

UPDAAN



2025

LIFE PROCESSES



Biology

Lecture - 07

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Topics to be covered

- 1 ✓ Blood and its components
- 2 ✓ Blood vessels
- 3 ✓ Breathing in fishes
- 4 ✓ MCQ practice and Homework



Question of the Day

Deficiency of iron
↓
Anemia

(A)

(B)

Lack of haemoglobin will lead to weakness

Bhai tu "Iron" Kha

YES

NO

Less O_2 transport

Less O_2 will reach our cells

Less respiration → "low energy"

Weakness

What
Do You
Think?



Residual Volume:

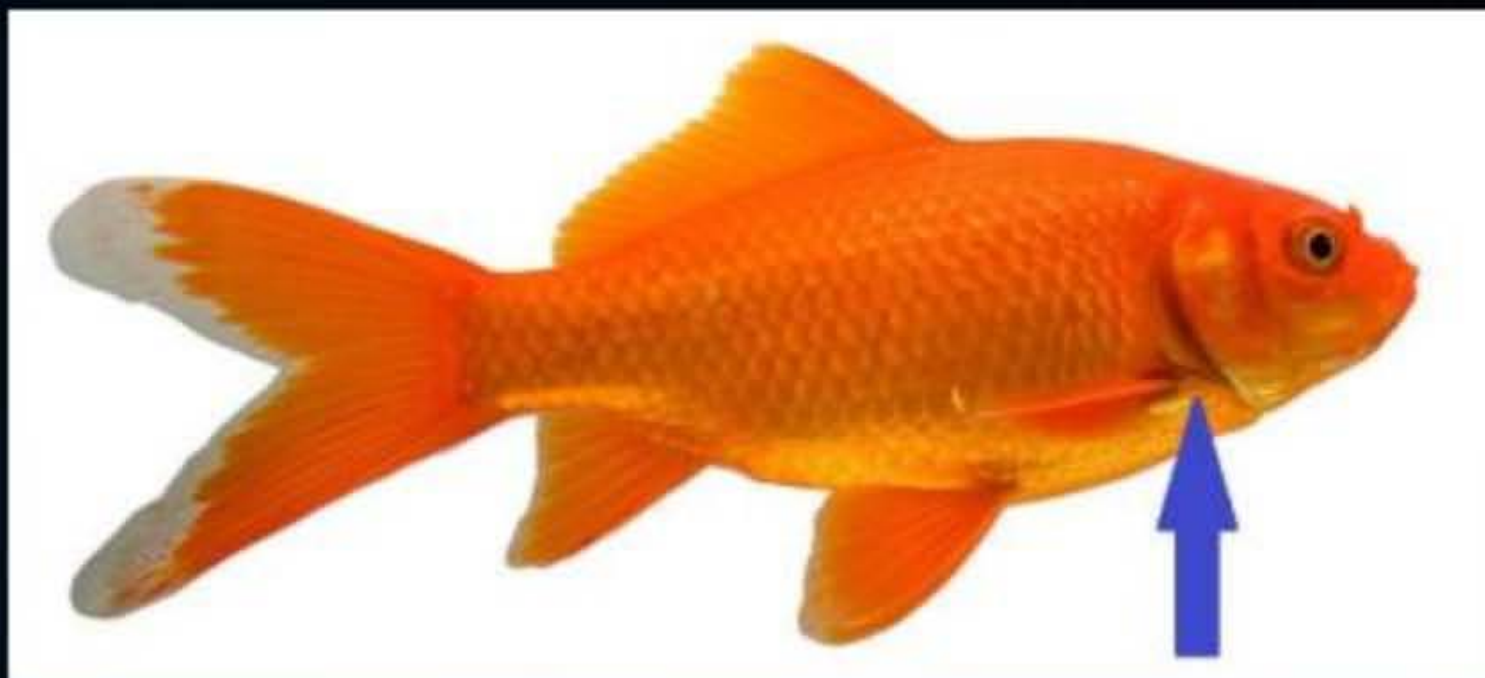


Residual volume (RV) is the amount of air that remains in a person's lungs even after maximum exhalation / forcible exhalation



$$RV = 1000 - 1200 \text{ ml}$$

How do fish breathe underwater?





<https://www.youtube.com/watch?v=2hBaH14Kpnw>

- Covered by gill cover (operculum)
- **Gills** are the respiratory organs for fishes.
 - Fishes take in oxygen which is dissolved in water through gills.



- { Since, availability of oxygen is less in the aquatic environment, so the breathing rate of aquatic organisms is faster. } ****

90 Minutes Exam



First 85 minutes

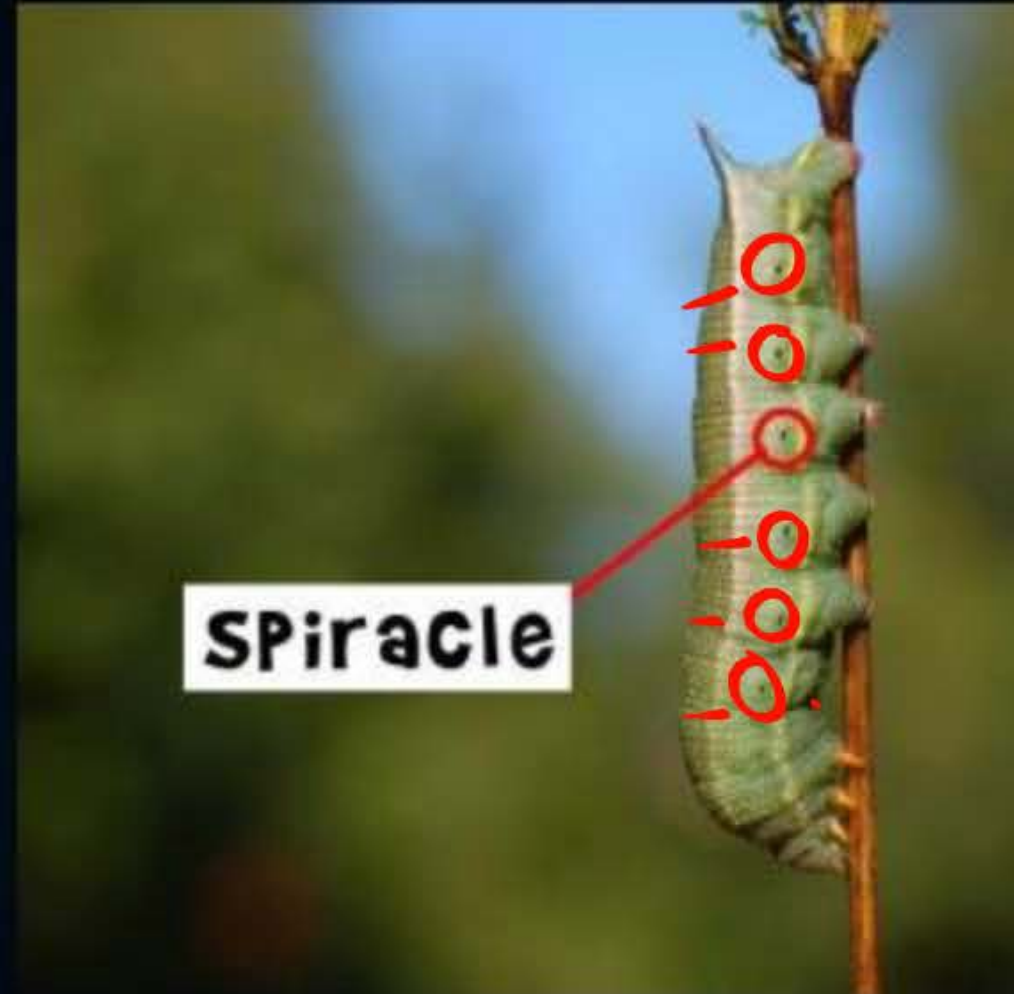
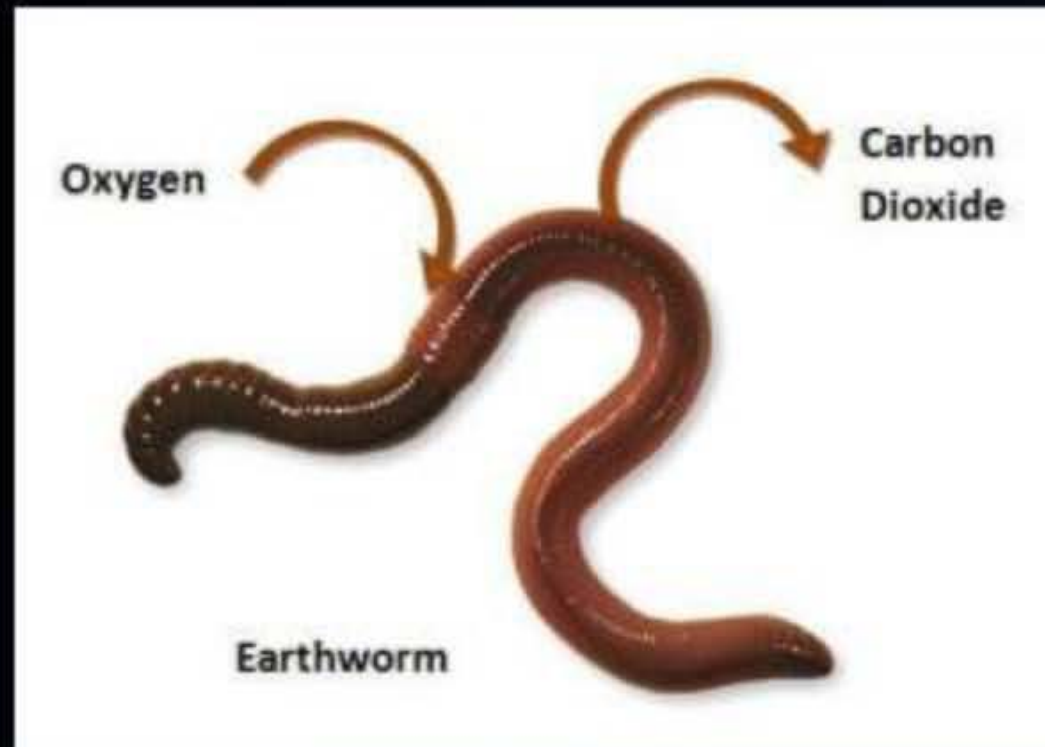


Last 5 minutes

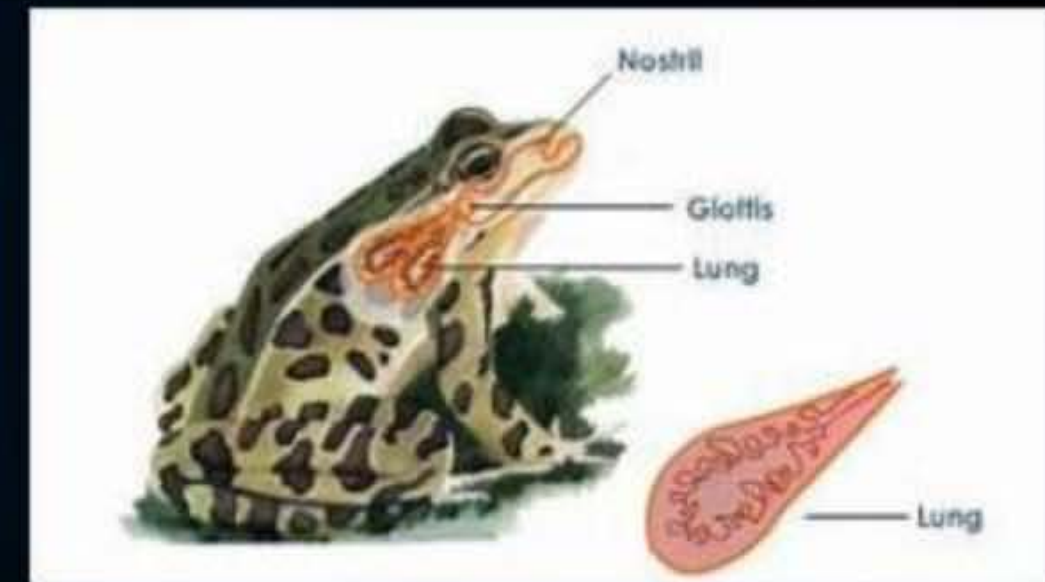


Insects: Spiracles and Tracheae

Earthworm: Skin



Frog: Skin and Lungs



QUESTION



Which of the following is correct with reference to breathing in fishes?

- A** They breathe with the help of gills
- B** Gills are covered by operculum (gill cover)
- C** They utilise dissolved oxygen for breathing underwater
- D** All of the above

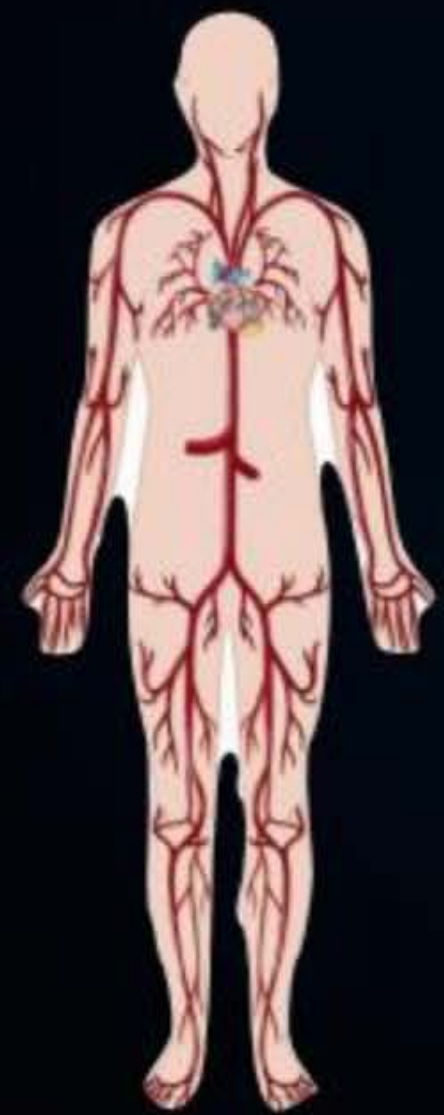


Transportation



1

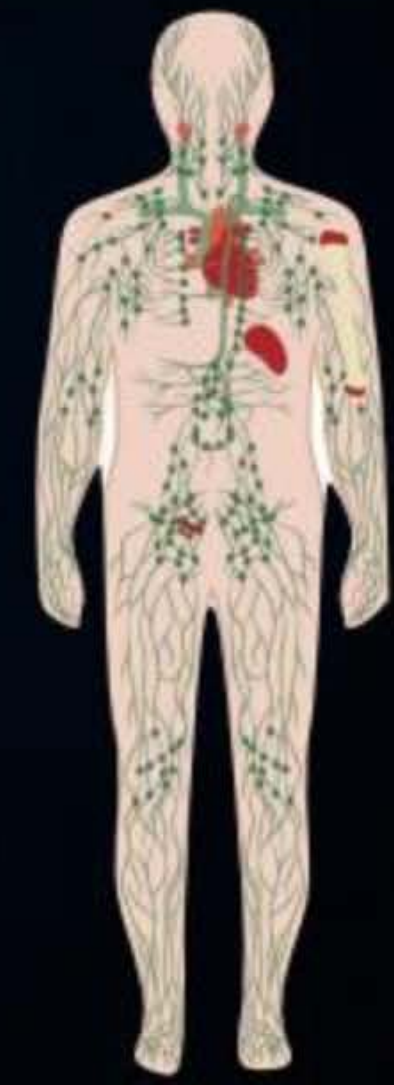
CIRCULATORY SYSTEM



Transportation is a life process which allows useful substances such as ✓ oxygen, ✓ food, ✓ salts, ✓ carbon dioxide, nitrogenous ✓ wastes and other substances to move from one part of the body to another.

2

LYMPHATIC SYSTEM



Human Circulatory System

Cardio Vascular System



• Blood

Red fluid connective tissue which helps to transport substances

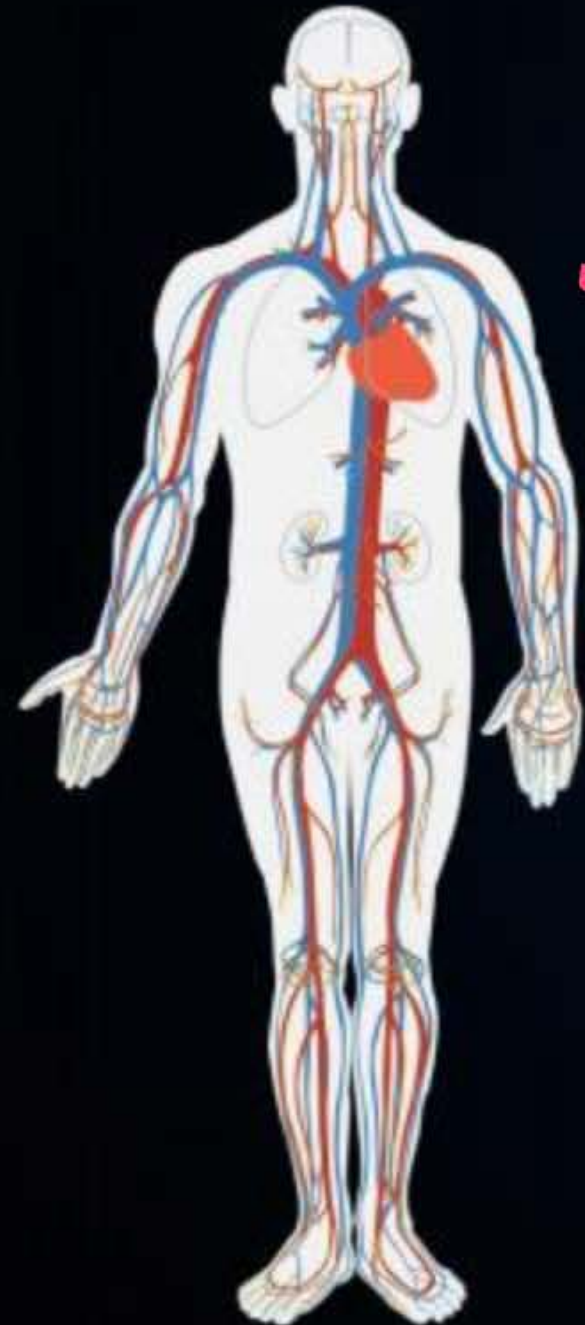
• Blood vessels

Tubes in which blood flows

① Arteries | ② Veins | ③ Capillaries

• Heart

Pumping organ



+ protection

WHAT'S BLOOD?



- * Red Coloured fluid Connective tissue
 - ↳ group of Cells
 - RBC
 - WBC
 - platelets
- * Transport & protective function
- * 5-7 l blood



Functions of Blood



1. Transport function

- Digested food substances ✓
- Excretory products (from tissues to excretory organs)
e.g., nitrogenous waste products → kidneys
carbon dioxide (bicarbonate ions) → lungs
- Hormones ✓
- O₂ (from lungs to rest of body) ✓

Waste Substances

Plasma

RBC

→ Hemoglobin

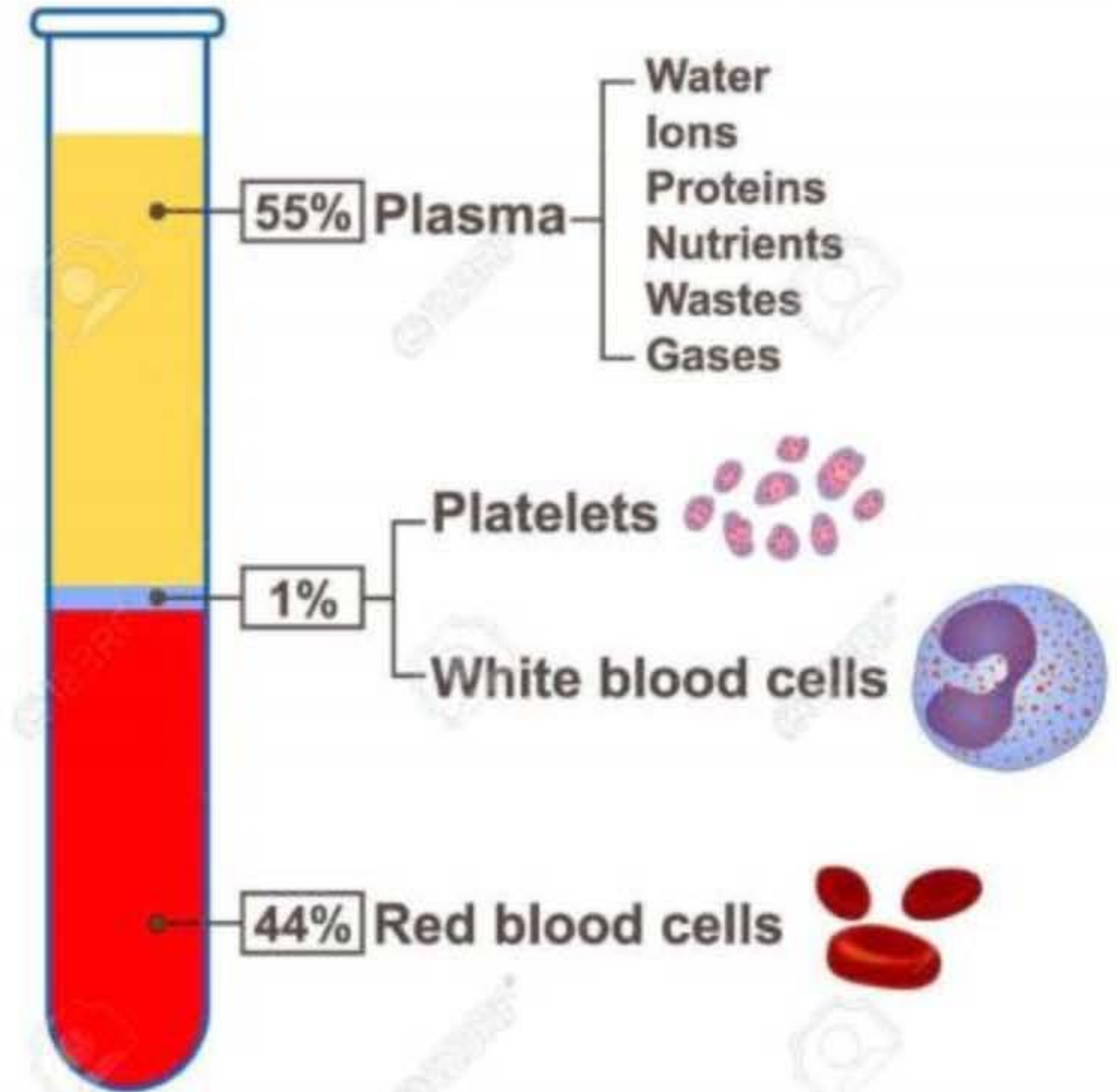
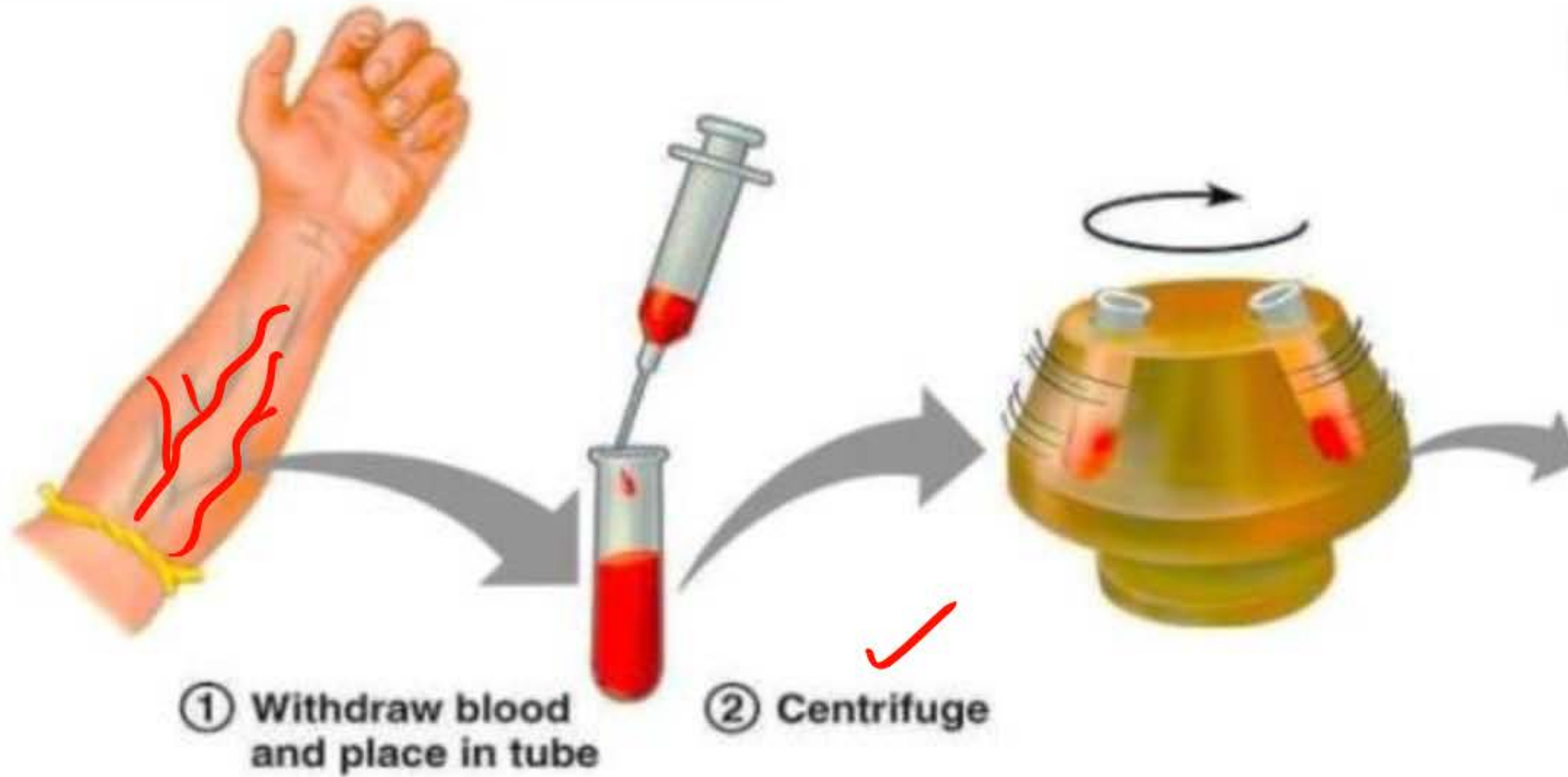
2. Protective function

- ✓ • Guards against infection
- ✓ • Blood clotting

WBC

platelets

Composition of Blood





→ Plasma

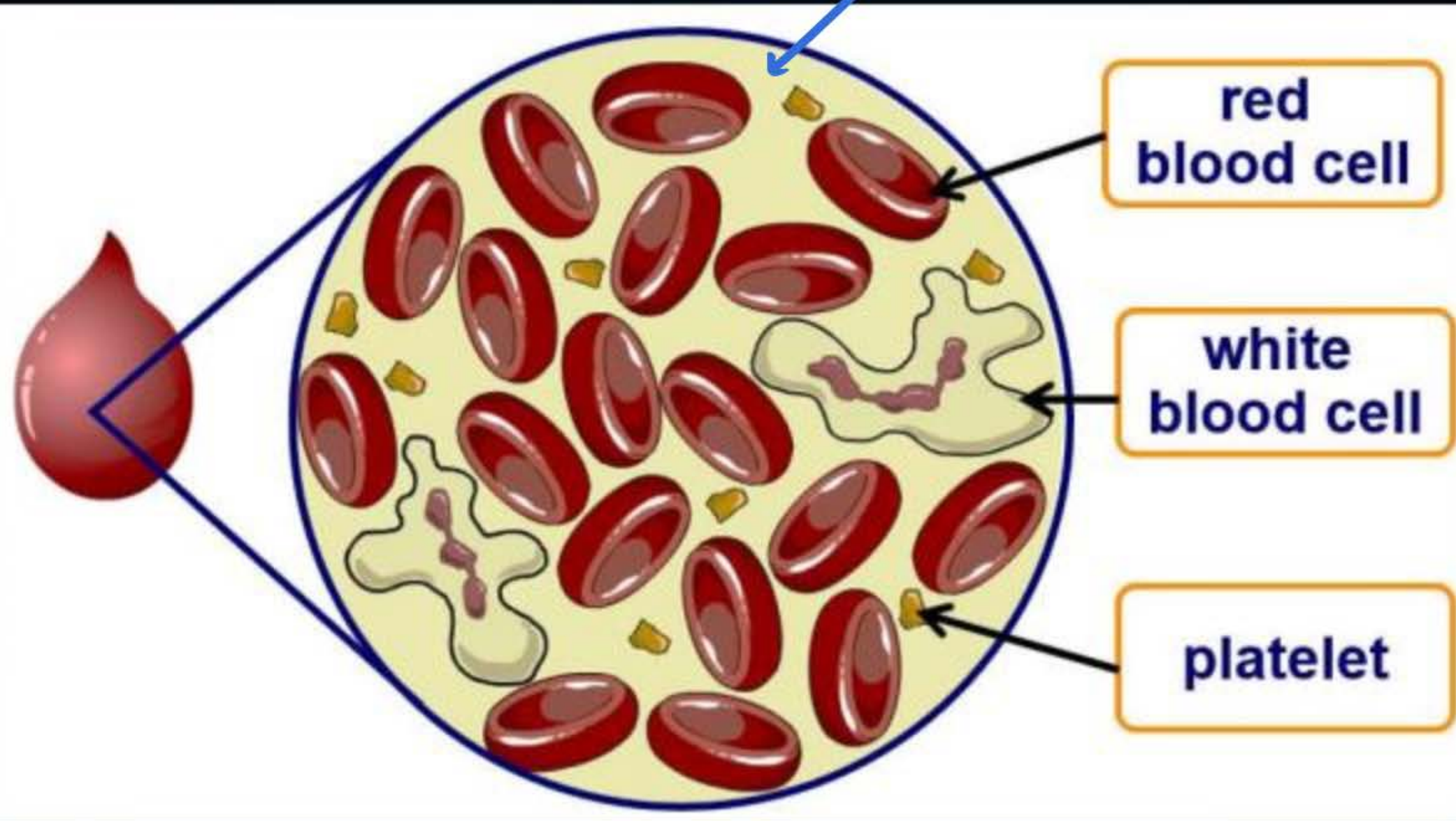
→ WBC + Platelets

→ RBC

Components of Blood



Plasma





plasma [Pale-yellowish]
↳ Liquid Matrix

WBC

RBC

Platelets

Blood Vessel

Plasma



Transportation of
✓ Digested food , ✓
✓ CO₂ Waste , Hormones



Red blood cells
(Erythrocytes)



✓ Hemoglobin in RBC
helps in Oxygen
transport ✓

White blood cells
(Leukocytes)



Produce antibody to kill
pathogen
(Bacteria, Virus)

Platelets
(Thrombocytes)



✓ Clotting of blood

Formation of blood clots is necessary at the point of injury

(A)  (B) 

What Do You Think?

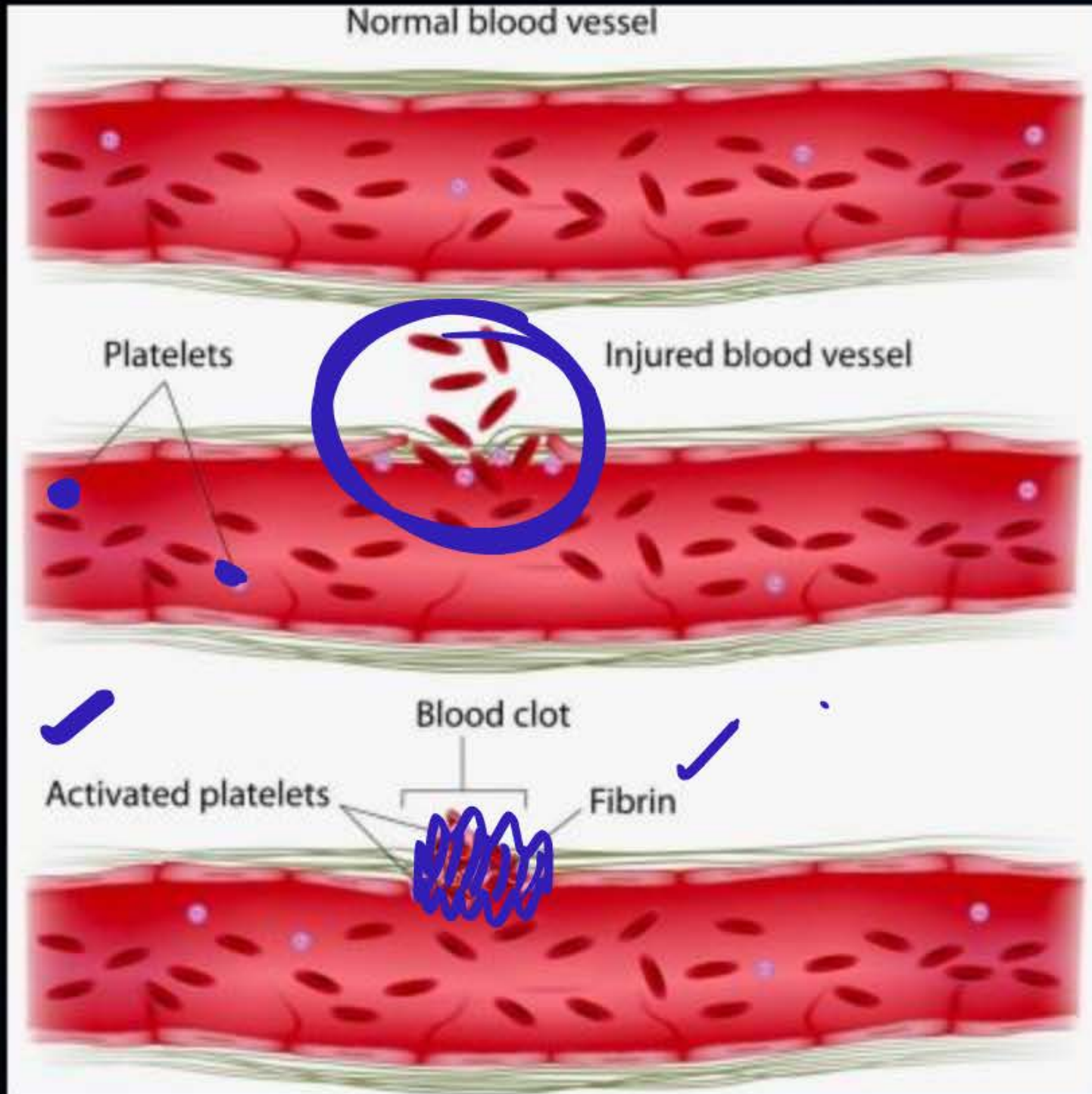


Injury → loss of blood

↓
Blood pressure will be affected

↓
Efficiency of transport system will be affected.

(prevent of blood loss)



Fibrin protein help platelets
in blood clotting

QUESTION

#H.Q



Which component of the blood produces antibodies?

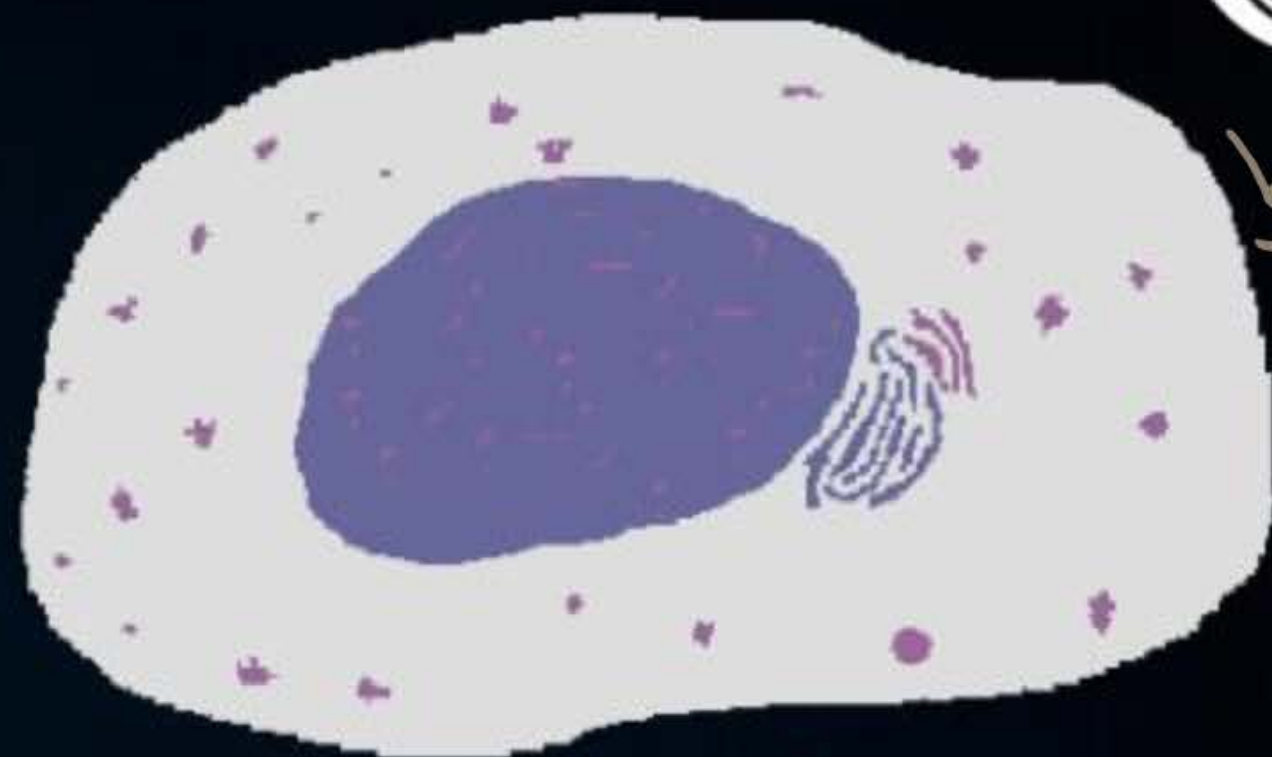
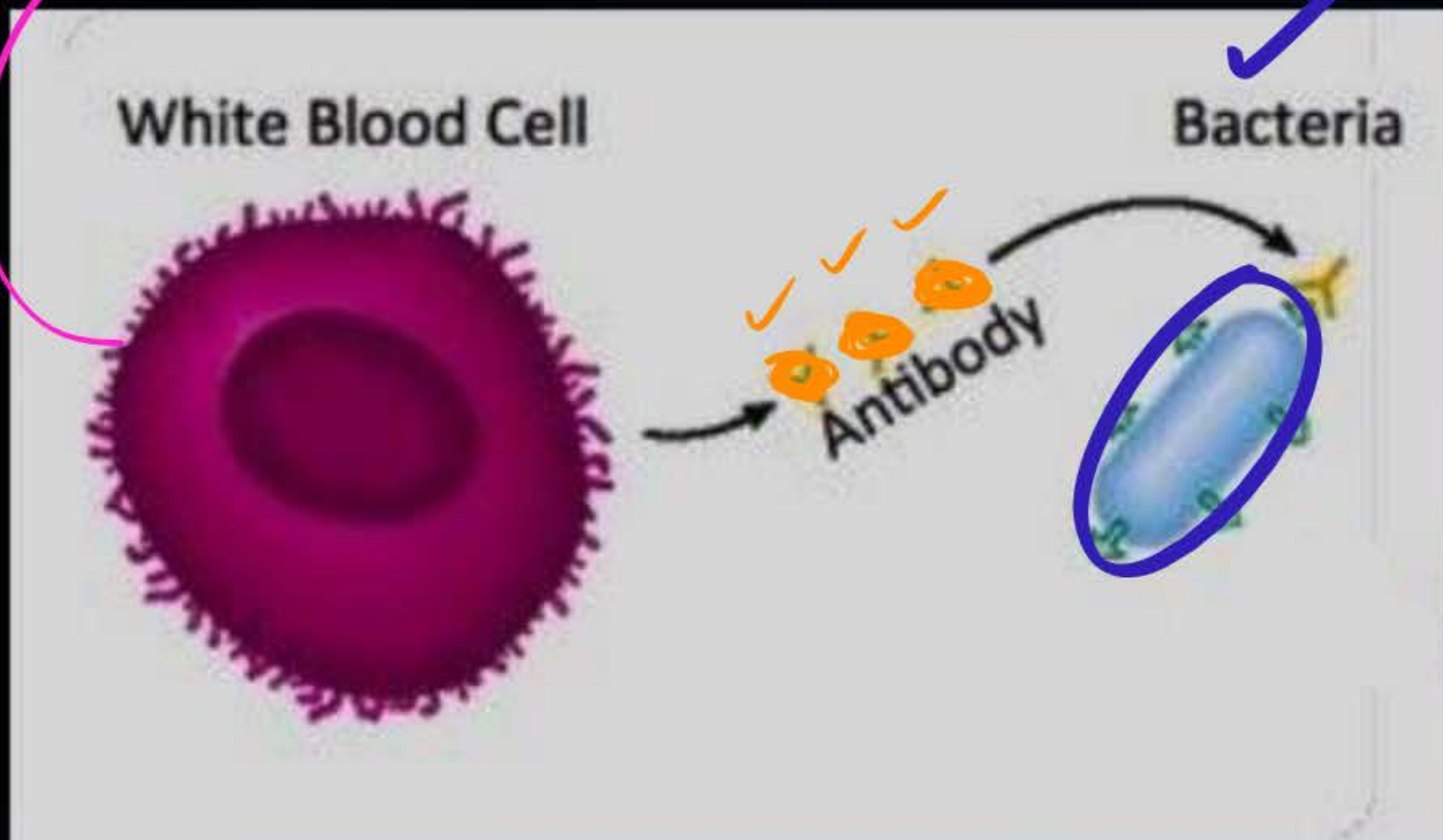
A Hemoglobin

☒ **B** Leukocytes (WBC)

C Platelets

D Erythrocytes

Hero



WBC



Production of antibodies

↓
proteins which kill bacteria/Virus.

Phagocytosis

[Eat Bacteria]



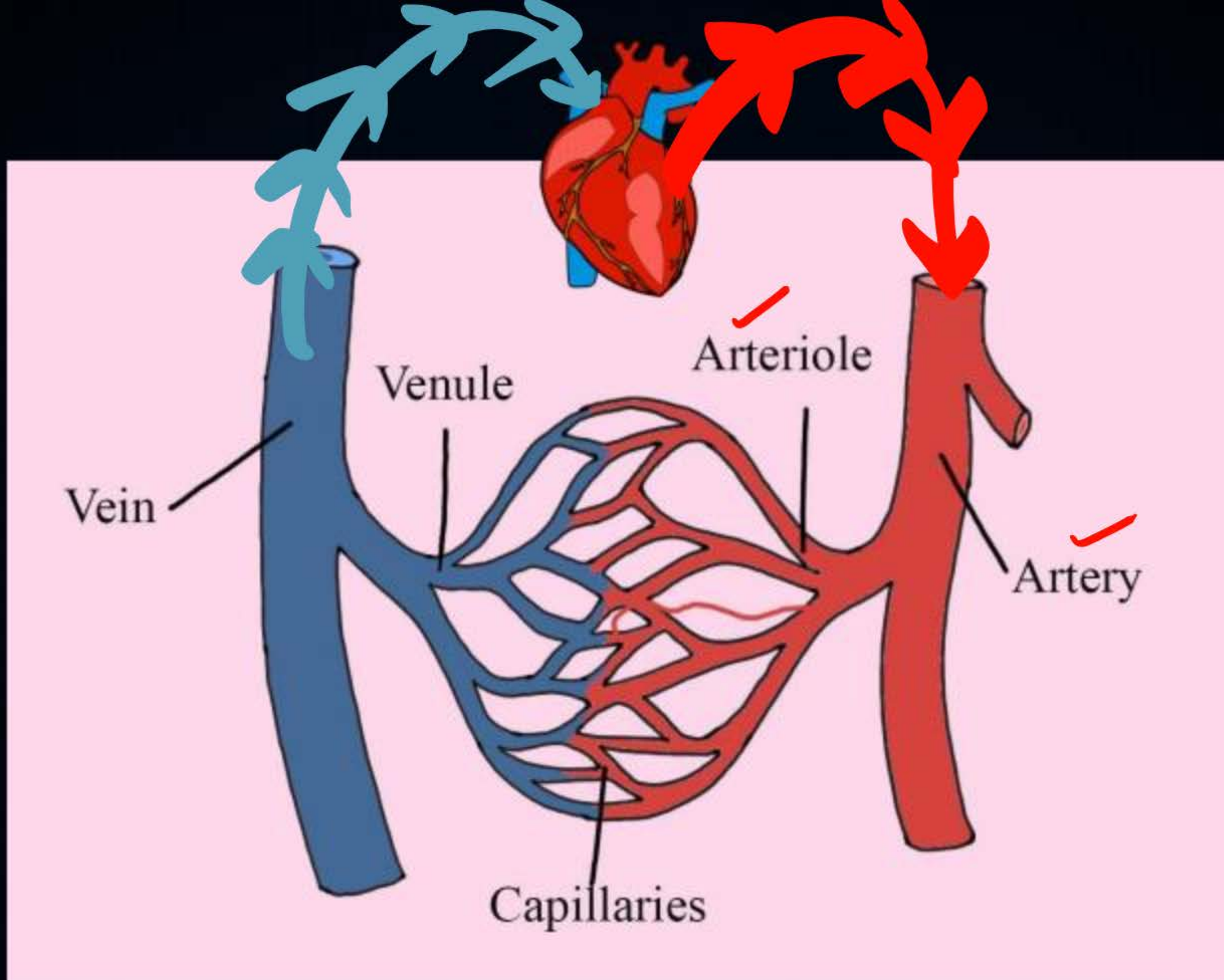
The Tubes-Blood Vessels



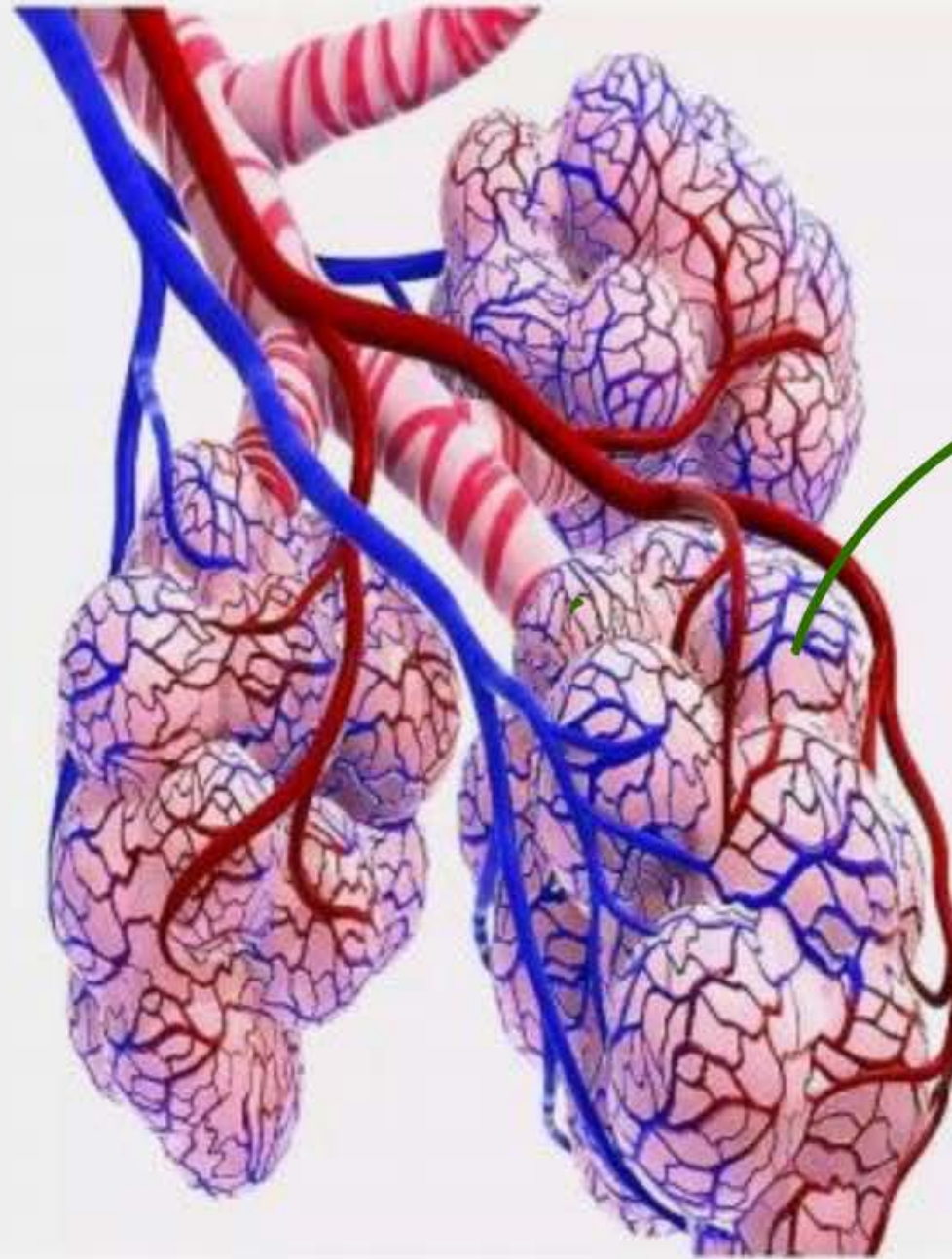
- * Arteries
 - * Veins
 - * Capillaries
- Away from heart.
(Towards the heart).



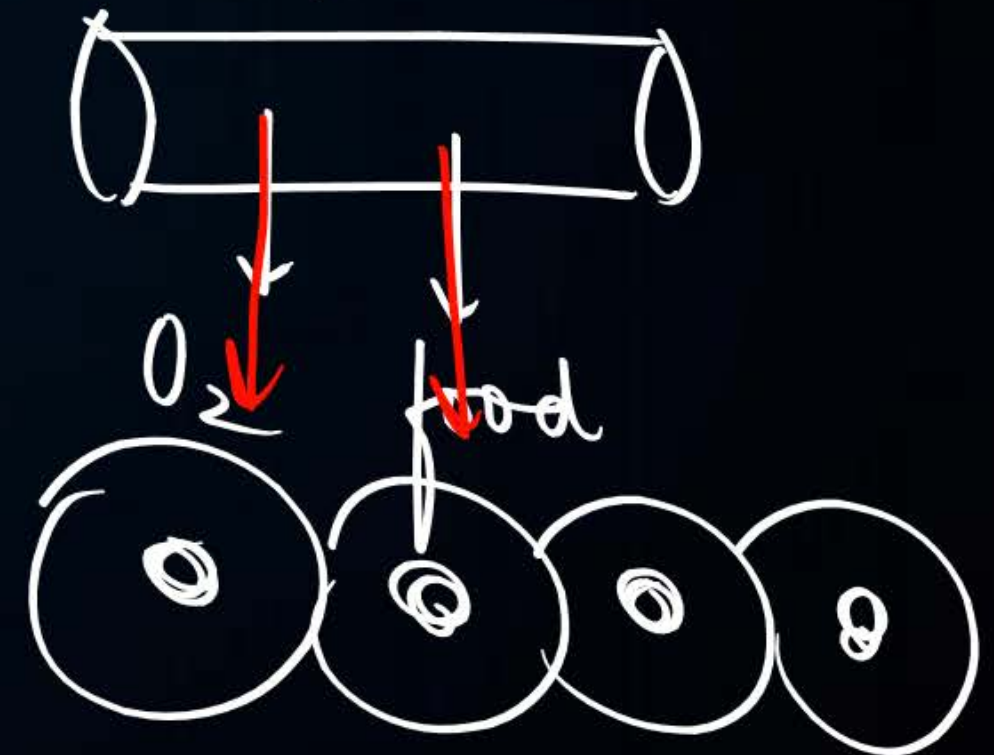
#Ch



ALVEOLI



Capillaries

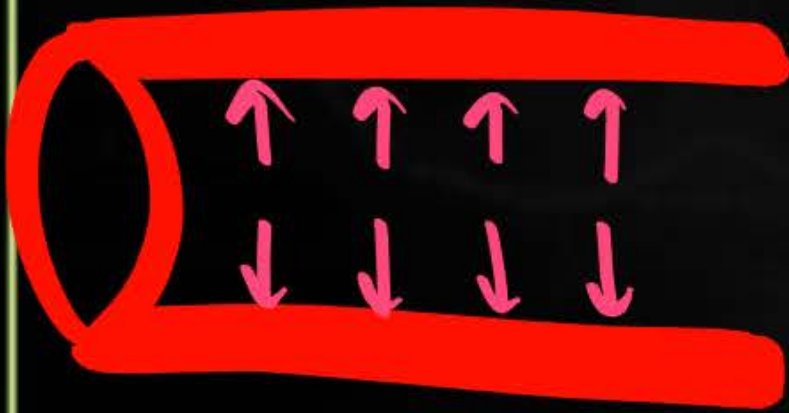


	<u>Arteries</u>	<u>Veins</u>	<u>Capillaries</u>
• Direction of blood flow	<u>Away</u> from the heart	<u>Towards</u> the heart	✓ Helps in exchange of substances
• Oxygen	High O_2 Content Oxygenated blood	O_2 is low Deoxygenated blood	Both
• Pressure	✓ High	✓ Low	Medium ✓

Arteries

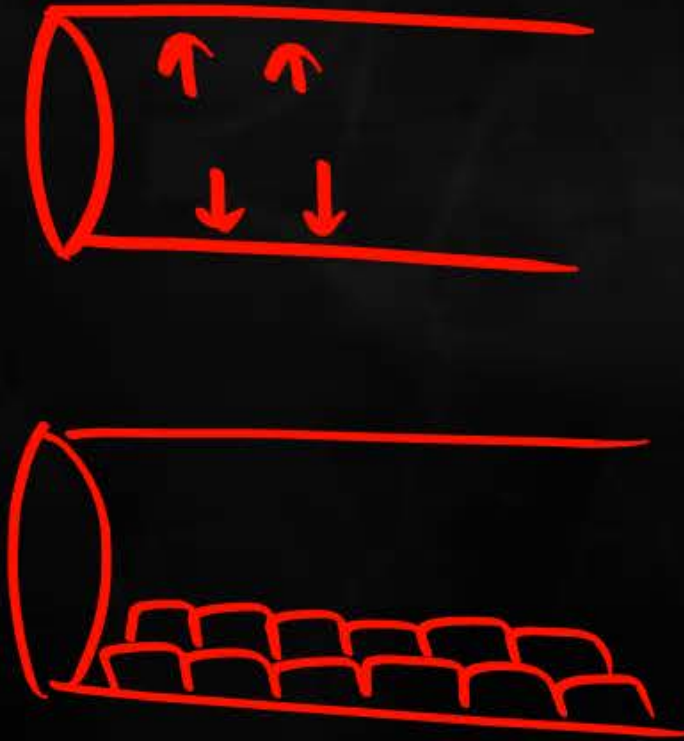
• Walls

Thick and elastic



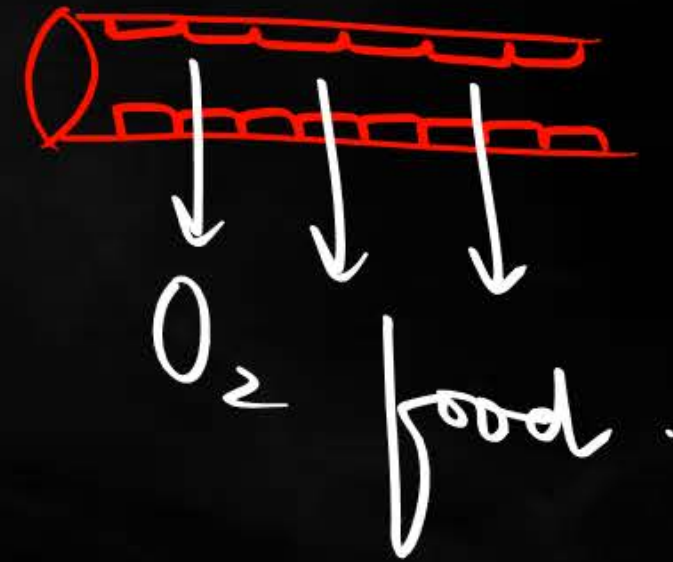
Veins

Thin and non elastic



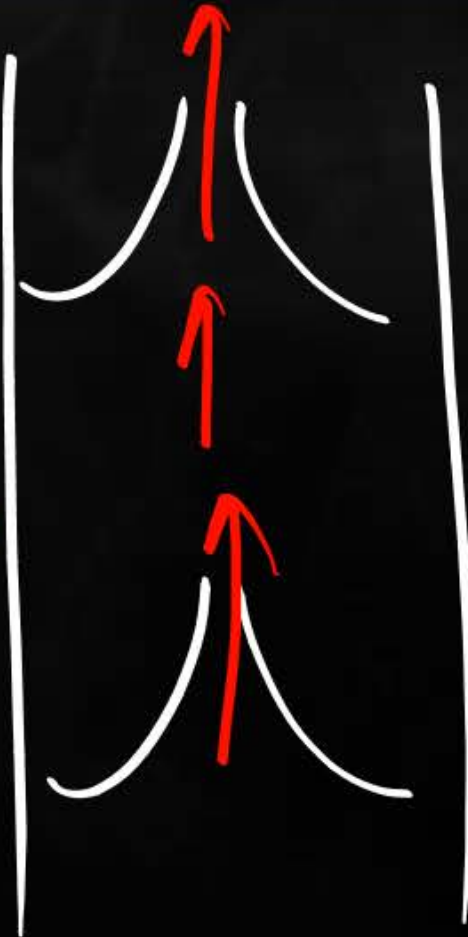
Capillaries

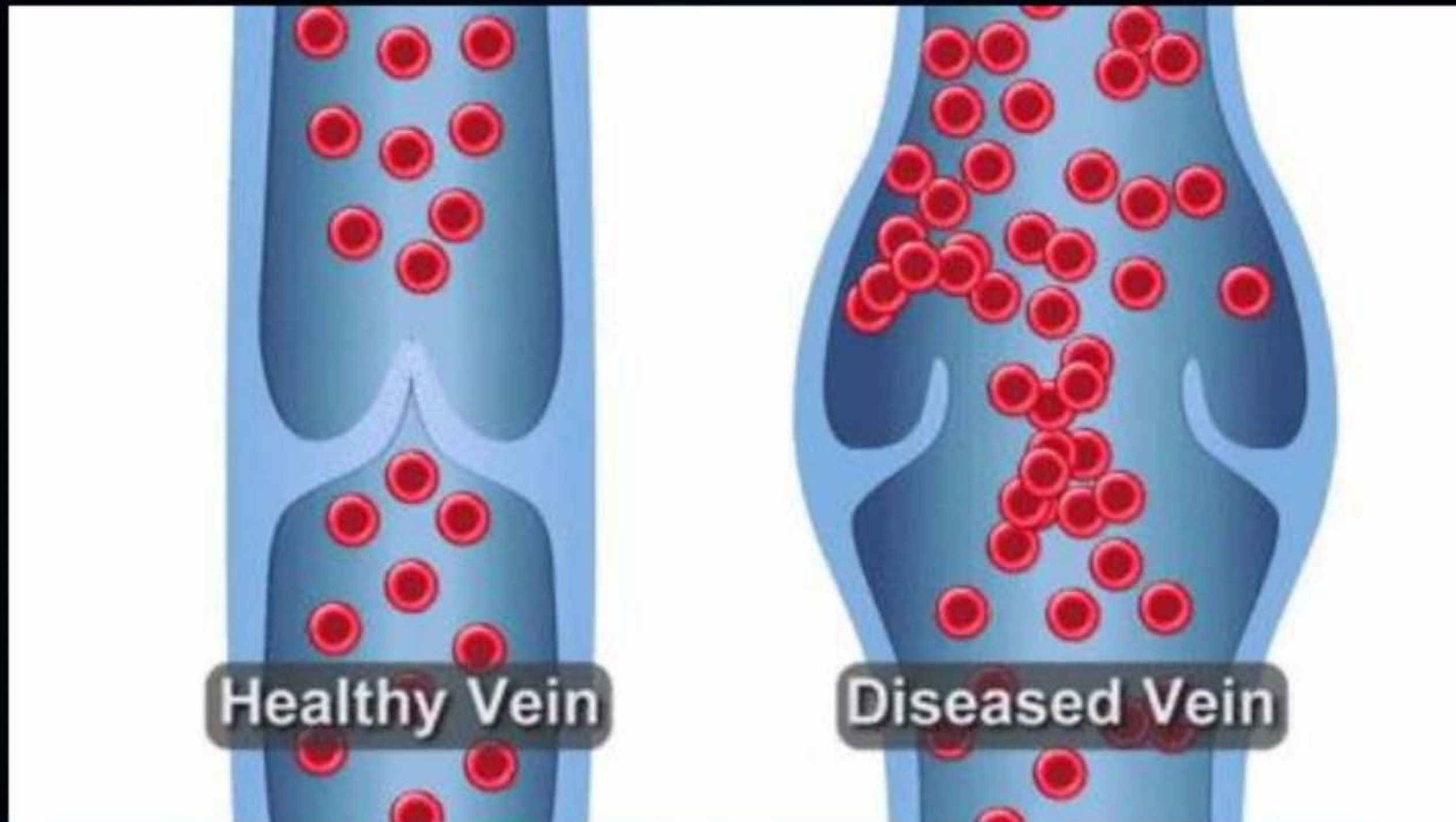
Very thin (one cell thickness)



	<u>Arteries</u>	<u>Veins</u>	<u>Capillaries</u>
• <u>Valves</u>	Absent	Present	Absent

→ prevent backflow
of the blood in Veins







- **Function**

Arteries

Distributes blood
pumped by heart
carries oxygen and
nutrients

Veins

Returns blood to
heart carries carbon
dioxide and other
waste

Capillaries

Exchange O_2 and
nutrients with cells
picks up CO_2 and
waste from cells

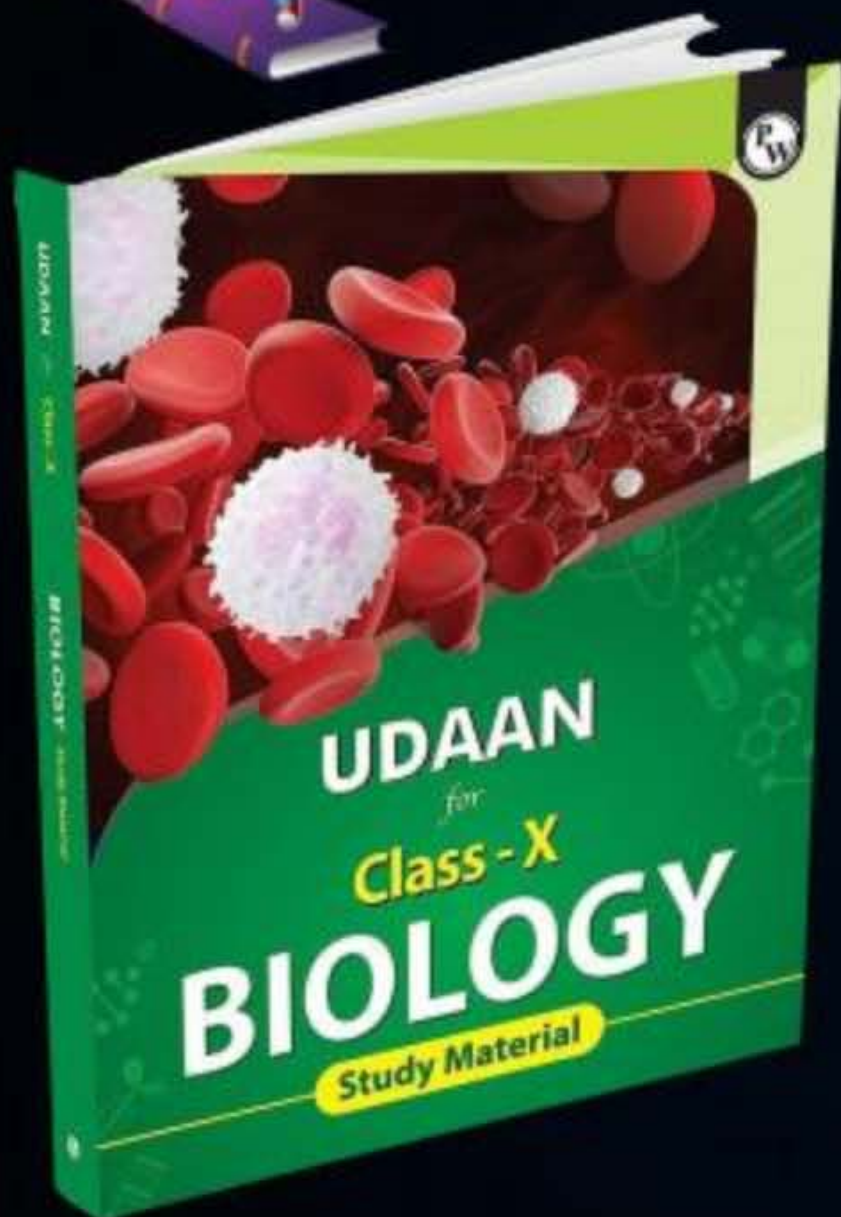
QUESTION



Veins have valves to

- ☒ **A** Prevent back flow of blood
- ☐ **B** Bind the oxygen
- ☐ **C** Maintain its position in the body
- ☐ **D** Fatafat se google kar leta hu kisi ko pata nahi chalega

Homework



FROM PW MODULE
(Udaan - CLASS 10)

✓
PAGE : 63 — Q-7 , Q-8 ✓



THANK
YOU

