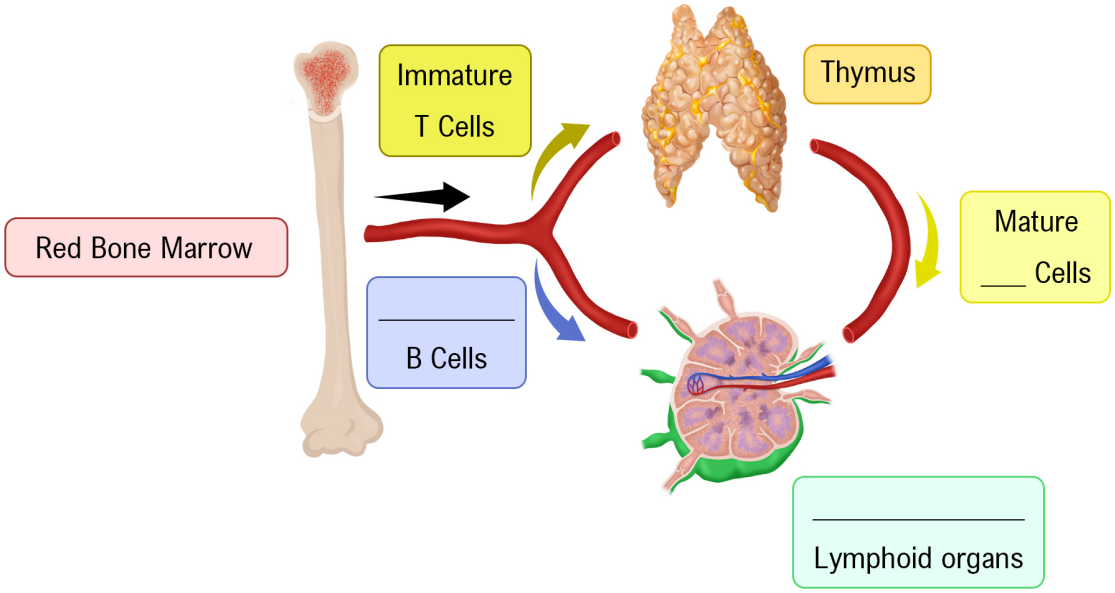
TOPIC: PRIMARY LYMPHOID ORGANS

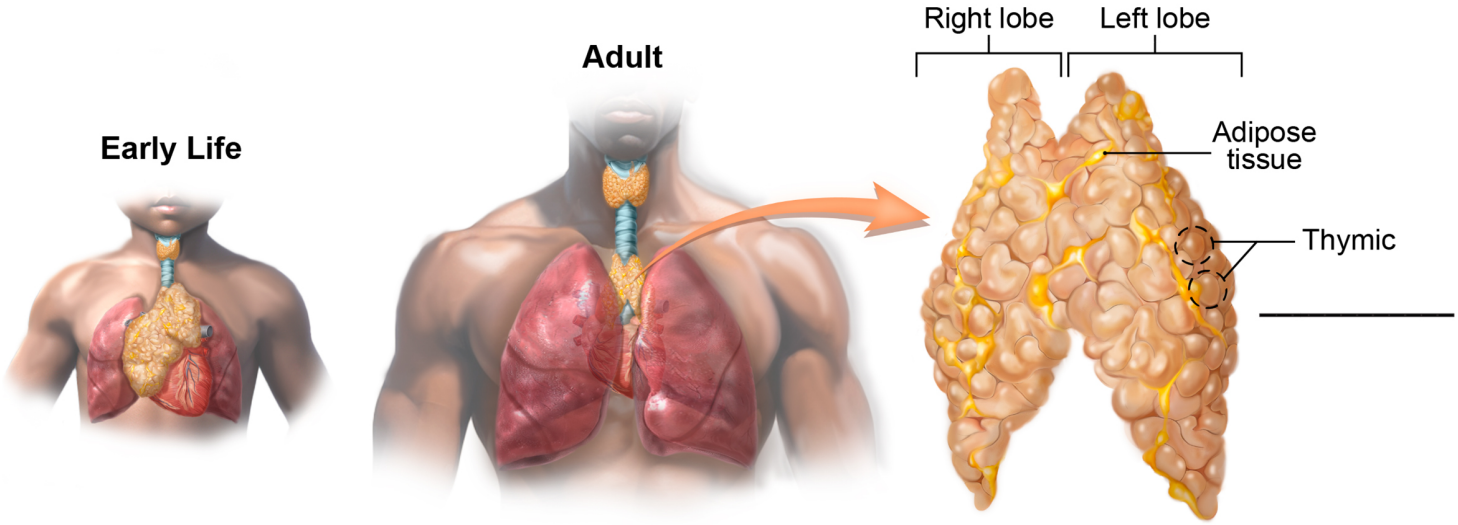
Red Bone Marrow

- Recall: Red bone marrow serves as the primary site of *hematopoiesis* (_____ cell formation).
  - Includes *lymphocytopoiesis* (lymphocyte formation), so both T & B cells _____ in red bone marrow.
  - These processes of the red bone marrow are covered in detail in other videos.



Introduction to the Thymus

- **Thymus:** _____ organ found in mediastinum & is part of the lymphatic, immune, & endocrine systems.
  - Functionally almost exclusive to _____ cell *maturation* & *selection*, making T cells immunocompetent.
  - *Selection* eliminates any potentially problematic T cell, making it a T cell *graveyard* (only ~1% survive).
- Thymus is *enlarged* & highly *active* in _____ life, but gradually *atrophies* (decreases in size/activity) over time.



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PRACTICE

Which of the following systems does the thymus NOT play a direct role in?

a) Lymphatic system.

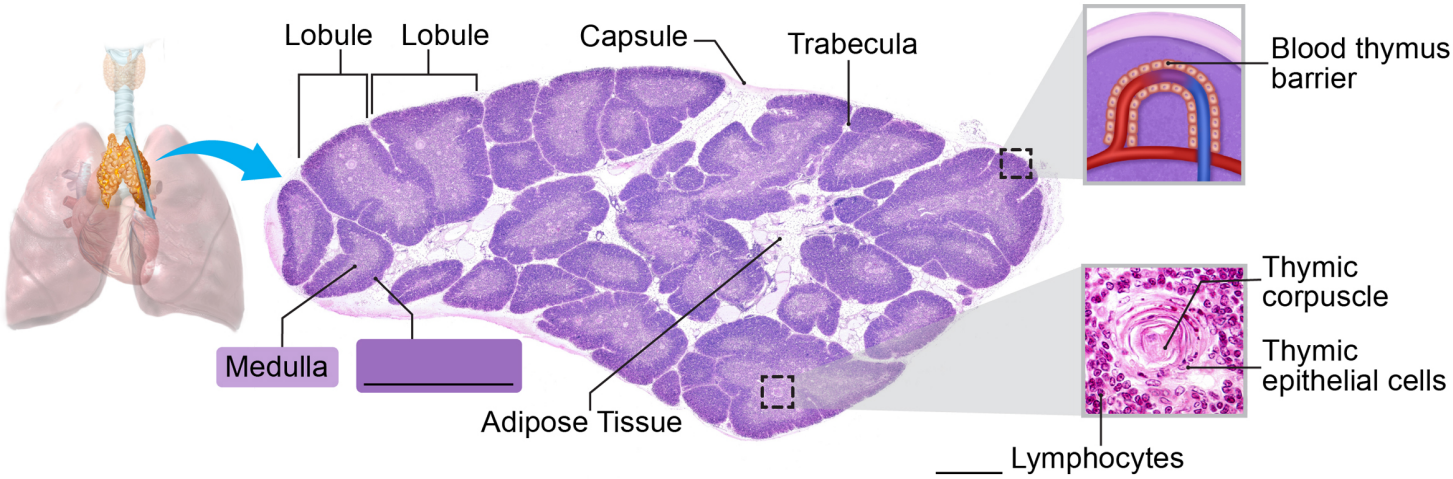
b) Immune system.

c) Endocrine system.

d) Respiratory system

Structure of the Thymus

- Each lobe of the thymus is covered with an exterior _____.
  - **Trabeculae** (or **Septa**): inward capsular extensions dividing lobes of thymus into smaller _____.
  - Has an outer _____ (pre-T cells) & an inner _____ (mature T cells).
- Thymus is structurally unique: it _____ lymphoid follicles, *lacks* ___ cells, & has specialized *epithelial* cells.
  - Thymic epithelial cells form *blood thymus* _____, thymic _____ & secrete signaling molecules.



EXAMPLE

Which of the following statements about the thymus is true?

a) It is located in the inferior thorax.

b) Like other lymphoid organs, it contains lymphoid follicles & B cells.

c) It is structurally unique compared to other lymphoid organs due to its lack of lymphoid follicles.

d) After puberty, it stops growing and remains the same size throughout life.

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PRACTICE

Why is it important for there to be a blood-thymus barrier?

a) To prevent maturing T cells from encountering antigens, as it could disrupt their development.

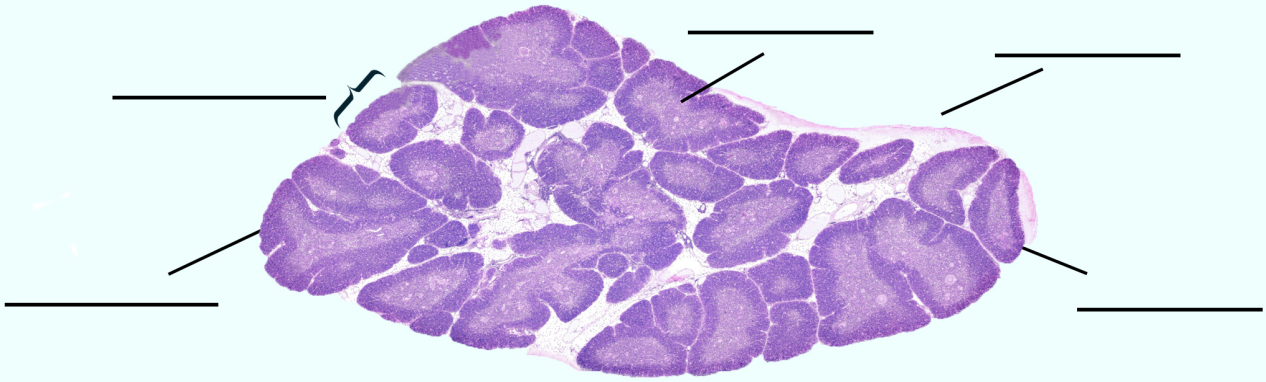
b) To prevent mature T cells from leaving the thymus.

c) To prevent immature T cells from the red bone marrow from entering the thymus.

d) To prevent thymic corpuscles from being exposed to too much oxygen.

EXAMPLE

Label the indicated areas of the thymus micrograph.



PRACTICE

_____ are projections of the external capsule that extend inward, & their primary function is to separate the thymus into distinct functional _____.

a) Capsules; lobules.

b) Capsules; trabeculae.

c) Trabeculae; capsules.

d) Trabeculae; lobules.