

# HEMATOCRIT PROTOCOL

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[http://biology.clc.uc.edu/fankhauser/Labs/Anatomy\\_&\\_Physiology/A&P202/Blood/Hematocrit.htm](http://biology.clc.uc.edu/fankhauser/Labs/Anatomy_&_Physiology/A&P202/Blood/Hematocrit.htm)

**SAFETY NOTE:** To reduce the risk of transmission of blood-borne diseases such as AIDS and hepatitis B, wear protective gloves when handling other peoples blood, dispose of all blood contaminated materials in the provided containers, sharps in the sharps container and clean up thoroughly when finished by wiping down with 70% alcohol.

The number of erythrocytes in the blood must be high enough to carry sufficient O<sub>2</sub> to the peripheral tissues, and yet not so great as to adversely increase the blood's viscosity. A simple test to determine the percent of formed cells in blood, 99% of which are RBCs, is the hematocrit (Hct) (hemato- = blood, -crit = separate). A fresh sample of blood is introduced into a heparin-coated capillary tube (to prevent clotting). The end is sealed with a putty, and the tube centrifuged to sediment the cells. The straw colored supernatant is the plasma, the RBCs sink to the bottom, and the WBCs are seen as a thin buffy coat at the top of the RBC column. By determining the percent of the total capillary contents occupied by the packed cells, the percent of RBCs in whole blood can be determined.

Normal Hct values for men are 40 to 54 percent, those for females, 37 to 47 percent. Anemia is defined as Hct counts below these. Anemia may be due to inadequate nutrition, blood loss, hemolytic disease, or exposure to agents which inhibit mitosis (such as radiation or chemotherapeutic agents).

[This protocol may performed simultaneously with blood cell counts and blood typing.]

## APPARATUS REQUIRED:

70% EtOH	Cotton balls
Sterile lancets	Hematocrit tubes
sealing putty (Crit-o-seal)	Centrifuge with hematocrit head
Micro-capillary reader	

1. Set up all apparatus required for the variety of blood tests you wish to perform (See *Blood Letting Setup per Desk* below.)
2. Wash hands well with soap and water.
3. Swab a less-used finger (i.e. ring finger on non-writing hand) with 70% EtOH. Lance finger tip with quick firm jab to the side of the fingertip pad, wipe off first drop with clean dry cotton ball. Dispose of the used lancet safely in sharps container.
4. Fill Hct capillary tube to within 1-2 cm of top with blood by *slightly* tipping down to allow blood to flow into tube. *Avoid bubbles* by not tipping too much.
5.  *Holding tube horizontally*, press filled end into sealing putty (Crit-o-seal) to plug end. It can then be stored vertically in the Crit-o-seal tray until ready to be centrifuged. (Continue collecting the rest of the samples require for your exercises before clotting occurs.)
6. Lie the tube in the centrifuge Hct head with *plugged end to the outside*, note the number of your slot. Ensure that a balancing hematocrit tube is placed opposite, either by someone placing their tube there, or by adding an empty tube.
7. Securely screw down top of head. Turn on centrifuge to speed 6, run for 5 minutes, turn off.
8. When rotation has stopped, remove tube, note appearance. Place in hematocrit reader, determine % of blood as formed cells, according to instructions on the reader. Enter your data into class data table
9. **Illustrate** the centrifuged hematocrit tube in your book and label: hematocrit tube, putty plug, packed cells (indicate % of total blood volume) and plasma.

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BLOOD LETTING SET UP PER DESK 13-Mar-08	
2 hemocytometers, clean and polished	
2 clean coverslips	
2 WBC (white) diluting pipets with mouth piece and tubing	
2 RBC (red) diluting pipets with mouth piece and tubing	
1 bottle RBC diluent (clear)	
1 bottle WBC diluent (purple)	
2 hematocrit tubes, heparinized	
1 crit-o-seal	
2 lancets	
2 cotton balls	
1 70% EtOH in squirt bottle	
1 folded paper towel, torn in half, half per person	
1 50 mL beaker for waste	
1 250 mL beaker with about 50 mL dilute warm soapy water	
2 clickers	