

# Science Solves Mysteries!

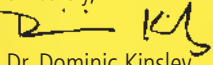
## Dear Educator,

In keeping with a renewed national focus on improving students' science, technology, engineering, and math (STEM) skills—and to introduce them to a unique and fascinating career that utilizes those skills—CBS Consumer Products and the award-winning curriculum specialists at Young Minds Inspired (YMI) are pleased to provide you with these free teaching materials that will bring science activities into your classroom in a fun and engaging way. Based on the popular and innovative CBS series, *CSI: Crime Scene Investigation*, and the new series of *CLUB CSI*: books for young readers, the standards-based activities for grades 4-6 in this teaching kit will involve your students in using different aspects of forensic science to evaluate and process a classroom "crime scene."

We hope that you will share this valuable program with other teachers in your school. Although the materials are protected by copyright, you may make as many copies as needed for educational purposes.

Please use the enclosed reply card to let us know your thoughts on this program, or comment online at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html). We depend on your feedback to continue providing free educational programs that make a real difference in students' lives.

Sincerely,



Dr. Dominic Kinsley  
Editor in Chief  
Young Minds Inspired



## Target Audience

This program is designed for use with students in grades 4-6. Tailor the activities to suit your students' needs and abilities.

## Program Objectives

- To supplement the STEM curriculum by introducing students to forensic science and the fact-finding techniques used by crime scene investigators (CSIs).
- To encourage students to enjoy the challenges of forensic sleuthing found in the *CLUB CSI*: books for younger readers.
- To introduce teachers and parents to the valuable learning resources available on the CSI: The Experience website, [www.CSItheexperience.org](http://www.CSItheexperience.org).

## Program Components

- This one-page teacher's guide.
- Four reproducible student activity sheets. Two activity sheets are included in this teaching kit. **Two more can be downloaded at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html).**
- A letter to parents that connects forensics to the science curriculum, along with a valuable coupon redeemable at Toys "R" Us®.
- A colorful wall poster for display in your classroom.
- A reply card for your comments, or comment online at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html).

## How To Use This Program

Photocopy the teacher's guide, parent letter, and student activity sheets before displaying the wall poster in your classroom. Download the two additional activity sheets at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html), and make copies of all four activity sheets for every student in your class, along with copies of the parent letter for students to take home.

Please visit [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html) to review the program's alignment with current National Standards in science.

## How To Use the Wall Poster

Before beginning the program, review the information on the poster with students to introduce them to the process used by CSIs when investigating a crime scene.

## Activity 1

### Tools of the Trade

Divide students into teams of 3-4, then revisit the CSI process on the poster and review the introduction on the activity sheet. Things students might note on their clues list include: the open bag of guinea pig food, the mop and bucket, the open door to the storage closet, the strand of hair near the cage door, and the feeding log. Techniques they could use in their examination include hair analysis, to see if they can find a match with the hair near the cage, and handwriting analysis, to compare the entries in the log book.

## Activity 2

(download at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html))

### Whose Hair Is It?

Have students continue to work in their teams as they consider the hair on Griffie's cage and compare it to a group of suspects. The answer: Based on the comparison, the hair can only belong to Griffie. The hair wasn't a clue at all, and the mystery continues.

## Activity 3

(download at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html))

### The Handwriting Is in the Log

Review the information about handwriting analysis with your students. Have them compare their descriptions of the four handwriting samples and explain how they identified the writer of the unsigned entry (Jeff).

## Activity 4

### Focus on Fingerprints

You will need soft lead pencils, scratch paper, and rolls of clear tape. Have students rub their pencil on the scratch paper until there is a dark smudge of graphite, and follow the instructions on the activity sheet to take their fingerprints. Students should use the bottom chart to record whether each print was an arch, a loop, or a whorl.

To add a math component to the program, have students finish by combining their fingerprint data to create graphs that illustrate the comparative numbers of the three types of prints in the class.

## Resources

CSI: The Experience—[www.CSItheexperience.org](http://www.CSItheexperience.org)  
*CLUB CSI*—[www.series.simonandschuster.com/Club-CSI](http://www.series.simonandschuster.com/Club-CSI)  
YMI—[www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html)

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# Science Solves Mysteries!

## Dear Parent,

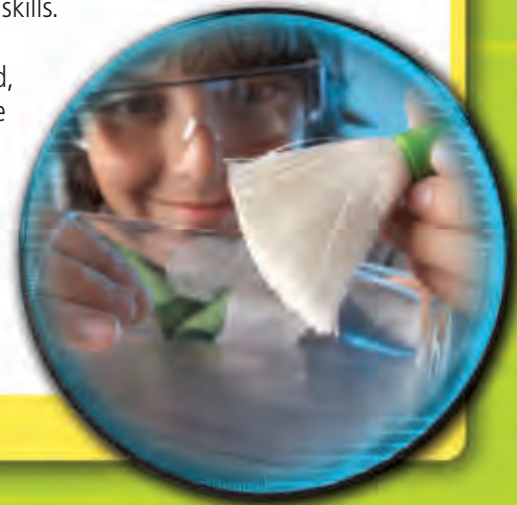
In keeping with the national effort to improve students' science, technology, engineering, and math (STEM) skills, your child has been learning about the field of forensic science. You may already be aware of how forensic scientists work and the skills and knowledge they employ if you have watched the popular CBS series, *CSI: Crime Scene Investigation*.

Crime scene investigation has been described as the meeting point of science, logic, and law. When CSIs (crime scene investigators) process a crime scene, they secure the site and then carefully document the conditions at the scene with photographs and sketches. They also collect and analyze physical evidence, such as fingerprints, hair, and DNA.

Talk with your child to find out what he or she has been learning in class. You also can go to [www.CSItheexperience.org](http://www.CSItheexperience.org) and download the "Family Forensics" educational guide. This full-color brochure provides springboard topics and experiments you can enjoy together with your child as you test your powers of observation, solve logistical riddles, experiment with blood spatter using a simple recipe for fake blood, and learn more about telltale fingerprint details—all the while using the fun of investigative sleuthing to help improve your child's STEM skills.

And, to provide even more fun and engaging forensic science activities for your child, visit your local Toys "R" Us® store and check out the range of CSI: science kits that are available there—including the CSI: Junior Investigator Kit, the CSI: DNA Laboratory Collection Kit, and the CSI: Fingerprint Analysis Kit. We have included a valuable coupon below that you can apply to the purchase price of any CSI: science kit.

Have fun with your child using science to solve mysteries!



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# Tools of the Trade

Ben, Cory, and Hannah—the kids featured in the exciting new *CLUB CSI: mystery series*—arrived at school Monday morning and heard some terrible news: Griffie, Ms. Mendoza’s class guinea pig, is missing. He’s not in his cage, and he’s nowhere to be found in the classroom. As members of the school’s CLUB CSI, it’s their job to find out what happened and—hopefully—to recover Griffie. Here’s how *you* can help!

With your team, become crime scene investigators (CSIs) and carefully examine the “crime scene” in the picture on this page and on your classroom wall poster. In the space below, list the clues that might help you figure out what happened. We’ve listed the first clue to help you get started.



- Griffie’s cage door is standing open and Griffie is gone.
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

What forensic techniques do you think you could use as you examine these clues?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Take the next steps in solving this mystery! Download Activity 2, *Whose Hair Is It?*, at [www.ymiclassroom.com/csi.html](http://www.ymiclassroom.com/csi.html).

Get the tools of the trade to investigate real-life crime scenes with the **CSI: Junior Investigator Kit**, available at your local Toys“R”Us®!



# Whose Hair Is It?

Hannah from CLUB CSI has suggested that your team examine the hair you found near Griffie’s cage, because it could be a valuable clue.

CSIs look at different characteristics when they examine hair samples. For example, they may want to know what part of the body the hair came from (the head, the arm, etc.), whether the hair fell out or was pulled out, and what its characteristics are. To practice analyzing a hair sample, answer the following questions as you examine a hair from your own head:

What color is it? \_\_\_\_\_  
 What about thickness (thick, thin, etc.)?

Describe the texture (rough, smooth, etc.).

What style is it (curly, straight, kinky, etc.)?

Now, compare your hair to a strand of hair from one of your teammates. How are they alike? How are they different?



*Griffie, the missing guinea pig*

The hair found on the door to Griffie’s cage was gray; it also was thin, smooth, and straight. Now, consider the suspects—the people who might have had access to Griffie on Friday afternoon—and what their hair is like.

- There were cleaning supplies near Griffie’s cage—like the ones Mr. Johnson, the custodian, uses, so he must have been in the room. Mr. Johnson has short white hair.
- Judging from the log book, Griffie had been fed Friday afternoon. There are four students on Griffie’s care team for the month. Could the hair be from one of them?
  - LaShaun has curly black hair.
  - Maria has medium, straight, dark brown hair.
  - Jeff has a blonde buzz cut.
  - Jen has long, fine, blonde hair.
- And, finally, there’s Ms. Mendoza, the teacher. Her hair is gray and wavy. Could she be involved?

Discuss your thoughts with the members of your team. Who do you think the hair belongs to? One of the suspects? Someone else?

To solve the mystery,  
 download Activity 3,  
*The Handwriting Is in  
 the Log*, at  
[www.ymiclassroom.com/  
 csi.html](http://www.ymiclassroom.com/csi.html).

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# The Handwriting Is in the Log

## Griffie's Feeding Log

Date	Time	Comments	Name
MONDAY, SEPT. 10	3:30	HE DIDN'T EAT MUCH TODAY.	MARIA
Tuesday, Sept. 11	3:45	I played with him for awhile.	Jen
Wednesday, Sept. 12	4:00	He was happy to see me!	Jeff
Thursday, Sept. 13	3:50	I cleaned his cage today.	LaShaun
Friday, Sept. 14	3:45	He was asleep when I was here.	

The kids on Griffie's September care team have all filled in entries on the log, but the last entry isn't signed. Since we have a handwriting sample from each team member, maybe we can find out who was the last person to see Griffie by comparing the writing for September 14 to see if it matches one of the other entries.

Handwriting analysis is based on the fact that every person in the world has a unique way of writing. It's a very methodical process that examines the way people form letters and the unique characteristics of those letters. Some of the things that handwriting analysts focus on include:

- The slant of the letters
- The way loop letters (e, f, and g, for example) are formed
- The way the i is dotted and the t is crossed
- Height ratios (the height of the letter t compared to the h, c, or l, for example)
- Alignment to baseline (whether the writing slants upward, downward, or curves)
- Movement (how the letters are, or are not, connected)

Keeping these factors in mind, look at the four samples on the feeding log and write a short description of each student's handwriting above right.

Maria \_\_\_\_\_  
 Jen \_\_\_\_\_  
 Jeff \_\_\_\_\_  
 LaShaun \_\_\_\_\_

Now describe the last, unsigned entry.

\_\_\_\_\_

Based on your analysis, who do you think was the last person to feed Griffie?

\_\_\_\_\_

This will be the first person that Ms. Mendoza talks to about Griffie—who, by the way, just came out of the supply closet. He seems a little hungry and thirsty, but otherwise he's just fine!

Before you turn this sheet upside down to read what Ms. Mendoza learned, what does your team think might have happened? How did Griffie get out of his cage? Be prepared to share your thoughts with the class.

When Ms. Mendoza questioned Jeff, who—based on the handwriting analysis—was the last student to feed Griffie, he admitted that, after he opened the cage door, something going on outside the classroom window had distracted him. When he turned around, Griffie was gone. He looked all over the room, but when he couldn't find him, he left. He was too embarrassed to tell anyone what he did. He worried about Griffie all weekend, which probably was punishment enough for being so careless!

Get the tools of the trade to investigate real-life crime scenes with the CSI: Junior Investigator Kit, available at your local Toys "R" Us®!



# Focus on Fingerprints

In the new book, *CLUB CSI: The Case of the Missing Moolah*, the seventh graders at Woodlands Junior High have been selling magazines to raise money for a class trip to Washington, D.C. Mrs. Ramirez has been keeping the money—\$1,500 in all—in a locked cash box in a locked drawer in her desk. But when Mrs. Ramirez went to count the money one last time, she found that \$100 was missing.

Ben, Corey, and Hannah, the members of CLUB CSI, discover some clues to solve this mystery, including fingerprints on Mrs. Ramirez' desk drawer and the cash box. But when they compare those prints to the fingerprints of all the possible suspects, will they really be able to figure out who took the money?

## How does fingerprint analysis work?

Fingerprinting, one of the oldest crime-solving tools, is based on the fact that no two fingerprints are alike. When fingerprints are left on an object, they can be used to make a positive identification of the person who touched that object. *Latent fingerprints* are prints that are not immediately visible to the naked eye; CSIs use fingerprint dust and other techniques to

gather them. *Patent fingerprints* are easily seen, because a foreign substance such as dirt or paint makes them visible.

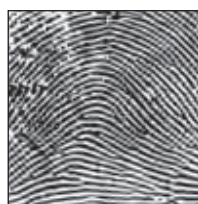
Fingerprints form one of three basic patterns:

**Arch:** Ridge lines flow across the finger and rise or wave in the center. This is the least common type of print.

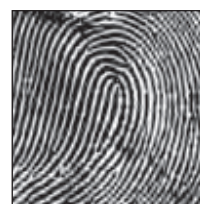
**Loop:** Ridges flow from one side of the finger, curve in the middle, and exit from the same side. The loop is the most common type of print.

**Whorl:** Ridges flow into a circular pattern.

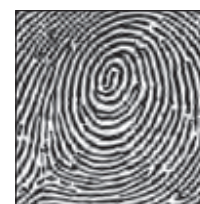
There also are variations within these basic patterns.



Arch



Loop



Whorl

## Now, follow these directions to take a look at your fingerprints!

1. Rub the lead of a pencil on a piece of scratch paper until there is a dark, heavy smudge of graphite. This will be your fingerprinting pad.
2. Beginning with the little finger of your left hand, rub the smudge until the fingertip is covered with graphite. Place a small piece of clear tape over the smudged fingertip and press it down gently. Remove the tape and stick it in the space provided. Repeat the process for each finger of your left and right hands. Use extra paper if you need it.
3. Wash your hands to remove the graphite.
4. Compare each of your prints to the examples and determine whether it is an arch, loop, or whorl. Record your findings in the charts at right.

### Left Hand

Thumb	Index	Middle	Ring	Pinky

### Right Hand

Thumb	Index	Middle	Ring	Pinky

### Patterns

	Thumb	Index	Middle	Ring	Pinky
Right Hand					
Left Hand					

To find out how the CLUB CSI: kids solved the crime, who did it, and why, read *CLUB CSI: The Case of the Missing Moolah!*

Learn more about fingerprints and how CSIs use them to help solve crimes with the CSI: Fingerprint Analysis Kit, available at Toys“R”Us®!



# Crime Scene Investigation: Science Solves Mysteries!

## Help CLUB CSI: solve the mystery of Griffie, the missing guinea pig!

When a crime occurs, the crime scene investigator (CSI) takes a series of special steps to make sure that the evidence and the scene of the crime are protected against damage or contamination. These steps also prevent pieces of evidence from being stolen or lost.

Although every crime scene is different, the CSI follows the same basic five-step process:

1. **Interview** the person who reported the crime and any witnesses.
2. **Examine** the location carefully to see if any suspicious activities are taking place there.
3. **Photograph** the scene for later reference.
4. **Sketch** the scene to show what it looks like.
5. **Process** the scene to collect all the valuable evidence possible.



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