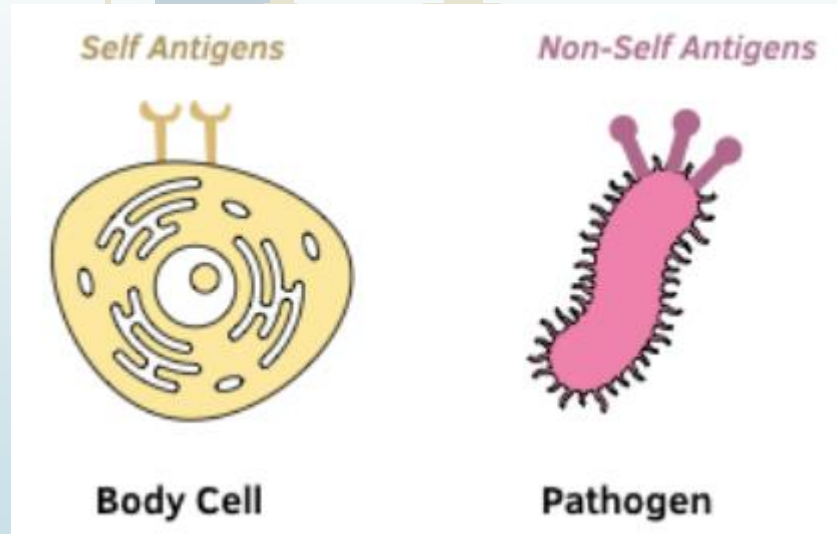


## Document 3

### The “Non-Self”



# I. Non-Self Antigens

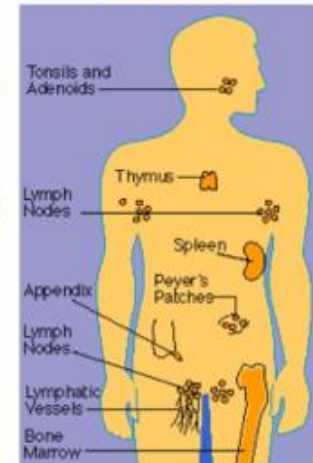
- Are foreign elements (molecules) that invade our body.
- They cause an immune response which tends to eliminate them.
- They can be classified into:
  - 1- Pathogenic agents.
  - 2- Non-pathogenic agents.
  - 3- Modified self-antigens.

## THE IMMUNE SYSTEM

### The Invaders



### The Defender

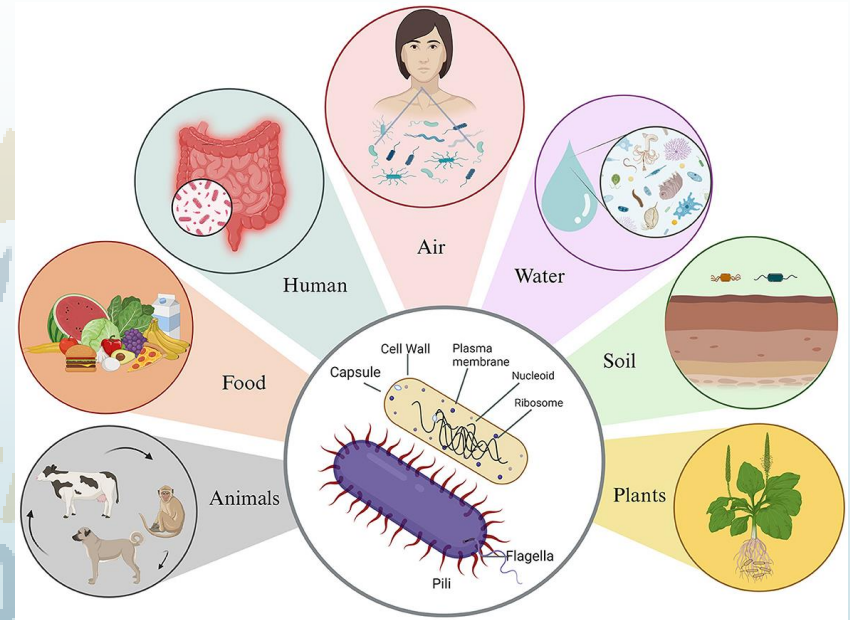


**1- Pathogenic agents:** infectious agents, they are organisms that infect other living organisms and causes diseases. ex: viruses, bacteria, fungi worms. Doc.a, p.119

| Size (m)       | Infectious agents          | Examples  | Diseases   |
|----------------|----------------------------|---|--|
| $10^{-8}$      | Viruses                    | Influenza virus<br>Measles virus<br>Mumps virus<br>Varicella zoster virus<br>Human immunodeficiency virus (HIV) | Flu<br>Measles<br>Mumps<br>Chickenpox<br>Acquired immunodeficiency syndrome (AIDS)   |
| $10^{-6}$      | Bacteria                   | Streptococci<br>Salmonella<br>Vibrio cholera<br>Clostridium tetani<br>Myobacterium tuberculosis                 | Pneumonia, Otitis, Meningitis<br>Typhoid fever<br>Cholera<br>Tetanus<br>Tuberculosis |
| $10^{-2}$ to 1 | Fungi<br>Protozoa<br>Worms | Candida<br>Plasmodium<br>Ascaris and Taenia   | Mouth lesions<br>Malaria<br>Intestinal infections                                    |

**Doc.a** Some infectious agents and the diseases they cause.

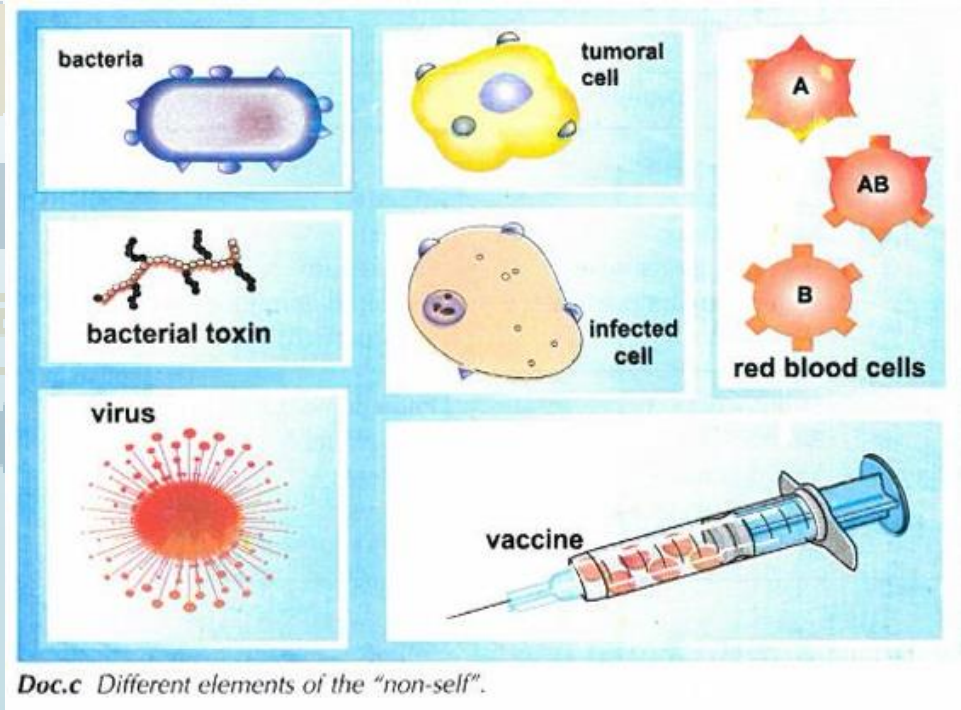
- All microscopic organisms are called microorganisms or “microbes”, except worms.
- Some infectious agents are transmitted directly from an infected person to a healthy one by: skin contact, sexual contact, blood or from pregnant woman to the fetus.
- Other agents are transmitted indirectly through: air, water or food.



**2- Non-pathogenic agents:** foreign organisms that doesn't cause diseases. ex: allergens, vaccines, tissue transplants...

**3- Modified self-antigens:** if the coding genes of the "self" undergo mutation, then the "self" might undergo modifications. ex: Cancer cells.

- Doc.c, p.120 shows different elements of the non-self.



- **Probing the documents p.120.**

### Probing the documents

1. Referring to the information provided in paragraph 2, can we consider HLA molecules as antigens ? Justify your answer.
2. The modified "self" is identified by the immune system as "non self". Justify this statement.

1- A antigen is defined as a large molecule, usually a protein or a complex sugar carried by a cell. Since HLA molecules are protein molecules carried by a nucleated cell, then they can be considered as antigens.

2- The modified self is identified by the immune system as non-self, since it is an association between the self (self HLA) and a non-self-peptide (a peptide deriving from a foreign, modified or abnormal protein).