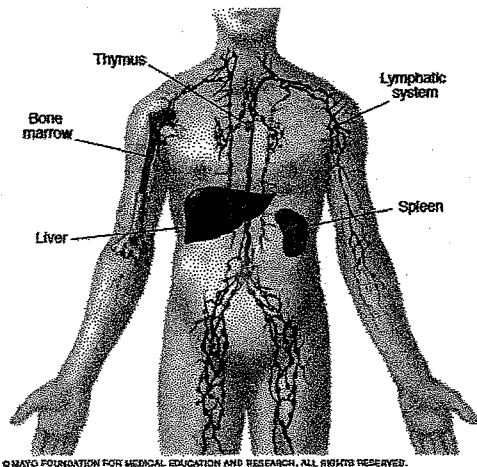


# Meet the Lymph System



The lymphatic system is closely aligned with the circulatory system. It is made up of lymph vessels and is an extensive drainage network that keeps the body fluids in balance and defends the body against infections.

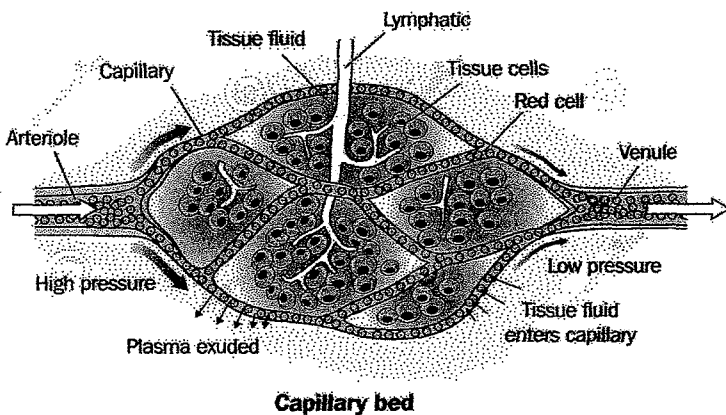
One of the lymphatic system's major jobs is to collect extra lymph fluid from body tissues and return it to the blood. This process is important because water, proteins, and other substances are continuously leaking out of tiny blood capillaries into the surrounding body tissues. If the lymphatic system didn't drain the excess fluid, it would build up in the body's tissues and they would swell.

The lymphatic system also helps defend the body against germs like viruses, bacteria, and fungi that can cause illnesses. Those germs are filtered out in the **lymph nodes**, which are small masses of tissue located along the network of lymph vessels. The nodes house **lymphocytes** which

stop infections from spreading by trapping disease-causing germs and destroying them.

Lymph nodes are round or kidney shaped. Most lymph nodes are about 1 cm in diameter but they can vary in size. Most of the lymph nodes are found in clusters in the neck, armpit, and groin area. Nodes are also located along the lymphatic pathways in the chest, abdomen, and pelvis, where they filter the blood. Inside the lymph nodes, lymphocytes called T-cells and B-cells help the body fight infection. Lymphatic tissue is also scattered throughout the body in different major organs and in and around the gastrointestinal tract.

The spleen also helps the body fight infection. The spleen contains lymphocytes and **macrophages**, which engulf and destroy bacteria, dead tissue, and foreign matter and remove them from the blood passing through the spleen.



Fluid in the blood is called **PLASMA**. When plasma passes into the spaces around cell tissue it is called **INTERCELLULAR FLUID (ICF)**. ICF gets "dirty" from cellular wastes, pathogens, and possible cancer cells and is drained by lymph capillary into the lymph system where it is now called **LYMPH**. After the fluid has been cleaned from pathogens and other debris, it is returned to the bloodstream into the large veins in the upper chest near the neck where it becomes **PLASMA** again.

## Fighting Infection

Lymph fluid enters the lymph nodes, where macrophages fight off foreign bodies like bacteria, removing them from the bloodstream. After these substances have been filtered out, the lymph fluid leaves the lymph nodes and returns to the veins, where it re-enters the bloodstream.

When a person has an infection pathogens such as bacteria and viruses collect in the lymph nodes. If the throat is infected, for example, the lymph nodes of the neck may swell. That's why doctors check for swollen lymph nodes (sometime called swollen "glands" — but they're actually lymph nodes) in the neck when your throat is infected.

**Tonsillitis.** Tonsillitis is caused by an infection of the tonsils, the lymphoid tissues in the back of the mouth at the top of the throat that normally help to filter out bacteria. When the tonsils are infected, they become swollen and inflamed, and can cause a sore throat, fever, and difficulty swallowing. The infection can also spread to the throat and surrounding areas, causing pain and inflammation and eventually may have to be removed.