



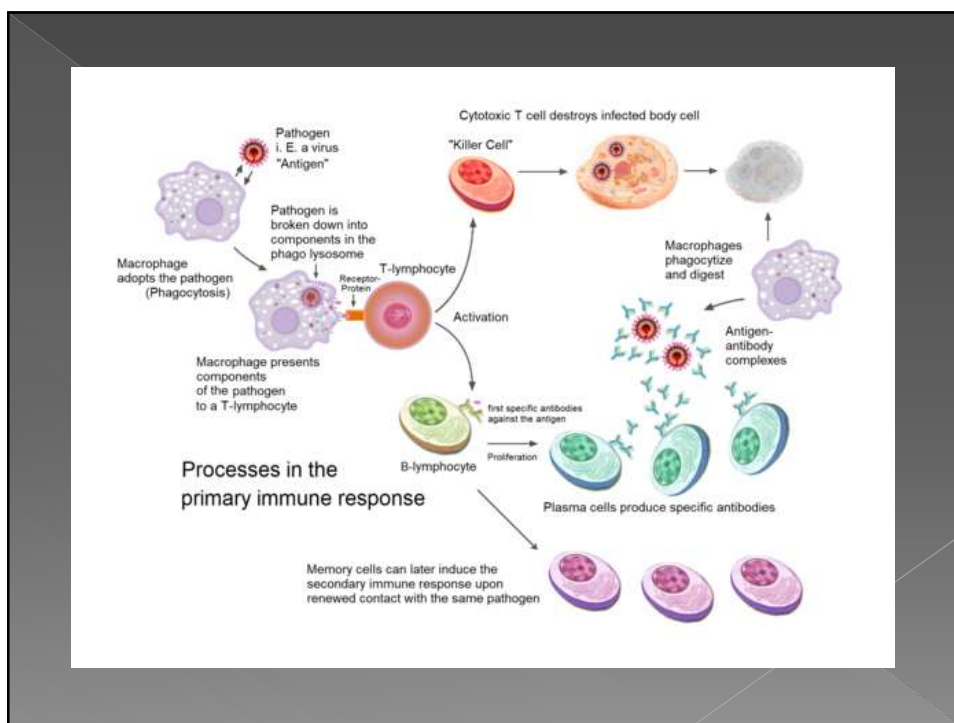
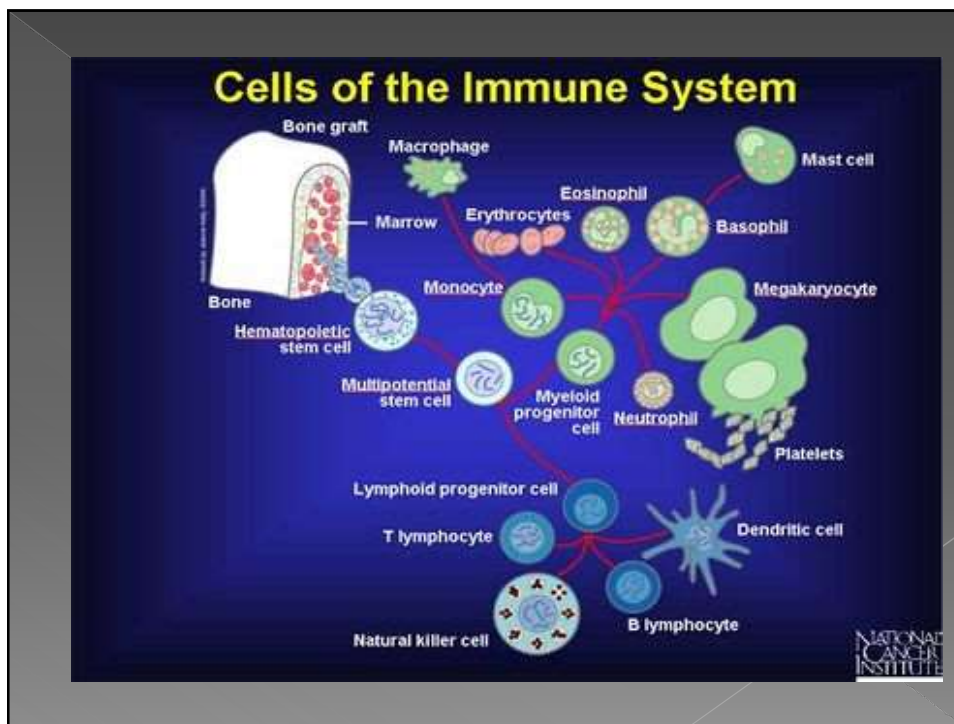
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Immunity

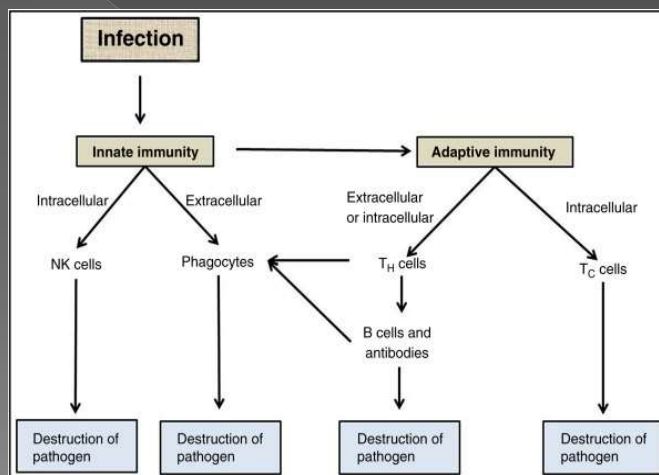
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The Immune System—The Body's Defense Against Infection

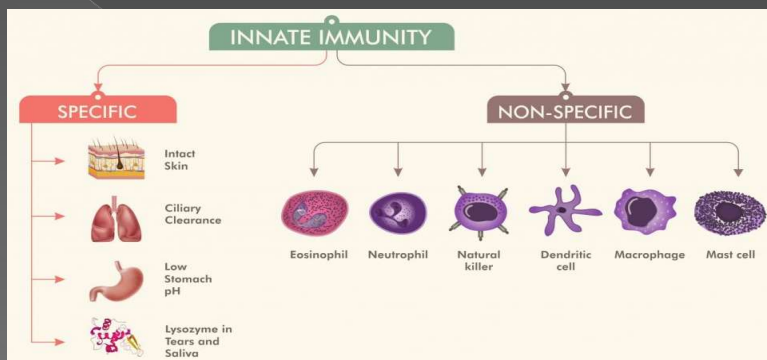
- When germs, such as bacteria or viruses, invade the body, they attack and multiply. This invasion, called an infection, is what causes illness.
- The immune system uses several tools to fight infection. Blood contains white or immune cells, for fighting infection. These white cells consist primarily of macrophages, B-lymphocytes and T-lymphocytes:
- **Macrophages** are white blood cells that swallow up and digest germs, plus dead or dying cells. The macrophages leave behind parts of the invading germs called antigens. The body identifies antigens as dangerous and stimulates antibodies to attack them.
- **B-lymphocytes** are defensive white blood cells. They produce antibodies that attack the antigens left behind by the macrophages.
- **T-lymphocytes** are another type of defensive white blood cell. They attack cells in the body that have already been infected.
- The first time the body encounters a germ, it can take several days to make and use all the germ-fighting tools needed to get over the infection. After the infection, the immune system remembers what it learned about how to protect the body against that disease.
- The body keeps a few T-lymphocytes, called memory cells, that go into action quickly if the body encounters the same germ again. When the familiar antigens are detected, B-lymphocytes produce antibodies to attack them.



Types of Immunity



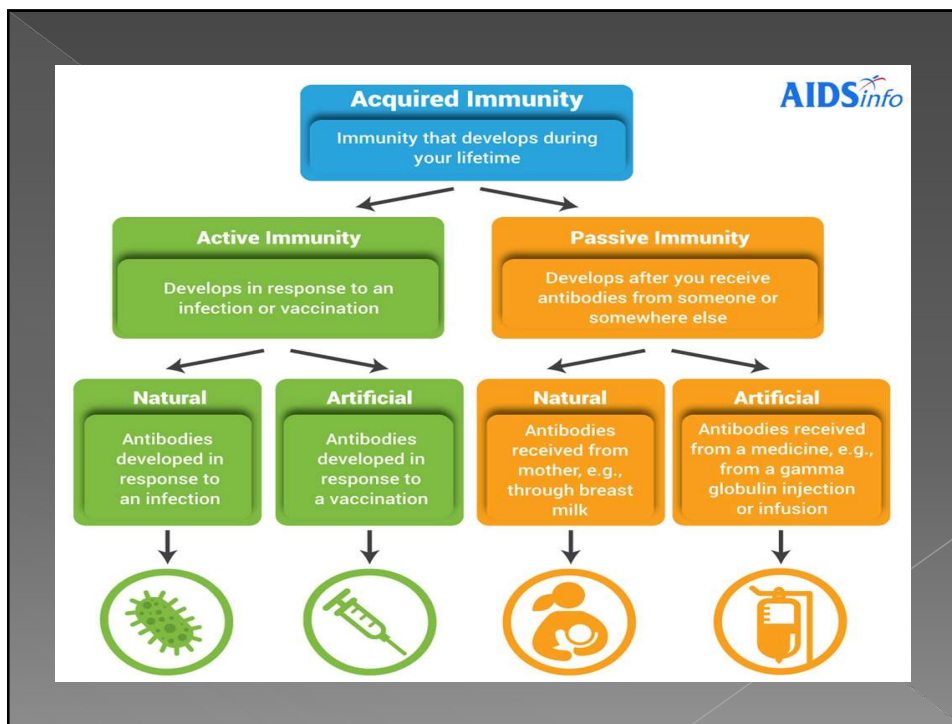
Innate Immunity



It is acquired naturally by the body. Everyone has this basic, general protection. For instance, the skin acts as a barrier to block germs from entering the body. Innate immunity is sub-divided into two types:

Non-Specific innate immunity, which is general resistance offered to all the infections.

Specific innate immunity, where a distinct resistance specific to a microorganism is displayed.



Adaptive Immunity

- It develops gradually through a person's lifetime. When exposed to a disease or when immunized against it with the vaccine, our body develops adaptive immunity. It can be sub-divided by how the immunity was acquired:
- Active immunity:** It is naturally acquired immunity through accidental contact with a disease-causing agent. It can be acquired through the transfer by injection (or infusion) and promises long-term immunity, sometimes life-long.^[2]
- Passive immunity:** It is artificially acquired through deliberate actions. It is "borrowed" from another source and lasts for a short period of time.

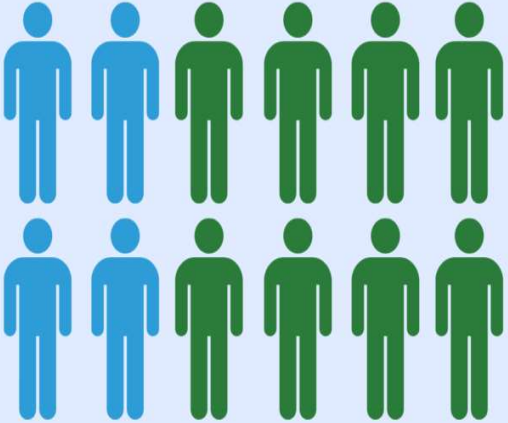
WHAT IS HERD IMMUNITY?

Herd immunity means that enough people are protected from a disease, such as COVID-19, to the point where that illness can no longer spread within a population.

People can gain immunity either by getting infected with the virus, or by getting vaccinated.

South Africa estimates that 67% of its population would need to have immunity in order to stop COVID from spreading.

Some scientists, however, believe the threshold needed is actually much higher.



The diagram consists of two rows of six human figures each. In the top row, the first two figures are blue, representing susceptible individuals, and the remaining four are green, representing immune individuals. In the bottom row, the first two figures are blue (susceptible) and the remaining four are green (immune). This visualizes a population where 67% (8 out of 12) are immune, which is the threshold for herd immunity according to the text.

References and Further Readings

- <https://www.cdc.gov/vaccines/vac-gen/immunity-types.htm>
- <https://www.bharatbiotech.com/blog/immunity-and-its-types/>
- https://www.physiopedia.com/Immune_System