

Lab #3 Fresh Bones

Imaging the Body, Fall 05

Objectives

The objectives of this lab exercise are to:

- Observe the differences between spongy and compact bone;
- Directly observe and describe the periosteum;
- Examine the interface between connective tissue and bones;
- Observe highly magnified bone tissue and record your observations through drawings.
- Learn to use a compound microscope.

You will be observing fresh sections of cow bones using a dissecting microscope. These are quite fresh and, as such, are a little messy. **Put several sheets of paper towels down next to your workspace and place all of your dissecting tools on them.** Be especially careful with your hands and avoid getting goop on the microscopes. Wipe down your workspace at the end of lab and wash your hands thoroughly. Avoid putting anything in your mouth (fingers, end of pencil, small bits of samples) during lab.

Coordinate your work with your neighbor. One of you can start with step 5 using the compound microscope and then you can switch spots instead of both of you getting out both types of microscopes.

Exercise

Record all your observations and drawings in your lab/sketching notebook. All your sketches should have a title that includes magnification and any discernible structures should be clearly labeled.

1. Observe and sketch two different bone cross sections in cross section. Make sure that one of the sections is from near the end of a bone. (why is this important?)
 - a. Use a razor blade or scalpel to scrape and clean the surface of the cross section.
 - b. Use a dissecting probe to investigate the surface of the bone and the marrow. Identify the spongy bone and the compact bone.
 - c. Draw a sketch of the cross section and label whatever structures you can identify. What type of material is in the middle? What color is it? What type of cells would you expect to see here?
 - d. If you wish, take some of the marrow and spread it on a microscope slide using a dissecting needle. Add a drop of water and put a cover slip on it. Observe it using the compound microscope. Make a sketch to record your observations.
2. Use a smaller section, turn it on its side and probe the tissues attached to the surface. Locate the periosteum. See if you can separate it from the bone slightly. Record your observations with words.
3. Locate a place on the bone where connective tissue (ligaments or tendons) connect to the bone (you may have to try several pieces). Observe this connection and probe the interface. Record your observations with words.
4. Clean up your work area thoroughly and put your dissecting scope away.
5. Observe a prepared slide of ground compact bone. Draw a representative area of the slide. Identify and label the various features you observe. Where would you expect to find osteocytes? What about blood vessels?

