

CONCEPT: INTRODUCTION TO ADAPTIVE IMMUNITY

● **Adaptive (Specific) Immunity:** components that _____ over time & protect against *specific* pathogens.

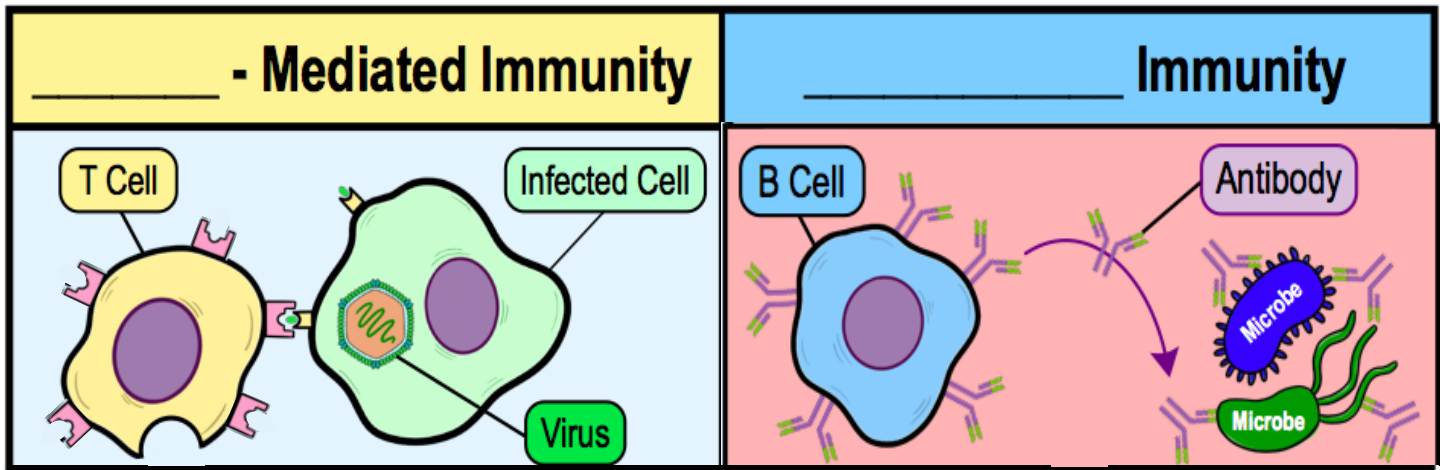
● Adaptive immunity is considered a *dual* system with two components:

1) **Cell-Mediated Immunity:** targets & destroys *intracellular* (inside host cell) pathogens using ____-cells.

□ T cells use *T Cell Receptors* (____s) to generate an immune response.

2) **Humoral Immunity:** targets & destroys *extracellular* (outside host cell) pathogens using ____-cells & *antibodies*.

□ B cells use *B Cell Receptors* (____s) to generate an immune response.



PRACTICE: Cytotoxic T cells are primarily involved in _____.

- a) Innate Immunity.
- b) Antibody production.
- c) Cell-mediated Immunity.
- d) Humoral Immunity.

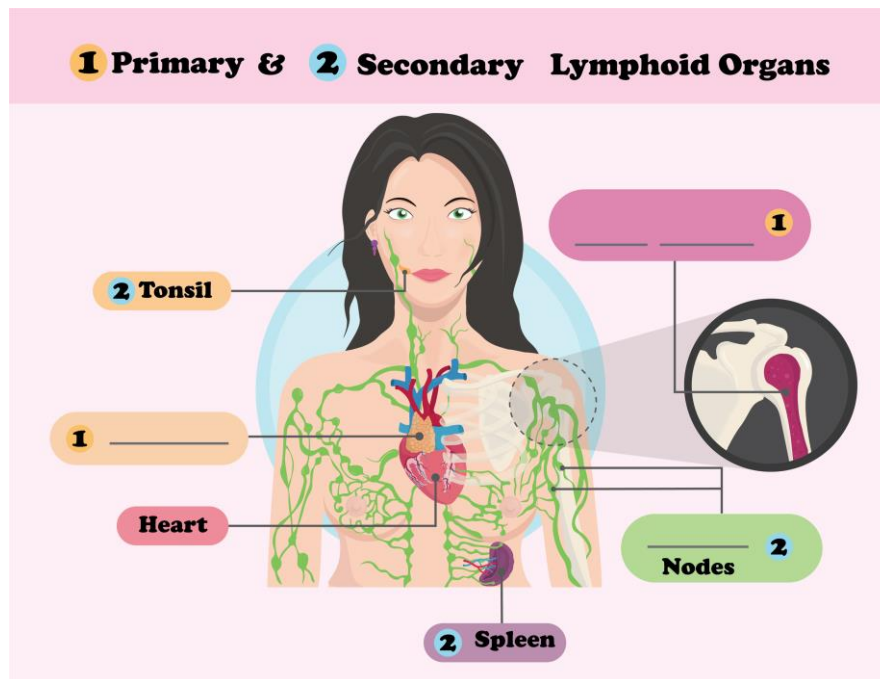
PRACTICE: The humoral response is initiated by production of:

- a) Cytotoxic T cells.
- b) Antigens.
- c) Red blood cells.
- d) Antibodies.

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Primary vs. Secondary Lymphoid Organs

- **Primary Lymphoid Organs:** organs where *immature* T & B lymphocytes _____ into **naïve** (*inactive*) forms.
 - Includes **Thymus** (where ____ cells develop) & **Bone marrow** (where ____ cells develop).
 - Both T & B lymphocytes are produced in bone marrow, but T cells _____ to the thymus to fully develop.
- **Secondary Lymphoid Organs:** organs where naïve T & B lymphocytes are _____ & begin immune functions.
 - Sites where *foreign* molecules (antigens) are brought into contact with populations of lymphocytes.
 - Includes *lymph nodes*, *spleen*, & *tonsils*.



PRACTICE: T cells and B cells are produced in the:

- a) Bone marrow.
- b) Thymus.
- c) Bloodstream.
- d) Epithelial Cells.

PRACTICE: T cells mature in the _____ & B-cells mature in the _____.

- a) Bone marrow; Thymus.
- b) Thymus; Bloodstream.
- c) Hypothalamus; Bone marrow.
- d) Thymus; Bone marrow.

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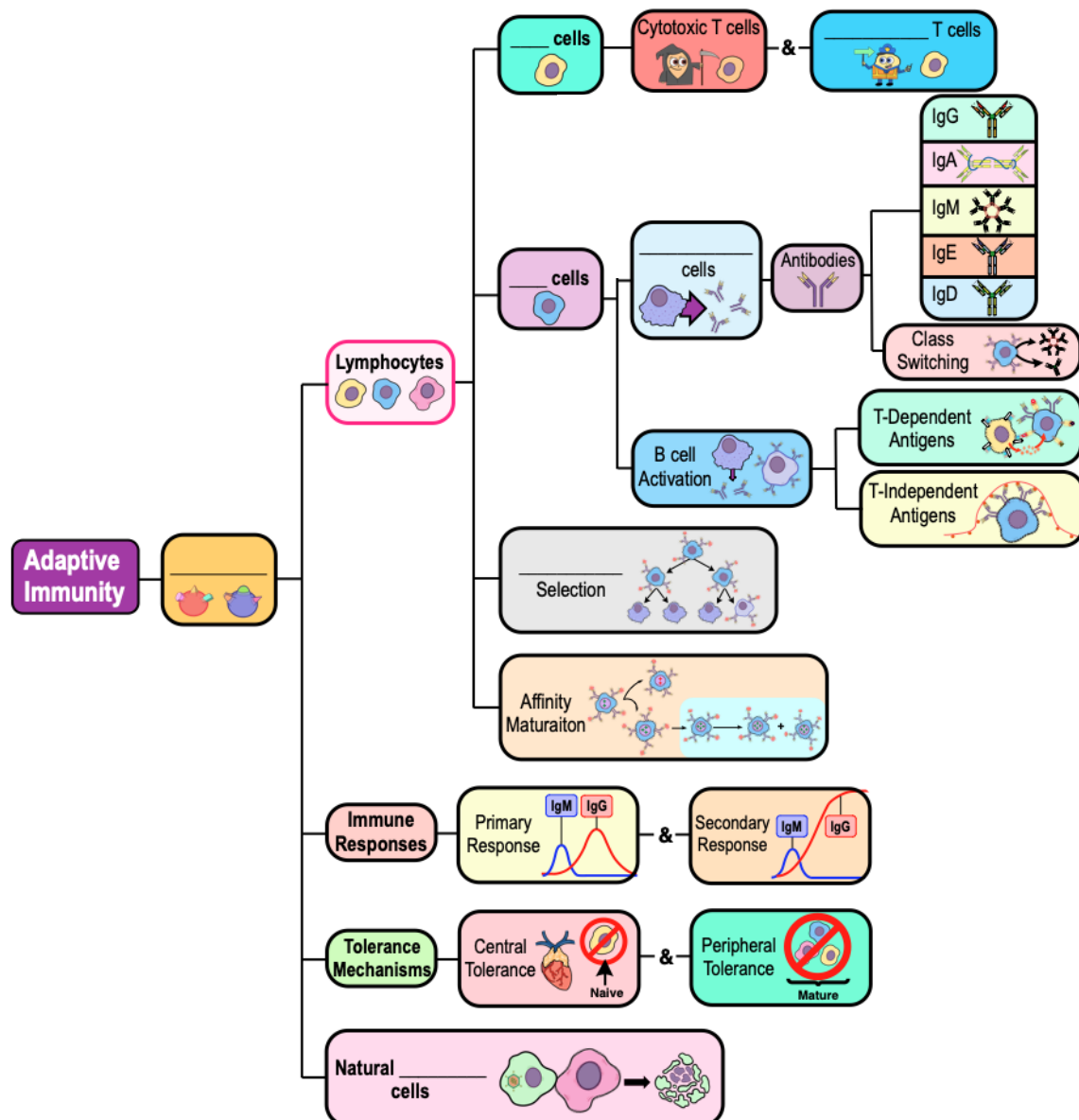
PRACTICE: The secondary lymphoid organs:

- a) Are where foreign antigens interact with lymphocytes.
- b) Are the site of antibody production.
- c) Are hematopoietic.
- d) Include bone marrow & thymus.

PRACTICE: Which of the following are two of the secondary lymphoid organs?

- a) Stem cells & Spleen.
- b) Lymph Nodes & Bone Marrow.
- c) Lungs & Bone Marrow.
- d) Spleen & Lymph Nodes.

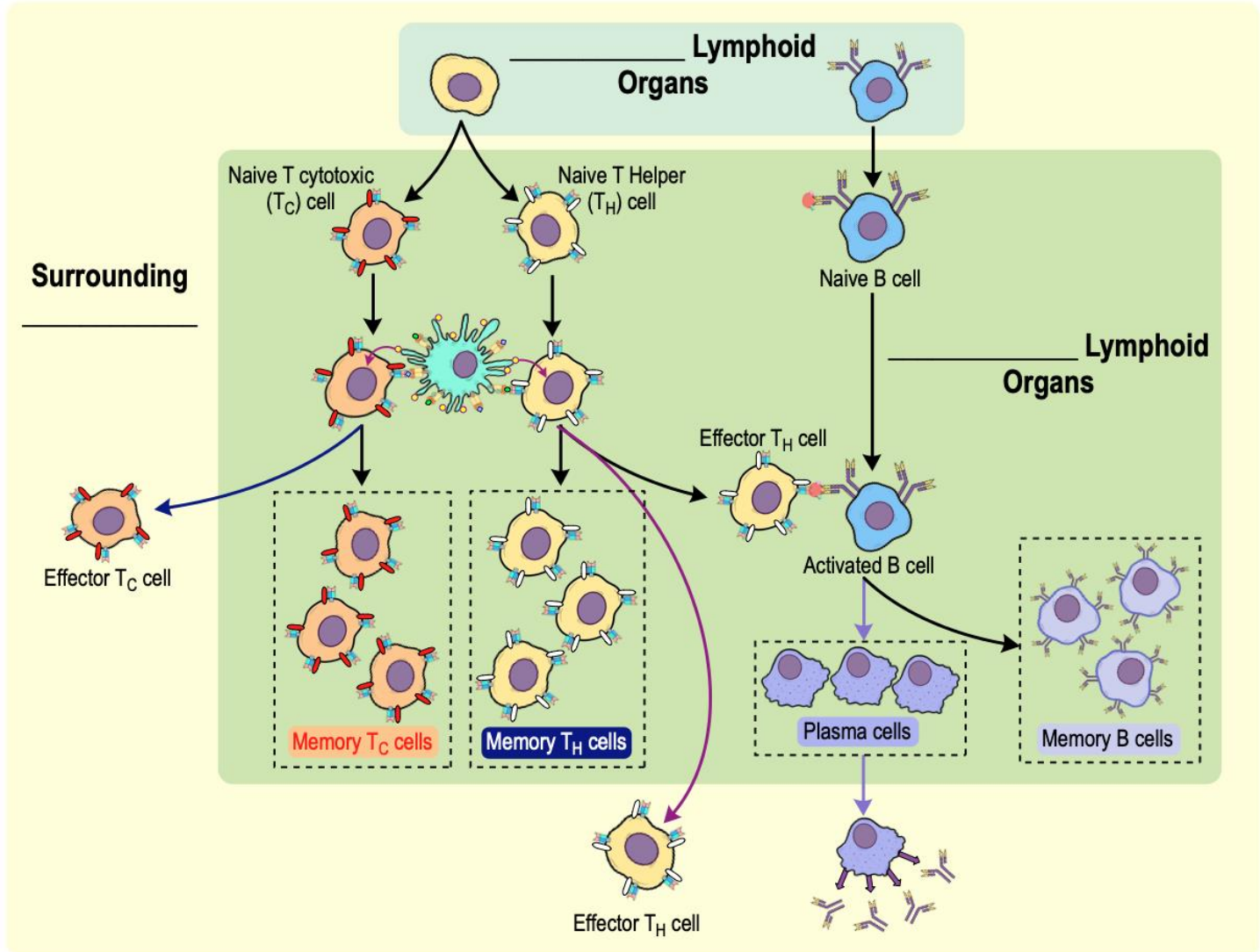
Map of the Lesson on Adaptive Immunity



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Overview of Adaptive Immunity

● Let's overview the lesson on adaptive immunity. We'll explain & break this down in more detail as we move forward.



PRACTICE: What major advantage is conveyed by having a system of adaptive immunity?

- It enables a rapid defense against an antigen that has been previously encountered.
- It enables an animal to destroy most pathogens almost instantly the first time they are encountered.
- It results in effector cells with no tolerance to host or self-antigens.
- It allows for the destruction of antibodies.