An Introduction to Normal Monocytes in Peripheral Blood Smears

MONOCYTES
Monocytes live for a few days in the peripheral blood then move to tissues throughout the body where they mature into macrophages.

Macrophages are monocytes distributed outside the blood, all over the body, especially in the liver, spleen, lymph nodes, lungs, bone marrow, connective tissue, and serous cavities.
Monocytes Data

- **Cell Size**: 12-20µm
- **Nucleus**: Variable, may be round, horseshoe-shaped, or kidney-shaped. Often has folds producing “brainlike” convolutions.
- **Chromatin**: lacy
- **Cytoplasm**: blue-gray, may have pseudopods
- **Granules**: many fine granules frequently giving the appearance of ground glass.
- **Vacuoles**: absent to numerous
- **% Range**: 3%-11% of WBC’s
- **# Range**: $1.3-1.5 \times 10^9$/L
  (1.3-1.5 billion per liter of blood)
Monocyte Slide #4
Monocyte Slide #5
Function of Monocytes/Macrophages

- Monocytes/Macrophages:
  - phagocytize and often vacuolize bacteria and larger particles
  - contain great quantities of lipase and can therefore degrade bacteria with lipidic capsule
  - have a dominant role in immunity because they go through antigen presentation, a process by which macrophages capture antigens and then enable their recognition by lymphocytes.
Macrophages ("big eaters"):
  - slower to respond to invaders than the granulocytes
  - larger, live longer, and have far greater capacities than granulocytes
  - play a key part in alerting the rest of the immune system of invaders
  - start out as monocytes
  - monocytes that leave the blood stream turn into macrophages