

Study Guide — HBS Unit 2: Research Ready (Pretest / Diagnostic Preview)

Human Body Systems · Unit 2 — Research Ready · Modeled on the PLTW Guided Review format

Vocabulary to know cold

Term	Definition
Epithelial tissue	Tissue that covers body surfaces and lines cavities, glands, and tubes; protects, absorbs, and secretes.
Connective tissue	Tissue that supports, binds, and connects other tissues; includes bone, blood, fat, cartilage, and tendons.
Muscle tissue	Tissue specialized to contract and produce movement (skeletal, cardiac, smooth).
Nervous tissue	Tissue that senses stimuli and transmits electrical signals to coordinate the body.
Integumentary system	The skin and its accessory structures (hair, nails, glands) that protect the body.
Epidermis	The outermost layer of skin; the prefix epi- means 'upon/above.'
Dermis	The middle skin layer containing blood vessels, nerves, glands, and hair follicles.
Homeostasis	The maintenance of a stable internal environment, such as body temperature.
Independent variable	The factor the researcher deliberately changes in an experiment.
Dependent variable	The factor that is measured; it responds to the independent variable.
Control group	The baseline group that receives no treatment, used for comparison.
derm/o	Combining form meaning skin (e.g., dermatology).
-cyte	Suffix meaning cell (e.g., melanocyte).
hist/o	Combining form meaning tissue (e.g., histology).

Worked examples (follow the reasoning)

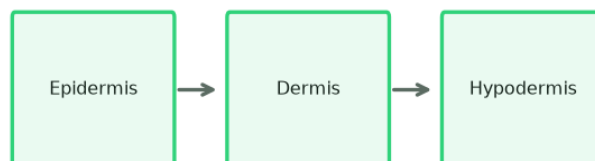
Example 1. Build the medical term for 'a cell that makes pigment' using word parts, then name the structure.

- Identify the parts: melan/o = black/dark pigment, -cyte = cell.
- Combine: melan/o + -cyte = melanocyte.
- Define: a cell that produces the pigment melanin.

Answer: Melanocyte — a cell that produces melanin (skin/hair pigment).

Example 2. Order the three skin layers from the body surface inward and state one job of each.

Skin layers (surface to deep)



- Surface layer = epidermis (barrier, makes keratin and melanin).
- Middle layer = dermis (holds blood vessels, nerves, glands, follicles).
- Deepest layer = hypodermis/subcutaneous (fat for insulation and cushioning).

Answer: Epidermis → Dermis → Hypodermis (surface to deep).

Practice questions (with reasoning)

1. Which tissue type lines the inside of the mouth and stomach?

- A. Nervous
- B. Epithelial
- C. Muscle
- D. Connective

Answer: B. Epithelial tissue lines internal cavities and tubes, including the digestive tract.

2. The term 'epidermis' literally means:

- A. Below the skin
- B. Upon the skin
- C. Skin cell
- D. Skin study

Answer: B. epi- (upon) + derm (skin) = the layer upon the skin.

3. A scientist tests whether a sunscreen reduces UV damage. The amount of UV damage measured is the:

- A. Independent variable
- B. Dependent variable
- C. Control
- D. Constant

Answer: B. The measured outcome (UV damage) is the dependent variable.