

Forensic Microscopy Lab

Background:

No two human beings (including identical twins) are exactly alike. Especially variable between individuals is the genetic information (DNA) located in the nucleus of all cells and the ridges that make up the fingerprints.

In this lab you will perform a microscopic investigation of your own fingerprints, hair and prepared slides of human cheek cells. This type of study lays the foundation for the kinds of microscope work that would be carried out in a forensic science laboratory.

Diameter of the Field of View:

Low Power is 4250 μm ; Medium Power is 1700 μm ; High Power is 425 μm .

Fingerprints:

1. Rub a soft pencil across a piece of paper making a very dark area. Press your finger firmly into the dark area rolling it a bit to either side and covering your finger with graphite from the pencil.
2. Carefully press a piece of clear transparent tape onto your finger over the graphite. Gently remove the tape and stick it to a small square of acetate. Examine the fingerprint under the low, medium, and high power objective lenses.
3. Calculate the actual size (width) of one ridge on your fingerprint using the **medium** power objective lens.
Answer on a separate piece of paper and SHOW ALL WORK.

Hair:

4. Remove a hair from your head and prepare a wet mount using water. Examine the hair under low, medium, and high power.
5. Calculate the actual size (width) of one piece of your hair under the **medium** or **high** power objective lens.
Answer on a separate piece of paper and SHOW ALL WORK.

Cheek Cells:

6. Obtain a prepared slide of human cheek cells. Examine these cells under low, medium and high powers.
7. Using the **high** power objective lens make a scientific drawing of one cheek (epithelial) cell **on the paper provided**. **Label** the structures that you can identify at high power. **Show** all calculation under the drawing.

Discussion Questions: (answer on a separate sheet of paper)

1. Describe what happens to the light intensity as you switch from low power to medium power to high power objective lens.
2. Describe what happens to the field of view visible as you switch from low power to medium power to high power objective lens.
3. How many cat hairs placed side by side would it take to fit across the field of view using medium power if the average cat hair is 0.5 millimetres wide?

Total Magnification = _____ X
Diameter of Cell = _____ μm

Calculations (for total magnification and diameter of cell):