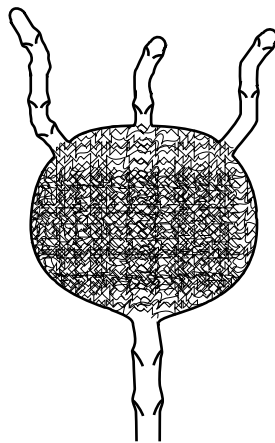


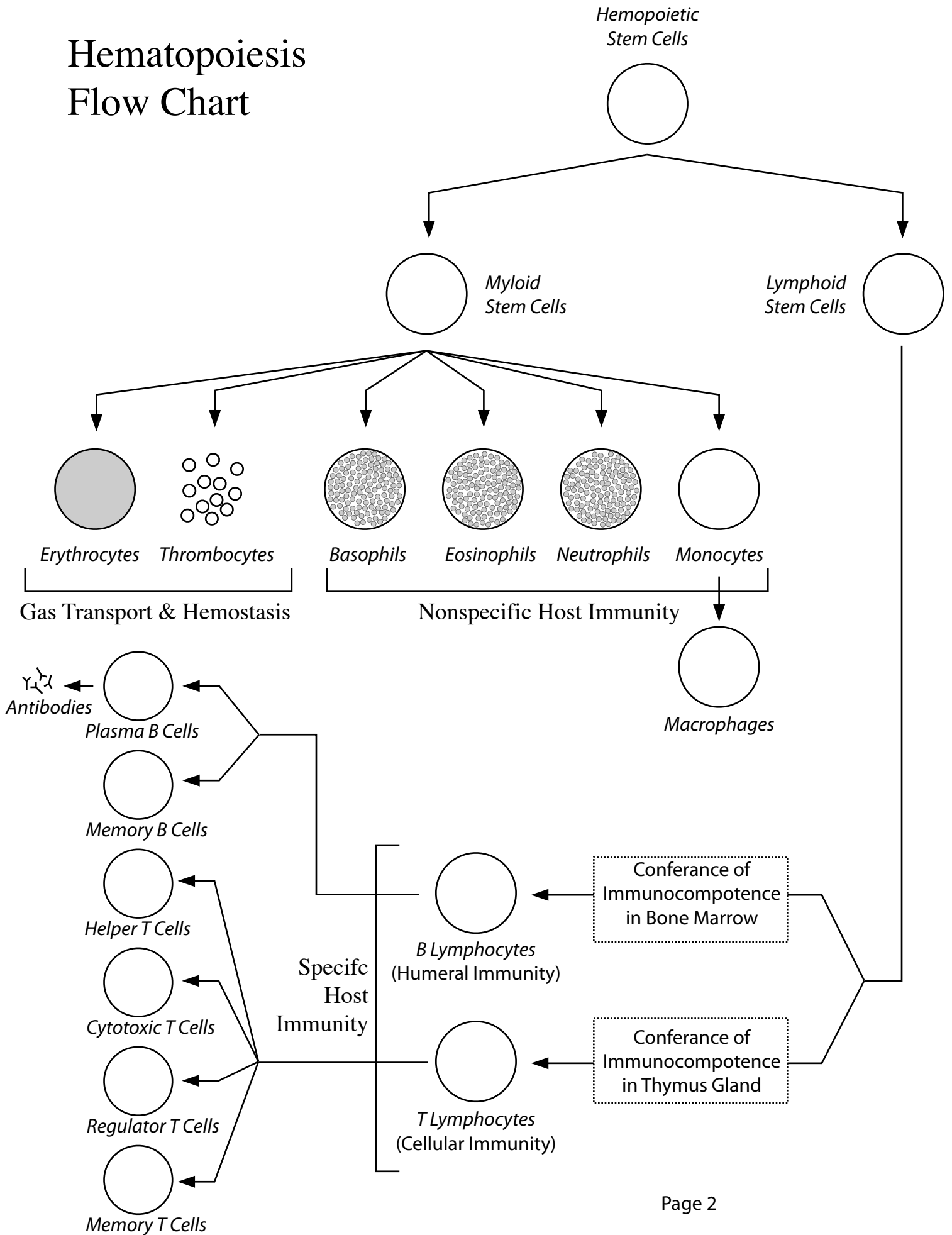
Lymphatic System Handout

An Introduction to
*Cytology of the
Lymphatic System*



By Noel Ways

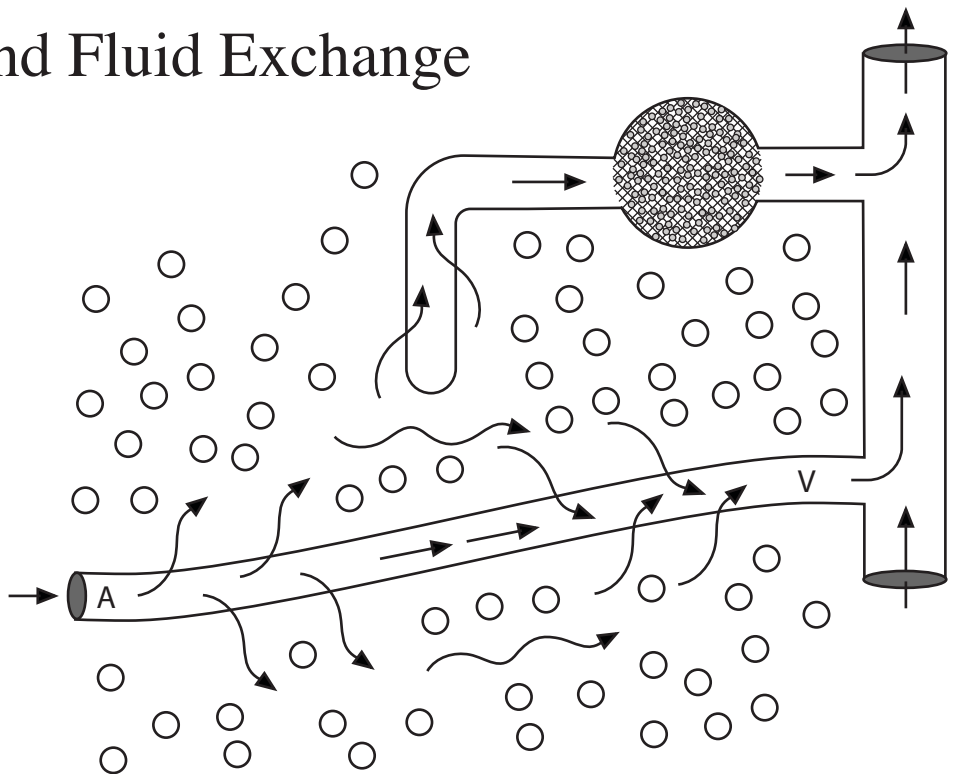
Hematopoiesis Flow Chart



Inflammation and Fluid Exchange

At the arterial end of a capillary (A) hydrostatic pressure (blood pressure) exceeds osmotic pressure and fluid leaves that capillary and bathes interstitial cells. This brings nutrients and oxygen to the interstitium.

At the venous end of the capillary (V) osmotic pressure exceeds hydrostatic pressure and the interstitial fluid returns to the blood bringing waste and CO₂.

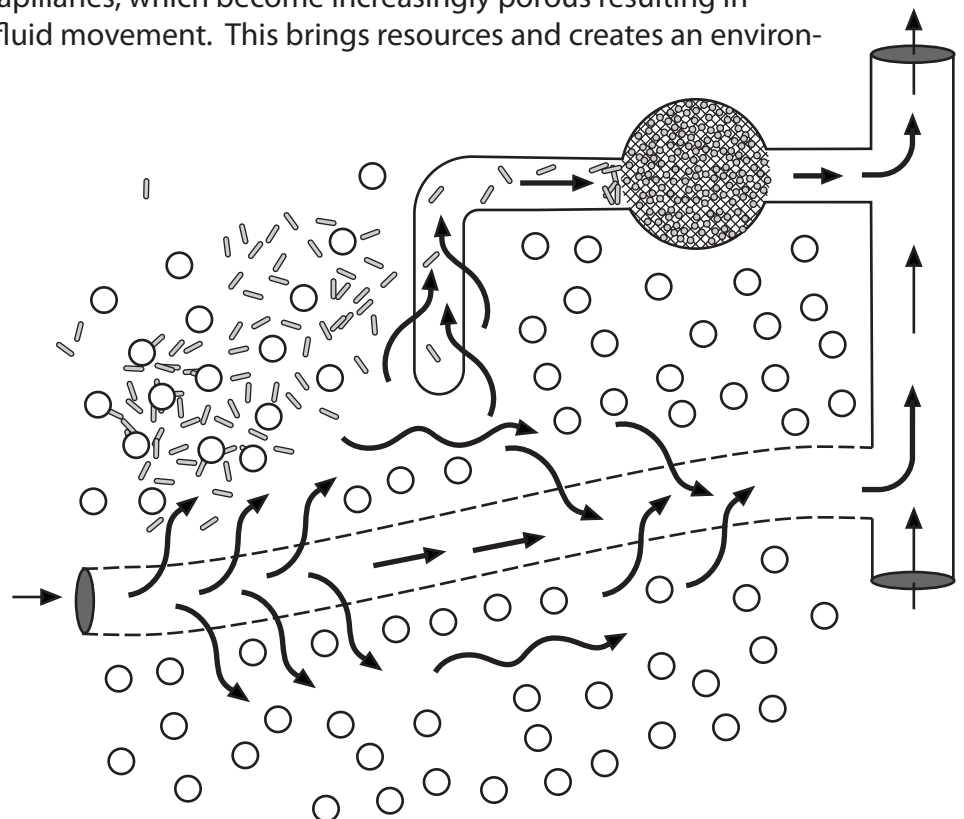


As not all fluid returns to the venous end, the lymphatic system functions as a “drainage system” receiving the balance of interstitial fluid. When the fluid enters lymphatic vessels it is called lymph and it will be returned to general circulation. Note that a lymph node filters the lymph before it enters general circulation.

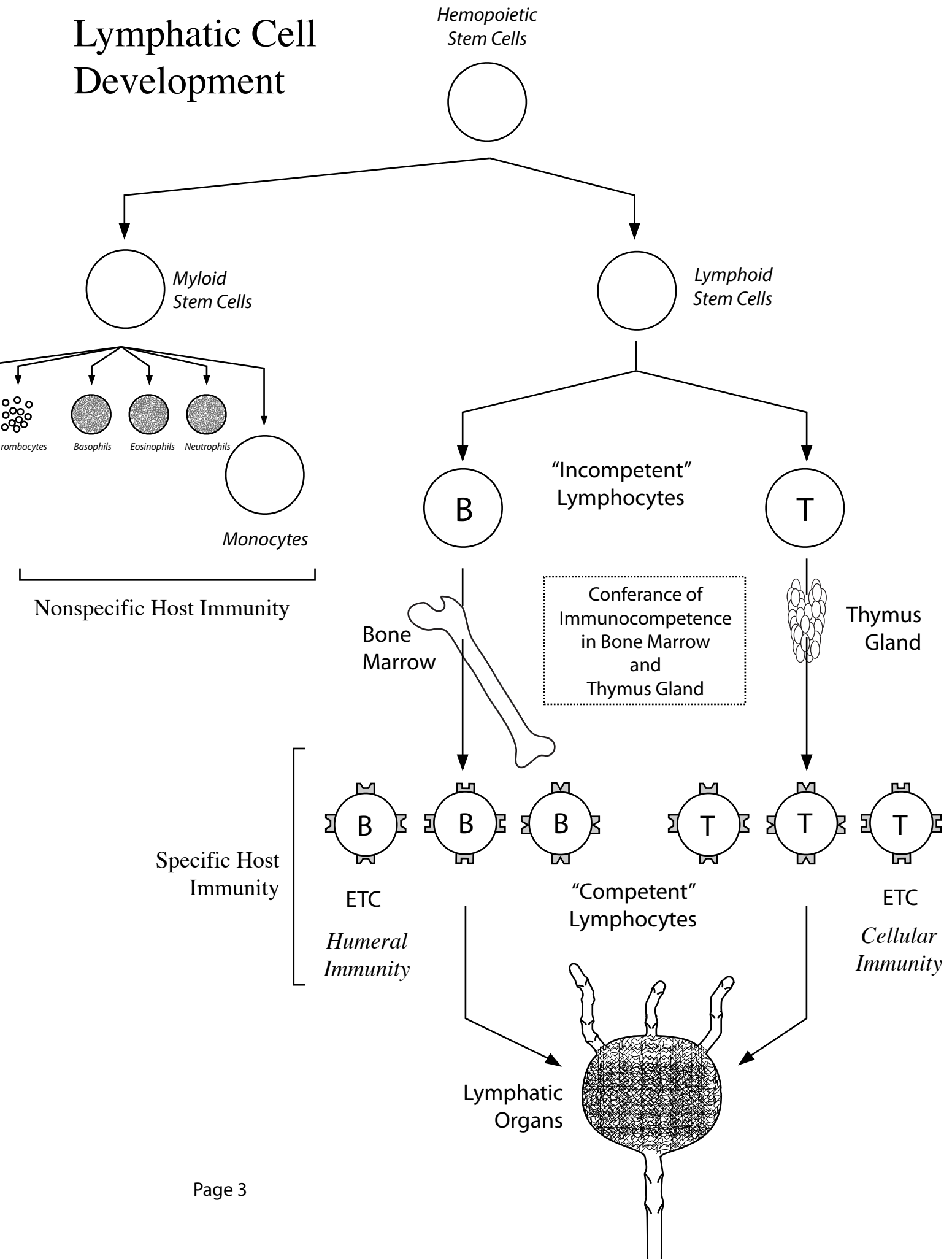
If trauma or infection occurs, mast cells secrete histamine inducing an inflammatory response, the purpose of which is to control bacterial growth and enhance immune responses. Histamine causes vasodilatation of capillaries, which become increasingly porous resulting in increases in both pressure and fluid movement. This brings resources and creates an environment to promote resolution of the infection and healing.

Due to the increase in interstitial fluid pressures, there is increased fluid drainage into the lymphatic system. This results in the infectious agent being brought to the lymph nodes, where the immune system in large part resides.

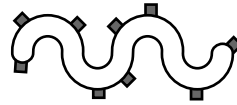
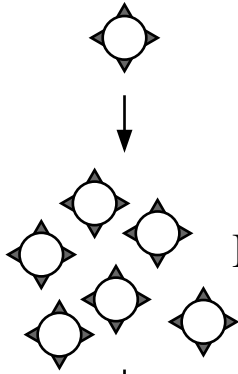
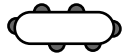
As the agents of infection collect in the lymph nodes, this “informs” the immune system that there is an infection, and a specific immune response ensues. Note that in this scenario, the bacteria are not entering general circulation.



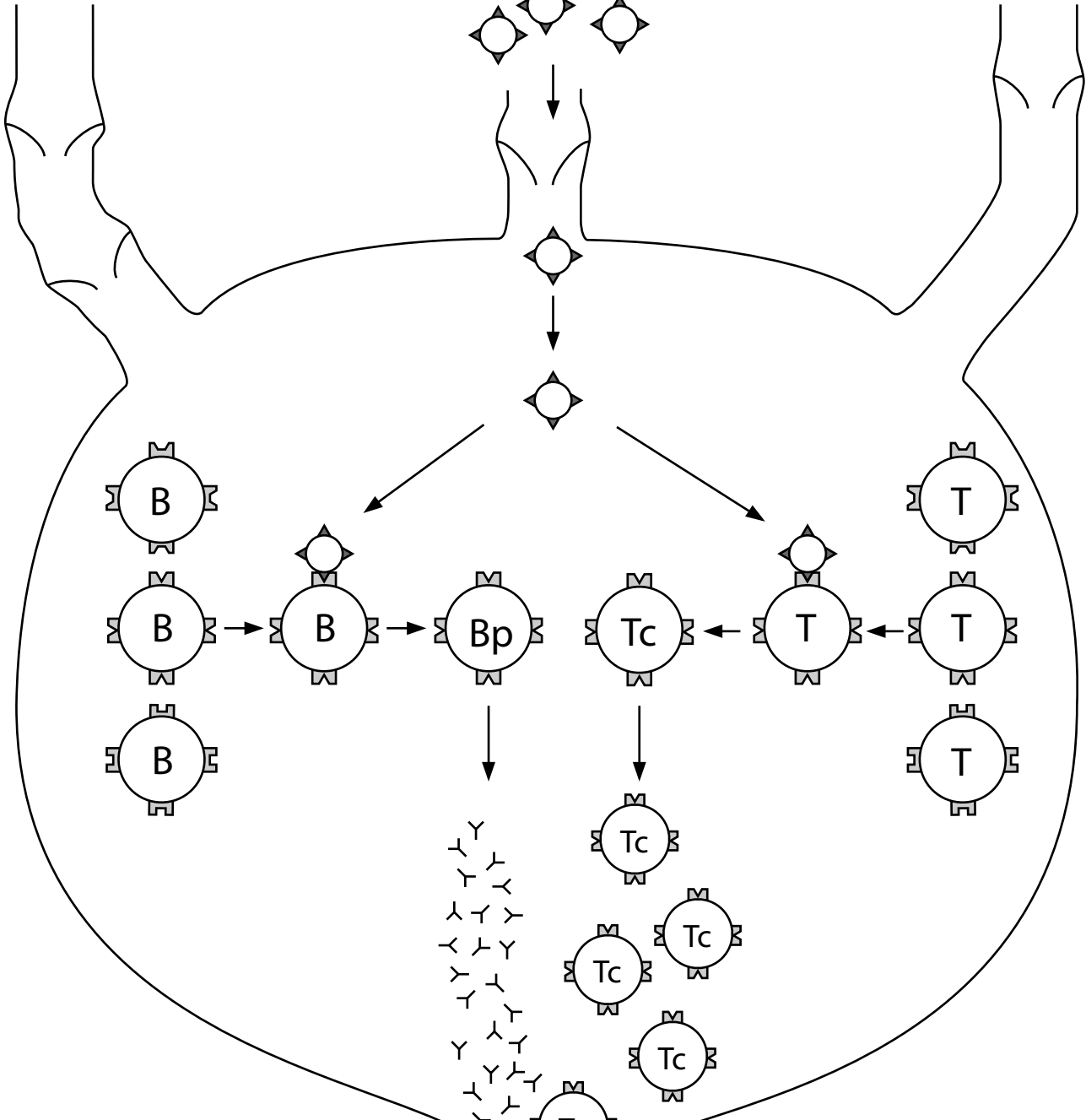
Lymphatic Cell Development



Introduction to Humoral and Cellular Immunity



Infection



Subclavian Vein to
Right Heart to
General Circulation
Site of Infection

