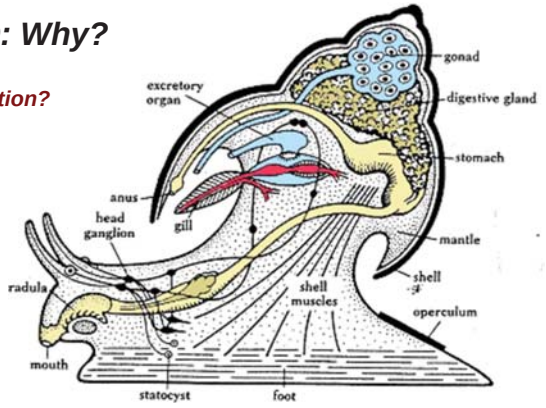
shell eye (aesthete)



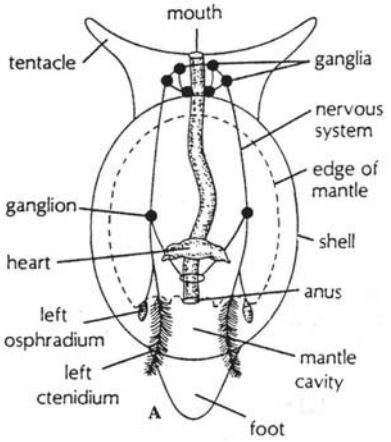
Consequences of gastropod torsion *Q: Why?*



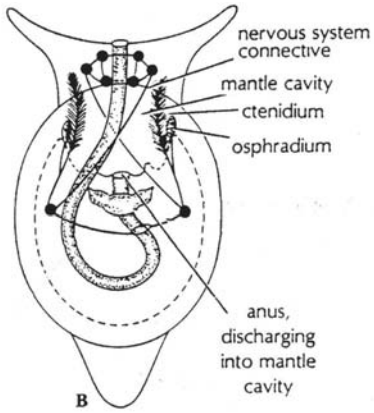
weight distribution?



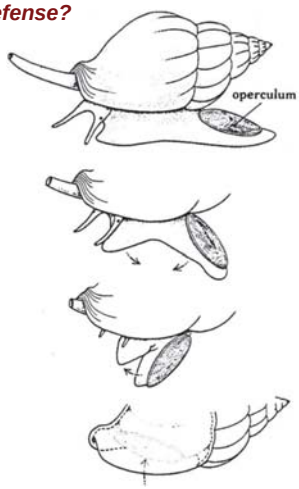
"Pre-torsion"



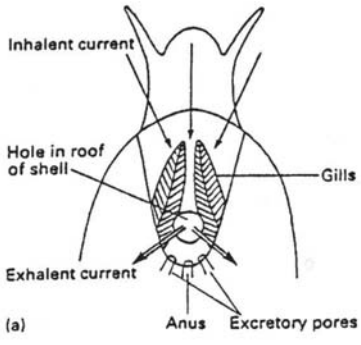
"Post-torsion"



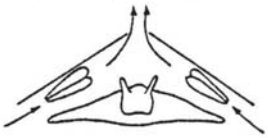
defense?



Consequences of gastropod torsion
water currents, gas exchange, and defecation



Subcl. Prosobranchia
O. Archaeogastropoda
(keyhole limpet, abalone)



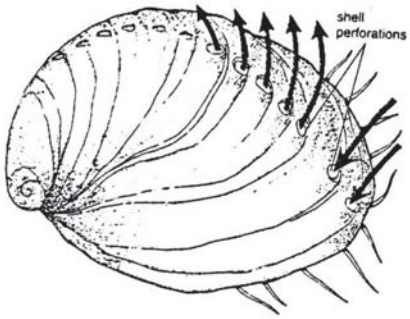
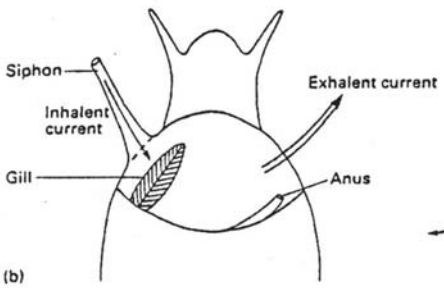
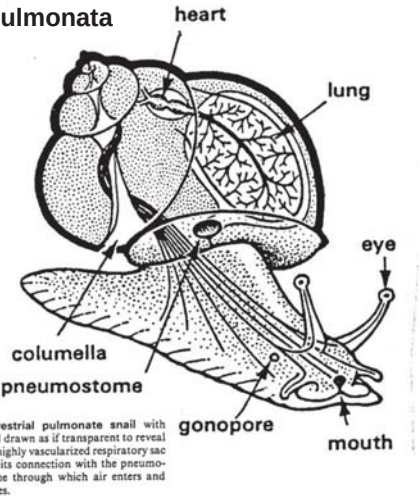


Fig. 5.14 Two modifications of the path of the respiratory water current in gastropods, necessitated by torsion: (a) the exhalent current leaving via a dorsal hole in the shell; (b) loss of the right ctenidium and production of a cross-directed current, the anus being displaced in the direction of the current.

Other prosobranch orders



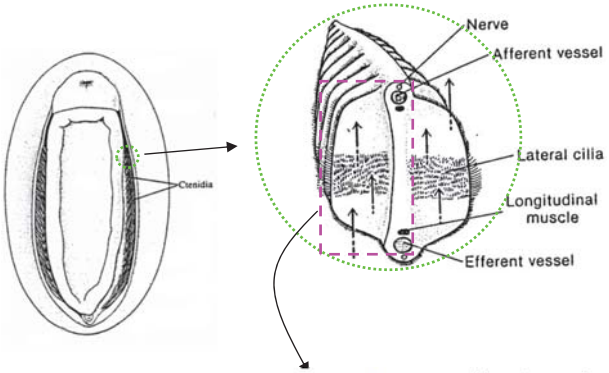
Subcl. Pulmonata



Terrestrial pulmonate snail with shell drawn as if transparent to reveal the highly vascularized respiratory sac and its connection with the pneumostome through which air enters and leaves.

Counter-current gas exchange (in molluscan ctenidia)

(alternative diagrams p. 209)



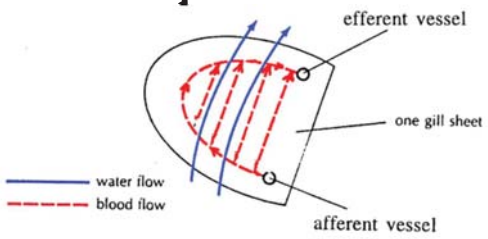
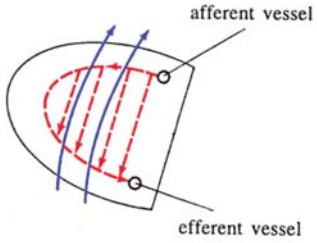
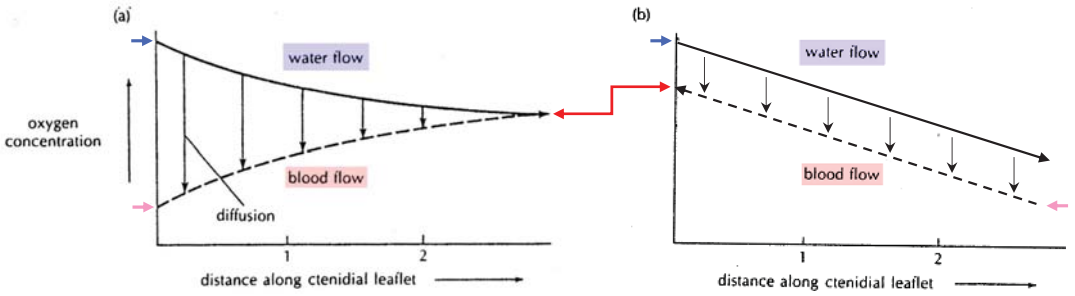


Figure 14.15. Changes in O_2 concentration for cases of (a) water and blood running in the same direction and (b) countercurrent exchange. Note the relative positions of the afferent vessel, which carries O_2-depleted water from the body tissues to the gill, and the efferent vessel, which carries O_2-enriched blood to the heart and then to the body tissues.





Gastropod creeping locomotion

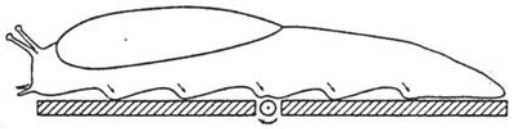
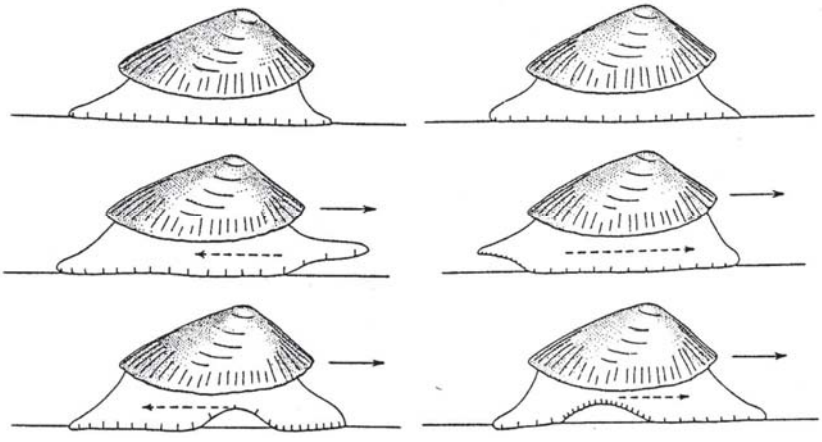


FIGURE 13.18 Diagram showing the waves of muscular activity in the foot of a slug. The roller is turned by the waves as they impinge on it.

Two forms of "creeping" locomotion used by gastropods and chitons. (1) How can waves that move in opposite directions both create forward movement? (2) Which types of muscles must be used, and in what sequence, to achieve each type of wave?



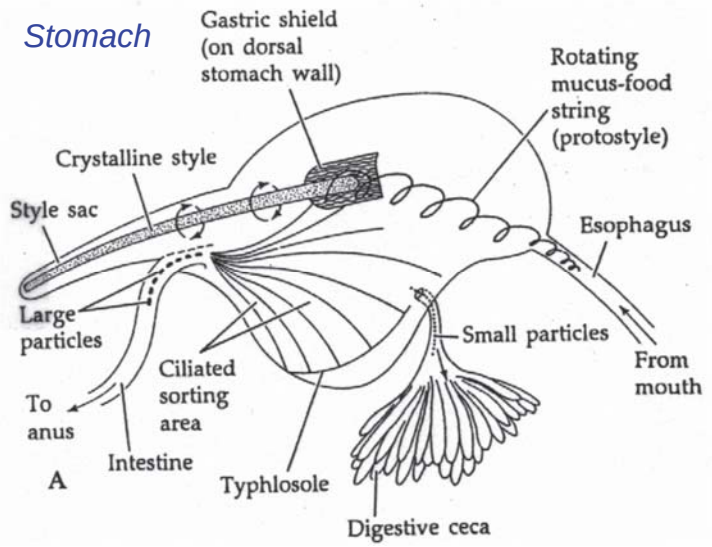
"retrograde" wave

"direct" wave

Gastropod feeding diversity

Benthic grazing (algal crusts or epiphytes)
Predation (drilling, browsing)
Planktonic grazing and predation
Suspension feeding (with mucus or ctenidia)
Kleptoparasitism
Toxic harpooning

Stomach



Digestive system