

2027-03-23 · 80 minutes

Wk10 Vocabulary: Endocrine glands and signaling

Your goal: Map the major endocrine glands and the hormones they secrete using teacher notes and the PLTW online task.

One product: Annotated body diagram labeling at least four endocrine glands with their primary hormones, plus definitions of hormone, target cell, and receptor.

Question: How can a hormone made in one gland change a distant target cell?

Start the work

Weigh medical evidence, the young person's voice and real tradeoffs before defending a treatment policy.

1. Take guided notes on the pituitary, thyroid, pancreas, and adrenal glands.
2. Define hormone, target cell, and receptor in your own words.
3. Complete the assigned PLTW online gland-and-hormone matching activity.
4. Annotate a body diagram with each gland and its primary hormone.
5. Write one question about a gland you still find confusing.

If access is unavailable, save the same diagram and definitions and tell the teacher. Ask for the actual matching task and correct submission route.

Words you will use

hormone

A chemical signal released by cells that affects cells with a matching receptor.

endocrine gland

A gland that releases hormones into blood.

target cell

A cell able to respond to a particular hormone through its receptor and signaling machinery.

receptor

A protein on or in a cell that binds a matching signal.

secrete

Release a substance from a cell.

source

The place a signal is produced or released.

target tissue

A group of cells affected by a signal.

circulation

Movement of blood through the body.

signaling machinery

Cell parts and processes that turn a received signal into a response.

pituitary

A small gland at the base of the brain with anterior and posterior parts.

hypothalamus

A brain region that helps regulate endocrine signals and other body functions.

anterior

Toward the front; the anterior pituitary is its front part.

posterior

Toward the back.

GH

Growth hormone, made by the anterior pituitary.

TSH

Thyroid-stimulating hormone, released by the anterior pituitary to stimulate the thyroid.

thyroid

A gland at the front of the neck that makes T4 and T3.

T4 / thyroxine

A thyroid hormone with four iodine atoms.

T3 / triiodothyronine

A thyroid hormone with three iodine atoms.

metabolism

The body's chemical processes for using and changing matter and energy.

pancreas

An abdominal organ with hormone-secreting islets and a digestive role.

islet

A cluster of hormone-secreting cells in the pancreas.

beta cell

An islet cell that releases insulin.

alpha cell

An islet cell that releases glucagon.

insulin

A pancreatic hormone that helps lower blood glucose.

glucagon

A pancreatic hormone that helps raise blood glucose.

glucose

A sugar used as fuel by cells.

adrenal gland

One of a pair of glands near the upper ends of the kidneys.

cortex

An outer region; the adrenal cortex makes cortisol.

medulla

An inner region; the adrenal medulla releases epinephrine.

cortisol

An adrenal cortex hormone involved in metabolism and stress responses.

epinephrine / adrenaline

An adrenal medulla hormone involved in stress responses.

negative feedback

A control process that opposes a change in the regulated condition.

homeostasis

Keeping internal conditions within workable ranges.

hypothyroidism

Too little thyroid hormone for the body's needs.

hyperthyroidism

An overactive thyroid making too much thyroid hormone.

fatigue

A feeling of tiredness or low energy.

annotate

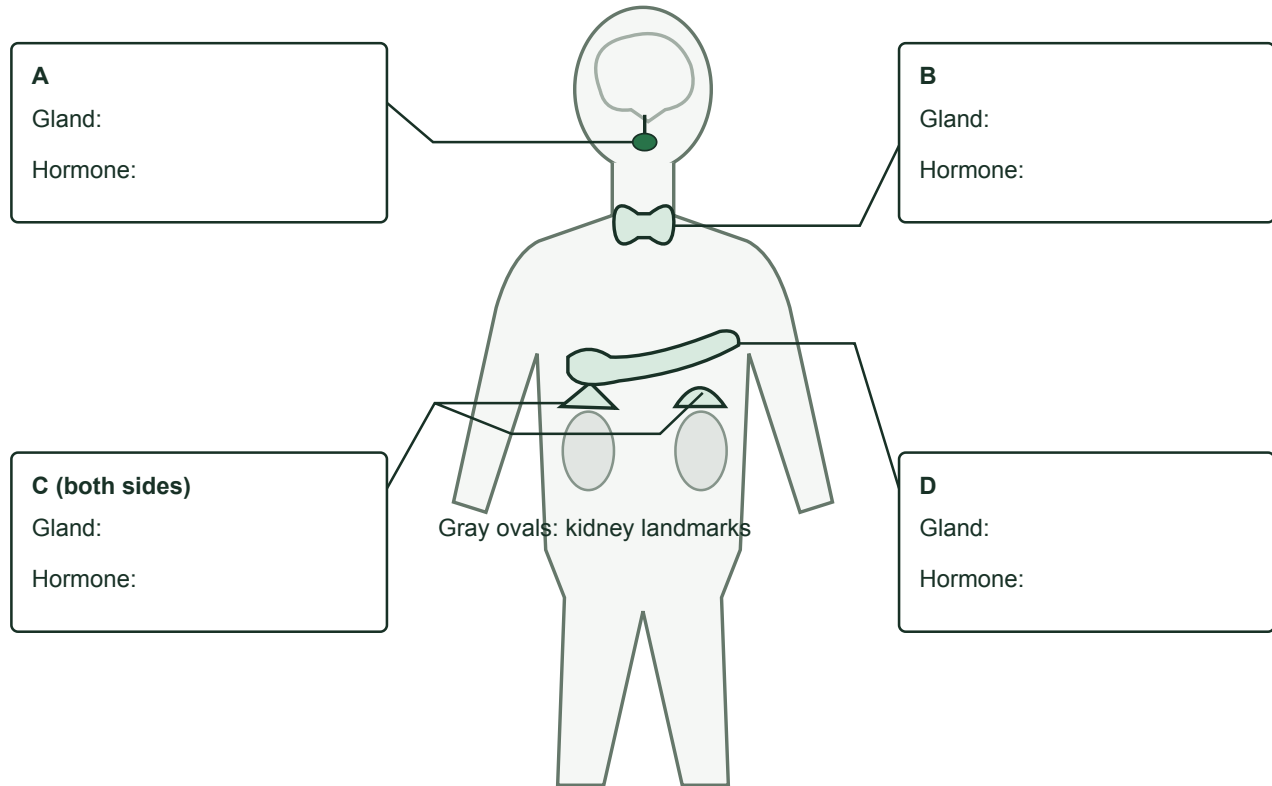
Add labels or explanatory notes to a figure.

Map four endocrine gland types

V1: map four endocrine gland types

Front view: the person's right is on your left. Internal organs are shown as a cutaway.

Write each gland name and an example hormone. Use E2/E3 and G1 to check.



Schematic: organs enlarged; depth omitted; not to scale. Pancreas lies behind the omitted stomach.

Original practice. Sources and full location text: E2, E3 and G1. This is not patient imaging.

Original practice diagram. Organs are enlarged and depth is omitted. The pancreas lies behind the omitted stomach. Use E2, E3 and G1 to annotate four gland types and example hormones.

Text description: Front-view body schematic with A at the pituitary, B at the thyroid, C at paired adrenal glands above kidney landmarks, and D at the pancreas; four gland and hormone response fields.

E1: a source is not a target

Endocrine glands release hormones into blood. Circulation distributes them widely; it does not guarantee the same exposure at every cell. A target cell has a receptor that can bind that hormone. The cell's signaling machinery also helps determine the response.

The gland is the source of the signal. A distant tissue may be a target, not another source of that hormone. Receptors may be on a cell surface or inside a cell. Reaching a tissue does not mean every cell there responds in the same way.

For both warmups, name one gland and a role from E2/E3, then explain why broad blood transport does not cause one identical response everywhere. Do not infer a hair follicle lacks insulin receptors just because its response differs from a muscle cell.

E2: head and neck gland notes

Pituitary: near the base of the brain, connected to the hypothalamus. Its anterior part makes and releases growth hormone, GH, and thyroid-stimulating hormone, TSH. GH supports growth-related processes; TSH stimulates the thyroid. These are examples, not its complete hormone list.

Thyroid: in the front of the neck, with lobes on either side of the windpipe. It makes T4, called thyroxine, and T3, called triiodothyronine. These hormones influence energy use in many tissues. TSH comes from the anterior pituitary, not from the thyroid.

For your map, use pituitary - GH, with TSH as a second example, and thyroid - T4/T3. A gland can produce several hormones; primary hormone here means a representative taught example, not its only hormone.

E3: abdominal gland notes

Pancreas: across the upper abdomen behind the stomach. Its islet beta cells secrete insulin; its alpha cells secrete glucagon. These cells are the sources. Liver and muscle are examples of tissues affected by insulin; they are not the source of pancreatic insulin.

Adrenal glands: a pair near the upper ends of the kidneys. The outer cortex secretes cortisol, which helps regulate metabolism and stress responses. The inner medulla releases epinephrine, also called adrenaline, during stress responses. The adrenal gland is not the kidney itself.

For your map, use pancreas - insulin/glucagon and adrenal glands - cortisol from cortex or epinephrine from medulla. Label both adrenal positions as the same gland type. Four gland types, not five different types, complete this map.

G1: supplied body diagram and matching input

V1-endocrine-outline.svg is the original annotation sheet. It is a front-view teaching cutaway, not a scan or a scale drawing. The person's right is on the viewer's left. Internal structures are enlarged; depth and exact size are simplified.

Text equivalent: A marks the pituitary at the base of the brain. B marks the thyroid at the front of the neck. C marks both adrenals near the kidney tops. D marks the pancreas in the upper abdomen; it lies behind the stomach, which is omitted. Gray kidney landmarks are not endocrine targets to label for this task.

Add the gland name and at least one correct hormone to each blank A-D area. Use E2/E3 to check your choices. If the SVG is missing from the delivered page, report that missing diagram input; do not call a list alone a completed body diagram.

Original matching practice: match 1 anterior pituitary, 2 thyroid, 3 pancreatic beta cells and 4 adrenal cortex to A cortisol, B GH, C insulin and D T4/T3. Check after trying: confirm each pair against the gland and hormone statements in E2 and E3. This practice does not submit or finish the assigned myPLTW matching items.

E4: feedback and the thyroid extension

A negative-feedback loop opposes a change and helps keep internal conditions in a workable range. In thyroid regulation, hypothalamus and pituitary signals help regulate thyroid output; circulating thyroid hormone feeds back on that control. This is regulation, not the gland aiming hormone at one body part.

For the extension, compare the pituitary-thyroid pair and contrast hypothyroidism with hyperthyroidism. Hypo means below; hyper means above. Hypothyroidism means too little thyroid hormone for the body's needs. Hyperthyroidism means an overactive thyroid making too much.

NIDDK describes cold intolerance and fatigue with hypothyroidism, and heat intolerance or sweating with hyperthyroidism. Higher thyroid activity can increase energy use, but people with hyperthyroidism may also feel tired. More hormone does not guarantee more usable energy or a better mood.

Predict those general patterns using the hormone level and prefix, not a measured fever or a diagnosis of a person. Symptoms vary and overlap with other conditions. The sources explicitly state that symptoms alone cannot establish either diagnosis.

P1: full product and authentic work

Take notes on all four gland types. Define hormone, target cell and receptor in your own words. In pair-work, compare definitions; if working alone, compare yours with E1 and mark the solo route. Explain in one sentence why exposure and response differ.

During minutes 45-60, complete every assigned gland-and-hormone match in Activity 2.2.1 The Endocrine System on myPLTW. Obtain the actual screens and teacher stopping point. If the official matching task is unavailable, use G1 practice and ask the teacher for that task. Do not assume yesterday's introduction is complete.

Your product is the annotated four-gland body diagram plus the three definitions. Add one question about a gland still confusing you. Submit through the confirmed section route and retain a screenshot or note of actual official completion on the weekly tracker.

Absent or interrupted: use these guided notes, attempt the actual matching when available, finish the diagram and write the lingering question. Local practice does not replace the official task. No homework is due before this class.

March 26 is no school. Check the actual assignment deadline.

The week retains a feedback-loop organizer, hormone feedback model, blood-glucose CER and later experimental design. Its absence route needs the actual teacher-posted data/model packet. March 24 needs the assigned cards/tokens, body diagram and glucose tracking sheet for meal and fasting runs. None of those model results is supplied here.

The weekend item remains Submit reflex evidence in Exit Tickets. The March 22 consent exit and any unresolved introductory activity remain separate. Ask for missing inputs; no new recording, classmate reply or treatment task is added.

M1: different model, shared radio message

An invented workshop sends one radio message across the room. Receiver A has the right tuner and turns on a lamp. Receiver B has a different tuner and does not react. Receiver C has the right tuner but is connected to a buzzer.

Model explanation: the same broadcast can produce no response or different responses because receiving parts and connected machinery differ. Hormone maps likewise separate the source, transport and target response.

The prerequisite key-and-lock analogy also helps: name the biological lock as the receptor. Neither analogy means hormones are metal keys, cells are houses, or every tissue receives the same amount. Use E1 for the biological explanation.

Try the decision

Which explanation fits the map and E1?

- The source releases a hormone into blood; a matching receptor and cell processes help determine the target response.
- Pancreatic insulin is aimed only at the liver, so circulation does not matter.
- Different tissue responses prove that every less responsive cell has no receptor.

Explain your choice using the reading. Discuss it or say it to yourself. This practice does not add another submission.

Your 80-minute flow

0–10 minutes	Complete both warmups with supplied examples.
10–30 minutes	Take the four-gland notes using E2/E3.
30–45 minutes	Define the three key terms; compare with a partner or the supplied text.
45–60 minutes	Attempt actual myPLTW matching or labeled G1 recovery.
60–72 minutes	Annotate V1 with four gland types and their hormones.
72–80 minutes	Write and share the lingering question; submit and check Schoology after uploading.

Your response record

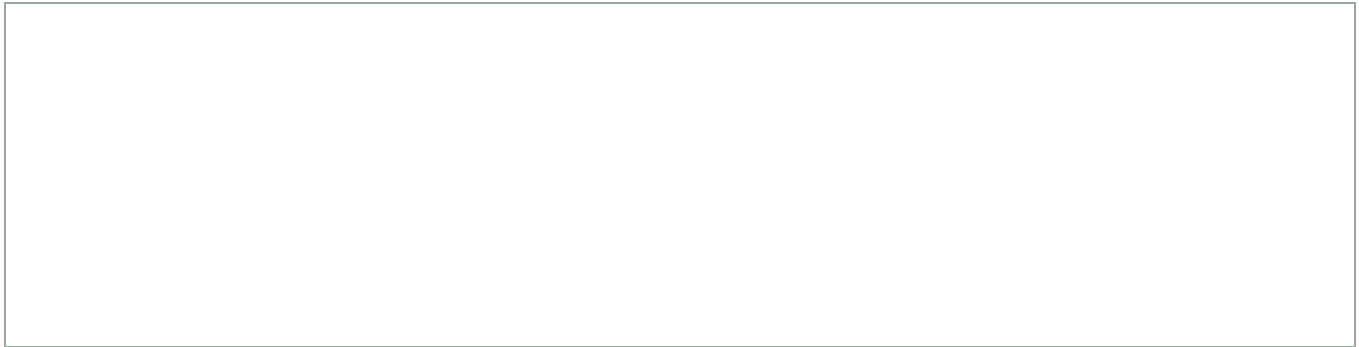
Use these labels on paper or in your document. The space below also works when this page is printed.

Both warmups

Name a gland and one role, then explain why wide hormone transport does not make every cell respond alike.

Use E1-E3 and M1; name the receptor as the biological lock.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

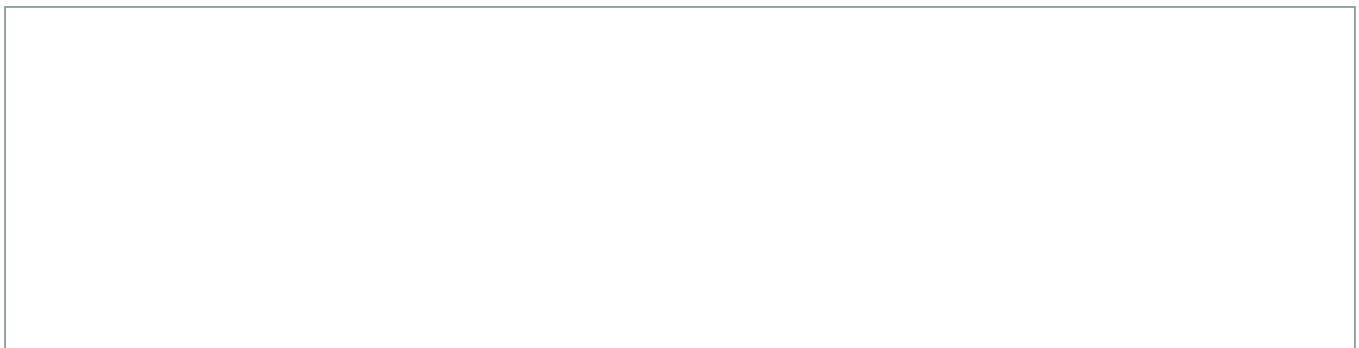


Four-gland notes and definitions

Record the location, example hormone and role for pituitary, thyroid, pancreas and adrenal glands; define hormone, target cell and receptor in your own words.

Use E2/E3. Compare definitions with a partner or label solo comparison. Do not confuse hormone source with target.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.



Actual matching and local practice

Attempt all assigned myPLTW gland-and-hormone matches in the 45-60 minute window; use G1 practice if access is missing.

Describe only what you checked and ask for anything you need. G1 includes a check method for local review and is not official completion.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

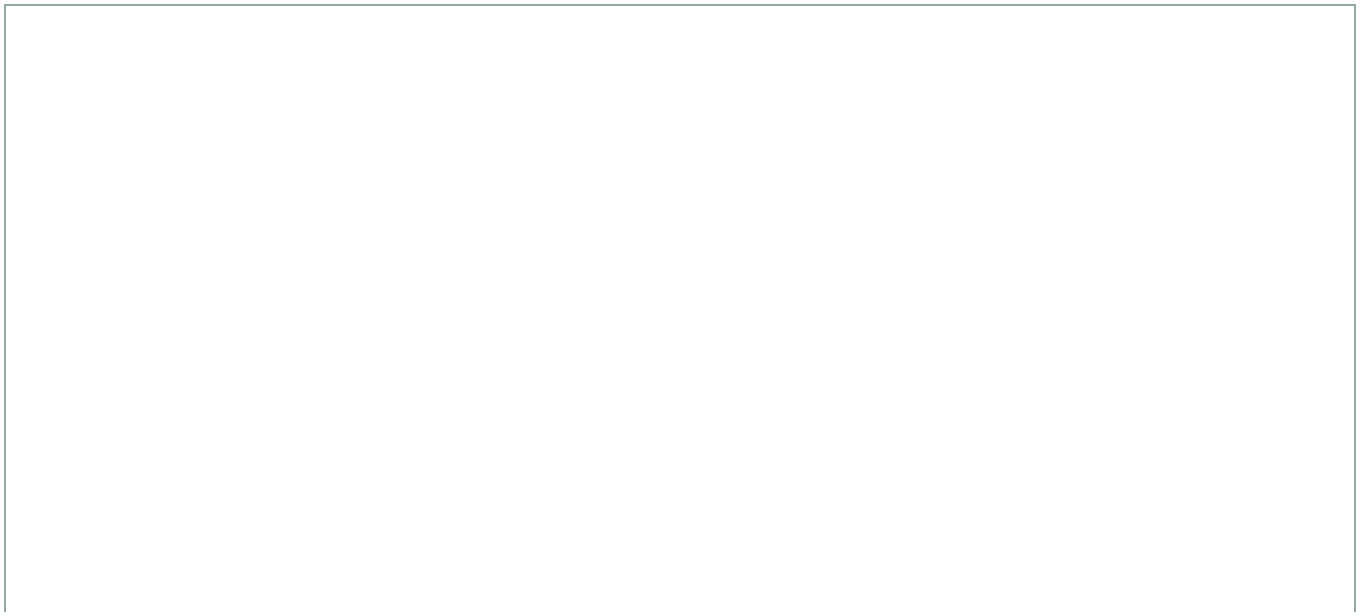


Annotate the body diagram

Label A-D on V1 with the four gland types and at least one taught hormone each; include the three definitions with your diagram.

Use the location text in G1 and E2/E3. The paired adrenals count as one type. A list alone does not meet the diagram task.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.



Response check and thyroid extension

Explain in one sentence how source, blood and receptor connect; explain why different tissue responses do not prove absence of a receptor.

For extension, contrast hypo/hyperthyroidism for the pituitary-thyroid pair using E4, including temperature tolerance, energy use and the diagnosis limit.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.



Question and submission check

Write one lingering gland question, share it and submit the annotated diagram with definitions through your section route.

Retain actual official completion evidence for the tracker or list the missing screens. Keep weekly model and data tasks separate.

Use this space or the same labeled section in your existing document. Add paper when your table, graph or drawing needs more room.

Check your product

- The diagram locates pituitary, thyroid, pancreas and both adrenal glands with correct example hormones.
- Hormone, target cell and receptor are defined in the student's own words.
- The explanation distinguishes source, broad blood transport and receptor-dependent response.
- One lingering gland question is recorded.
- Keep evidence from the matching task and weekly work you actually do. Ask for missing inputs.

Keep the limit: Original anatomy and signaling practice only. It cannot establish a patient diagnosis, measured hormone level, treatment advice, official submission or model-lab completion.

Turn in your work

Submit the annotated body diagram and three definitions under the exact assignment title. Section 1292: <https://clevelandmetro.schoology.com/assignment/8544581660>. Section 6792: <https://clevelandmetro.schoology.com/assignment/8544581693>. Confirm that your section's assignment is open.

If access is unavailable, save the same diagram and definitions and tell the teacher. Ask for the actual matching task and correct submission route.

[Section 1292: Wk10 Vocabulary: Endocrine glands and signaling](#)

[Section 6792: Wk10 Vocabulary: Endocrine glands and signaling](#)

Carry forward

Name the hormone source, follow its route through blood, and explain the response using the target cell's receptor.

March 24 uses the assigned blood-glucose negative-feedback model; bring the gland map and obtain the actual model inputs. How could a pancreatic signal contribute to a blood-glucose feedback loop?

Sources and resources

[Open today's page](#)

SEER-SIGNAL · Characteristics of Hormones

National Cancer Institute, SEER Training

<https://training.seer.cancer.gov/anatomy/endocrine/hormones.html>

SEER-PIT · Pituitary & Pineal Glands

National Cancer Institute, SEER Training

<https://training.seer.cancer.gov/anatomy/endocrine/glands/pituitary.html>

SEER-THY · Thyroid & Parathyroid Glands

National Cancer Institute, SEER Training

<https://training.seer.cancer.gov/anatomy/endocrine/glands/thyroid.html>

SEER-PAN · Pancreas: Islets of Langerhans

National Cancer Institute, SEER Training

<https://training.seer.cancer.gov/anatomy/endocrine/glands/pancreas.html>

SEER-ADR · Adrenal Gland

National Cancer Institute, SEER Training

<https://training.seer.cancer.gov/anatomy/endocrine/glands/adrenal.html>

NIDDK-HYPO · Hypothyroidism

National Institute of Diabetes and Digestive and Kidney Diseases

<https://www.niddk.nih.gov/health-information/endocrine-diseases/hypothyroidism>

NIDDK-HYPER · Hyperthyroidism

National Institute of Diabetes and Digestive and Kidney Diseases

<https://www.niddk.nih.gov/health-information/endocrine-diseases/hyperthyroidism>