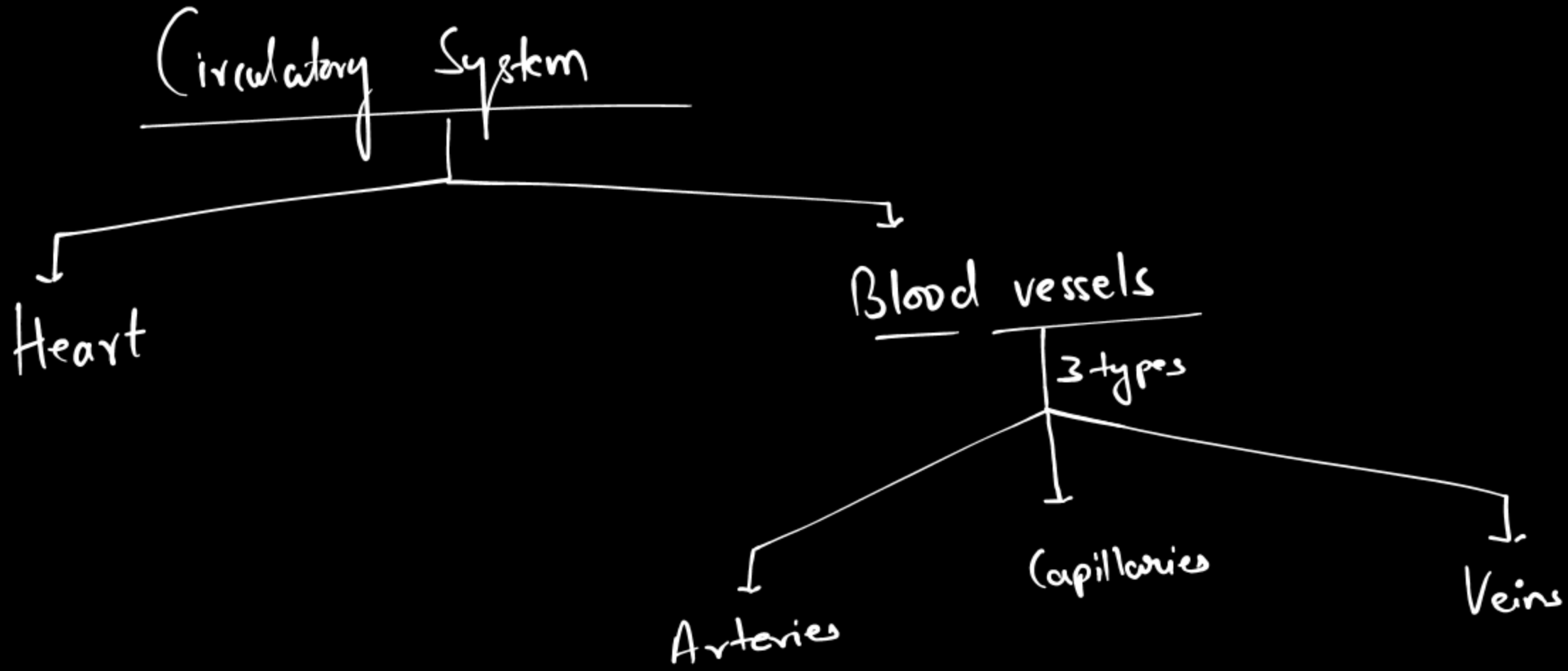
The Circulatory System

Grade 5



Major Internal organs of our body :

- → Brain
- → Heart
- → Liver
- → Stomach
- → Kidneys
- → Lungs

Organ System

- Group of organs working together to perform a particular function.

eg: • Digestive System
  - ↳ Helps to digest food.
  - ↳ Consists of mouth, food pipe, stomach, pancreas, Liver, intestine.

- **Excretory System**
  - Kidneys, ureter, urethra, Urinary bladder.
  - Helps to remove nitrogenous waste from our body in the form of urine.

The Circulatory System

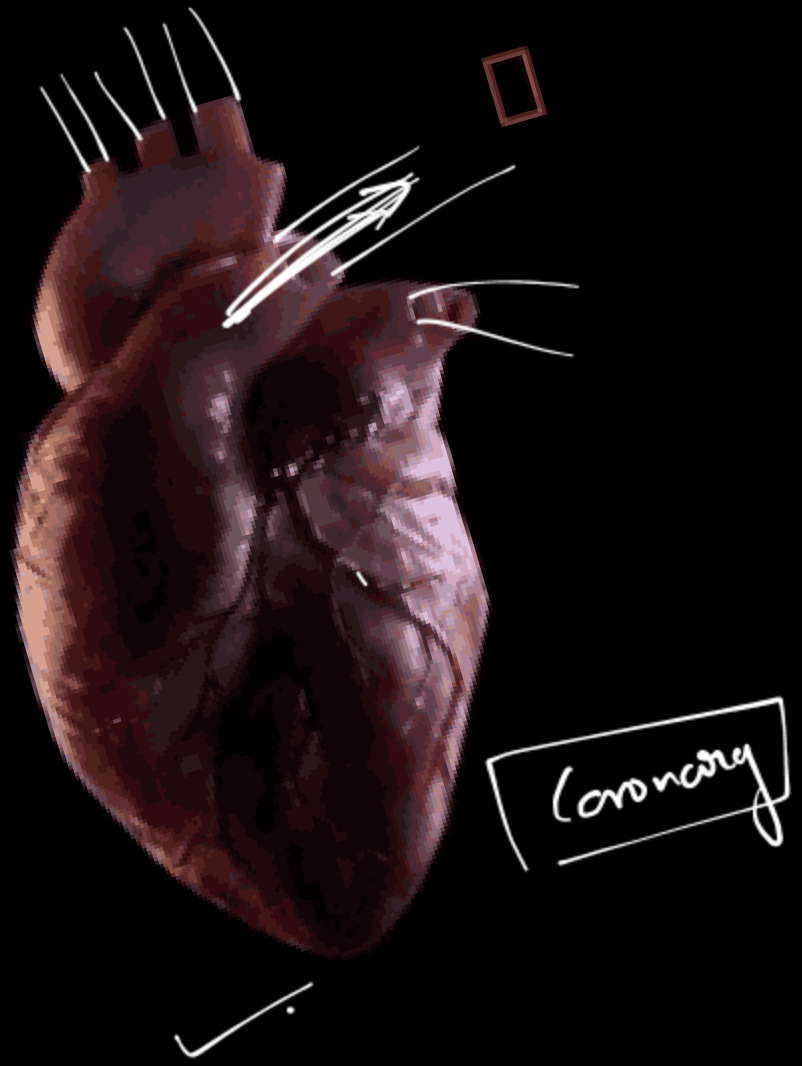
⇒ Made up of Heart and blood vessels.

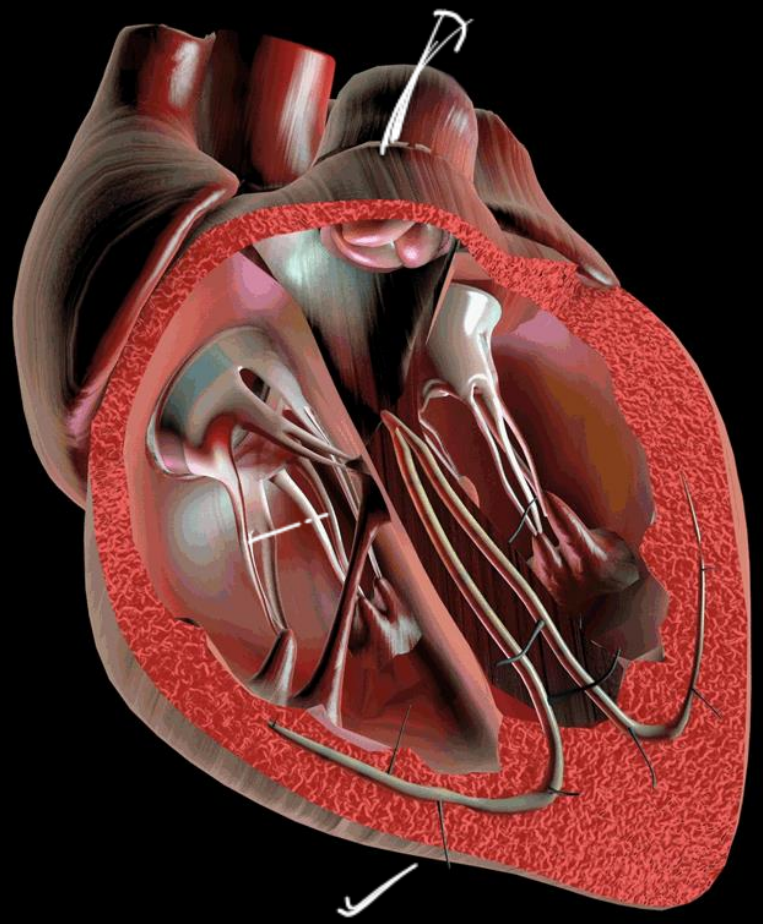
⇒ This system circulates / transports blood in our body.

⇒ Blood contains nutrients, oxygen, nitrogenous waste, carbondioxide, etc.

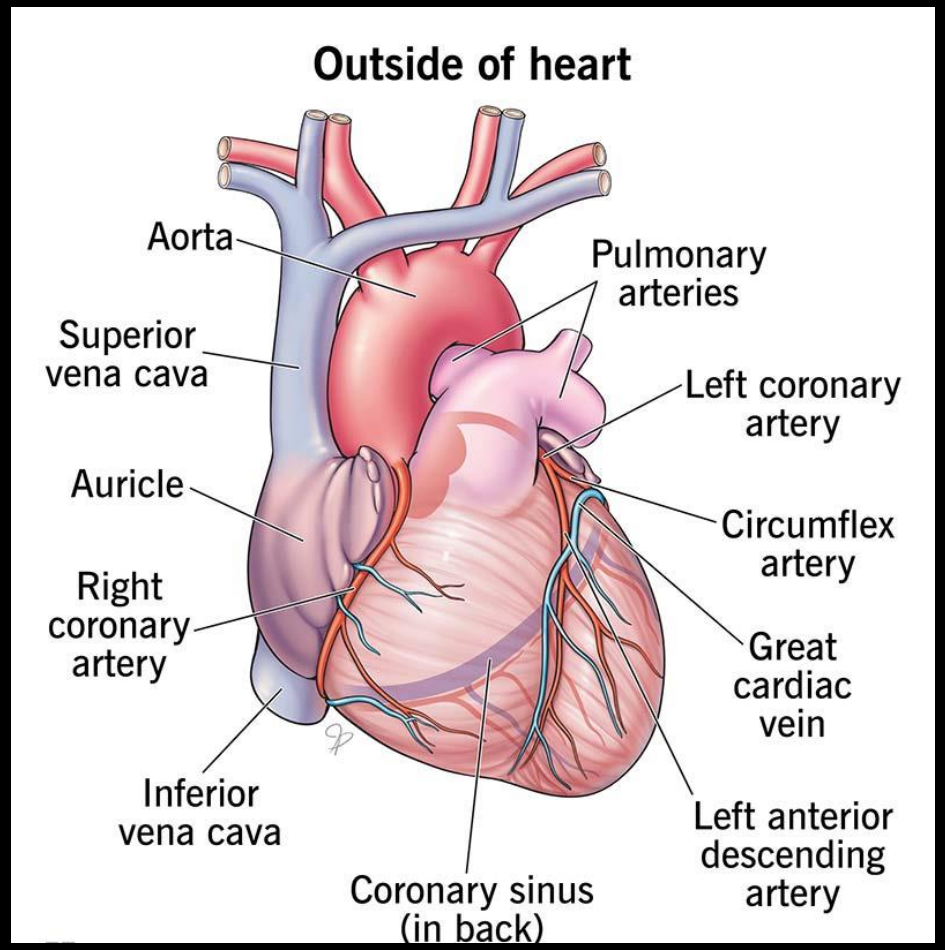
⇒ Circulatory system helps to provide oxygen and nutrients to different organs/cells of our body.

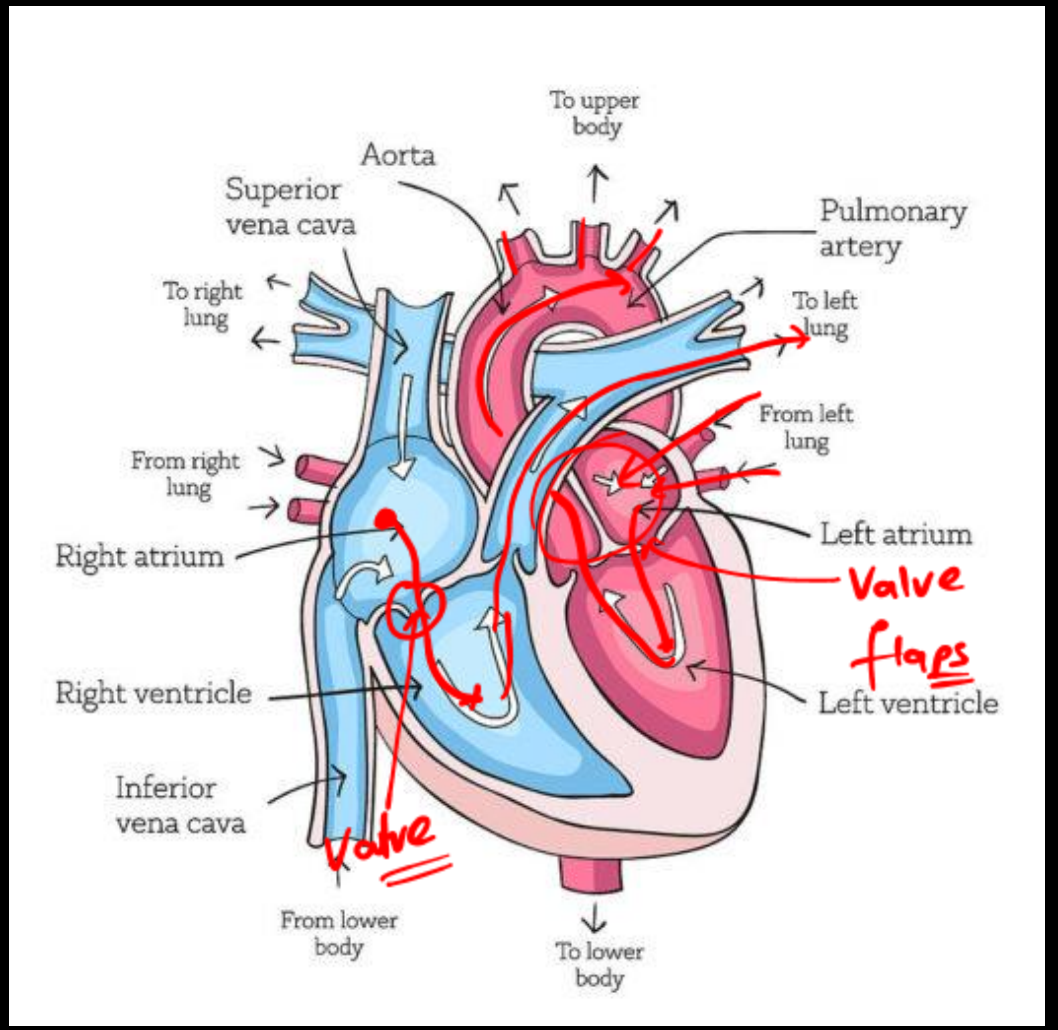
⇒ It also helps in removing wastes from our body.



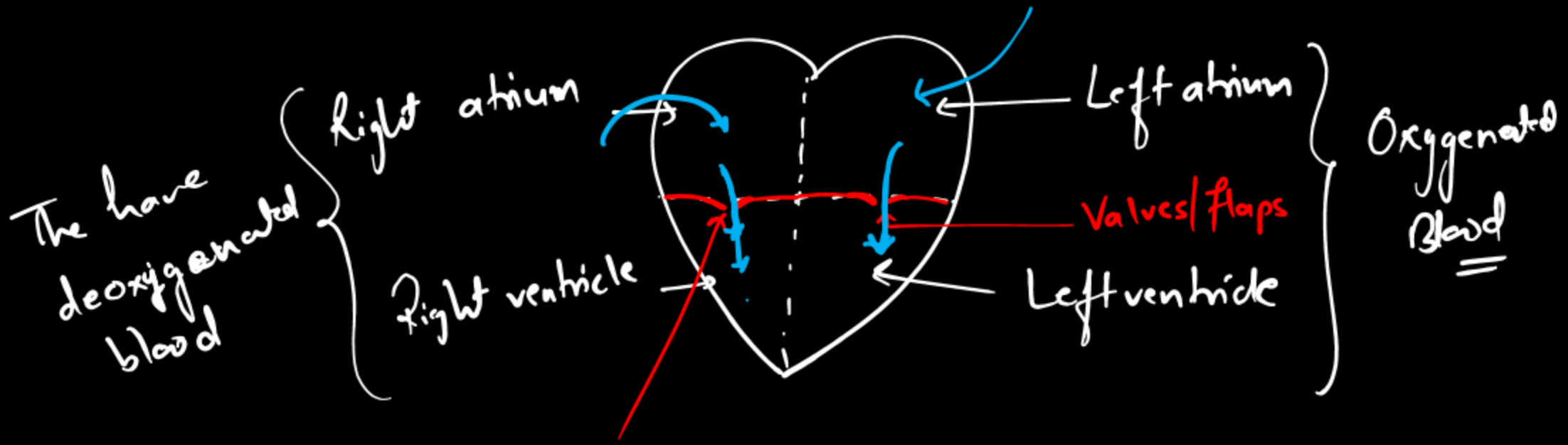


Heart





Human heart → 4 chambers



- Birds → ~~Fish~~ 4 chambered
- Frog → Three chambered
- Fish → Two chambered
- Cockroach → 13 chambered heart.

Valves / flaps

- They ensure that the blood flows in one direction only.

Blood Vessels :

⟹ We have network of blood vessels throughout our body.

→ To transport blood to and from heart.

3 Main Types of Vessels

- Arteries
  - ↓ Thick walled
  - The main thick artery is called Aorta
- Capillaries
  - ↓
  - Very-very-very thin blood vessels.
  - ⇒ they connect arteries and veins
- Veins
  - → thin walled.
  - → Blood in vein is low in oxygen

Arteries

→ They carry oxygen rich blood from heart to different parts of our body.

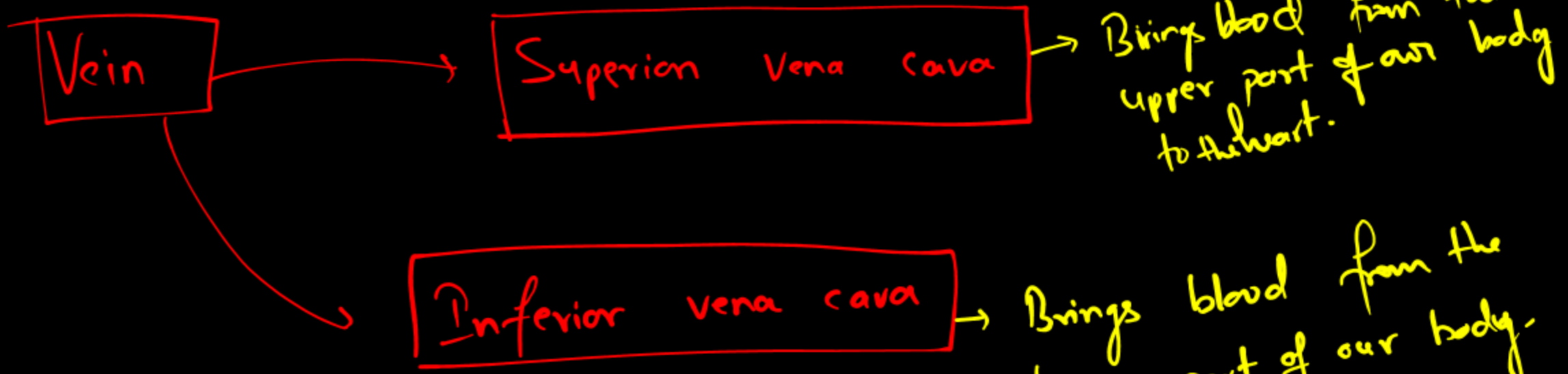
Exception ⇒ Pulmonary artery → It carry blood which is low in oxygen.

Veins:

→ It returns blood from ~~the~~ different parts of the body to the heart.

→ Veins have valves
↳ prevents backflow of blood.

→ Vein carry blood low in oxygen. Except pulmonary vein → blood is rich in ~~oxygen~~

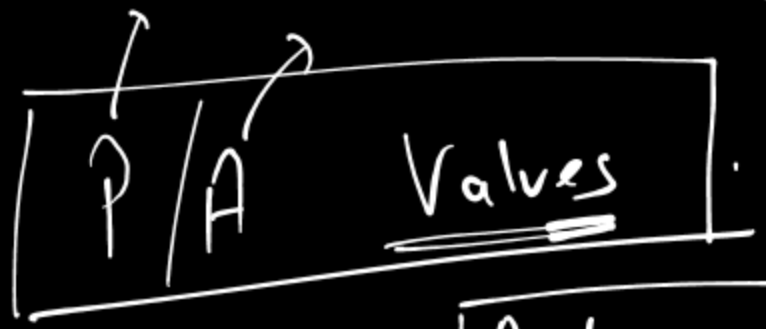


Blood Capillaries

→

Thikness of Wall (Surface of vessel)

- Arteries ⇒ Thick walled
- Veins ⇒ Thin walled



- Arteries → Do not have valve.
- Veins → have Valves
  - To prevent back flow of blood.

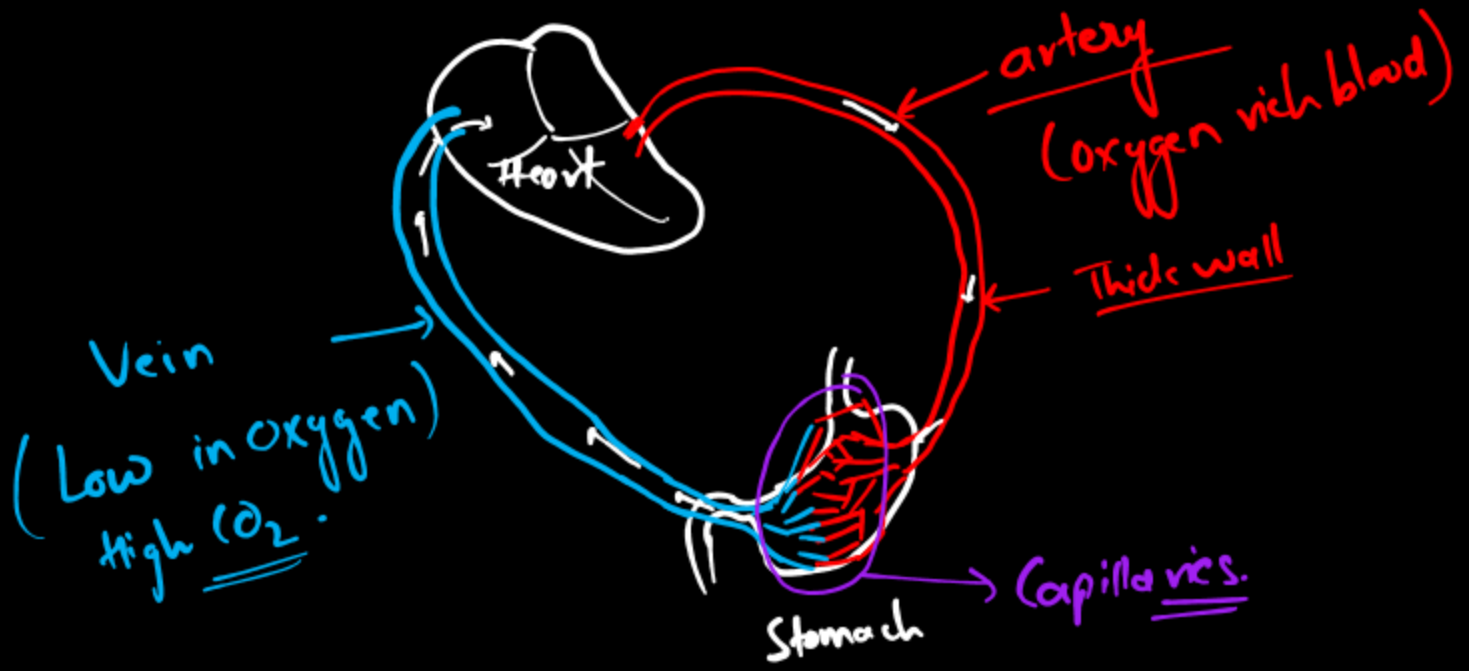
Capillaries :

"Thinnest blood vessel"

→ It creates connection between arteries and veins.

→ They are responsible for delivering oxygen and nutrient to each cell of our body.

→ They are also responsible for picking CO_2 and waste products from each cell of our body.



Blood :

→ Liquid that flows in blood vessels

→ It is red in colour (due to haemoglobin)

[Iron contain pigment(protein) responsible for carrying oxygen.]

Blood

Components

Lactobacillus

Good Bacteria, it convert milk into curd.

Blood cells

Red Blood Cells (RBCs)

- Red in colour
- Blood is Red because of RBCs
- It carry oxygen throughout our body.

White Blood cells (WBCs)

- help fighting infection.
- By killing bacteria / germs

Platelets

- Clots blood at injured site.
- It stops bleeding.

Blood Plasma (Pale yellow liquid)

- Water (mostly)
- Proteins, minerals

Functions of Blood :

→ It carry oxygen from lungs to different part of our body. (RBCs)

→ It carry carbon dioxide from every cells to the lungs (Plasma)

→ It transports nutrients to all the cells. (Plasma)

→ It transports wastes away from the cells. (Plasma)

→ It helps to fight infections. (WBCs)

→ It & regulate the temperature of our body. (Mostly Plasma)

Colour of blood is Red in both Arteries and Veins

Arteries → Bright Red

Vein → Dark Red

Heartbeat

→ Heart pumps blood at a regular rhythm called heartbeat

→ Human heart beats 60 - 80 times per minute.

Heart Rate :

"No. of time heart beats per minute."

- Increases during running / exercise → on some time ; it comes to normal rate when we stop exercising.
- Normal heart rate 60-80 beats per minute

Process of Blood Circulation

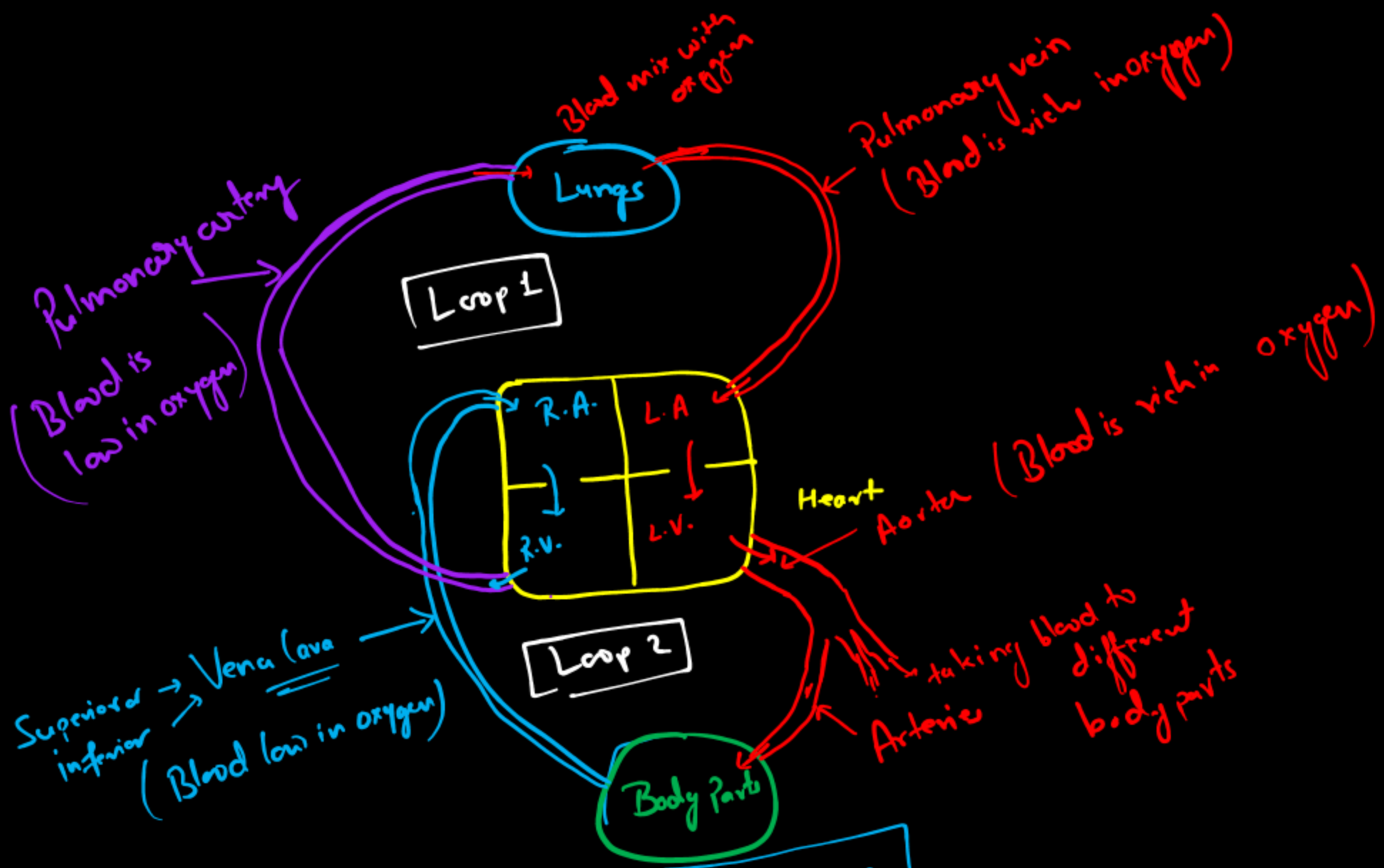
Double - Circulation

Blood flows in two loops → Loop 2 : Heart → Body Parts → Heart

Loop 1 :

Heart → Lungs → Heart

This process takes less than 1 minute in human.



Schematic diagram

Double circulation.

End of the chapter