

# End UNIT 1 ↑

① Cardiovascular System: Heart & Blood Vessels Ch. 5

## Cardiovascular system

- includes the ♥ & blood vessels
- transport system
- functions:
  - delivers nutrients & oxygen to cells
  - picks up cell waste products (CO<sub>2</sub> & other chemicals) & delivers them to be processed & excreted from body
- transports hormones
- distributes cells & substances of the immune system

## Features of Cardiovascular System?

- 4 chambered pump
- essentially 2 pumps joined side by side
- closed circulation
- all blood kept within blood vessels & heart
- blood is maintained under pressure
- needed to provide blood flow

What are the 2 cardiovascular pathways in the body?

pulmonary circuit: the right side of ♥ brings blood from body to the ♥ & lungs

systemic circuit: the left side of ♥ that brings blood to entire body to deliver nutrients & rid of wastes

What is the main pathway of blood in the body?

heart → arteries → arterioles → capillaries → venules → veins → back to ♥...

## Arteries & Arterioles

- carry blood ~~to~~ away from heart!
- walls have 3 layers:

Arterioles are small arteries that <sup>regulate</sup> blood press.

## Capillaries

- microscopic vessels between arterioles & venules
- made of one layer of epithelial tissue
- form beds of vessels where exchange w/ body <sup>cells</sup> occurs!

## Veins & Venules

- Venules are small veins that receive blood <sup>from the</sup> capillaries
- Vens/Venules carry blood toward heart!
- Venule & vein walls have 3 layers:
  - veins that carry blood against gravity
  - have valves to keep blood flowing toward heart

## Heart & Circulatory System overview

### Anatomy of the Heart

- a large, muscular organ consisting mostly cardiac muscle tissue called myocardium
- its surrounded by a sac called pericardium
- consists of 2 sides, right/left, separated by septum
- 4 chambers: 2 atria & 2 ventricles
- 2 sets of valves: semilunar valves & atrioventricular valves (AV valves)
- valves give the resulting "lub" & "dup" sound of heart

External anatomy of the heart  
Internal anatomy of the heart  
How does blood flow through the heart?

- Inferior & Superior Vena Cava (1)
- dump blood into right atrium (2)
- right ventricle (3)
- 2 pulmonary arteries (4) that lead to the lungs (5) where blood becomes oxygenated
- pulmonary veins (6) bring back blood from left atrium (7)
- Left ventricle (8) is large & muscular to pump blood into aorta & to rest of body (10)
- eventually blood will be pumped back to each vena cava (1)

Visualizing blood flow through the heart  
How does the heart beat occur?

\* The Cardiac Cycle:

Systole (contraction):

- the atria contract together followed by the ventricles contracting together
- blood pumped out of heart

Diastole (relaxation):

- a rest phase, when chambers relax
- blood fills chamber of heart

• the cardiac cycle (heart beat) on avg. occurs 70/min.

What is the Cardiac cycle?

- Diastole

- AV Valves open
- Semilunar Valves closed
- blood fills chamber

- Systole

- AV valves close
- Semilunar valves open
- blood ejected from heart