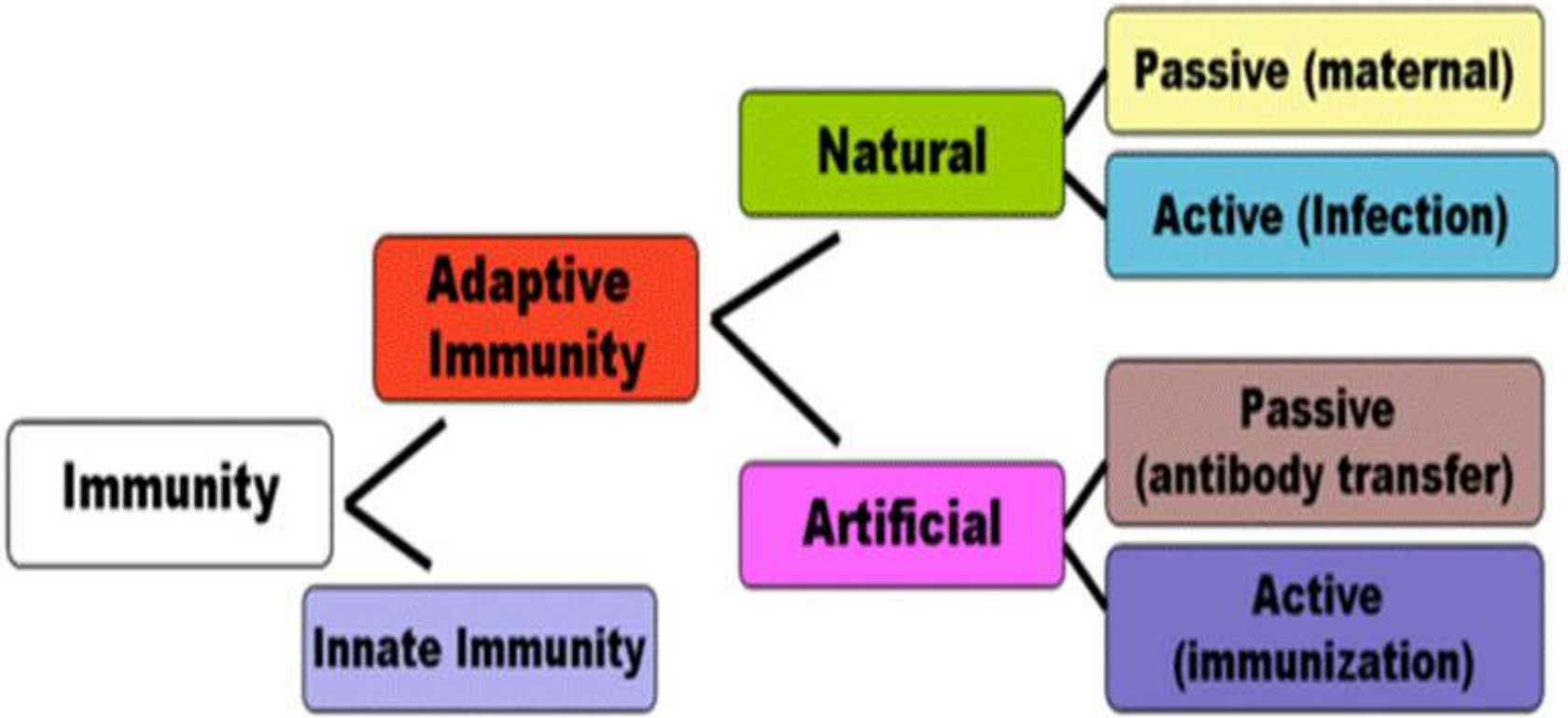
TYPES OF IMMUNITY

IMMUNE SYSTEM: MOLECULES

- **Antibodies**
- **Complement**
- **Cytokines**
- **Interleukines**
- **Interferons**

Immunity and its types



TWO TYPES OF IMMUNITY

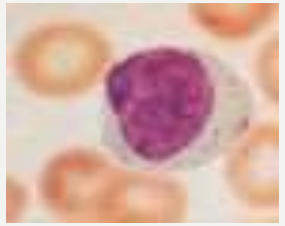
1. Innate (non-adaptive)
   - first line of immune response
   - relies on mechanisms that exist before infection
2. Acquired (adaptive)
   - Second line of response (if innate fails)
   - relies on mechanisms that adapt after infection
   - handled by T- and B- lymphocytes
   - one cell determines one antigenic determinant

INNATE IMMUNITY

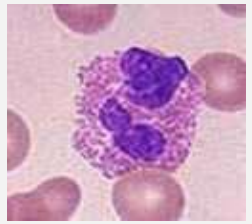
- Based on genetic make-up
- Relies on already formed components
- Rapid response: within minutes of infection
- Not specific
  - same molecules / cells respond to a range of pathogens
- Has no memory
  - same response after repeated exposure
- Does not lead to clonal expansion

INNATE IMMUNITY: MECHANISMS

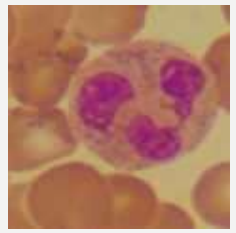
- Mechanical barriers / surface secretion
  - skin, acidic pH in stomach, cilia
- Humoral mechanisms
  - lysozymes, basic proteins, complement, interferons
- Cellular defense mechanisms
  - natural killer cells neutrophils, macrophages,, mast cells, basophils, eosinophils



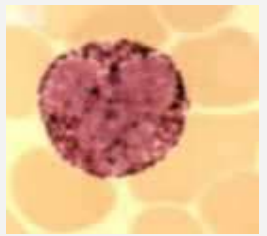
NK Cell



Eosinophils



Neutrophil



Basophils & Mast cells

Monocyte Macrophage

THE ACQUIRED IMMUNE RESPONSE CONSIST OF TWO MAIN TYPES-

- 1). Antibody mediated immune response
- 2). Cell mediated immune response

1). ANTIBODY MEDIATED IMMUNE RESPONSE

- The branch of the acquire immunity system is derived agents extracellular /exogenous antigen. Protein known as antibody promote the distraction of these invader.

- This type of immunity systems more time called as HUMORAL IMMUNITY/ non cellular immunity response. Since the antibody are found in body fluid.

- The antibodies are refered as immunoglobulins. It is mediated by the B-lymphocytes.

2). CELL MEDIATED IMMUNE RESPONSE:

- This is initiated when microorganisms are intracellular.
- Examples of diseases where microorganisms are Intracellular include viruses (corona), bacterial (TB), fungal (candida), protozoa (plasmodium- malaria) .
- Involves the T-lymphocytes. Subdivided to CD4 (T-helper cells)- enhance T&B cell activity & CD8 (cytotoxic T- cells)

Types of Acquired Immunity

Acquired Immunity is of two types– active and passive immunity.

1. **Active immunity**

It is induced by natural exposure to a pathogen or by vaccination.

It can be categorized into two types–

Naturally acquired and Artificially acquired active immunity.

2. **Passive immunity**

Passive immunity is achieve by transfer of immune products, such as antibody or sensitized T–cells, from an immune individual to non immune one.

It is of two types– Naturally acquired and Artificially acquired passive immunity

ACTIVE IMMUNITY

It is a product of the individual's own immune system in response to a foreign antigen.

I. Naturally acquired active immunity:

It is immunity that comes from infections encountered in daily life.

ii. Artificially acquired active immunity:

It is stimulated by initial exposure to specific foreign macromolecules through the use of vaccines to artificially establish a state of immunity.

PASSIVE IMMUNITY

It is an immunity in which antibodies produced elsewhere are given to the individual. They are divided into two:

I. **Naturally acquired passive immunity:**

Refers to antibodies transferred from mother to fetus across the placenta and to the newborn in colostrums and breast milk during the first few months of life.

ii. Artificially acquired passive immunity:

It is introduction of antibodies that are formed by an animal or a human to an individual to prevent or treat infection.

ADAPTIVE IMMUNITY: ACTIVE AND PASSIVE

	Active Immunity	Passive Immunity
Natural	clinical, sub-clinical infection	via breast milk, placenta
Artificial	Vaccination: Live, killed, purified antigen vaccine	immune serum, immune cells

MAJOR COMPONENTS OF ACQUIRED IMMUNE SYSTEM-

- Cells that trap and process of antigen and them present it recognition to the cells of immune system.
- Cells that have receptors for the processor antigen. These cells can bind and response to antigen.
- Cells that once activated by antigen will produced specific antibody or will participate in cell mediated immune response.
- Cells that will retain the memory of the event and react rapidly to the specific antigen. If it encounter at later time (memory cells).

- The B and T lymphocytes have specific receptor for foreign antigen and are thus able to bind the processed antigen and respond apporopritily.
- Lymphocyte also function as memory cells and initiate secondary immune response.

- The cell mediate immune response in mutated by T cells and humoral antibody mediated B cells
- Those that permote immune response are called as helper T cell and those that inhibit immune response called as regulatory cells.

QUESTIONS (20 MARKS)

1. Define the following (5 marks)
   a) Immunity
   b) Immunology
   c) Immune system
   d) Immune response
   e) Antigen
2. State three roles of immune system (3 marks)
3. Name at least 5 organs involved in immune system (5 marks)
4. State the 4 mechanical barriers used as mechanism in innate immunity (4 marks)
5. State 2 difference between the humoral and cell mediated immune response (4 marks)

READ ON :

THE COMPLEMENT SYSTEM


Thank you
By www.wallcoo.com