

Immunology Refresher

Immune System

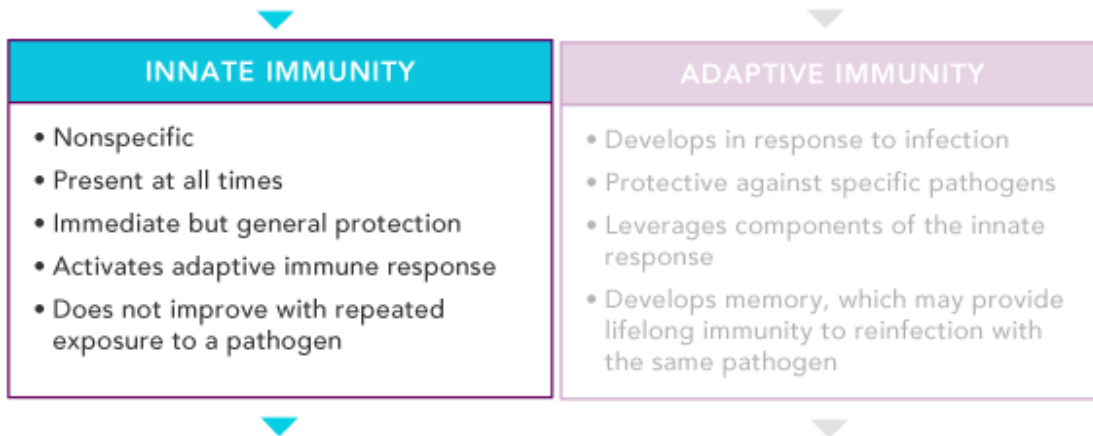
A coordinated system of cells, tissues, and soluble molecules that constitute the body's defense against invasion by nonself entities, including infectious and inert agents and tumor cells.¹

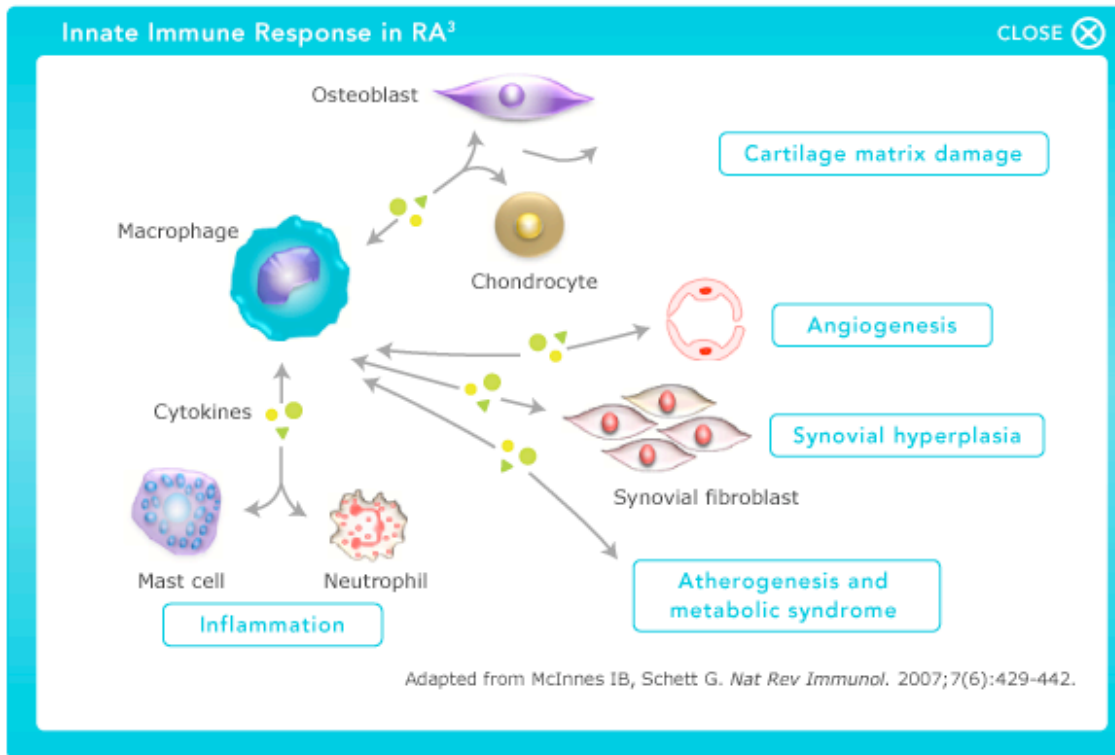
The immune system has 4 key tasks²:





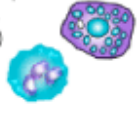






1. **Recognition:** Detect infection or harm
2. **Effector function:** Contain and eliminate infection
3. **Regulation:** Control activity to avoid damage to the body
4. **Memory:** Remember exposure; react immediately and strongly upon re-exposure

Innate and Adaptive Immunity²

Immune System





| COMPONENTS | FUNCTION | COMPONENTS | FUNCTION |
|---|---|--|--|
| Macrophage  | <ul style="list-style-type: none"> • Phagocytosis • Activation of bactericidal activity • Antigen presentation | T lymphocytes  | T cells fall into 2 broad classes according to function <ul style="list-style-type: none"> • CD4⁺ T helper cells (Th) that orchestrate and regulate immune responses • CD8⁺ cytotoxic T cells (CTL) kill cells infected with viruses or other intracellular pathogens • All T cells secrete cytokines |
| Dendritic cell  | <ul style="list-style-type: none"> • Antigen uptake in the periphery • Antigen presentation | | |
| Neutrophil  | <ul style="list-style-type: none"> • Phagocytosis • Activation of bactericidal activity | | |
| Other myeloid cells (eg, eosinophils, basophils, mast cells)  | <ul style="list-style-type: none"> • Kill antibody-coated parasites • Release histamine granules and other pro-inflammatory mediators | B lymphocytes  | <ul style="list-style-type: none"> • Produce antibodies in response to antigens • Antigen presentation • Cytokine secretion |
| Natural Killer cells  | <ul style="list-style-type: none"> • Release lytic granules to kill some virus-infected cells | Antibodies  | <ul style="list-style-type: none"> • Bind to antigens to neutralize them or facilitate destruction of microorganisms |
| Complement  | <ul style="list-style-type: none"> • Soluble proteins that form a complex to destroy microorganisms | Cytokines  | <ul style="list-style-type: none"> • Proteins secreted by cells that affect the behavior of nearby cells bearing appropriate receptors |
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Take Action to Learn More



Understanding JAK Pathways >

Discover more about JAK pathways and how they are related to inflammatory and autoimmune diseases such as rheumatoid arthritis (RA).



Behind the Science >

Watch leading scientists discuss the JAK pathways.