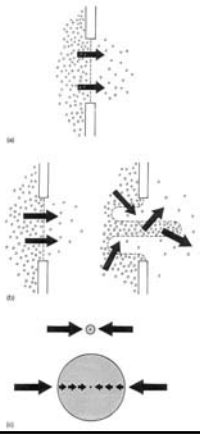
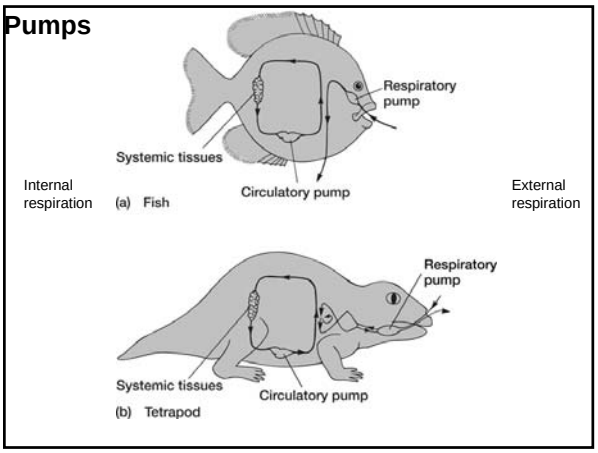
Respiratory System

Passive Diffusion



Pumps

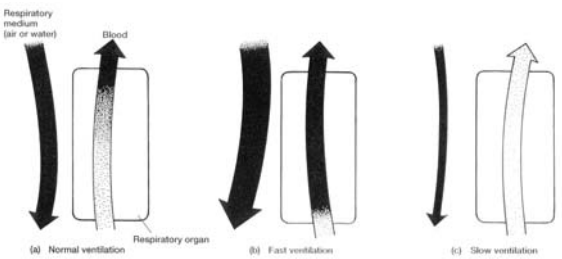


Perfusion—

delivery of blood to tissues

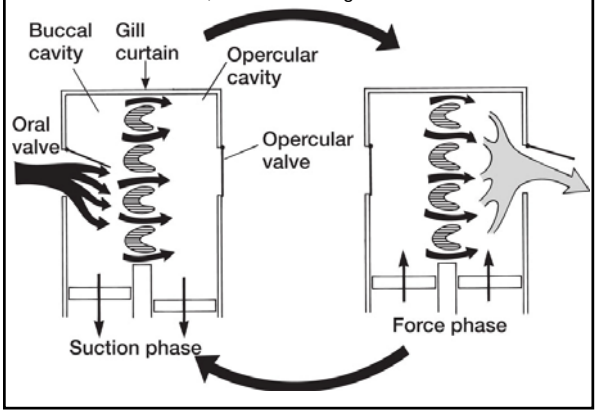
Cardiovascular system

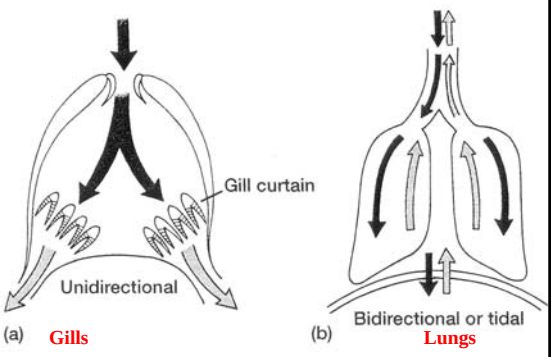
Respiratory Organ



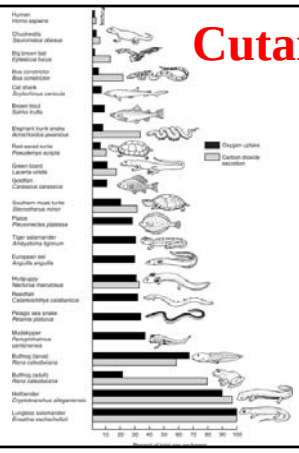
Dual pump

--Fish, water breathing

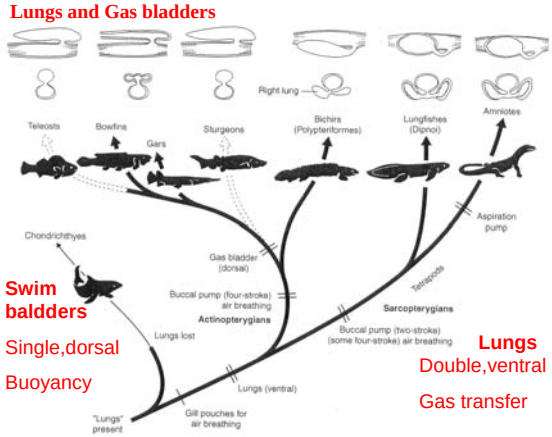




Cutaneous



Lungs and Gas bladders



Swim baldders

Single,dorsal

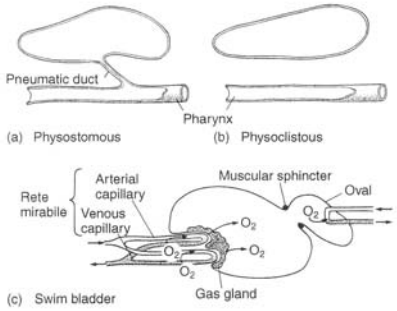
Buoyancy

Lungs

Double,ventral

Gas transfer

Gas bladders—Swim Bladders

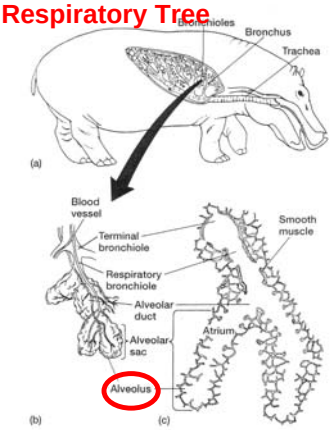


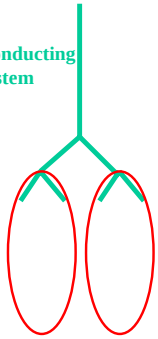
Hydrostatic organ – swim bladder

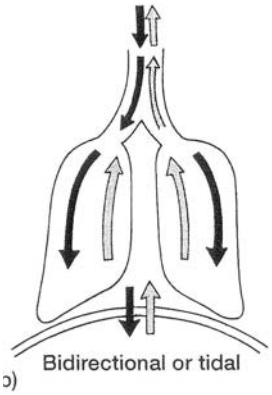
Respiratory

Sound production/reception

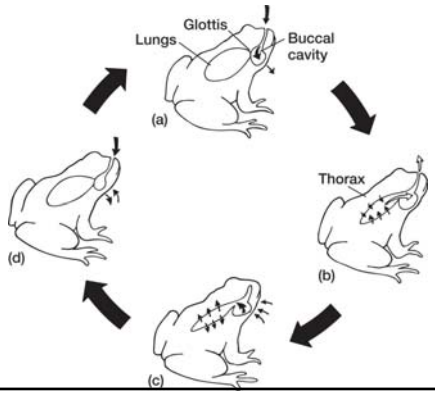
Respiratory Tree



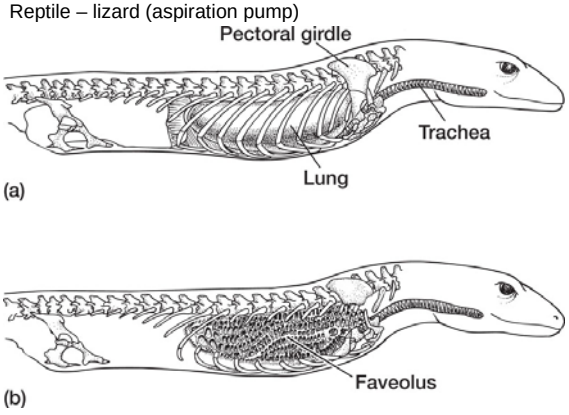




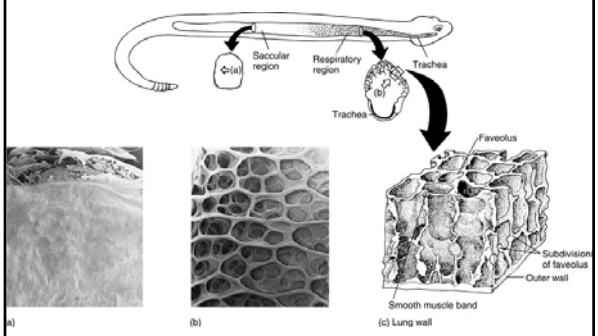
Amphibians—buccal pump

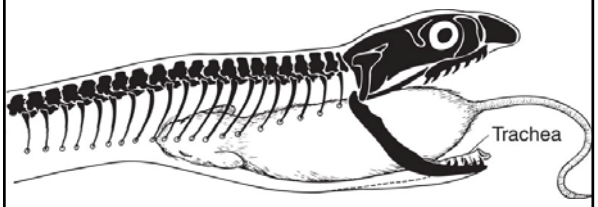


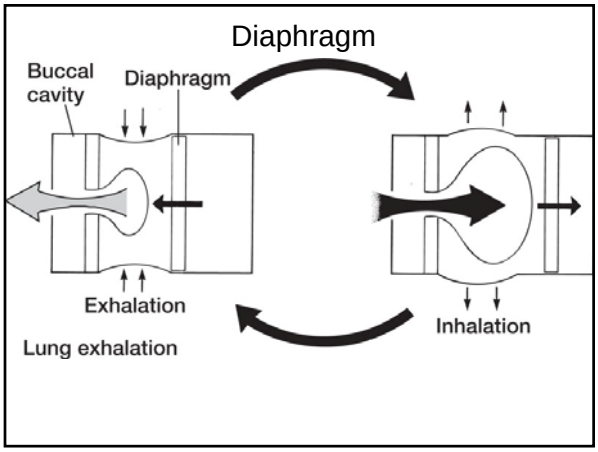
Reptile – lizard (aspiration pump)



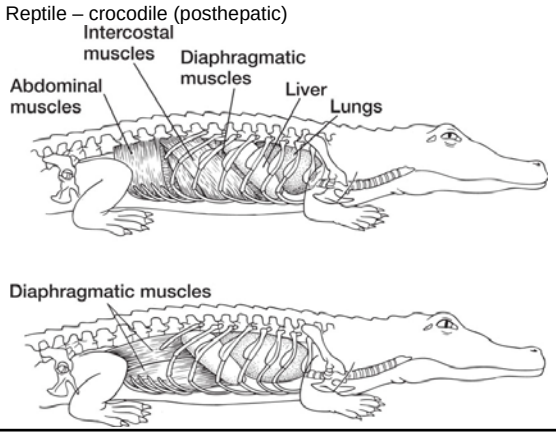
Reptile – snake



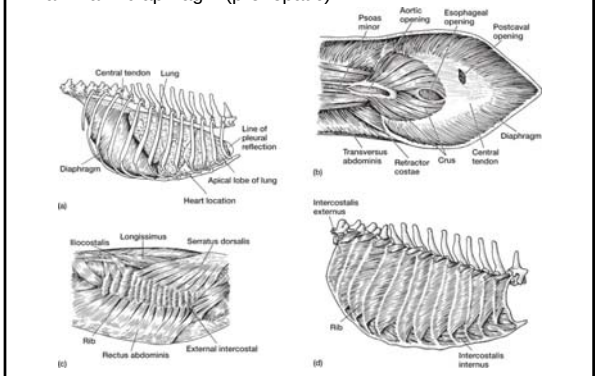




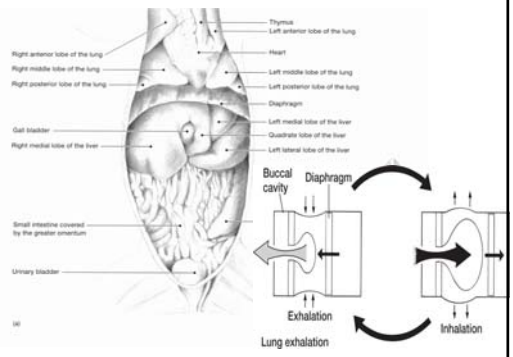
Reptile – crocodile (posthepatic)

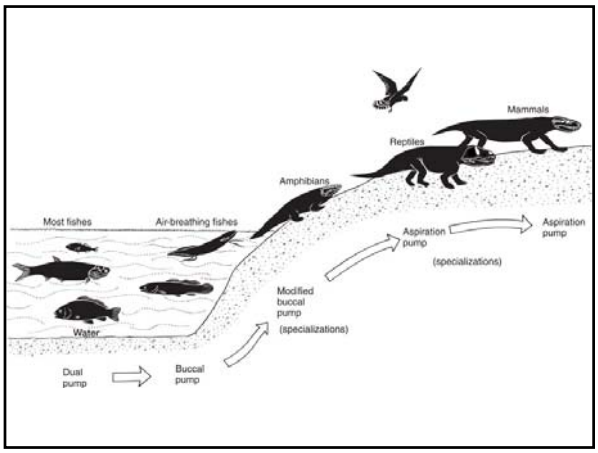


Mammal – diaphragm (prehepatic)



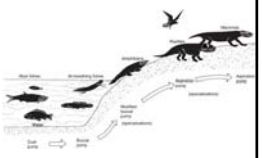
Mammal – diaphragm (prehepatic)

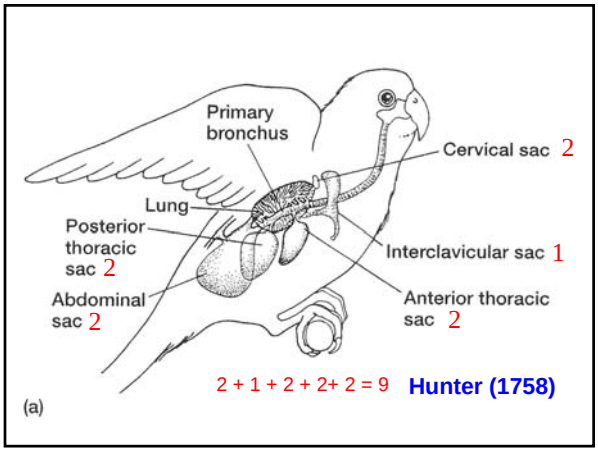


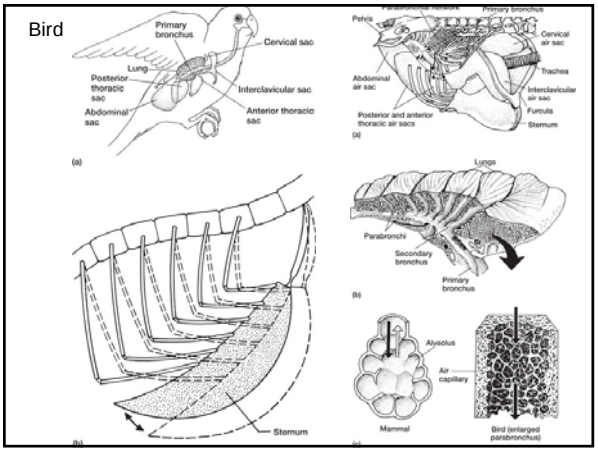


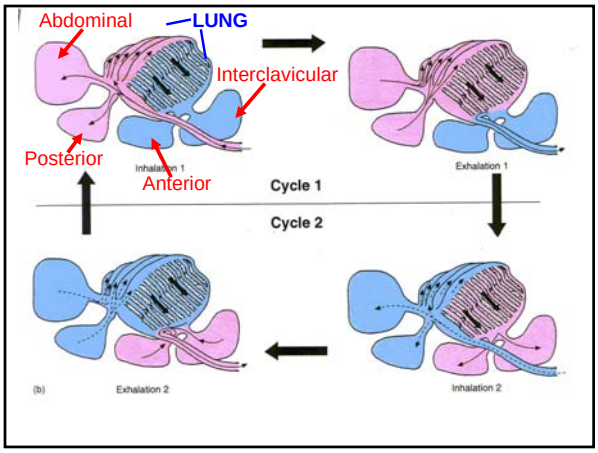
Overview

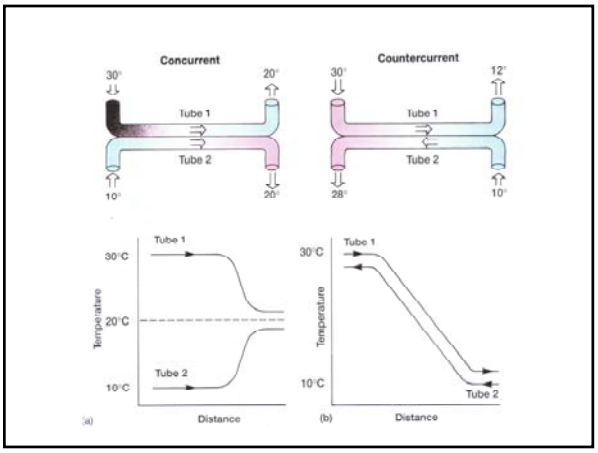
- Air breathing
  dual pump ➔ buccal pump
  (fish) (amphibians)
- Tradeoffs
  breathing vs. feeding
  cutaneous
  Aspiration pump

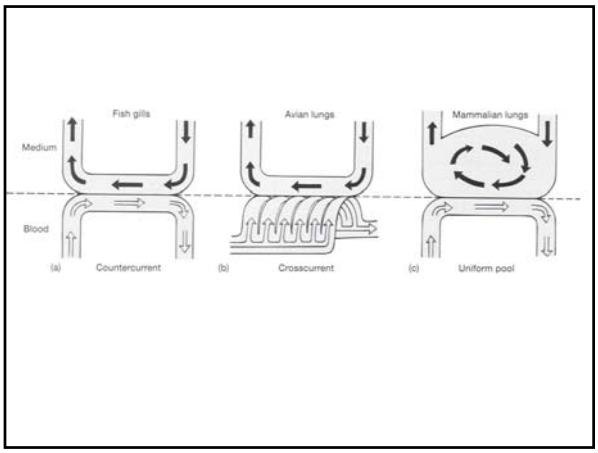


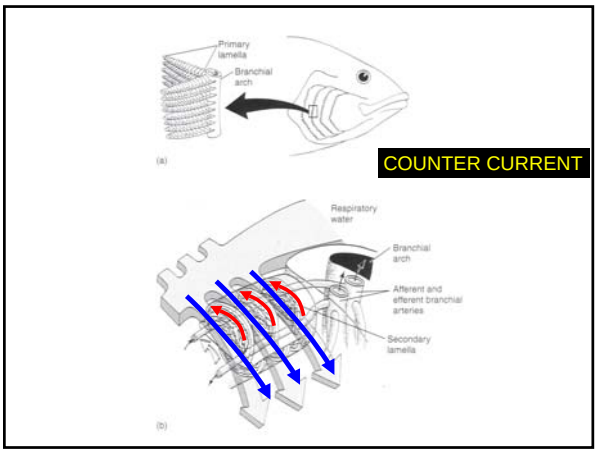




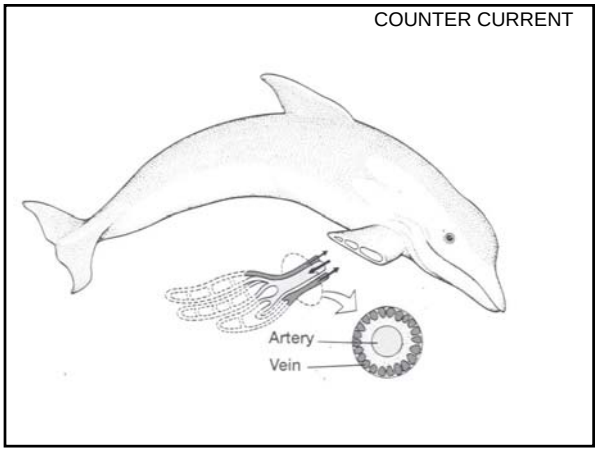


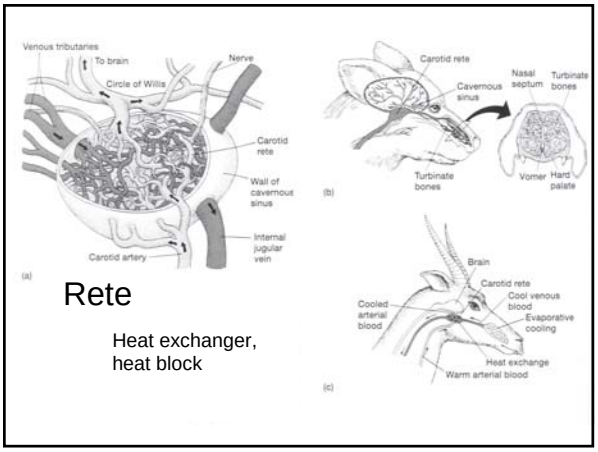






COUNTER CURRENT





Rete

Heat exchanger,
heat block