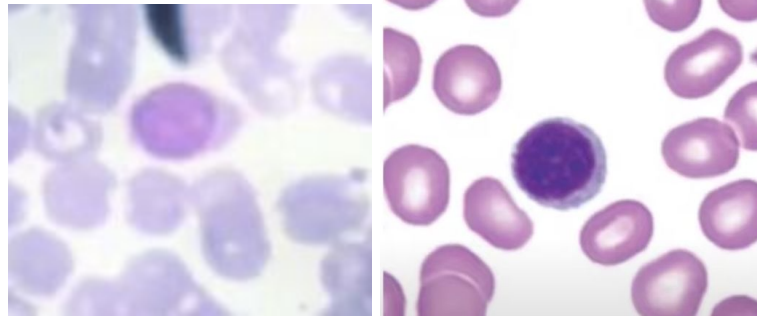




Lymphocyte

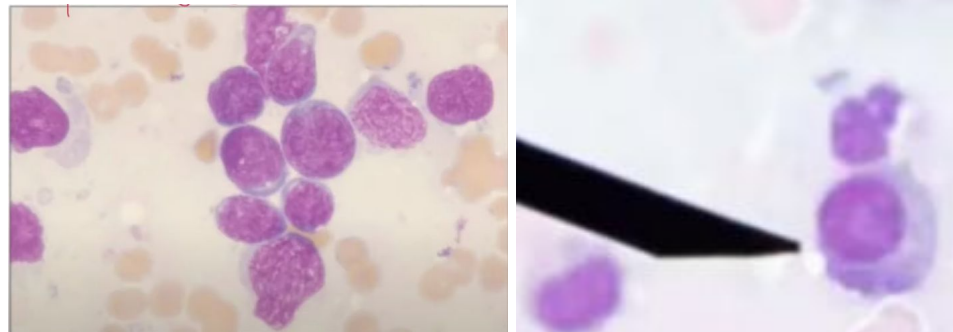
- Size: 7-18 micrometers
- 2nd most numerous WBC in blood
- **Round/oval or slightly indented nucleus: condensed chromatin**
- **(very little) Scant-moderate amount of blue cytoplasm: Few azurophilic granules**

Function: play an immune response role

- B-cells act in humoral immunity: produce antibodies
- T-cells or NK cells act in cellular immunity: initiate attack to foreign organisms or cells directly

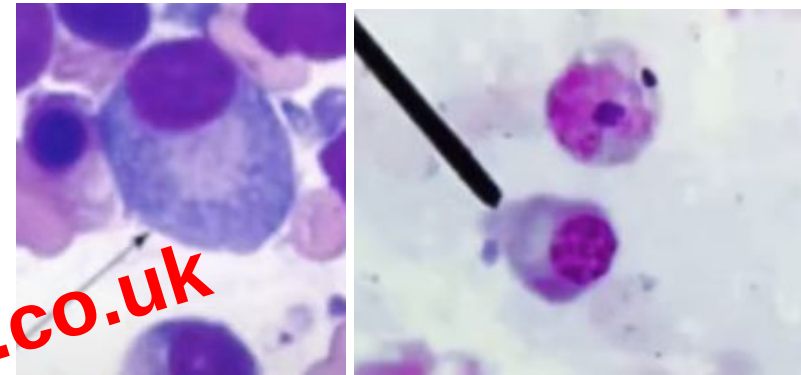
Circulating lymphocytes:

- B-cells: 3-21%
- T-cells: 88%
- Natural killer (NK) cells: 4-29%



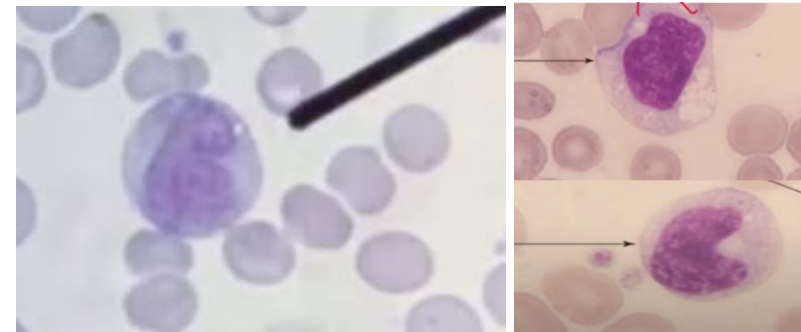
Plasmablast

- Size: 12-15 microns
- N:C ratio=4:1
- **Nucleus is round with an increased N:C ratio**
- Nucleus: purplish red with fine and linear strands of chromatin. **1-2 nucleoli are present**
- **Cytoplasm stains blue and does not contain granules**
- The cell refers to a short-lived differentiation stage between a post germinal center B-cell and mature plasma cell
- Associated conditions: plasma cell leukemia, plasma cell myeloma



Plasma Cell

- Size: 9-20 microns
- Nucleus: Dark purple, ovoid and **eccentrically placed, with a wheel-spoke pattern**
- **Cytoplasm is abundant and deep blue** with a clear area next to the nucleus
- Plasma cells develop from B cells that have been activated as a form of immune response
- Their primary function is to produce antibodies against substances that the antibody considers as "foreign"
- Associated conditions: Plasma cells dyscrasias, response to infection specially of viral origin



Monocytes

- Size: 14-21 microns
- **Nucleus: horseshoe shaped or indented: nuclear folding may give the appearance of brain-like convulsions.** Nucleus stains with fine, delicate linear strands of chromatin
- N:C ratio: 1:1
- **Cytoplasm: blue-gray, finely granular (ground glass) appearance. Contains many fine, dustlike, bluish granules; may contain vacuoles and blunt pseudopods**
- Mature WBC population normally found in the peripheral blood
- Associated conditions: myeloproliferative disease--myelomonocytic leukemia, tuberculosis, severe infections