

Figure 2.6: Neutrophil

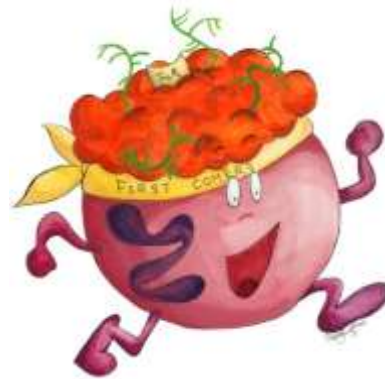


Figure 2.7: Neutrophil

1. neutrophils (*Figure 2.6 and 2.7*) – the infantry of the system, in the most modern techie sense
 - a. strongly phagocytic – first responders to infection and population expands if the infection does not rapidly clear.
 - b. typically live for only a day (in some ways, these guys resemble Kamikaze pilots) and remains accumulate in an infected region as pus.
 - c. granules stain with both acidic and basic stains (different granules with different functions).
 - d. nucleus multilobed (sometimes called a polymorphonuclear leukocytes)



Figure 2.8: Basophil

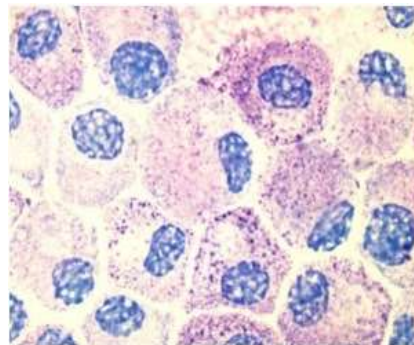


Figure 2.9: Mast Cells



Figure 2.10: Mast Cell

2. basophils (*Figure 2.8*)
 - a. granules with histamines stain with methylene blue, a basic stain
 - b. lobed nucleus
 - c. not phagocytic
 - d. respond to worms

3. mast cells similar to basophils, only they associate with tissues instead of circulating.
 - a. also basic granules with histamines (*Figure 2.10*)
 - b. non-lobed nucleus (*Figure 2.9*)
 - c. released as undifferentiated cells, maturing in their tissues.
 - d. have other immune regulatory functions
4. eosinophils

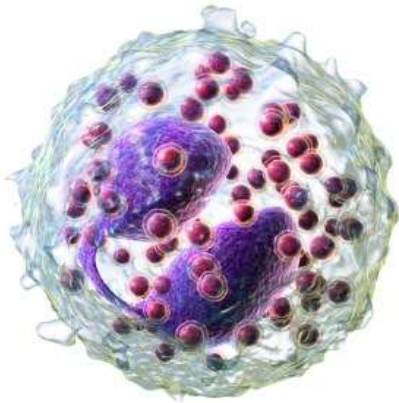


Figure 2.11: Eosinophil



Figure 2.12: Eosinophil

- a. granules stain with eosin red, an acidic stain, have hydrolytic enzymes (*Figure 2.11*)
- b. bilobed nucleus
- c. phagocytic, though less important
- d. target worms (*Figure 2.12*)

Video clip 2-4

IV. Myeloid Antigen Presenting Cells

A. Specific Presenters: called mononuclear because the nuclei are unlobed and look like proper single nuclei. These cells are a little like cavalry or scouts: They both patrol and report back and may kill bad guys.

1. monocytes
 - a. circulate in blood for about 8 hours (*Figure 2.13*)
 - b. enlarge and give rise to - macrophages (*Figure 2.14*)

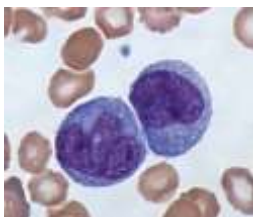


Figure 2.13: Monocyte



Figure 2.14: Monocyte

2. macrophages

- migrate into tissues by amoeboid motion, enlarge five to 10 fold (*Figure 2.15*)
- phagocytize pathogens and debris from dead cells. Antibodies attached to pathogens make this easier. (*Figure 2.16*)
- present antigen derived from phagocytosis to T_H cells.
- subtypes guard specific tissues, becoming a fixed part of the structure.



Figure 2.15: Macrophage



2.16: Macrophage

3. Sentinel Dendritic cells

- NOT related to nerve cells – just have a lot of extensions
- phagocytize pathogens and debris, but also use receptor mediated endocytosis and pinocytosis (*Figures 2.17, A, B and C*)
- hang out in the peripheral tissues and only migrate to secondary lymphoid organs if they sense something suspicious
- present antigen to T_H cells- most effective cell for initiating the immune response
- Some types develop from the lymphoid lineage



A: artist's conception

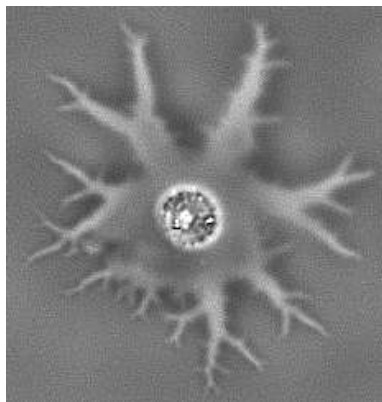


Figure 2.17: Sentinel Dendritic Cells:

B: micrograph



C: cartoon