Phagocytosis

1- The process of digestion and break down molecules like bacteria by certain cells.
2- Phagocytic one of the most important non-specific defense in host.
3- Discovered in 1887 year by Metchnikoff.

There are many types of cells that can do the process of phagocytosis but can distinguish two basic types of cells that have the ability to do this process:

1 - Microphage (Small phagocytic cells):
The mainly Neutrophils cells, a granulocyte cells circling in the blood stream and can penetrating through the walls of blood vessels to the affected parts of the body (infection), these cells live only for several days.

2 – Macrophage(large phagocytic cells):
These are white blood cells of the type Monocytes and leaving the blood stream, maturation in the tissues of different body by change in the shape and size depending on the tissue which stabilizes it, and the advantage of these cells being longer lifetime than Microphage where she lives for several weeks or months, cells live in the liver called Kuffer cell, which differentiate in brain called Microglia cell and which differentiate in the lungs called Alveolar macrophage and so on ....

The movement of the phagocytic cells:
Phagocytic cells to migrate within and outside the blood vessels and tissue during the migration process called Diapedesis The process of phagocytosis in several stages:

1 - Chemotaxis:
It is the movement of the phagocytic cells toward chemical stimuli produce by infected tissue or microb or both , and called Chemotaxins and found that the lipopolysac charide (LPS) which produce by Cr-bacteria is stronger Chemotaxins.

2 - Opsonization:
They prepared antigen for ingestion by phagocytic cells by adhesion it on the phagocytic cell surface, and the process is done with the help of several factors (antibodies IgG, IgM, some complement parts, especially the C3b).

3 - Ingestion:
This stage begins localized stimulation as a result of the adhesion antigen to phagocytic cell surface, and then the body is surrounded by gaseous false foot forming by cell membrane of the phagocytic cell called pseudopodia, as the union of false foot with each body will make the gap called Phagosome.

4 - Intra cellular killing:
This stage begins by adherence vesicles Lysosome with Phagosome where the emptied contents of enzymes situation in vesicle Phagosome and this is called Phagolysosome, and then it will be killed body by ingested enzymes, H2O2 and the single oxygen O2. In addition to the presence of many enzymes such as hydrolytic enzymes, Myeloperoxidase, glycosidase, phosphatase, phospholipase and lysozyme, as well as there are some proteins that directly affect the cell membrane of microorganisms.

5 - exocytosis, the macrophages secrete a variety of compounds may be effective essential to the outside of the phagocytic cell.