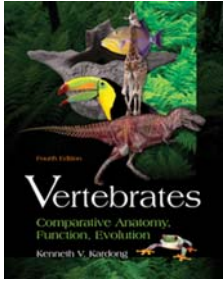


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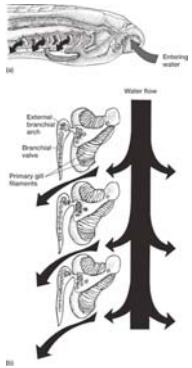
Chapter 11

Image PowerPoint

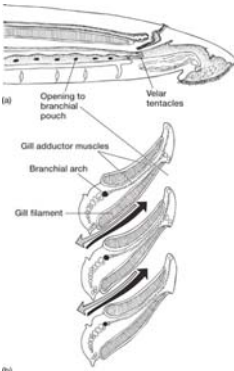
The Respiratory System

Part II to end

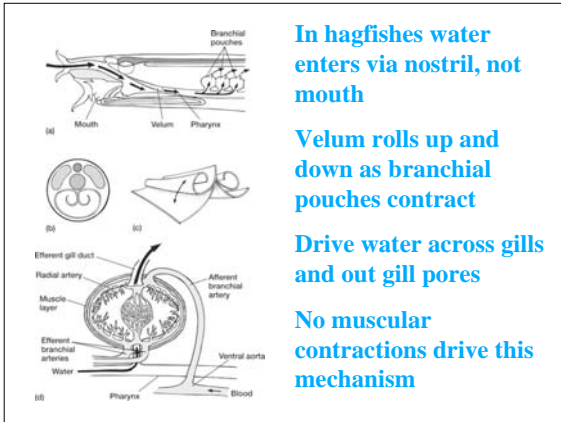
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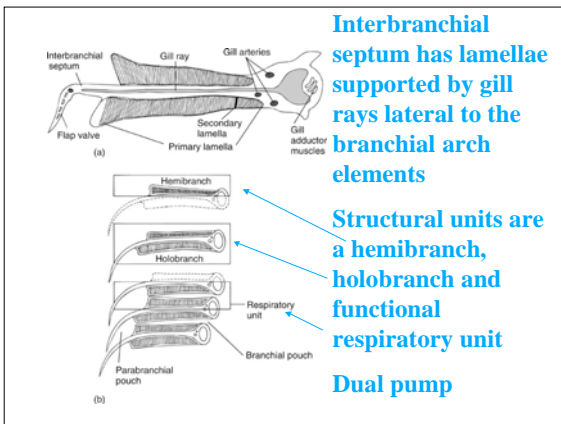


Agnathans
Current formed by velar folds of the velum
Compression of branchial arches and expansion
Gill structure differs from later groups
Water enters through round gills pouches, usually seven
Hagfishes use scrolling and unscrolling of velum

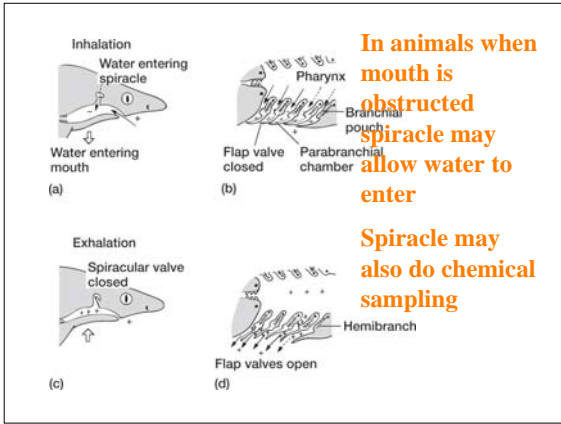


Lamprey adult mouths are often affixed to prey so water must enter and leave through pharyngeal slits
Gill ventilation in lampreys is tidal
FOR ALL THESE ANIMALS BE ABLE TO IDENTIFY STRUCTURES



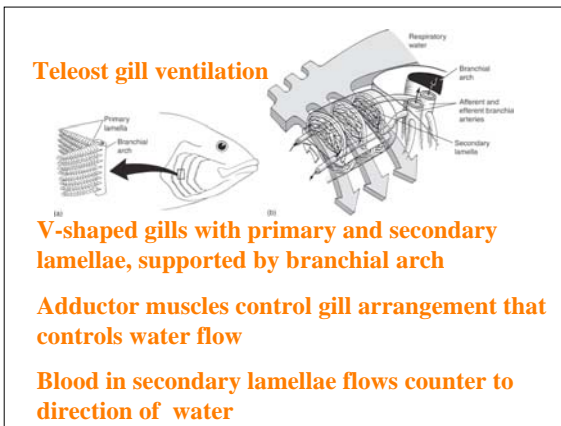


- **Dual pump mechanism**
- **Alternating negative (suction) pressure with**
- **Positive pressures to draw water in and pass it across the gill curtain**
- **Pressures always lower in parabranchial cavity (lateral to gills)**
- **Pressures are maintained as relatively similar so flow is almost continuous as well as unidirectional**



In animals when mouth is obstructed spiracle may allow water to enter

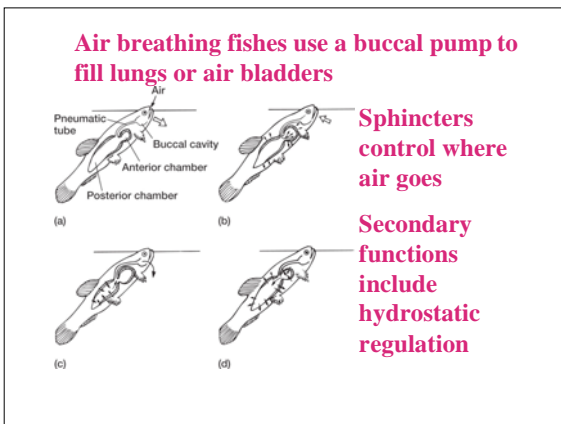
Spiracle may also do chemical sampling

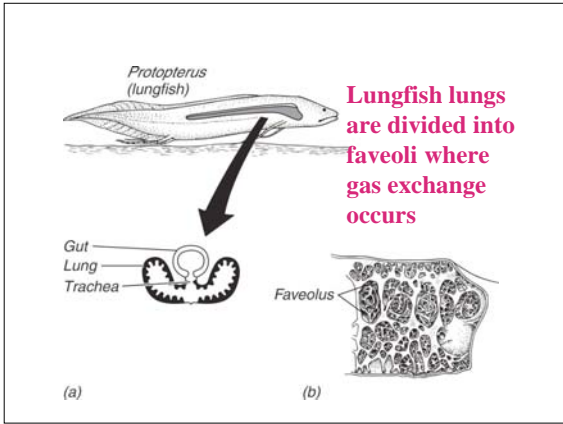


V-shaped gills with primary and secondary lamellae, supported by branchial arch

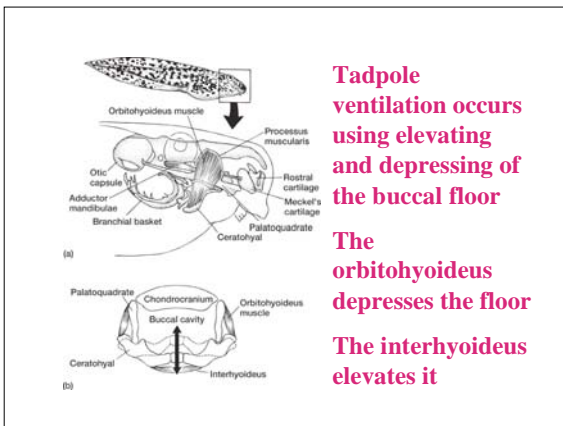
Adductor muscles control gill arrangement that controls water flow

Blood in secondary lamellae flows counter to direction of water



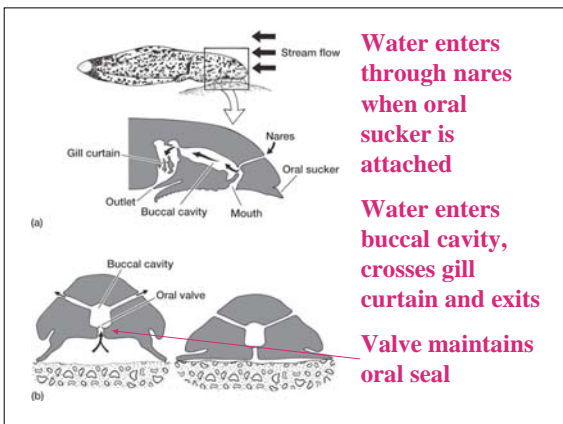


Lungfish lungs are divided into faveoli where gas exchange occurs



Tadpole ventilation occurs using elevating and depressing of the buccal floor

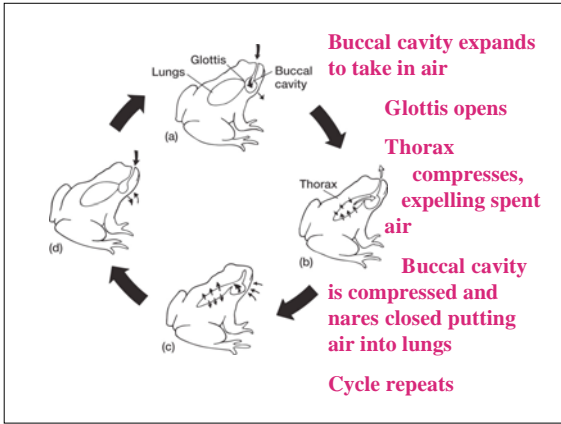
The orbitohyoideus depresses the floor
The interhyoideus elevates it

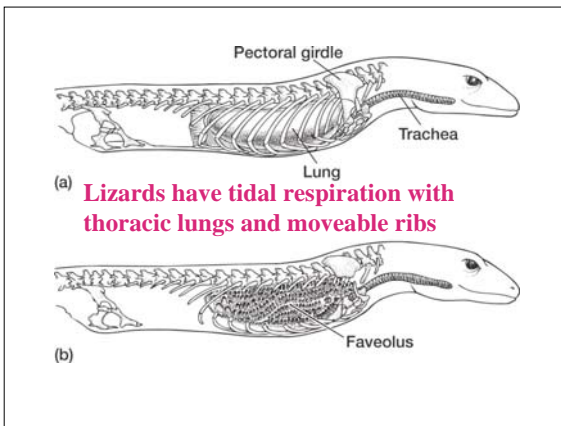


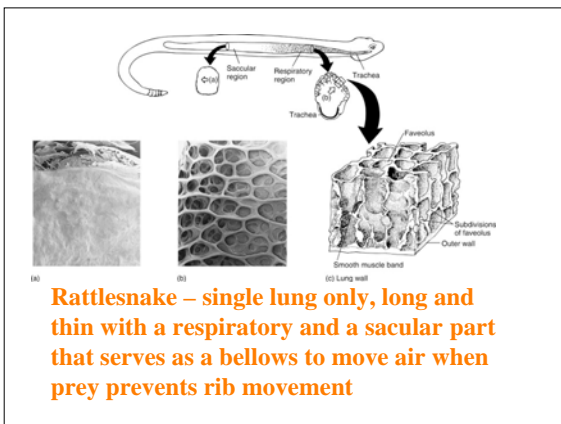
Water enters through nares when oral sucker is attached

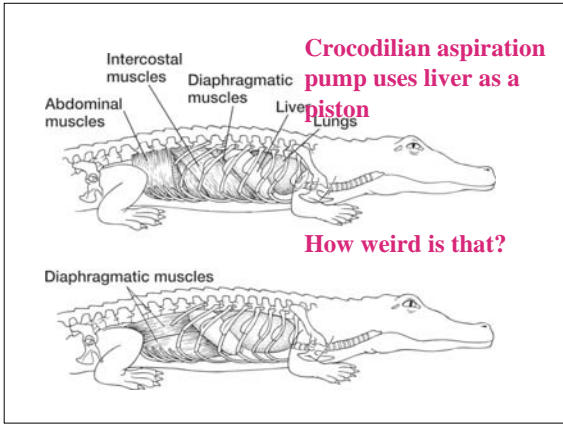
Water enters buccal cavity, crosses gill curtain and exits

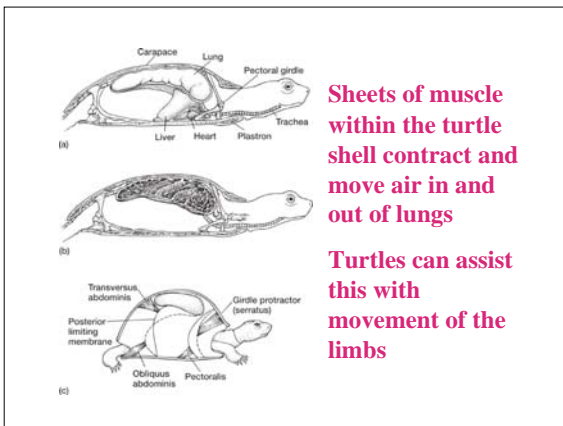
Valve maintains oral seal

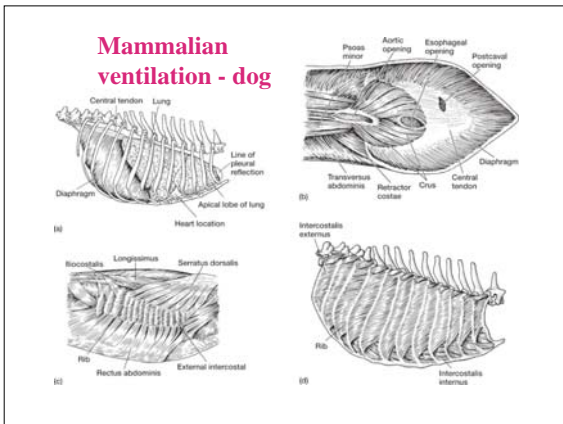


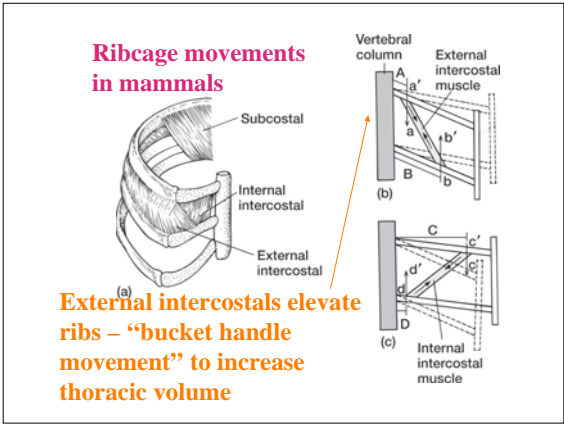












- Internal intercostals depress ribs along with gravity to decrease thoracic volume
- Decreased thoracic volume increases intrathoracic pressure and expels air = exhalation
- If gravity only it is passive
- If forceful additional muscles may be recruited
- At more rapid gaits respiration and locomotor movements are synchronized as in the horse in the following slide

