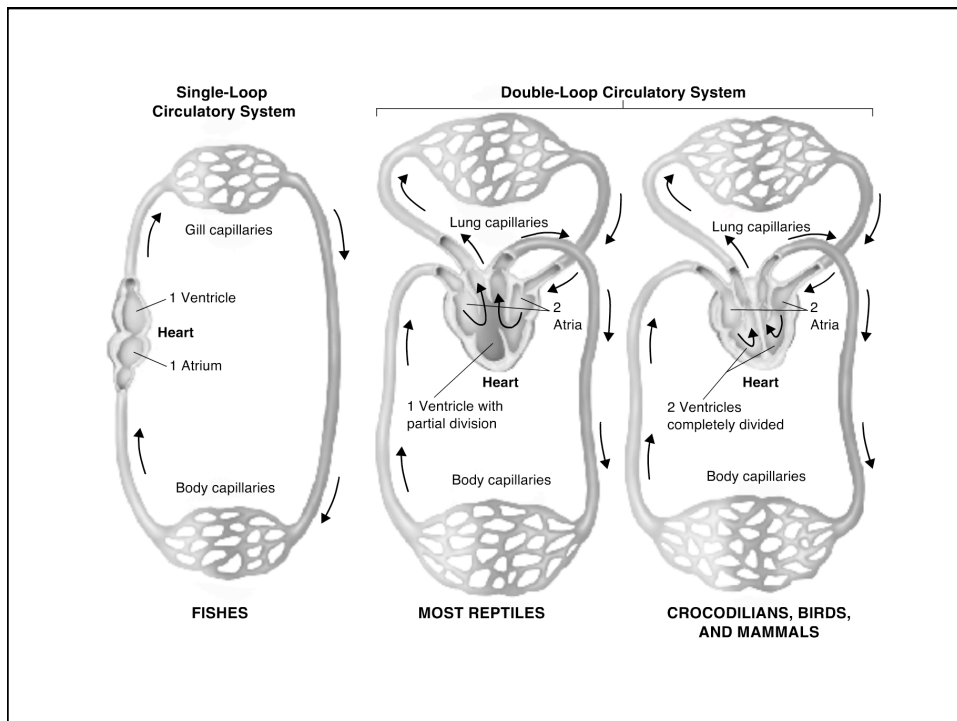


Respiration & Circulation

Non-humans

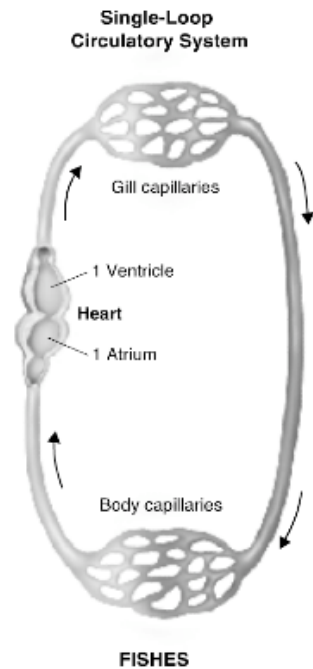


2-Chambered Heart

1. Atrium
 - a) Receives blood from body
 - b) Pumps it to the ventricle
2. Ventricle pumps it
 - a) First to gills
 - b) Then to body

Single loop: blood flows in one big circle

Animals: those with gills - Fish and larval amphibians.

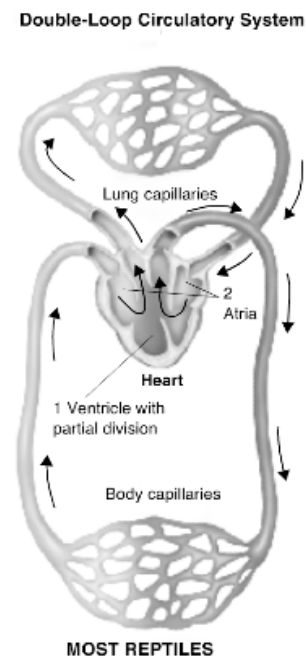


3-Chambered Heart

1. First atrium
 - a) receives blood from body
 - b) Pumps it to the ventricle
2. Ventricle pumps blood to lungs
3. Second atrium
 - a) receives blood from lungs
 - b) Pumps it back to the ventricle
4. Ventricle pumps blood to body
5. SOME oxygenated and deoxygenated blood mixes in the ventricle

Double loop: one to body, one to lungs
SOME ox/deox blood mixes in ventricle

Animals: Amphibians and Most reptiles
Reptiles have a partial partition in the ventricle.



4-Chambered Heart

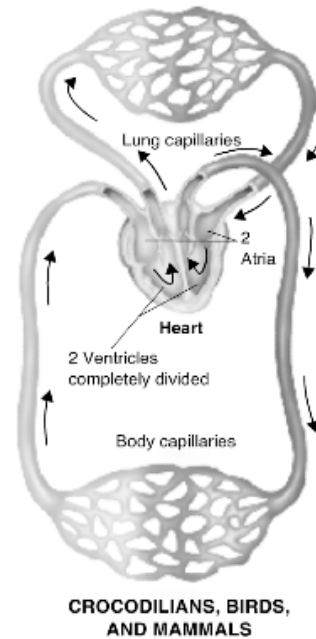
1. First atrium
 - a) receives blood from body
 - b) Pumps it to first ventricle
2. First ventricle pumps blood to lungs
3. Second atrium
 - a) receives blood from lungs
 - b) Pumps it to second ventricle
4. Second ventricle pumps blood to body

No blood mixes 😊

Double loop: one to body, one to lungs

Animals: Crocodilians, birds, mammals.

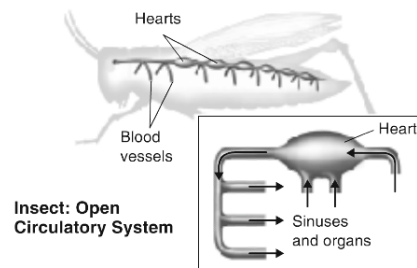
Double-Loop Circulatory System



Invertebrate Circulatory Systems

- **Open Circulatory System:**

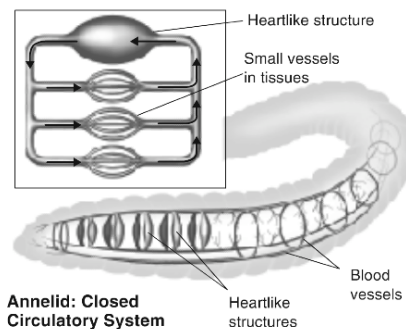
1. Pump (heart)
 - Pumps blood to vessels
2. Vessels
 - take blood to sinuses
3. Sinuses
 - Open area not enclosed in vessel
 - Organs in pooled blood
4. Open vessel
 - Receives blood back
 - Takes it to heart



Insect: Open Circulatory System

- **Closed Circulatory System:**

1. Pump (heart-like)
 - Pumps blood through vessels
2. Vessels from heart
 - Pump blood to body
3. Small vessels in tissue
 - Gas exchange takes place
4. Vessels back to hear.



Annelid: Closed Circulatory System

Respiratory Systems

- Two requirements
 - Large surface area
 - Moist exchange surface
- Respiratory Organs
 - Skin (small animals only - worms)
 - Gills (feathery surface-aquatic animals)
 - Book lungs (sheet like surface-spiders)
 - Tracheal tubes (Insects)
 - Lungs (with alveoli-mammals, reptiles)
 - Lungs & air sacs (one-way flow in birds).



Pigeon

- Nostrils, mouth, and throat
- Trachea
- Lung
- Air sac