The Hidden Return

Trace lymph transport and immune defense after a scraped knee.

HS-AP9-1 "Identify the primary structural and functional components of the lymphatic system."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Circle each named lymphatic structure or organ in the passage. Underline the words that tell what each one does.

Where Does the Extra Fluid Go?

1. After you scrape your knee, fluid leaves tiny blood vessels and enters the spaces around nearby cells. Most returns directly to the blood, but some enters blind-ended lymphatic capillaries. Once inside these capillaries, the fluid is called lymph. These thin-walled tubes collect extra tissue fluid, along with bits of debris and any microbes present. Lymphatic capillaries join larger lymphatic vessels, which carry lymph through the body. One-way valves in these vessels help keep lymph moving toward the chest rather than flowing backward. This return route helps maintain a healthy balance of fluid in tissues.

2. On its way back to the blood, lymph passes through small lymph nodes along lymphatic vessels. Nodes contain immune cells that trap and respond to microbes and other foreign material in lymph. A node near your scraped knee might swell as immune cells multiply there. Eventually, lymphatic vessels feed into larger ducts. The right lymphatic duct drains lymph from the right side of the head and chest and the right arm. The thoracic duct drains the rest of the body. Both ducts empty into large veins near the collarbones, returning lymph to the bloodstream.

3. Other lymphatic organs help protect you, but they do not all filter lymph. The spleen filters blood, removing worn-out red blood cells and helping immune cells detect material carried in the blood. Bone marrow makes blood cells, including many immune cells, and is where B cells mature. The thymus, located behind the breastbone, is where T cells mature. Tonsils near the throat help detect microbes entering through the mouth or nose. Together, these organs support immune defense, while lymphatic capillaries, vessels, nodes, and ducts move or process fluid on its way back to the blood.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do lymphatic capillaries and larger lymphatic vessels have different jobs?

2. What do lymph nodes do to lymph, and why might a node near a scraped knee swell?

3. Which duct returns lymph from a scraped knee toward the bloodstream, and where does it empty?

4. Name two lymphatic organs that do not filter lymph. Give one job of each.

3 YOUR TURN

Your own words

Write a short museum label that traces lymph from knee tissue back to the bloodstream. Name at least four lymphatic structures in order, explain each one's job, then name one lymphatic organ outside that route and explain its job.

ANSWER KEY

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PART 1 · READ AND MARK

Circle each named lymphatic structure or organ in the passage. Underline the words that tell what each one does. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do lymphatic capillaries and larger lymphatic vessels have different jobs?	**Lymphatic capillaries collect extra tissue fluid. Larger lymphatic vessels carry lymph through the body.**
2	What do lymph nodes do to lymph, and why might a node near a scraped knee swell?	**Immune cells in nodes trap and respond to foreign material in lymph. A node may swell as immune cells multiply.**
3	Which duct returns lymph from a scraped knee toward the bloodstream, and where does it empty?	**The thoracic duct drains lymph from the lower body and empties into a large vein near a collarbone.**
4	Name two lymphatic organs that do not filter lymph. Give one job of each.	**For example, the spleen filters blood and removes worn-out red blood cells; the thymus is where T cells mature.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Lymphatic capillaries collect extra fluid from the tissue around a scraped knee. Lymphatic vessels carry it through lymph nodes, where immune cells trap microbes. The thoracic duct collects lymph from the lower body and empties it into a large vein near a collarbone, returning it to the bloodstream. Outside this route, the spleen filters blood and removes worn-out red blood cells.

For the museum label, accept equivalent descriptions of the knee-to-blood route if the structures are in order and their jobs are accurate. The organ outside the route may be the spleen, bone marrow, thymus, or tonsils.