

Tools of the Biologist



Dissecting Microscope



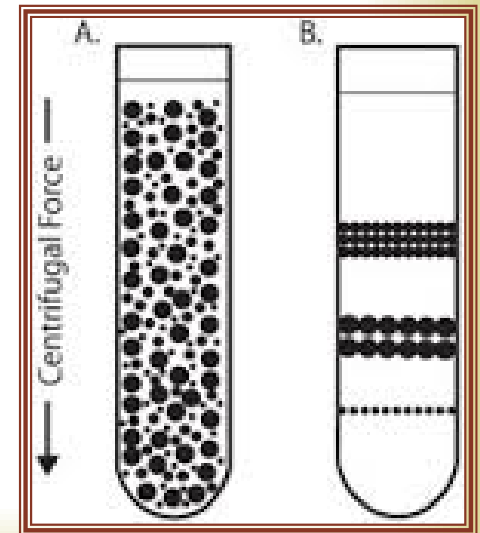
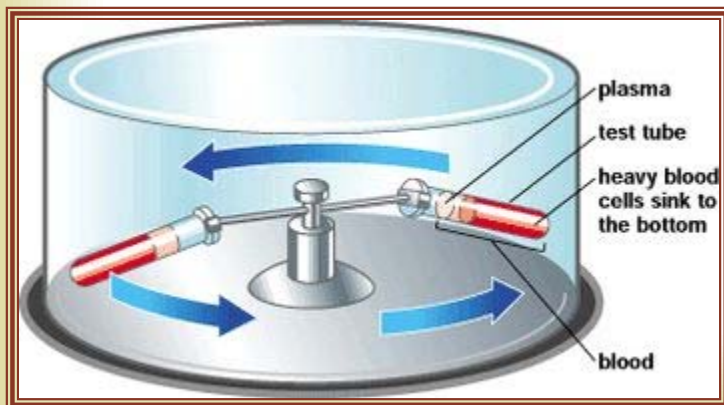
- ❧ Used to examine small, opaque objects or organisms
- ❧ Binocular – creates a 3-D image of object
- ❧ Object and image are in the same orientation
- ❧ Low magnification



Ultracentrifuge



- Used to separate small particles or materials by density
- Spins contents of test tubes at high speeds so particles will separate forming layers of particles separated by relative densities.
- Use to separate blood or parts of cells



Scanning Electron Microscope



- ❧ Uses a beam of electrons and magnets to form images
- ❧ Has high resolution and magnification
- ❧ Can view specimens such as the eye of an insect or the inside of an insect's stomach in great detail



SEM

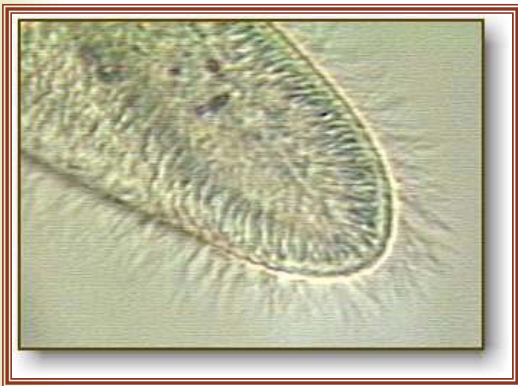
Scanning Electron Microscopy Basics (Flash Animation) - segment 1_3

http://www.youtube.com/watch?v=SfNs_PmEXII

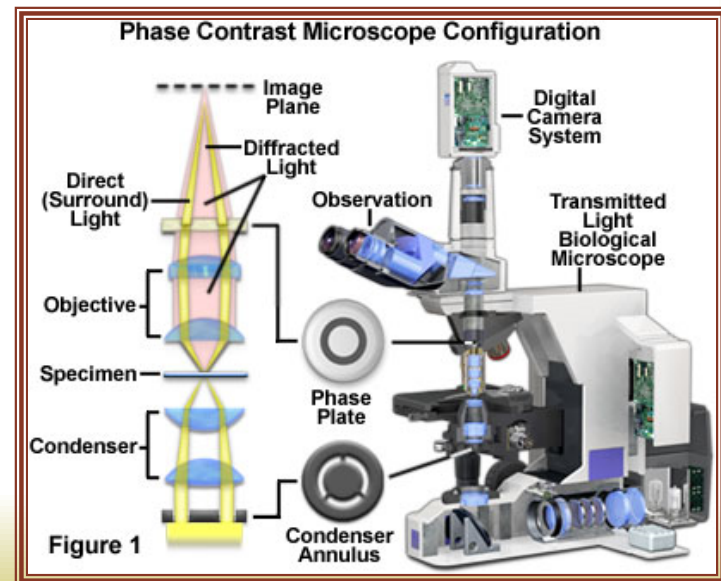
Phase Contrast Microscope



- Used to examine biological specimens without staining
- Advantage:** transparent and colorless cells can be examined without staining (which can harm or kill the cells you are looking at)



paramecium



Staining Cells



- ❧ What type of cells are we looking at?
- ❧ How do these two microscope images differ?

