

## LABORATORY ACTIVITY 4.1:

### Observing and Taking Fingerprints

Although fingerprints can be left casually on anything you touch, there are a number of steps involved in taking clear fingerprints that can be classified and used for identification.

#### Materials

For each group:

- stereomicroscopes

For each student:

- magnifying glass
- fingerprint ink or ink pad
- 10-print cards



#### SAFETY ALERT! CHEMICALS USED

Always wear goggles and an apron when working in the laboratory

1. *Observation:* Examine the surface of your fingers beyond the last knuckle with a magnifying glass or a stereomicroscope. Describe what you see in your notebook. Make a sketch.

Ridge patterns are not unique to fingers. Observe your palms, bare feet, and lips; they all have unique patterns.

2. *Ink and transfer:* The object is to obtain as wide and clear a print as possible—not too light, not too dark. This takes practice. The idea is to roll the finger across the ink pad, then roll it across the paper from one edge of the fingernail to the other. Do this just once, not back and forth because that will blur the print. Rolling the finger should make a large, square print showing lots of detail. Keep the finger and forearm parallel to the surface of the table. Sometimes it helps if your other hand or a partner directs the roll by holding and pressing the finger. See the diagram in Figure 4.2, showing how this is done.

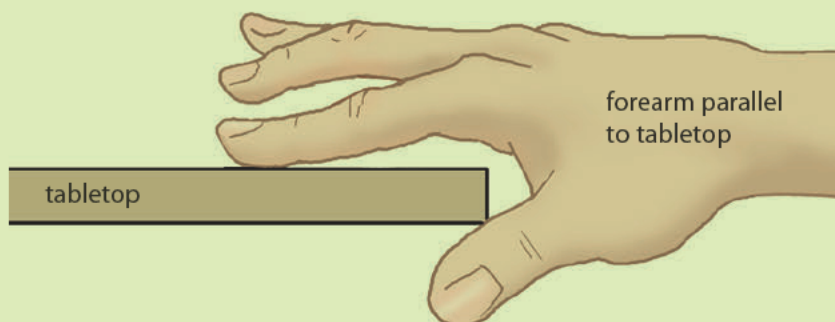


Figure 4.2 Ink and roll

The FBI rejects about 2 percent of submitted criminal cards and about 10 percent of inked civil cards because of illegible fingerprints, even though these cards are prepared by professionals.

#### Procedure Notes:

You'll need a good magnifying glass or stereomicroscope; a special ink pad for fingerprinting or printer's ink rolled onto a glass or plastic plate (however, a black ink office pad will do); a 10-print card; soap; and towels. A good forensic fingerprint pad, one sold specifically for fingerprinting, is best and will cost about \$20. A less expensive method that works pretty well is to rub a soft, black pencil point on paper, then rub and roll the finger through the graphite. Have someone hold each end of a piece of 2-inch-wide, clear sticky tape while the finger is rolled onto it. The tape can then be stuck to the 10-print card (a 10-print card can also be printed on clear acetate and projected with an overhead for illustrative purposes).

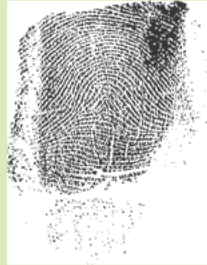
Students should be able to see the pattern of ridges forming beads of sweat at the pores if the finger is close enough to the microscope lamp. Encourage them to look at other things under the scope, such as scars, blisters, cuts, dirt under the fingernails, and jewelry.

You can use the 10-print card provided as Blackline Master 4.1, found on the Teacher Resource on Flourish. Blackline Master 4.2, also found on Flourish, a grading chart that can be used to assess proficiency in a number of the activities to follow.

Some states require parental permission to fingerprint students under the age of 18. A permission slip such as that shown can be taken home a few days prior to the lab. This slip is provided as Blackline Master 4.3 on the Teacher Resource on Flourish. Emphasize that all fingerprints will be returned to the students or destroyed at the end of this exercise.

### LAB ACTIVITY 4.1: Observing and Taking Fingerprints continued

Practice on scrap paper. In a good print, you should be able to follow a ridge as it enters one side of the finger and exits. Then take the cleanest, most legible print for each finger, cut it out, and paste it on the 10-print card distributed by your teacher. Some states require that students have a parent's permission to take part in this activity. If required, your teacher will hand out a permission slip prior to the fingerprinting activities. All fingerprint impressions will be returned or destroyed.



*Well-rolled fingerprint*



*Well-placed fingerprint*



*Blurred fingerprint—rolled back and forth*

3. *Further observations:* Examine your 10-print card using a magnifying glass.

#### Analysis Questions

1. Note the basic similarities and differences in the patterns. What are they?
2. Which of your fingers have similar patterns and how are they different from the others?
3. Do you have any scars, cracks, or other unique features? If so, explain.



*FBI 10-print card*



*Rolling a print*