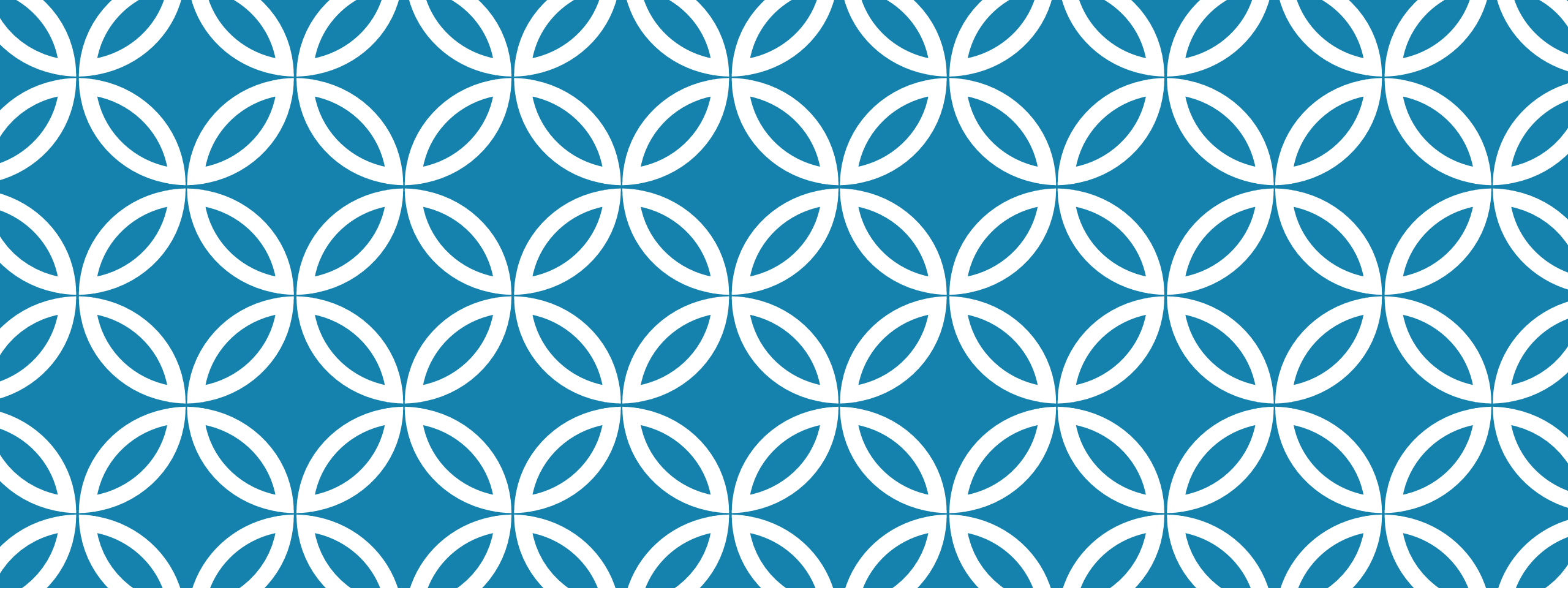


CHAPTER 6.2

The Circulatory System

CIRCULATION ACCORDING TO WILLIAM HARVEY

Describe the circulatory system according to William Harvey.

CARDIOVASCULAR SYSTEM

Main functions:

- carries water, nutrients and water to cells
- removing waste products
- maintaining constant body temperatures
- transports hormones

Three key components:

blood, vessels, heart

CIRCULATORY NETWORK

Heart = 4 chambers

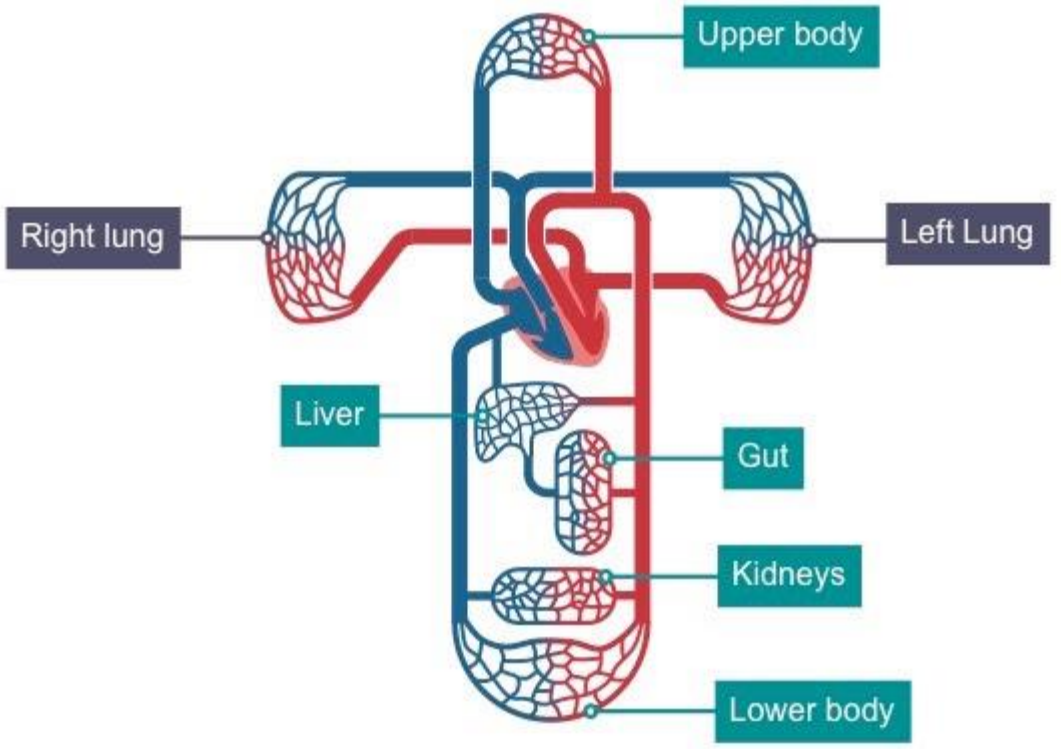
- top chambers (atria) = reservoirs
- bottom chambers (ventricles) = pumps

Left side = **Systemic** circulation

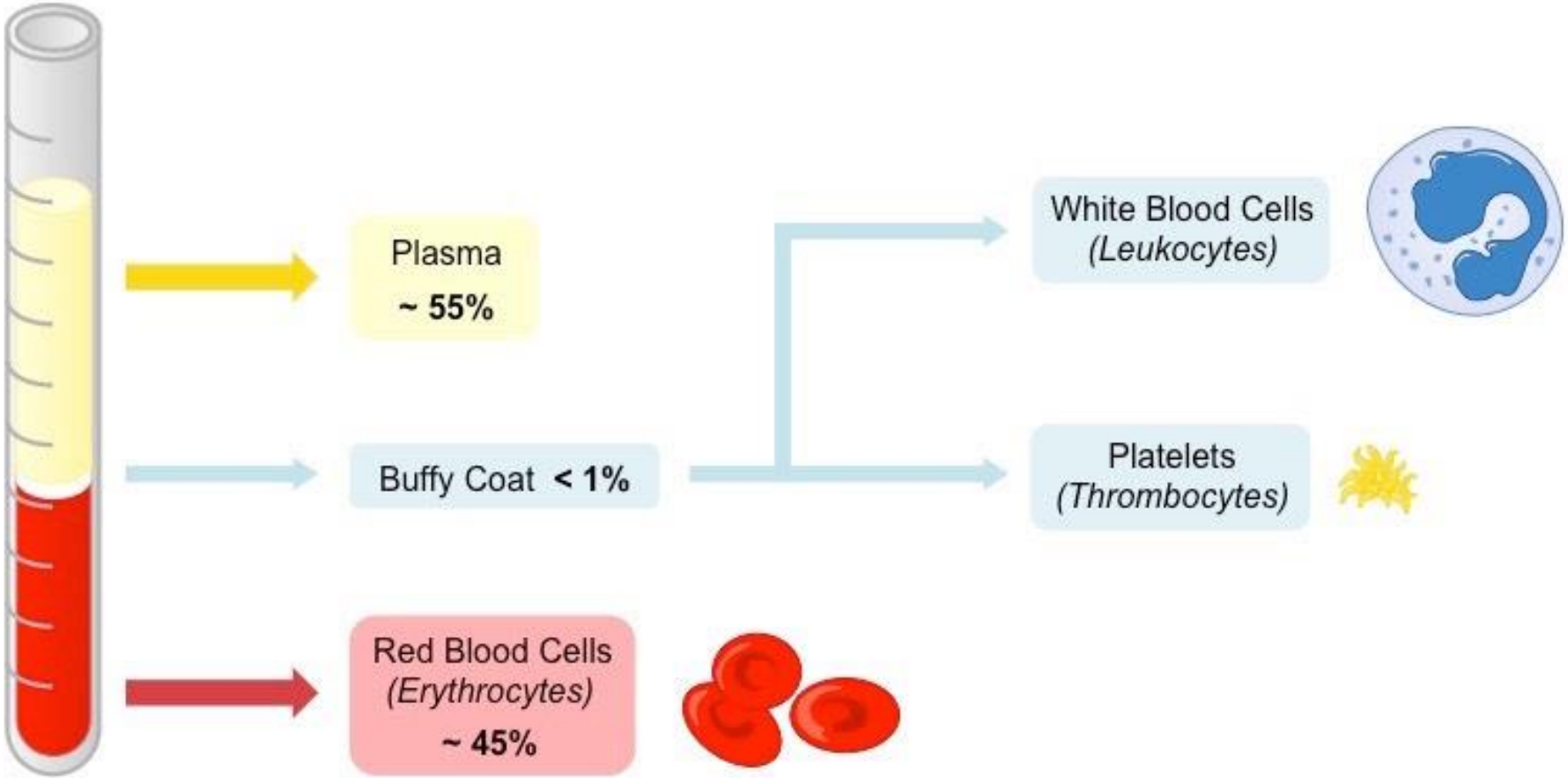
- moves **oxygenated** blood around body

Right side = **pulmonary** circulation

- moves **deoxygenated** blood to lungs



BLOOD COMPOSITION

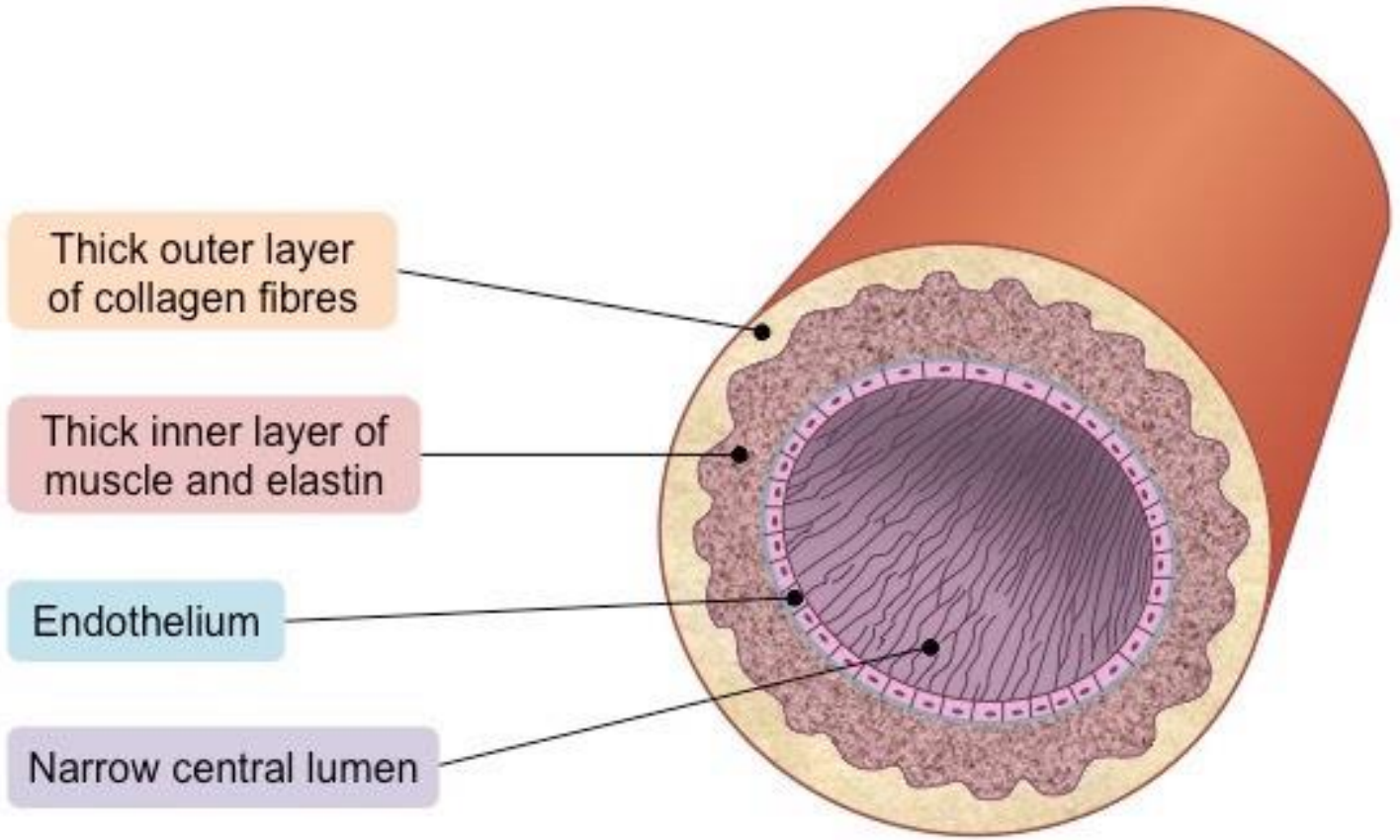


BLOOD VESSELS

ARTERIES

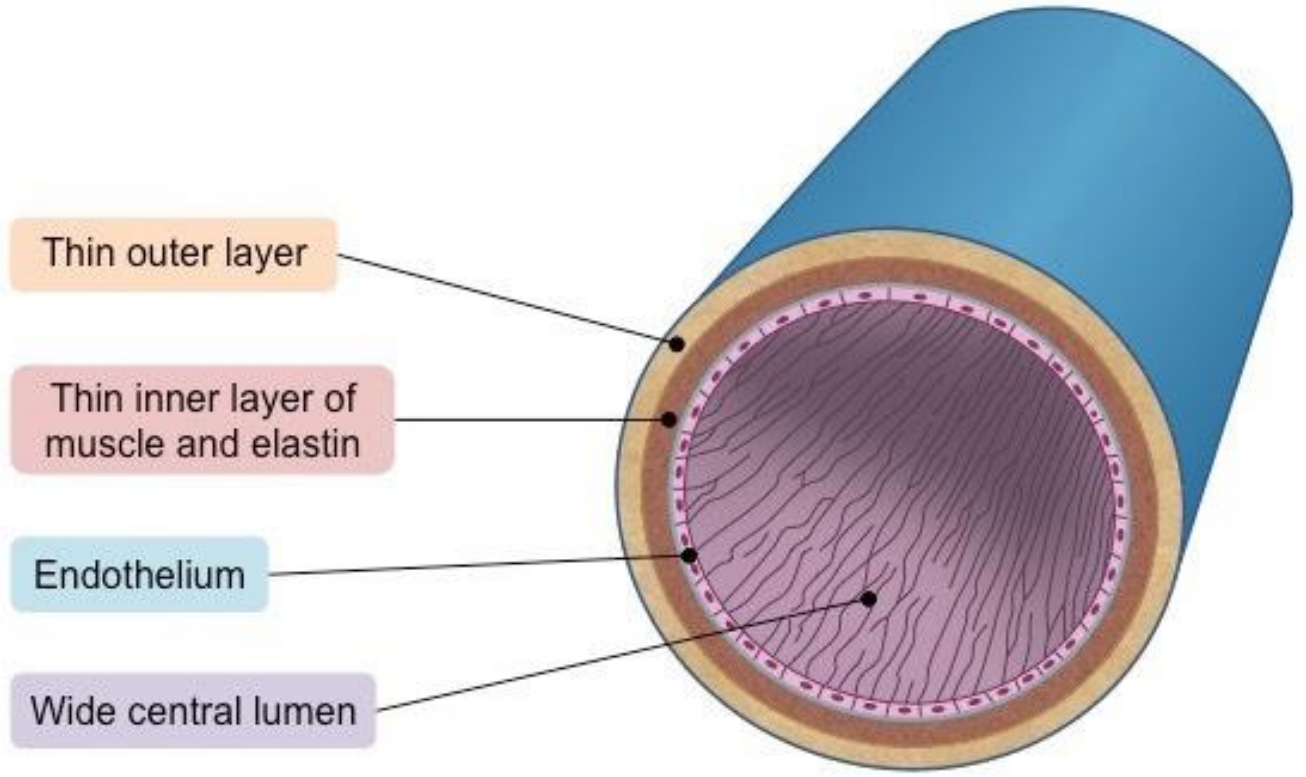
- narrow lumen

- blood = high pressure (no valves)



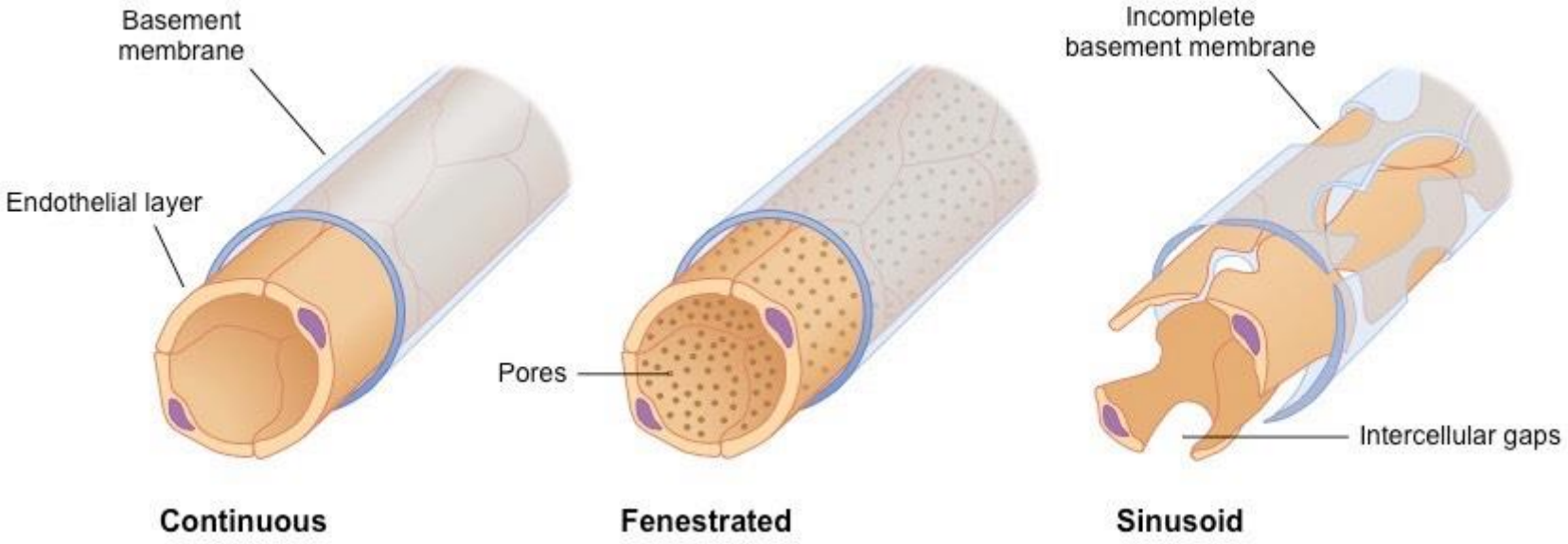
VEINS

- wide lumen
- wall quite thin
- low blood pressure
- valves to prevent backflow and pooling of blood

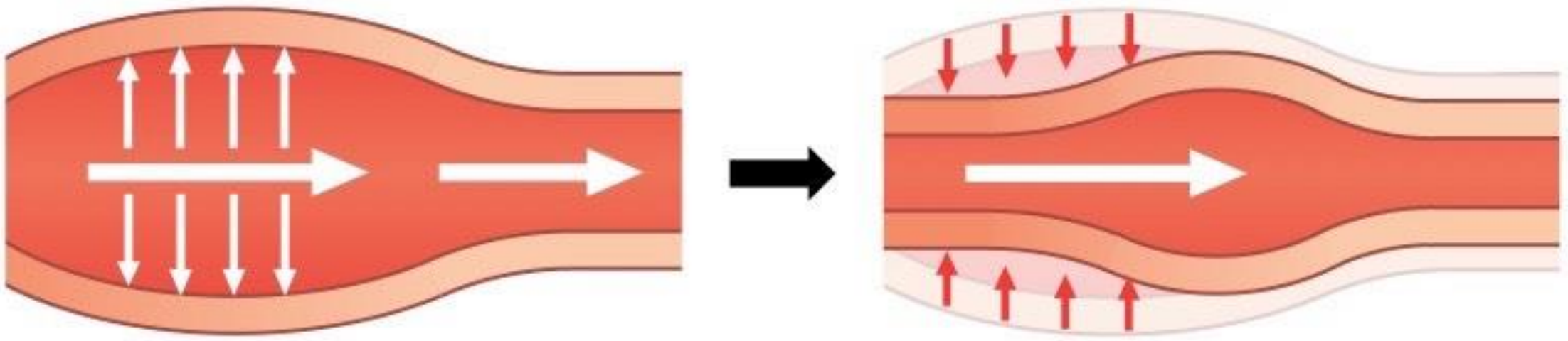


CAPILLARIES

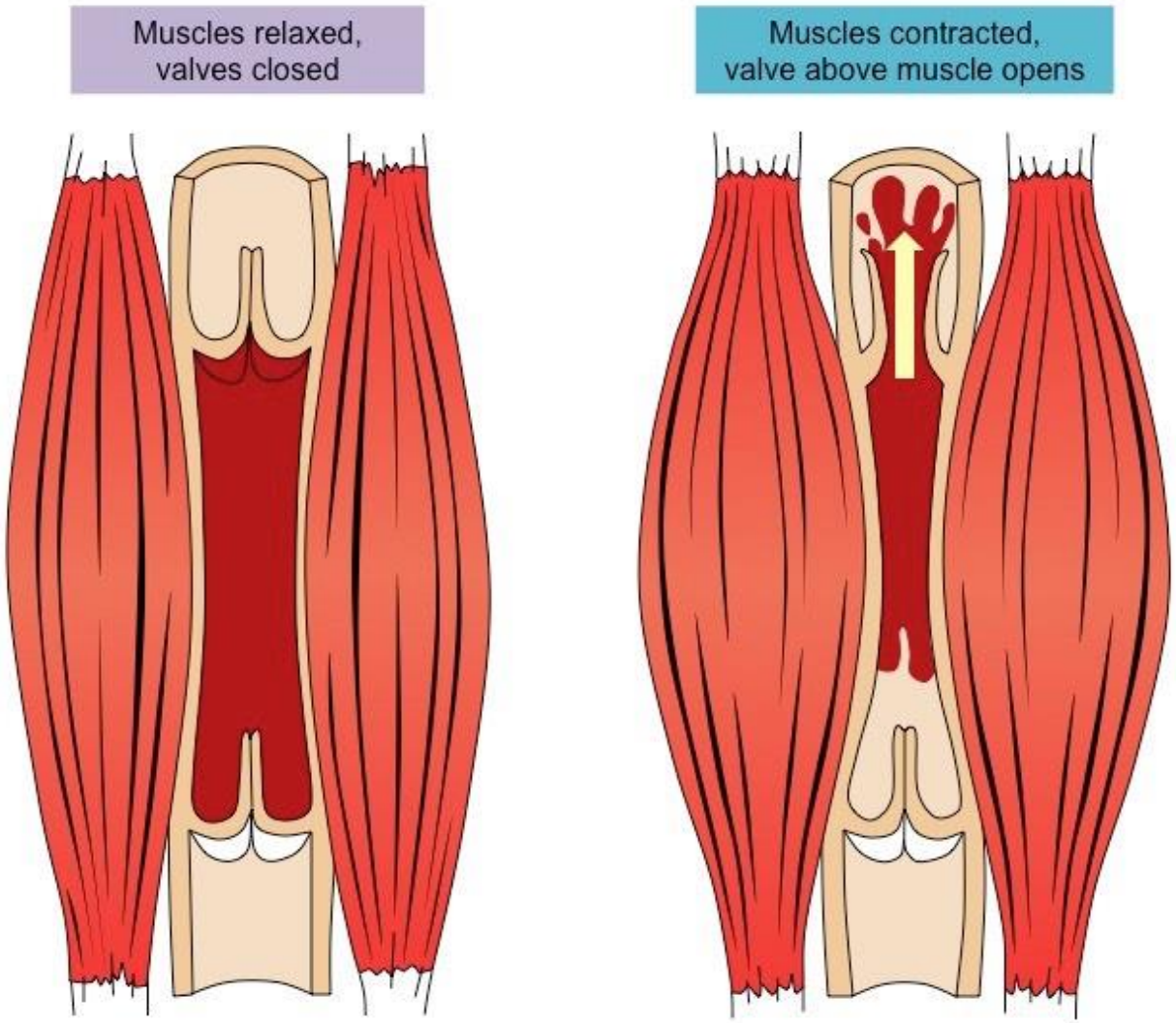
- responsible for material exchange between blood and tissue
- small lumen and diameter



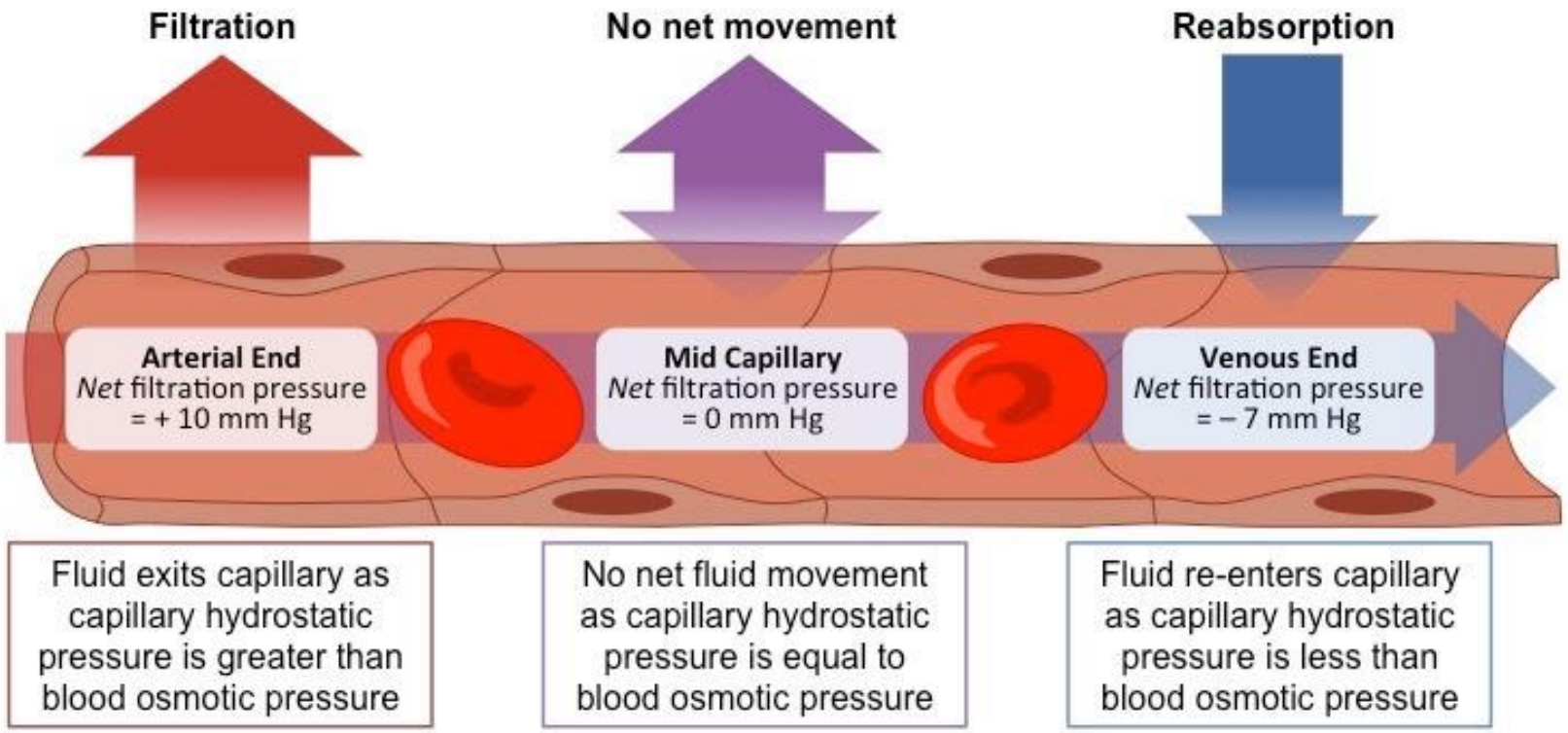
MOVEMENT OF BLOOD



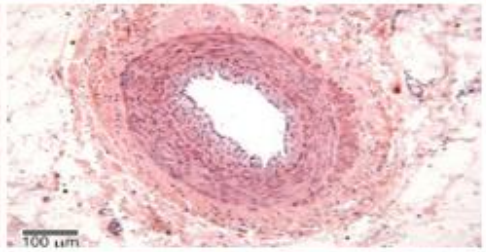
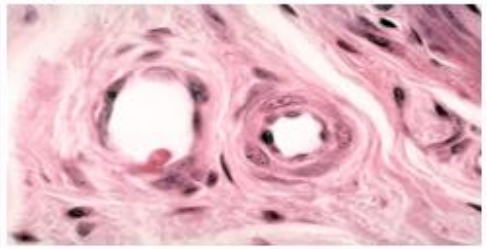
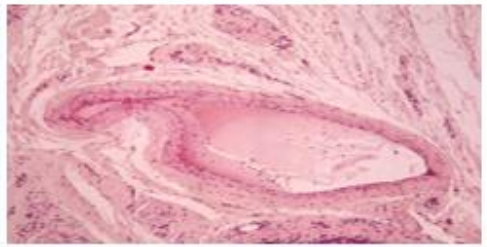
MOVEMENT OF BLOOD



MOVEMENT OF BLOOD

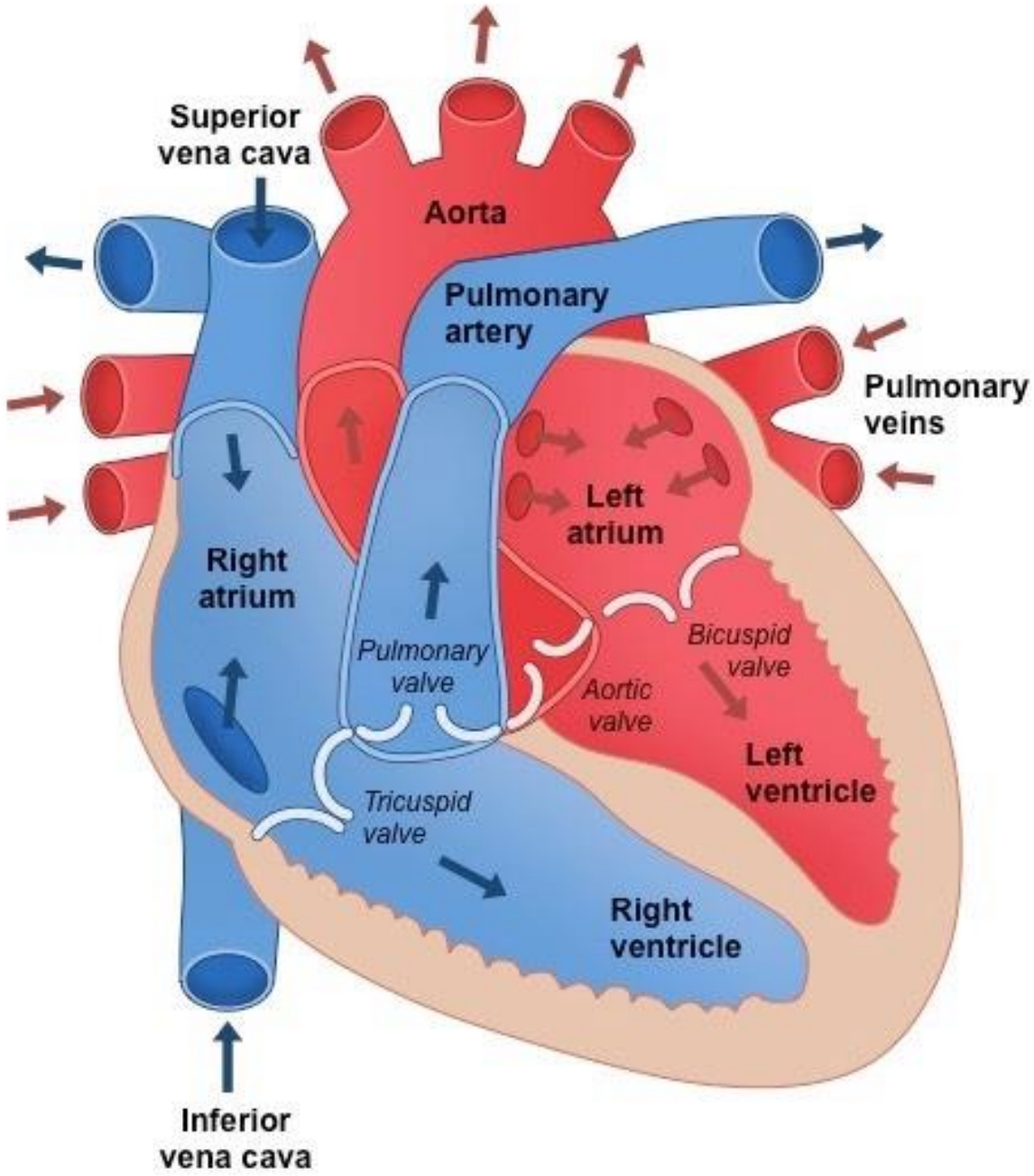


BLOOD VESSEL COMPARISON

Vessel	Function	Pressure	Diameter	Wall	Micrograph
Artery	Sends blood **from** heart	High (80 – 120 mmHg)	Narrow	Thick	
Capillary	Material exchange	Low (<15 mmHg)	Wide	Very thin	
Vein	Sends blood **to** heart	Low (5 – 10 mmHg)	Extremely narrow	Thin	

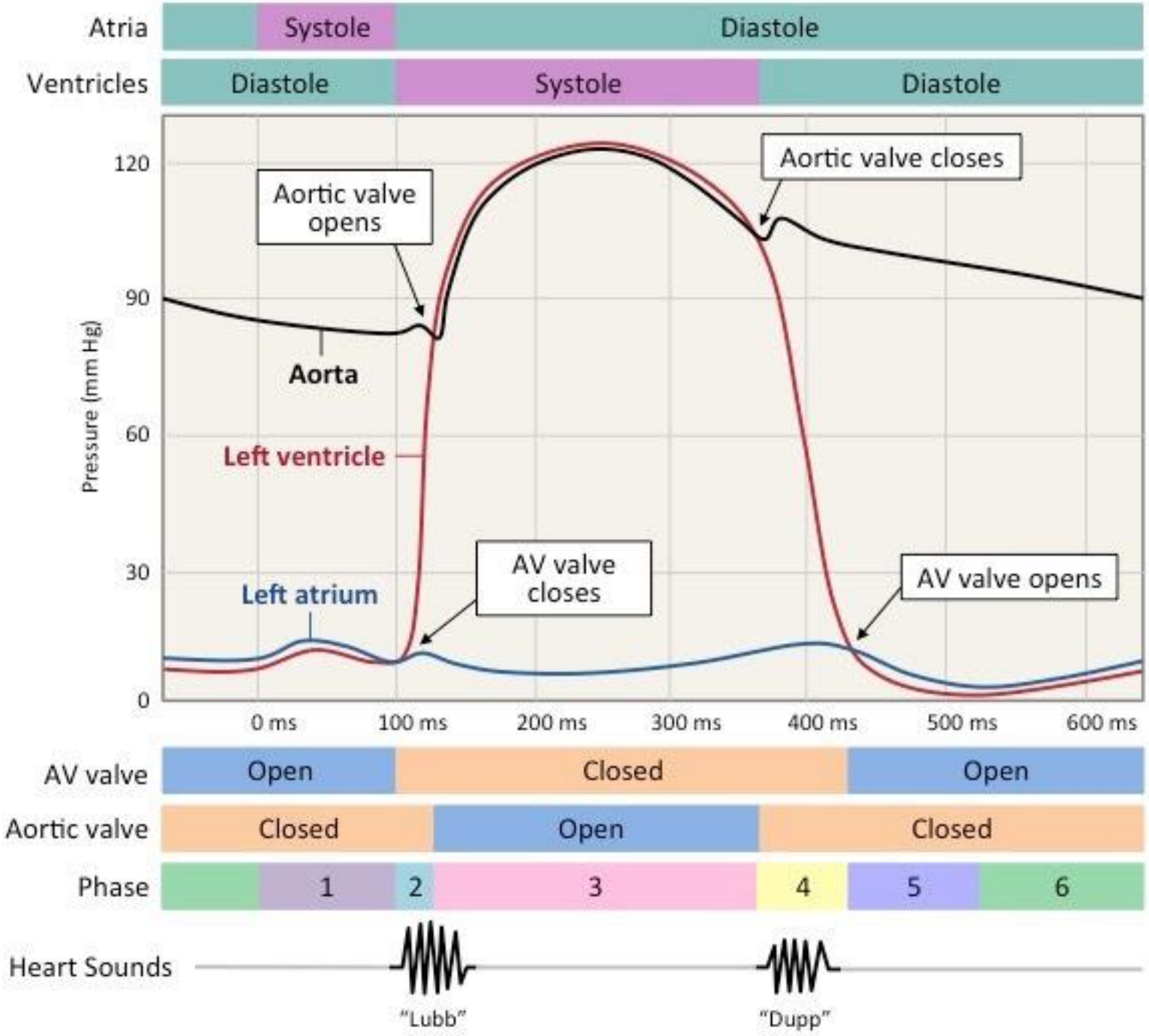
* The capillary is a significantly smaller structure and thus is shown at a substantially higher magnification

HEART STRUCTURE

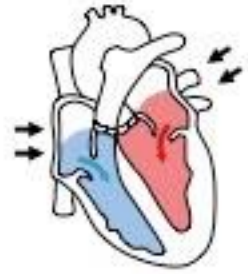


THE CARDIAC CYCLE

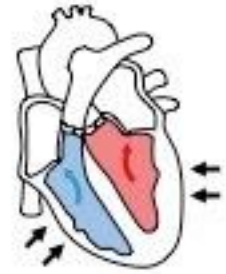
http://bcs.whfreeman.com/WebPub/Biology/hillis1e/Animated%20Tutorials/at3801/at_3801_cardiac_cycle.html



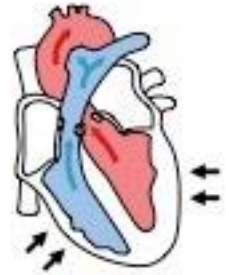
Phases of the Cardiac Cycle:



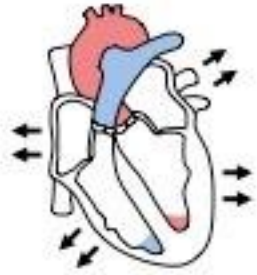
Atrial Contraction



Isovolumetric Contraction

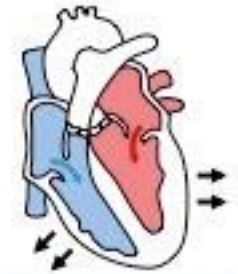


Ventricular Ejection



Isovolumetric Relaxation

Atrial Filling



Ventricular Filling

HEART BEAT & PACE MAKERS

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CORONARY HEART DISEASES