D.PHARM • FIRST YEAR

Human Anatomy & Physiology

CHAPTER 6

Lymphatic System



ENGLISH CHAPTER NOTES

DIPLOMA IN PHARMACY

LYMPH AND ITS COMPOSITION

LYMPH

Clear fluid formed when interstitial fluid enters lymphatic capillaries. It circulates through lymphatic vessels rather than being pumped directly by the heart.

COMPOSITION

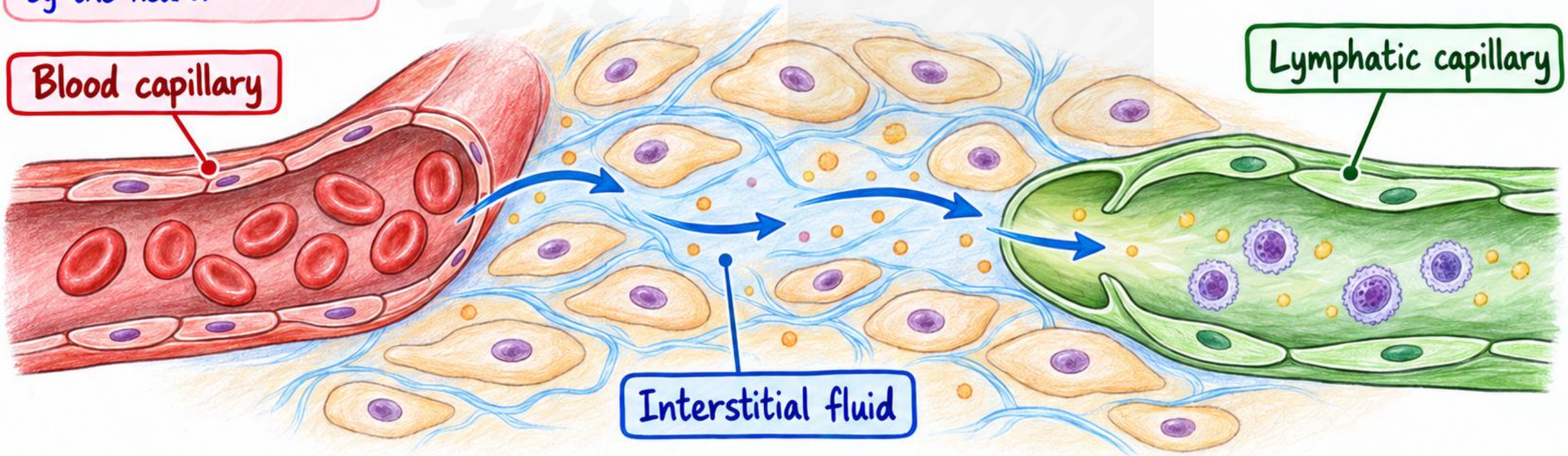
Contains water, dissolved ions, proteins, nutrients, waste products and immune cells, especially lymphocytes.

CHYLE

Lymph from intestinal lacteals can look milky because it carries absorbed dietary fats.

KEY DISTINCTION

Interstitial fluid surrounds tissue cells; the same fluid is called lymph after entering lymphatic vessels.



FUNCTIONS OF THE LYMPHATIC SYSTEM

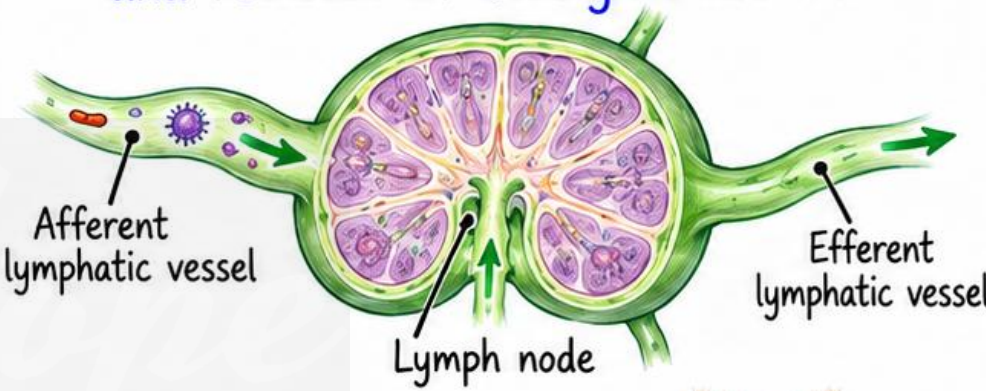
FLUID BALANCE

Returns excess interstitial fluid and proteins to the bloodstream, helping prevent tissue fluid accumulation.



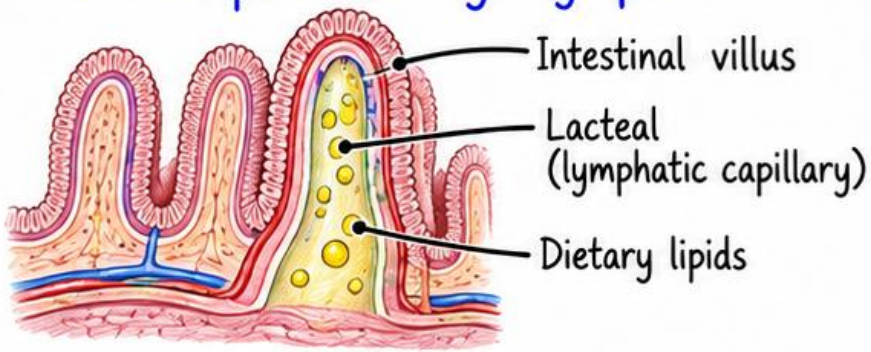
IMMUNE DEFENSE

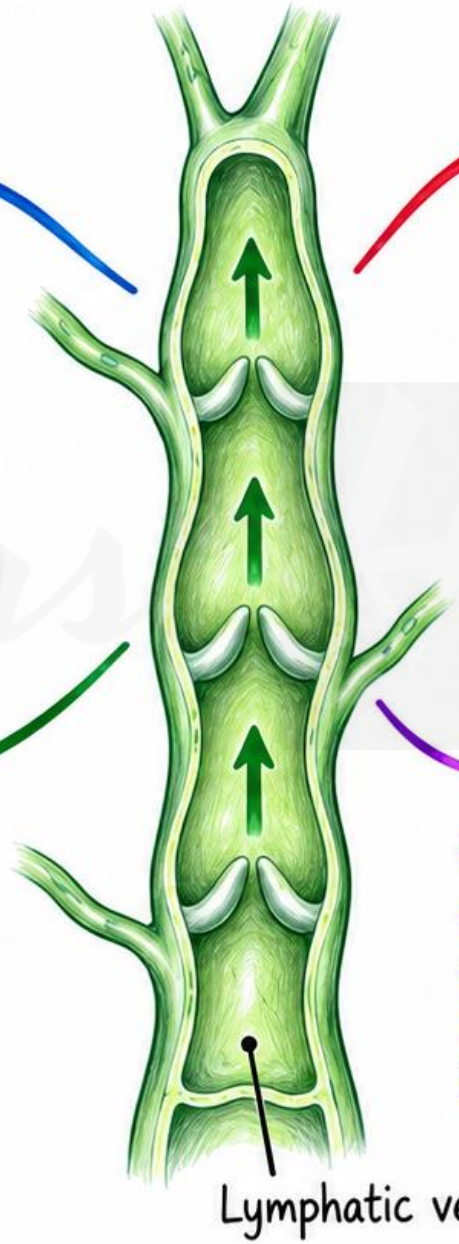
Lymph nodes and other lymphoid tissues support recognition and removal of foreign material.



FAT ABSORPTION

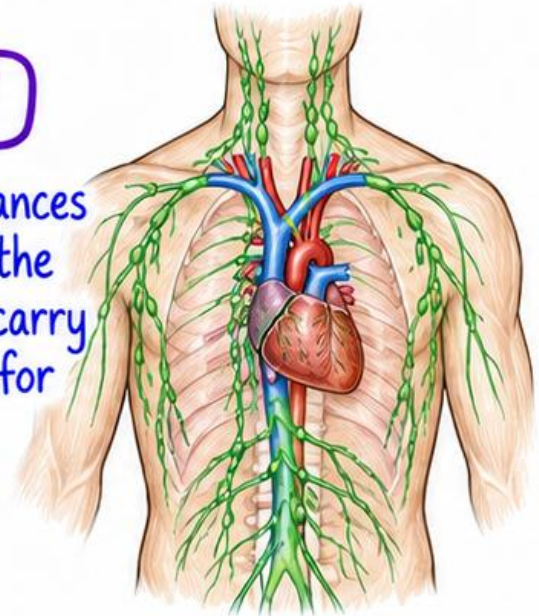
Intestinal lacteals take up dietary lipids and fat-soluble vitamins for transport through lymph.



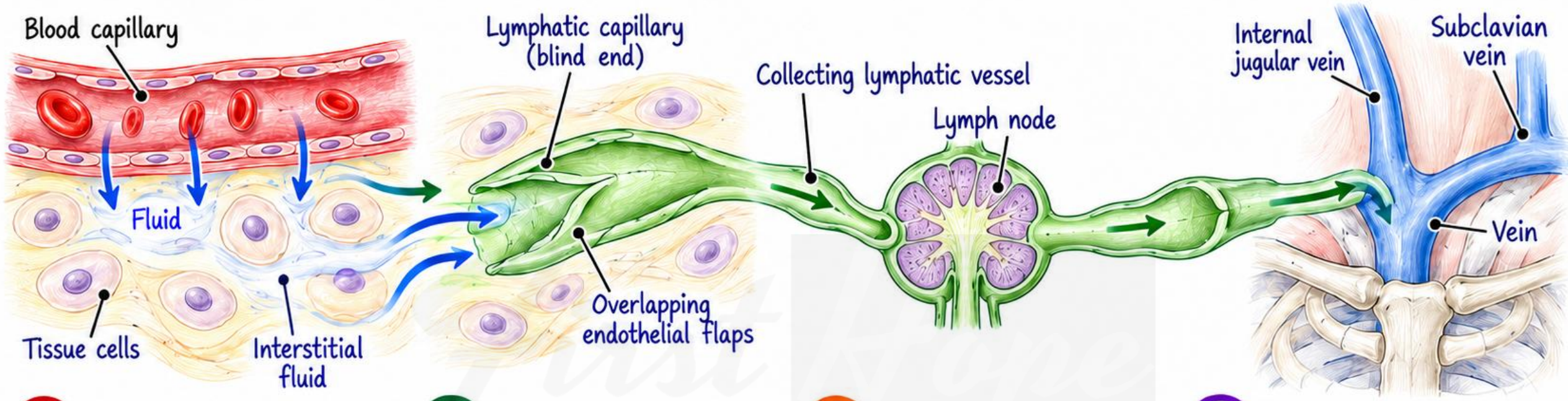


TRANSPORT

Carries tissue-derived substances and waste products toward the circulation. Lymph can also carry pathogens to lymph nodes for immune surveillance.



FORMATION AND RETURN OF LYMPH



1 CAPILLARY FILTRATION

Fluid moves from blood capillaries into tissue spaces and supplies the interstitial environment.

2 LYMPHATIC UPTAKE

Excess interstitial fluid enters blind-ended lymphatic capillaries through overlapping endothelial flaps.

3 VESSEL TRANSPORT

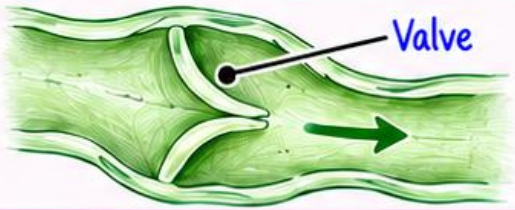
Lymph moves through collecting vessels and passes through lymph nodes.

4 VENOUS RETURN

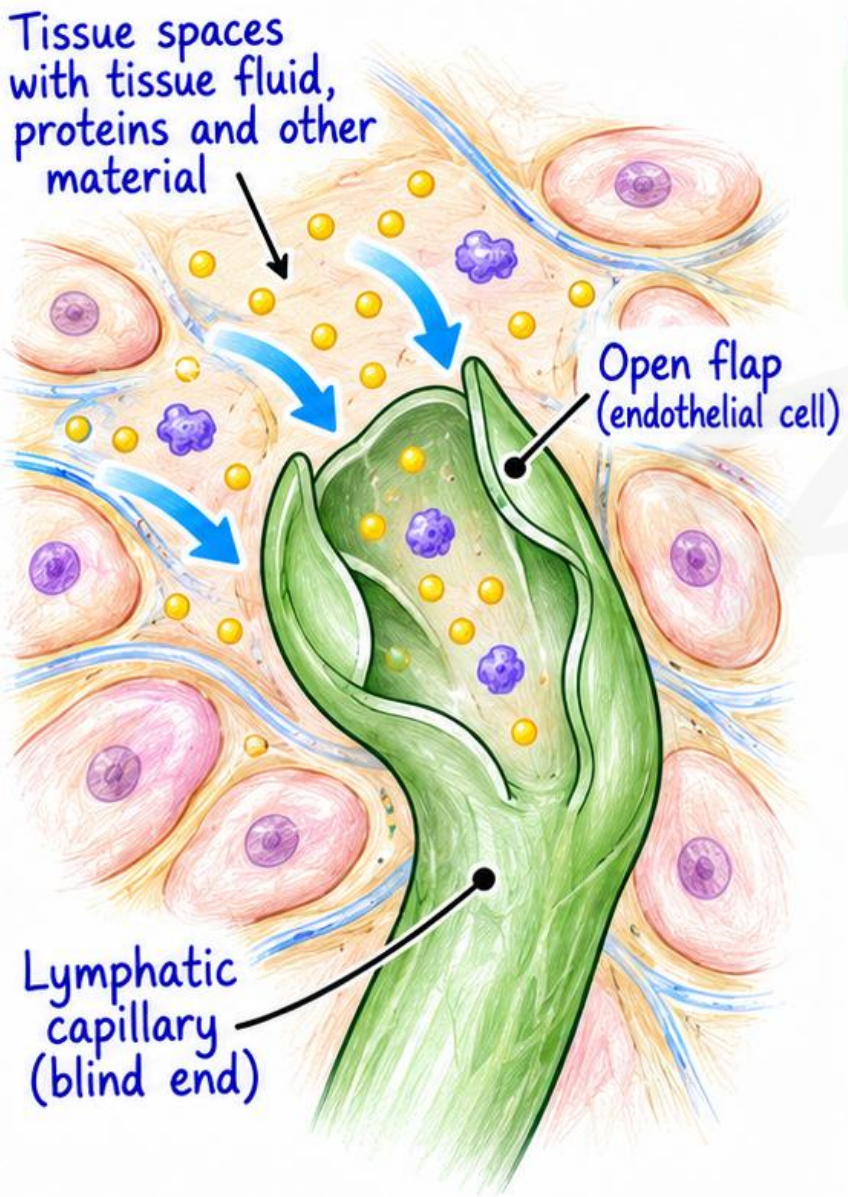
Larger trunks and ducts return lymph to veins near the junctions of the internal jugular and subclavian veins.

ONE-WAY ROUTE

Valves help prevent backward flow.



LYMPHATIC CAPILLARIES AND COLLECTING VESSELS



LYMPHATIC CAPILLARIES

Small, blind-ended vessels begin in tissue spaces. Their thin endothelial walls allow tissue fluid, proteins and other material to enter.

COLLECTING VESSELS

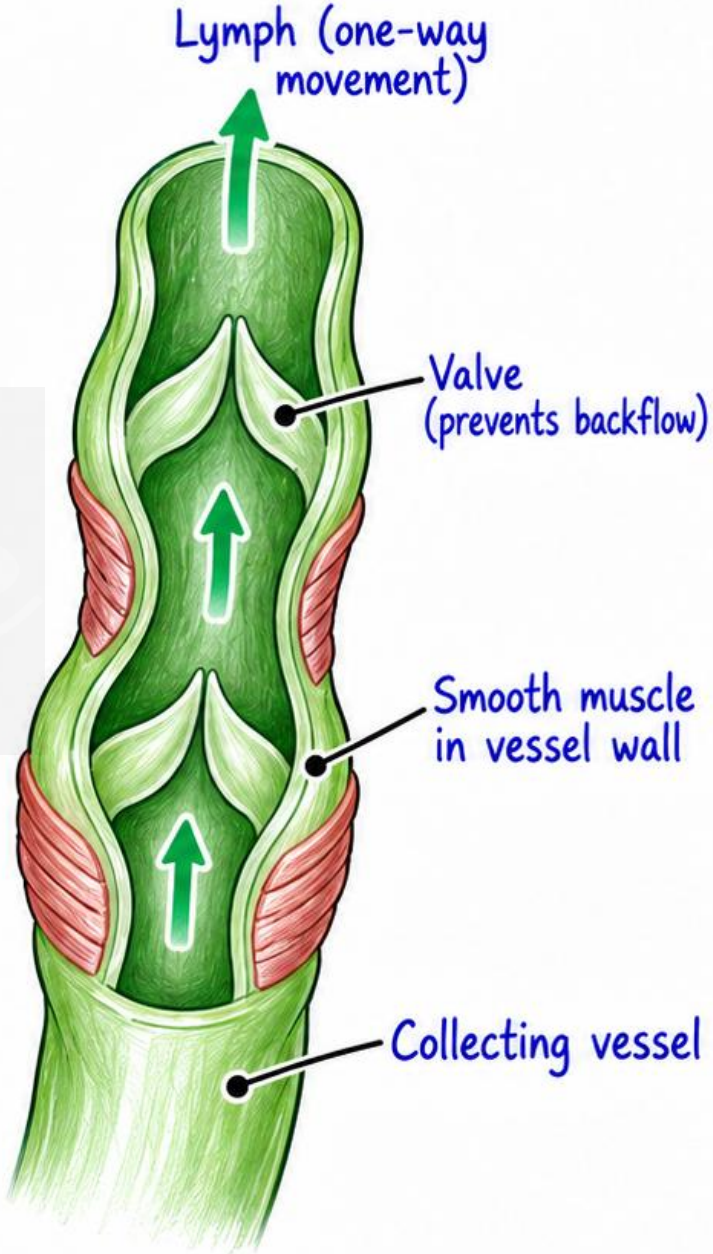
Larger vessels carry lymph away from tissues. Their walls contain smooth muscle and their valves maintain one-way movement.

LARGER PATHWAYS

Collecting vessels join lymphatic trunks; trunks drain into the major lymphatic ducts.

EXAMPLES

Jugular trunks drain head and neck regions; lumbar trunks drain lower-body regions.



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