



TEST YOUR POWER OF OBSERVATION

A crime scene investigator needs to hone his or her observational skills. Look carefully at both photos and identify seven things that are different.



answers: hand sculpture, laptop computer, pen, plaque on wall, photo of Gritsom, book on shelf, spider/beetle

LIFT THE LIGHT BULB

- PROBLEM:** You arrive at a crime scene and notice the light bulb outside the house has been partially unscrewed - possibly by the robber - who may have left fingerprints behind on the bulb.
- QUESTION:** How do you remove the bulb from the fixture to preserve fingerprints without touching the light bulb with your hands?
- SOLUTION:** See one solution by viewing the movie at http://www.csigizmos.com/video/bulb_remover_csi.wmv.



ON YOUR WAY HOME...

If you were to become a CSI, in which area would you specialize?
 DNA testing? Toxicology? Firearms? Entomology? Blood spatter analysis? Questioned documents?
 What characteristics do Crime Scene Investigators need to be successful?
 What skills will be important?
 To find out more about how to become a CSI, visit <http://www.forensicsciencesfoundation.org>

FAKE BLOOD RECIPE

Mix Together:

- 2 Tbsp. white corn syrup
- 4 tsp. water
- Red food coloring

Store at room temperature for best results.

IT'S A MATTER OF THE SPATTER

DID YOU KNOW...

- Blood acts like most other fluids—it obeys the laws of physics.
- Blood spatter experts use trigonometry, physics and common sense to make their calculations.

CAN YOU PREDICT...

Will blood dropped from different heights be of the same size and pattern?

ASSEMBLE:

- Large sheet of posterboard
- Measuring tape
- Eyedropper and Fake Blood

Fill the eyedropper with the fake blood. Release one drop onto the paper from each distance. Sketch your observations.

CAN YOU PREDICT...

Will the type of surface that blood lands on make a difference in the spatter pattern?

ASSEMBLE:

- Various surface materials
- Eyedropper and Fake Blood

From a fixed distance, drop blood onto each of the different materials. Sketch your observations.

WHAT OTHER FACTORS CAN AFFECT THE SPATTER PATTERN?
For more information, check out <http://www.nfstc.org/links> and click on "animations."

Forensic scientists who specialize in bloodstain pattern interpretation have many years of training both in school and on the job to reconstruct what happened at a crime scene. Maybe this is a career for you?



DROP FROM 1 FT.

DROP FROM 3 FT.

DROP FROM 5 FT.

DROP FROM 6 FT.

WOOD

CARDBOARD

PLASTIC

CONCRETE

Every Contact Leaves a Trace

DR. EDMOND LOCARD (1877-1966) was known as the Sherlock Holmes of France. He formulated the basic principle of forensic science, "every contact leaves a trace," which is also known as **Locard's Exchange Principle**.

TRACK YOUR TRACE

We all "exchange evidence" with our environments every day. When you get home today, use transparent tape to "lift" trace evidence from your clothes and the bottoms of your shoes. Use a magnifying glass to see what evidence—dirt, fibers, hairs—you find.



VERY BERRY DNA

Since DNA fingerprinting was first used for solving crimes in the mid 1980s, it has proven to be a powerful tool in forensics.

Want to see strands of DNA with your own eyes? Try this simple technique with household chemicals and strawberry cells.

WHAT YOU NEED:

- Strawberries—fresh or frozen
- 1/8 teaspoon salt
- 1 cup cold water
- 2 tablespoons liquid detergent
- toothpick
- 1 tablespoon rubbing alcohol (chilled in freezer)
- strainer
- 2 small transparent containers with lids (i.e., baby food jars or food storage containers)



WHAT TO DO

1. Place 1 large strawberry, 1/8 teaspoon of salt and 1 cup cold water in a jar and shake for 3 minutes.
2. Pour the strawberry/salt/water mixture through a strainer into another transparent container.
3. Add 2 tablespoons detergent and mix gently. Let the solution stand for 10 minutes.
4. Tilt the container. Slowly pour 1 tablespoon of chilled alcohol down the side so that it forms a layer on top of the strawberry solution. Be careful not to mix the alcohol and strawberry solution or the DNA extraction will not work.
5. Let the strawberry/alcohol solution sit for a few minutes. White, stringy, filmy stuff that looks like cotton candy will begin to appear where the strawberry solution and alcohol meet. After 5 – 10 minutes, use a toothpick to collect the strands around the toothpick.

WHAT HAPPENED?

Why did you have to shake the strawberry solution?
Why do you think you needed to add the soap?
What was the purpose of the cold alcohol?

Find these answers and more at:

<http://learn.genetics.utah.edu/units/activities/extraction>

Those are DNA strands!

Loops, Whorls, or Arches

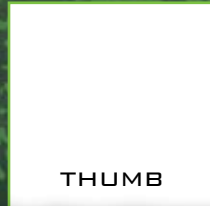
DID YOU KNOW...

- No two people have the same fingerprints—not even identical twins!
- Fingerprints are the most commonly used forensic evidence.
- The FBI has a database with over 470 million fingerprints.

Are all YOUR fingers alike? Are there similarities or differences among members of your family's fingerprints? Let's find out!

WHAT YOU NEED:

- Pencil
- Balloon



THUMB



POINTER



MIDDLE



RING



PINKY

WHAT TO DO...

- Rub your pencil in each of the above boxes until they are completely filled in.
- Blow up a balloon to about the same size as a baseball and tie it loosely.
- Press each finger into one of the boxes, then gently press it against the balloon. Use a different part of the balloon for each finger!
- Blow up the balloon larger. Watch the fingerprints EXPAND.

NOW, CLASSIFY YOUR FINGERPRINTS INTO THE DIFFERENT TYPES...

Do different family members have different fingerprints?

How many different types of fingerprints can you find among your family and friends?



LOOP

The most common type of print; some ridges enter and exit on the same side of the finger.



WHORL

The ridges form a circular pattern.



ARCH

The least common type of print; ridges run from one side of the finger to the other.

WHO was the first person convicted by DNA evidence?

WHICH famous criminal tried using acid to remove his fingerprints? (and did it work?)

WHEN was forensic science first used to solve a crime? (HINT: It was in China!)

Put your SLEUTHING SKILLS to the test with these questions and more at the **ONLINE SCAVENGER HUNT**.
<http://forensics.rice.edu/hunt>

MORE FORENSIC ADVENTURE AWAITS

WWW.CSITHEEXPERIENCE.ORG



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