STD 10-BIOLOGY-FIRST BELL-CLASS-30 Date 18/11/2020
Chapter – 5

Soldiers of Defense

Body Fluids and Defense

➢ Body fluids that play an important role in defense mechanism are :

- Blood
- Lymph

Defense strategies followed by body fluids

- Controlling the entry of germs into the body.
- Neutralising germs and the toxic substances they produce.
- Preventing the multiplication of germs.

Blood and Defense Mechanism :

- White blood cells play a significant role in defense mechanism.
- Blood is the liquid connective tissue in the body.
- Blood contains 55% blood plasma and 45% blood cells.
- Blood cells contains red blood cells, white blood cells and platelets.
- Among these white blood cells provide immunity to the body.

There are 5 different types of white blood cells:

Neutrophil

- Engulfs bacteria,
- Synthesizes chemicals that destroy bacteria.

Basophil

- Stimulates other white blood cells.
- Dilates the blood vessels.

Eosinophil

- Synthesizes chemicals that destroy foreign bodies.
- Synthesizes chemicals required for the inflammatory responses.

Monocyte

- Engulfs and destroys germs.

- **Lymphocyte**

- Identifies and destroys germs specifically.

White Blood Cells		Defense Action
	**Neutrophil**	Engulfs bacteria, synthesizes chemicals that destroy bacteria.
	**Basophil**	Stimulates other white blood cells. Dilates the blood vessels.
	**Eosinophil**	Synthesizes chemicals that destroy foreign bodies. Synthesizes chemicals required for the inflammatory responses.
	**Monocyte**	Engulfs and destroys germs.
	**Lymphocyte**	Identifies and destroys germs specifically.

Different strategies of defense mechanism

Inflammatory Response

- The cells that get damaged by a wound or by an infection produce certain chemical substances.
- These substances dilate the capillaries thereby increasing the blood flow.
- Blood plasma and more white blood cells reach the wound site.
- This is the reason for the swelling of the wound site.
- This defense mechanism is known as inflammatory response.

Stages of Inflammatory Response

Germs enter through wounds.

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Chemicals are produced

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Blood capillaries dilate.

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White blood cells reach the wound site through the walls of the capillaries.

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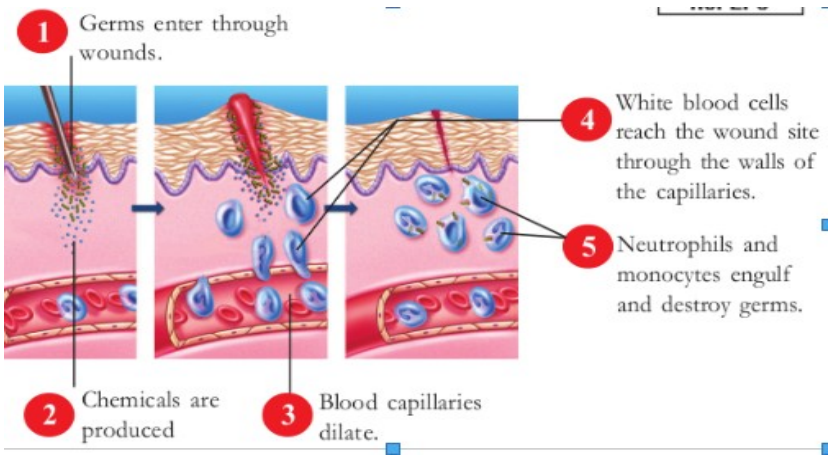
Neutrophils and monocytes engulf and destroy germs.

The advantage of dilation of capillaries at the wound site.

- The cells that get damaged by a wound or an infection produce certain chemical substances.
- Dilation of the blood vessels by chemical substances increases the blood flow to the wounded site .
- As the flow of blood to the wounded site increases blood plasma and more white cells reach the wounded site which destroy the pathogens.
- Flow of blood leads to redness of the wounded part.



Phagocytosis

- Phagocytosis is the process of engulfing and destroying of germs.
- The cells that are engaged in this process are called phagocytes.
- phago- to engulf, cyte-cell
- **Examples of phagocytes are Neutrophils and Monocytes**

- When the pathogens enter the body, phagocytes reach near the pathogen.
- Phagocytes engulf pathogen in the membrane sac.
- Lysosome(suicidal bag) combines with membrane sac.
- The pathogens are degenerated and destroyed by the enzymes in the lysosome.

Stages of phagocytosis:

Entry of pathogen inside the body

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Phagocytes reach near the pathogen

Engulfs pathogen in the membrane sac

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Lysosome combines with membrane sac.

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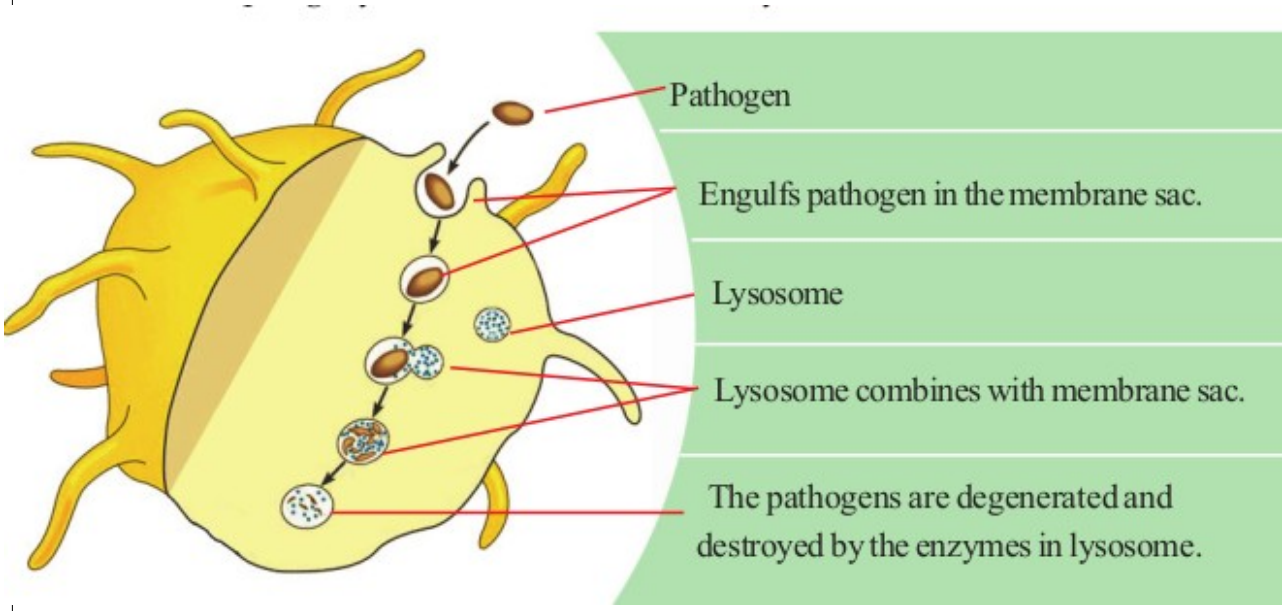
The pathogens are degenerated and destroyed by the enzymes in lysosome.



EVALUATION:

1) Prepare a table consisting white blood cells and its defense actions.
2) Note on inflammatory response and prepare a flow chart showing the stages of the process
3)Write the role of white blood cells in the inflammatory response.
4)Prepare a note on Phagocytosis and stages involved in the process .