## 3 Essential functions

1) Initial response to microbes

2) Eliminate damaged cells and initiate the process of tissue repair

3) Stimulate adaptive immune response

**2 types of responses**

1) Inflammation

2) Antiviral defence

## Components of innate immunity

**1.Anatomical barrier:**

- Physical barriers - Chemical barriers

**2.Cell:**

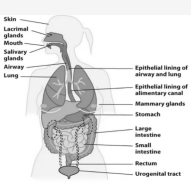
- Phagocytic cells - Dendritic cell - NK cells, ILC

**3.Soluble protein:**

- Complement - Cytokines, chemokines - Antimicrobial substances

## Anatomical barriers - Physical

| Organ or tissue | Innate mechanisms protecting skin/epithelium |
|---|---|
| Skin | Antimicrobial peptides, fatty acids in sebum |
| Mouth and upper alimentary canal | Enzymes, antimicrobial peptides, and sweeping of surface by directional flow of fluid toward stomach |
| Stomach | Low pH, digestive enzymes, antimicrobial peptides, fluid flow toward intestine |
| Small intestine | Digestive enzymes, antimicrobial peptides, fluid flow to large intestine |
| Large intestine | Normal intestinal flora compete with invading microbes, fluid/feces expelled from rectum |
| Airway and lungs | Cilia sweep mucus outward, coughing, sneezing expel mucus, macrophages in alveoli of lungs |
| Urogenital tract | Flushing by urine, aggregation by urinary mucins; low pH, anti-microbial peptides, proteins in vaginal secretions |
| Salivary, lacrimal, and mammary glands | Flushing by secretions; anti-microbial peptides and proteins in vaginal secretions |

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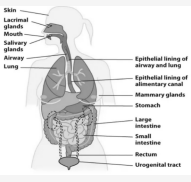


## Cellular response

**Phagocytic cells:** - Macrophage, neutrophil

"Phagocytosis" 1) Dendritic cell -> activate adaptive immune response

The immune system 1) Detects/senses the presence of a pathogen 2) Mounts a response