Lesson 6: The Immune System

Terminology:

1. **Innate Immune System:** The body's first line of defence against pathogens, consisting of physical and chemical barriers, as well as phagocytes and natural killer cells.
2. **Adaptive Immune System:** The body's specialised defence system, capable of targeting specific pathogens and creating a memory of past infections for future defence.
3. **Phagocytes:** Cells that can engulf and destroy pathogens. Neutrophils and macrophages are examples of phagocytes.
4. **Natural Killer Cells:** A type of immune cell that patrols the bloodstream and lymph, capable of identifying and killing abnormal cells, including those infected with viruses or cancerous.
5. **Inflammation:** The body's response to injury or infection, characterised by redness, swelling, heat, and pain. It helps contain pathogens and promotes healing.
6. **Histamine:** A chemical released during inflammation, causing vasodilation (increased blood flow), increased capillary permeability, and attraction of immune cells.

- The immune system is the body's defence against pathogens, consisting of the innate and adaptive immune systems.
- The innate immune system includes physical barriers like the skin and mucous membranes, which provide the first line of defence.
- Chemical weaponry, such as stomach acid, enzymes, and peptides, helps protect the body from harmful microorganisms.
- Phagocytes like neutrophils and macrophages are key players in the innate immune system, devouring pathogens and cleaning up debris.

- Natural killer cells patrol the blood and lymph, identifying and destroying abnormal cells, including those infected with viruses or cancerous.
- Inflammation is the body's response to injury or infection, involving redness, swelling, heat, and pain. It helps contain pathogens and promote healing.
- Histamine is released during inflammation, causing vasodilation, increased capillary permeability, and attraction of immune cells to the affected area.
- When local defences are overwhelmed, the body may raise its temperature through fever to accelerate healing and reduce bacterial growth.
- For more formidable foes, the adaptive immune system comes into play, targeting specific pathogens and forming a memory of past infections.
- The immune system's responses involve a combination of physical, chemical, and cellular defences to keep the body healthy.

Immunity

There are two types: Active and Passive

Summary

Line of defense	Cell/mechanism	Role in fighting pathogens
1st	Physical/chemical barriers	Prevent entry of pathogen
2nd	White blood cells	Attacking pathogens
3rd	Lymphocytes	B – create antibodies T – Attacks and marks pathogens

How does the body acquire immunity		
	Naturally acquired	Artificially acquired
Passive	Breast feeding from parent	Injection of antibodies
Active	Getting infected and building immunity	Injection of dead pathogens