

## Immune System – Quick Summary

1. Immune system has two main parts, **Acquired** and **Innate**
  - a. **Acquired** – means you develop over time – sometimes called Adaptive
    - i. Two main types within the Acquired System – Cell-Mediated & Humoral
    - ii. **Cell-Mediated** (T-Cells)
      1. Deals mainly with issues inside the cell
      2. They fight microbes and antigens (foreign substances inside the cells)
      3. T-Cells are made in bone marrow and reside in the thymus gland where they mature
      4. Mature T-Cells circulate in the blood and the rest lymph nodes & spleen
      5. How it works - T-Cells release toxins to kill invaders or attack them directly, without the involvement of antibodies.
    - iii. **Humoral** (B-Cells) – humoral = body fluids
      1. Way for body to protect itself from infection
      2. Does it by producing antibodies
      3. Antibodies target foreign material in the bloodstream that is seen as potentially dangerous, marking it for destruction.
      4. They are specialized white blood cells
      5. Produced in bone marrow
      6. How it works
        - a. B-Cells recognize antigens
        - b. ANTIGENS – are specific material on the surface of a virus or bacterium or OTHER foreign material (from gut leak)
        - c. When B-Cell encounters ANTIGEN it will MULTIPLY itself making a lots of them
        - d. B-Cells then release ANTIBODIES made to attach to ANTIGEN (foreign materials, virus, etc.). These ANTIGENS are now marked for destruction
        - e. These MARKED “invaders” will be destroyed by other immune cells.
  - b. **Innate** – is what you are born with – Also has 2 main parts bloodborne & physical barriers
    - i. Addressing **bloodborne** disease (pathogens)
      1. Phagocytes do the following
        - a. Ingest and kill microbes
        - b. Present antigen to lymphocytes
        - c. Scavenge degenerating material
        - d. Release mediators – what is this?
      2. Different types of Phagocytes
        - a. Microphages - ingest chiefly bacteria
        - b. Macrophages - are largely scavengers, ingesting dead tissue and degenerated cells
    - ii. **Physical Barriers**
      1. Skin
      2. Mucous Membranes
      3. Tears
      4. Saliva
      5. Stomach Acid