

Circulatory System

I. Introduction

Circulatory system = cardiovascular + lymphatic system

Functions

- Transport
- Defense / immunity
- Homeostasis

II. Types of Circulatory Systems (Comparative Anatomy)

A. Open circulatory systems

- Blood not fully enclosed in vessels
- Invertebrates

B. Closed circulatory systems

- Blood fully enclosed in vessels
- Vertebrates

III. Vertebrate Cardiovascular System

A. Major components

- Heart
- Blood vessels
- Blood

B. The heart

- Chambers
- Valves
- Vessels

C. Circulation

Pathway of blood in the body

Body → right atrium → right ventricle → lungs → left atrium
→ left ventricle → body

Pulmonary circuit

Systemic circuit

Coronary circulation

Cardiac output

Comparison of vertebrate systems

4-chambered heart: mammals, birds, crocodiles

3-chambered heart: reptiles & amphibians

2-chambered heart: fish

BIO 102 General Biology
Lecture Outline

D. Cardiac conduction system

Autorhythmic

Structures

SA (sinoatrial) node

AV (atrioventricular) node

Bundle branches

Purkinje fibers

Gap junctions

Electrocardiogram (ECG/EKG)

P wave

QRS wave

T wave

Arrhythmias

Bradycardia

Tachycardia

Fibrillation

E. Blood vessels

Arteries

Veins

Capillaries

Path of blood flow in systemic circulation

Vessel diameter

Vasoconstriction

Vasodilation

Valves

Capillary flow

Blood pressure

Systolic

Diastolic

Atherosclerosis

Plaques – cholesterol

Coronary bypass surgery

F. Blood

Volume & composition

Plasma

Cells

Red blood cells

White blood cells

Platelets

Blood cells

Formation

Red marrow in bones

Stem cells

Blood typing

ABO

Agglutination reaction

Rh factor

Erythroblastosis fetalis