

Blood clotting (lab 6.4)

A) Background information on blood clotting

The background information for understanding this lab is in lab 6.4. Although we will use a different procedure to test blood clotting time than the one described in lab 6.4, you should read lab 6.4 and answer the lab report questions in the lab report section.

B) Precautions when working with blood samples.

- 1) Only work with your own blood.

- 2) No materials go into the regular trash.
 - Put all hard or sharp wastes (Lancets, toothpicks, etc.) in the sharps container.
 - Put all soft wastes (paper towels, alcohol wipes, etc.) in the biohazard bucket.

- 3) After the experiment, put the glass slides with your blood drops into the sterilizing bleach bath in the fume hood.

- 4) After the experiment, clean the surface of the lab bench (and any other locations in the room where you may have left blood) with a disinfecting agent.

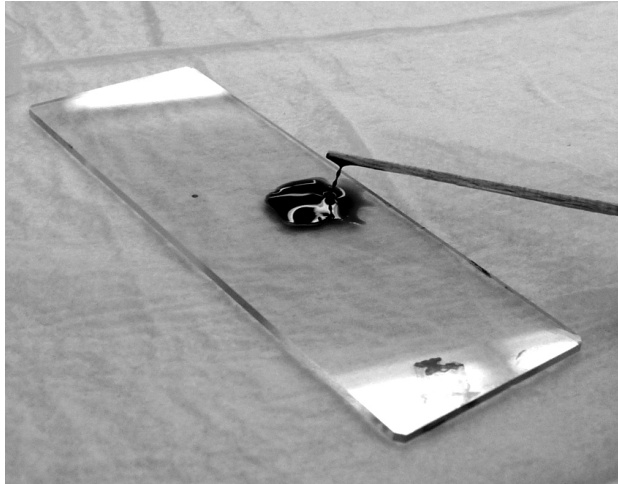
c) Procedure for testing blood clotting time.

- a) Obtain two glass microscope slide, three toothpicks, an absorbent pad, an alcohol wipe, a lancet, and several paper towels. Spread an absorbent pad on the lab bench and place the microscope slide on it.

- b) Take one slide to the front desk. On the front desk, the instructor will add a small amount of sand (which contains large amounts of silica and a small amount of powdered leather (which contains large amounts of collagen)).

- c) Get as much blood into your fingertips as possible by holding their fingers under hot water for a minute then swinging the arm around in circles. Clean one finger with the alcohol wipe then puncture it with the lancet. Note the time on the clock. Put one big drop of blood on the plain slide, put one big drop of blood on the sand, and put one big drop of blood on the collagen.

d) Into each drop, keep dipping a toothpick tip all the way into the blood drop then slowly lift the tip out. Keep dipping until you see a gel-like thread of fibrin (blood clot protein) spanning the gap between the blood drop and the toothpick, The time from puncture to the fibrin thread is the blood clotting time for that drop. Record the clotting time for each of the blood drops in the spaces below.



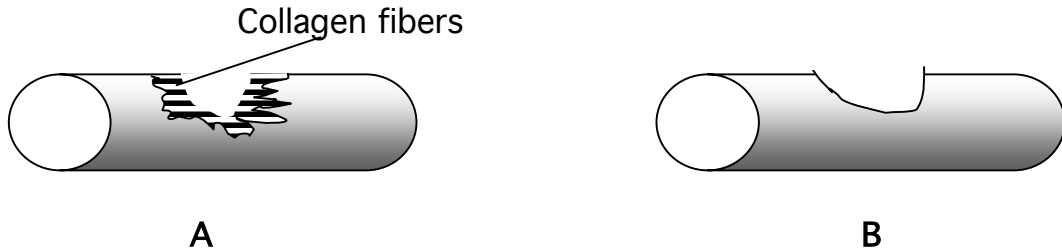
- e) Clotting time for plain drop: _____
Clotting time for blood and silica: _____
Clotting time for blood and collagen: _____

(Normal clotting time is 1 – 7 minutes).

f) When finished, thoroughly disinfect both your slides with hydrogen peroxide and then wash the slides with soap and water, then return the disinfected and washed slides to where you obtained them. Remember to discard all other materials in their proper biohazard sharp or soft wastes containers.

Show your instructor your clotting time results. Also, answer the following three review questions before taking the exit quiz.

1) One person is cut in a way that tears a jagged hole in the wall of a blood vessel (see picture A). Another person is cut in a way that makes a smooth clean hole in the wall of a blood vessel (see picture B). Assuming that the holes are the exact same size, which person's blood would stop bleeding first? Justify your answer using hemostasis concepts.



2) Place the events of blood clot formation in their proper order by writing numbers in the blank space after each event. Write 1 for the first event, 2 for the second event, etc.

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|--|-------------------------------------|
| ___ Prothrombin converted to thrombin | ___ Fibrin produced from fibrinogen |
| ___ Passing RBCs are trapped | ___ Blood vessel constricts |
| ___ Platelets stick together in vessel break | ___ Calcium ions are required |

3) Was there any difference in clotting time between plain blood, blood with silica added, and blood with collagen added? If there were differences, can you account for them using clotting pathway concepts? Be as specific as possible. Your answer should include the name of the exact molecule that the sand and the collagen directly interacts with in the clotting cascade.