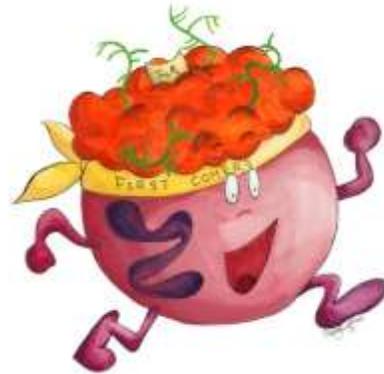
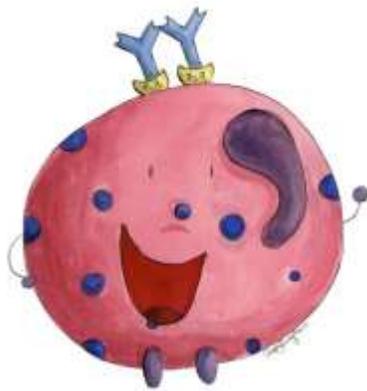


**Figure 2.6: Neutrophil**

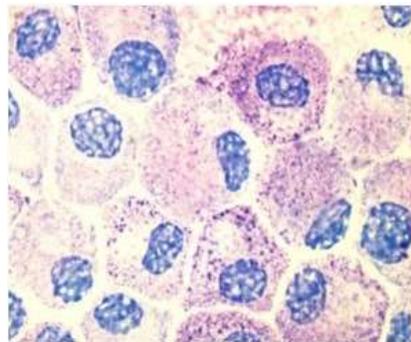


**Figure 2.7: Neutrophil**

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**



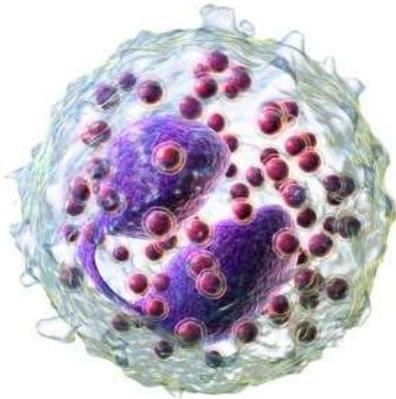
**Figure 2.9: Mast Cells**



**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**

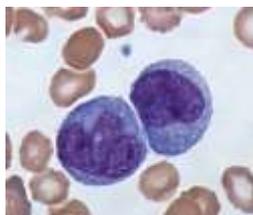
- a. granules stain with eosin red, an acidic stain, have hydrolytic enzymes (*Figure 2.11*)
- b. bilobed nucleus
- c. phagocytic, though less important
- d. target worms (*Figure 2.12*)

#### **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.



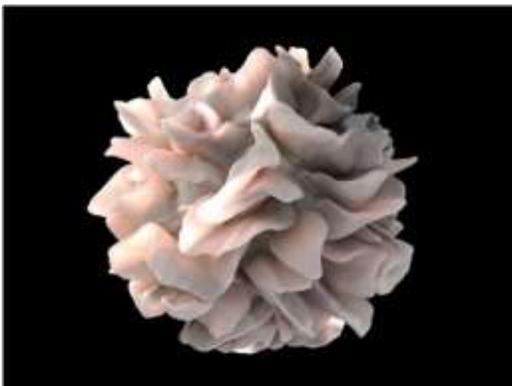
**Figure 2.15: Macrophage**



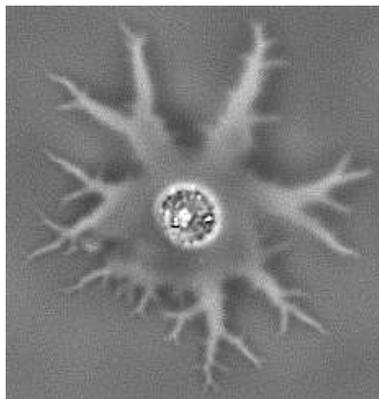
**2.16: Macrophage**

## 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**