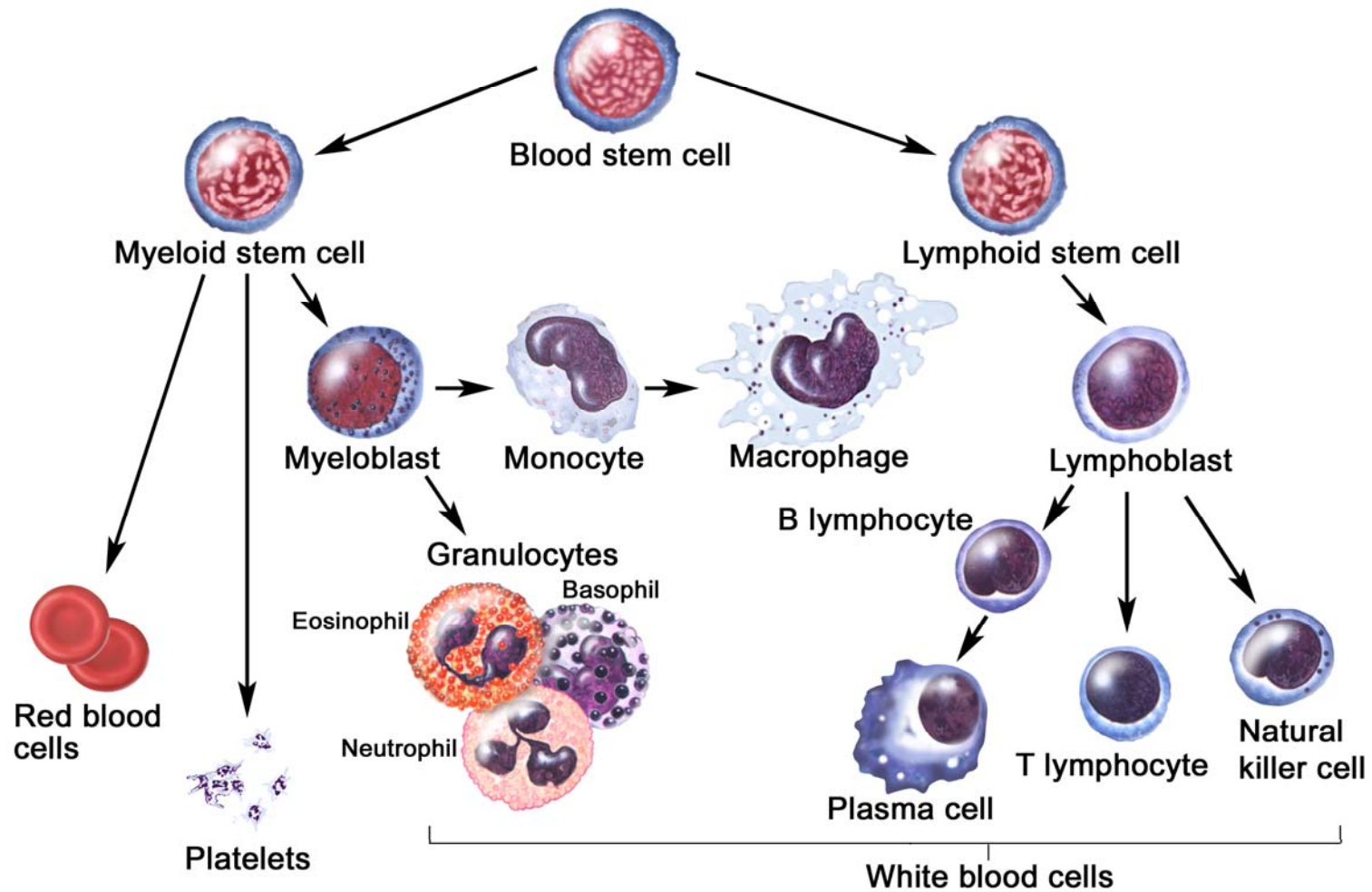


Teacher Guide

The Cell is Right: hematopoietic stem cell lineage tree

Directions: Teacher draws arrows and names on the board. Object of this activity is to get students to place each cell picture in the correct location on the lineage tree diagram based on descriptions provided along with the student handouts.



© 2008 Terese Winslow
U.S. Govt. has certain rights

Answers:

Cell 1- monocyte

Cell 2- myeloid stem cell

Cell 3- platelets/thrombocytes

Cell 4- lymphoblast

Cell 5- macrophage

Cell 6- basophil

Cell 7- T lymphocyte

Cell 8- red blood cells/erythrocytes

Cell 9- eosinophils

Cell 10- blood/hematopoietic stem cell

Cell 11- myeloblast

Cell 12- lymphoid stem cell

Cell 13- natural killer cell

Cell 14- neutrophil

Cell 15- plasma cell

Cell 16- B lymphocyte

Student worksheets

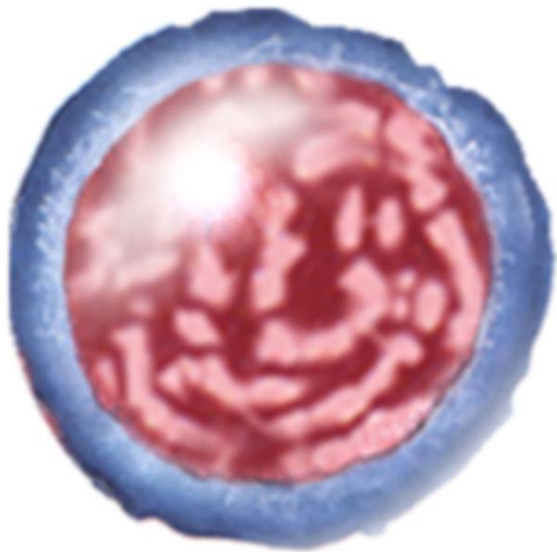
The Cell is Right: hematopoietic stem cell lineage tree

Directions: Each student (or group), obtain one of the cells below. Cut out the square and figure out where it belongs based on its position in the cell lineage tree. Match each name on the tree with the correct cell shape and description.

Cell 1: This cell replenishes resident macrophages and can travel to the site of infection. Here it will differentiate and elicit an immune response.



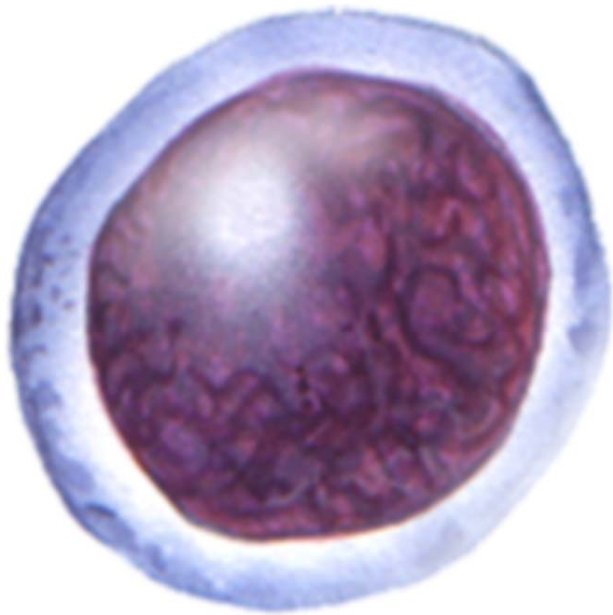
Cell 2: This immature cell is found in the bone marrow and gives rise to most blood cells; the exception is lymphocytes.



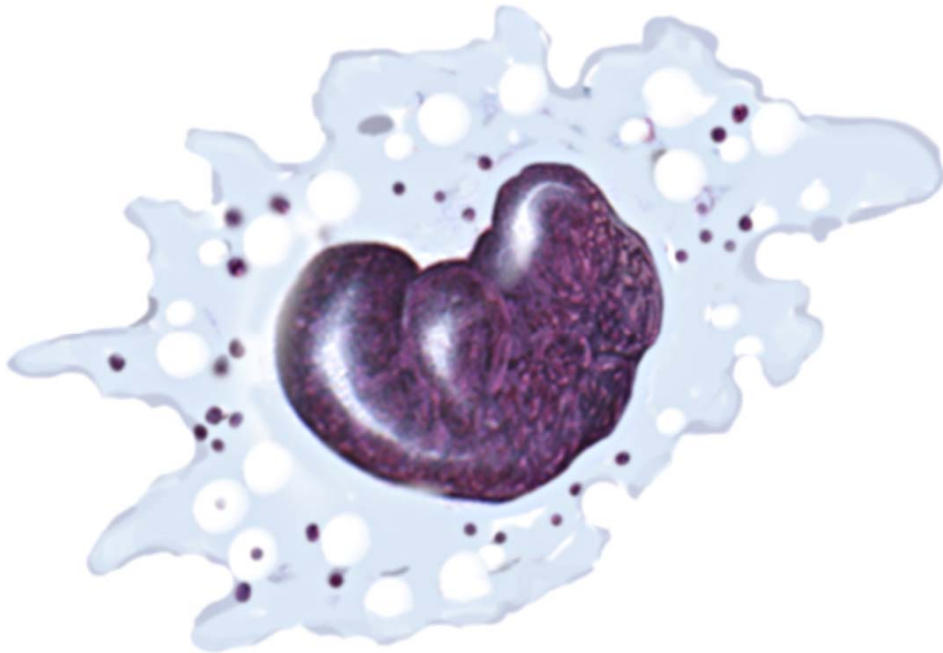
Cell 3: Irregularly shaped cell pieces that lack nuclei. They circulate in the blood and lead to the formation of blood clots.



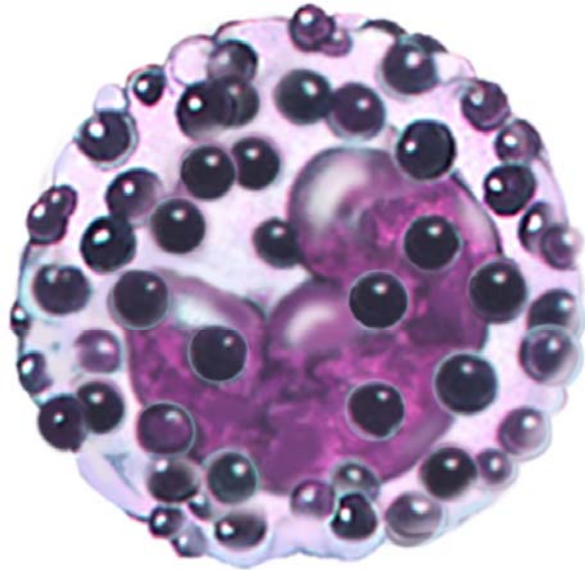
Cell 4: This immature cell can typically differentiate. It is found in bone marrow, but when speaking of leukemia there are abnormally high levels of these cells in the blood.



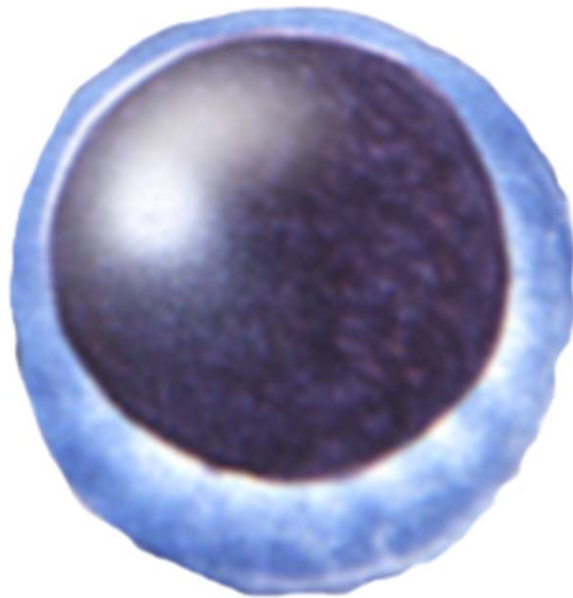
Cell 5: This large phagocytic cell can live in the body for months. It plays a role in specific and nonspecific immunity responses.



Cell 6: This cell contains many granules that stain purple in basic dyes. It is found in the blood and can be recruited for inflammatory reactions. It contains histamine, which promotes blood flow to tissues.



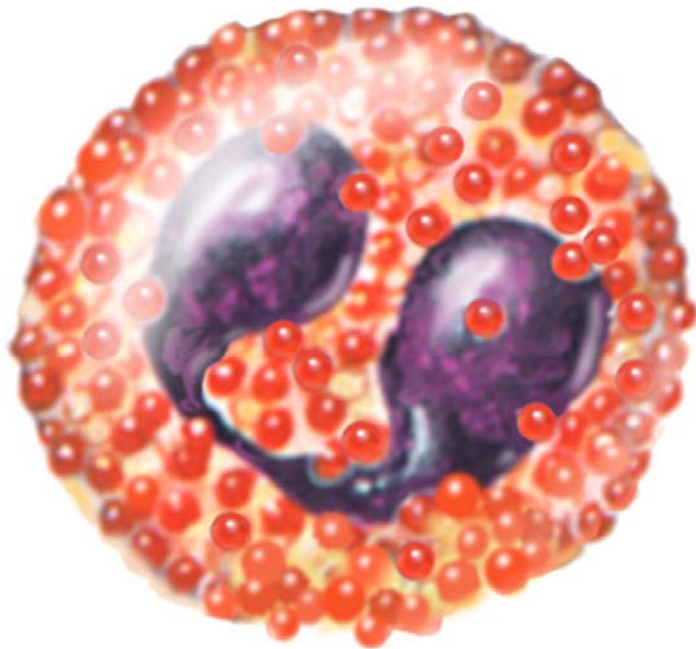
Cell 7: This cell has special receptors on its surface and matures in the thymus. It has various functions depending on its specialty. Roles include helping to control B cell development and recognizing/destroying foreign molecules.



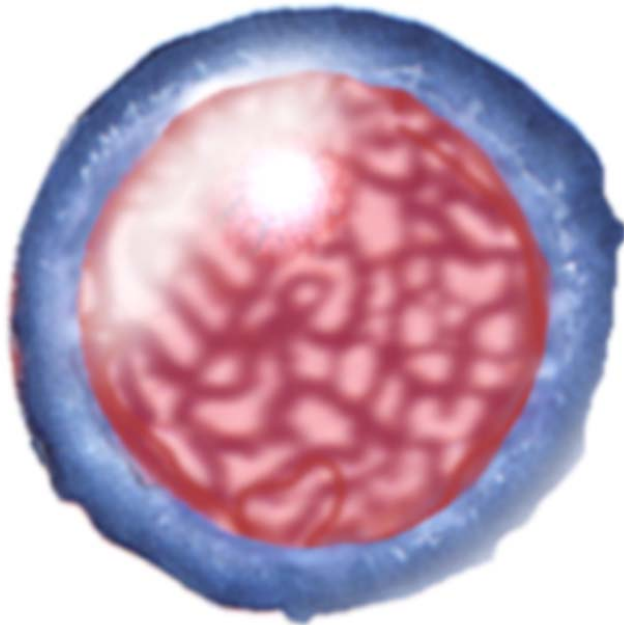
Cell 8: Being the most common in blood, this cell lacks a nucleus and binds to oxygen in order to transport it around the body. Its biconcave shape is ideal for high diffusion rates of oxygen.



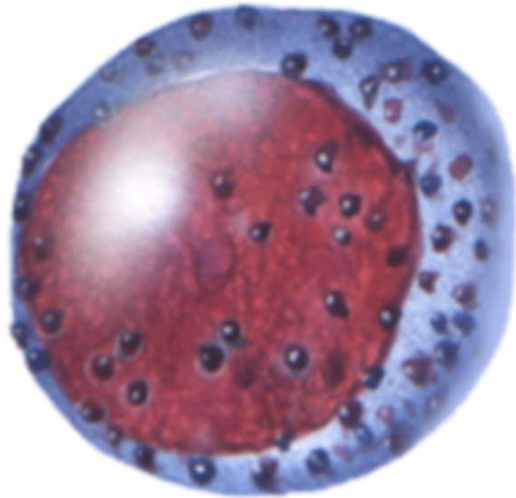
Cell 9: This cell appears brick red after staining with eosin. It circulates in blood and migrates to inflammatory sites in injured or infected tissues. It can release an array of granule proteins that are capable of inflicting dysfunction and membrane damage to foreign invaders



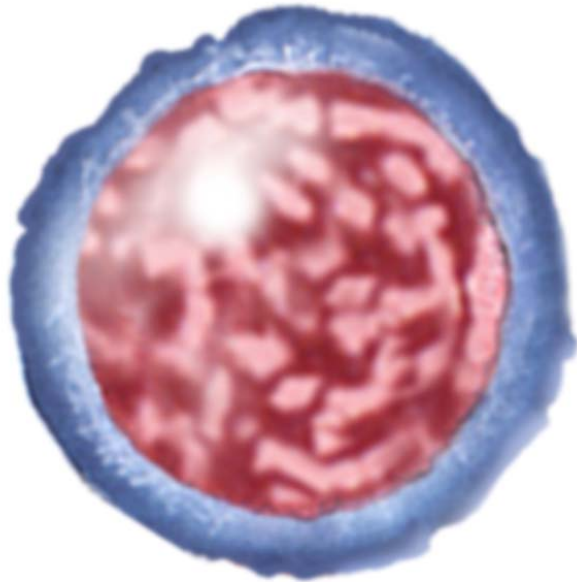
Cell 10: This multipotent cell gives rise to all blood cell types.
It is found in bone marrow and is harvested for bone marrow transplants.



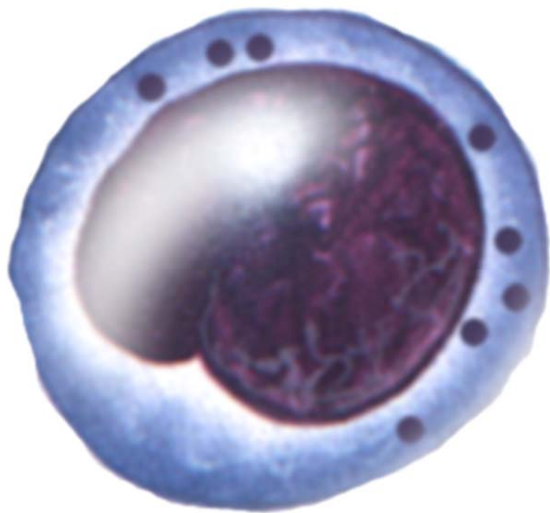
Cell 11: This cell is the first stage of the granulocytic branch. It is an intermediate “precursor” cell that gives rise to leukocytes which are not a part of the lymphatic system.



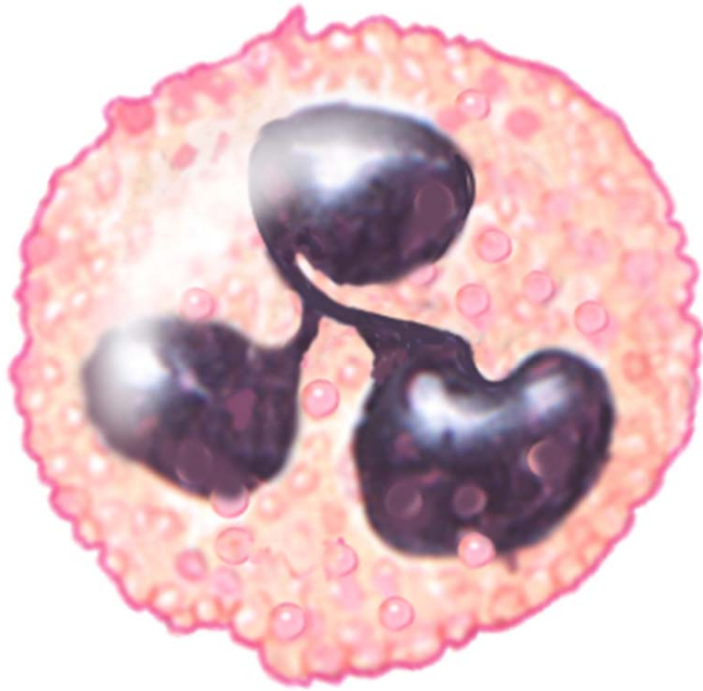
Cell 12: This immature self-renewing cell gives rise to various immune cells that are stored and proliferate in the lymphatic system.



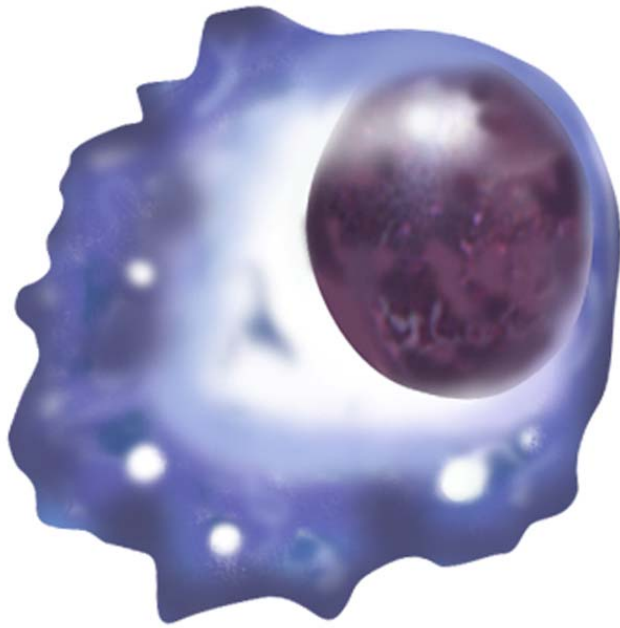
Cell 13: This cell plays a major role in the rejection of tumors and cells infected by viruses. It kills by releasing small proteins that cause the target cell to die.



Cell 14: This phagocytic cell is found in the blood and is usually the first to respond to the site of infection. It is the main component of and accounts for the white color of pus. This cell stains a neutral pink and contains a nucleus divided into 2-5 lobes.



Cell 15: This cell is made in the lymph nodes is capable of producing large volumes of antibodies. It has a distinctive cytoplasm containing abundant rough endoplasmic reticulum and golgi apparatuses.



Cell 16: The function of this cell, found in the bone marrow, is to make antibodies against antigens. One type of this cell is able to stick around in the body in case it encounters the same disease-causing agent again.

