

# ATI TEAS Science Review

Immune  
System

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**Watch this youtube video first:**

**Immune System by The Amoeba Sisters**

<https://www.youtube.com/watch?v=fSEFX12XQpc>

I love this youtube channel and it really helped me understand some of the concepts I learned in A&P. This is a great resource for visual learners!

**Function:** Protects the body against invading pathogens including bacteria, viruses, fungi, and protists.

**Pathogens:** infectious agent

**Lymphatic System:** Lymph, lymph capillaries, lymph vessels, lymph nodes.

- Skeletal muscle contractions move the lymph one way through the lymphatic system to lymphatic ducts.
  - o Dump back into venous supply via lymph nodes
- Red marrow- produces blood cells
- Leukocytes- white blood cells (WBC)

**Lymph Nodes:** located in the neck, armpit, and groin

- Small swellings in the lymphatic system where lymph is filtered and lymphocytes are formed

**Lymph Tissue:** Tonsils, adenoids, thymus, spleen, Peyer's patches

- Tonsils: Located in the pharynx
  - o Protect against pathogens entering via mouth or throat
- Thymus: Maturation chamber for immune T Cells formed in bone marrow.
- Spleen: Cleans blood of dead cells and pathogens.
- Peyer's Patches: Located in the ileum of the small intestine.
  - o Protects GI tract from pathogens



# IMMUNE SYSTEM

## General Immune Defenses

**Skin:** Primary barrier (intact)

**Ciliated Mucous Membranes:** Cilia protect the respiratory system

**Glandular Secretions:** Exocrine- destroy bacteria

**Gastric Secretions:** Gastric Acid destroys pathogens

**Normal Bacterial Populations:** Compete with pathogens in gut and vagina

## 3 Types of WBC

**Macrophage:** Phagocytes that alert T-Cells to the presence of foreign substances

- o Largest, longest-living phagocyte
- o Engulf and destroy pathogens
- o Found in lymph

**T Lymphocytes:** directly attack cells infected by viruses and bacteria

- o Helper T, Killer T, Memory T, Suppressor T

**B Lymphocytes:** target specific bacteria for destruction

- o Plasma Cells: antibody production

## Other Immune Cells

**Helper T-Cells:** Activate B-Cells to make antibodies and other chemicals.

**Suppressor T-Cells:** Stop other T-Cells when the battle is over.

**Memory T-Cells:** Remain in blood on alert incase invader attacks again.

**Killer/Cytotoxic T-Cells:** Destroy Cells infected with a pathogen, virus, or tumor.

Plasma cells secrete antibodies.

**Leukocytes:** WBC produced in Red Marrow.

- Monocyte
  - o Macrophage
  - o Dendritic Cell: present antigens to T-Cell
- Granulocyte
  - o Neutrophil: short living phagocyte; responds quick to invaders
  - o Basophil: alerts body invasion
  - o Eosinophil: large, long living phagocyte; defend against multicellular invaders
- T Lymphocyte
- B Lymphocyte
- Natural Killer Cell



**Antibody-Mediated Response:** Response to an antigen.

**Cellular Mediated Response:** Response is to an already infected cell

**Antigen:** a foreign particle that stimulates the immune system. Typically a protein on the surface of bacteria, virus, or fungi.

**Antibody:** a blood protein that counteracts a specific antigen.

### **Steps of Immune System**

1. Macrophage engulfs antigen and presents fragments of antigen on its surface
2. A Helper T Cell joins the Macrophage
3. Killer/Cytotoxic T Cells and B Cells are activated
4. Killer/Cytotoxic T Cells search and destroy cells presenting the same antigen
5. B Cells differentiate into Plasma Cells and Memory Cells

### **Innate Immune System**

You are born with it. Non-specific response

EX) Skin, hair, mucus, earwax, secretions, normal flora, antimicrobials, inflammation, interferons, complement, NK Lymphocytes, phagocytes

### **Adaptive Immune System**

Responds to specific antigens.

- Vaccinations or previous encounters
  - o Reaction: Cytotoxic T Cells kill pathogen
  - o Prevention: B Cells produce antibodies
- Activated by Antigen and Helper T Cells
- Helper T Cells activated by Antigen Presenting Cells (APC)

**Naturally Acquired Active Immunity:** Exposure to pathogen without immunization

**Naturally Acquired Passive Immunity:** Occurs during pregnancy and during breast feeding.

- Antibodies are passed from mother to child
- Provides protection from infancy to childhood

**Artificially Acquired Active Immunity:** Build immunity via Vaccination

**Artificially Acquired Passive Immunity:** Immunization given during an outbreak or emergency

- Quick, short-lived protection.
- Antibodies come from another person or animal.



# About Me

Hi there! My name is Ivy and I am the founder of Petite and Soignée. I am currently a licensed physical therapist assistant, dermatology and cosmetic medical assistant, and a nursing student in an accelerated BSN program. Over the years, I have researched and learned about different skincare products, ingredients, skin conditions, diseases, and new technologies and procedures within the field. I decided to join a dermatology practice so that I could learn more about skincare within a clinical setting. This position taught me so much about the science of skin that it led me to pursue nursing. My goal is to specialize in dermatology in the future.

You may be wondering what does *soignée* even mean?

***Soignée*** (pronounced "swan-yay") is a feminine French word meaning "*to dress elegantly*", "*well-groomed*", "*sleek*" "*well maintained*" or "*elegantly designed*". The word perfectly describes the way that I like to present myself on a daily basis. On my website, I share all of my skincare and beauty tips for everyone to feel soignée.

Don't forget to follow my other social media accounts!



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