

Tissue Fluid Formation

At the arteriole end

- Blood at high pressure arrives at the arteriole end of the capillaries
- The blood plasma contains many solutes so it has a low water potential
- Tissue fluid has a higher water potential so there is a water potential gradient into the blood
- However, the pressure effect forcing plasma out into the tissues is greater than the net movement into the tissues
- Water, small solutes like ions, glucose and amino acids are forced out into the tissues
- Oxygen in red blood cells is in high concentration: it diffuses out into the tissues down its concentration gradient
- Carbon dioxide and urea diffuse into the blood
- Large plasma proteins stay in the blood in the capillaries

At the venule end

- Since a lot of the water has gone into the tissues the pressure in the capillary is much lower
- This also means that, because there is less water but all the soluble proteins are still in the blood, it has a very low water potential – much lower than in the tissues
- There is a net movement of water into the blood by osmosis

The lymphatic system

- the remaining tissue fluid is absorbed into the lymph capillaries and circulated through the lymphatic system
- this contains meshes with many white blood cells that filter the tissue fluid (now called lymph)
- after being filtered the lymph drains back into the blood