Circulatory System: Pathways of Blood Flow and Heart

BIO308/508 Comparative Anatomy
Circulatory Systems of Vertebrates

Two basic types:
1. Single-circuit
Circulatory Systems of Vertebrates

Two basic types:

2. Double-circuit
Basic Vertebrate Circulatory System

- **ventral aorta**
- **afferent branchial arteries** collector
  loop
Basic Vertebrate Circulatory System

- **efferent branchial arteries**

- **aortic arch**
Basic Vertebrate Circulatory System

- **external carotid artery**
- **internal carotid artery**
Basic Vertebrate Circulatory System

- **anterior cardinal vein**
- **posterior cardinal vein**
- **common cardinal vein**
Basic Vertebrate Circulatory System

At least two portal systems are present (carry blood between sets of capillaries):

1. **Hepatic portal**
2. **Renal portal**
Heart
Heart of Gill-Breathing Vertebrates

- simple S-shaped tube

Four chambers:

1.
2.
3.
4.
Heart of Gill-Breathing Vertebrates

- sinoatrial valve
- atrioventricular valve
Heart of Gill-Breathing Vertebrates

- **semilunar valves**
- **conus arteriosus**
- **bulbous arteriosus**

![Shark heart diagram](image)
Evolution of Lungs
Heart of Amphibians
Heart of Amphibians
Hearts of Mammals and Birds