

Name \_\_\_\_\_ Date \_\_\_\_\_

## MISSING PARENTS

### A Lab on DNA Fingerprinting and Paternity

#### **Objectives**

You will use fictitious DNA fingerprints to determine paternity.

You will draw some fictitious DNA fingerprints, and write a story about them.

#### **Background Information**

Ralph Reynolds is excited today. He may be near the end of a long search. His friends on the police force have been giving him a hard time about his obsession, but he does not care. He plans to find out who his real parents are, no matter what it takes.

Abandoned at a trash dumpster on the day of his birth, Ralph was adopted by Sue and Rodney Reynolds who heard his heart-breaking story on the evening news. Now, 25 years later, Ralph is trying to find out what happened to his birth parents. He is not angry with them, because he loves his adopted family. But he wants to know something about his heritage and his birth family, so he keeps looking.

Since he's been on the police force, Rodney has told his story to several people. Over the years, he has found all of the couples who were living near that dumpster when Rodney was born. The court has ordered these people to donate a small sample of white blood cells for DNA testing. Today, the results of the DNA tests are due. Ralph has his own DNA fingerprint, and he's ready to compare it with the DNA fingerprints of these five couples.

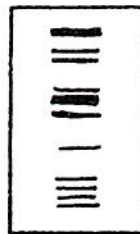
#### **Materials**

Ralph Reynold's DNA fingerprint

Scissors

#### **Procedure**

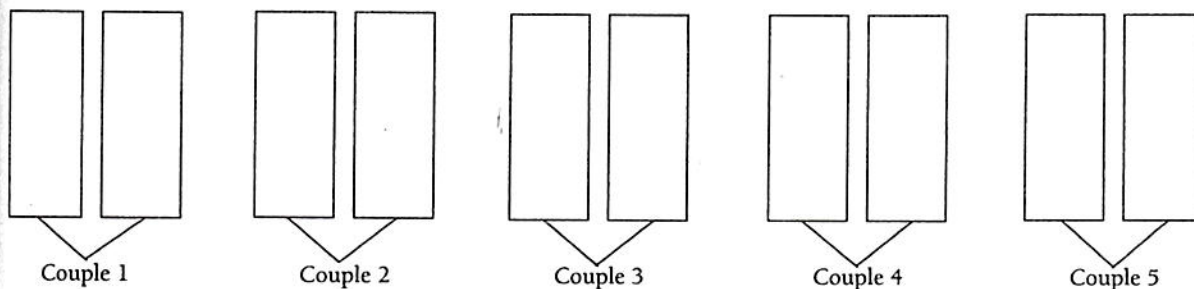
1. Examine Ralph's DNA fingerprint.



2. In the following boxes, create DNA fingerprints for the five couples whom Ralph has found. As you draw these fingerprints, decide whether or not you want one of the couples to be Rodney's biological parents. If so, Rodney's DNA fingerprint should show some similarities to both parents' fingerprints.

## Lab 3-3A

(cont'd)



3. On the lines below, write the end of Ralph's story. Base this story on the DNA fingerprints you drew earlier. Keep your story a secret from your classmates. For example, you might:
- draw four pairs of DNA fingerprints that are not similar to Ralph's and one pair that is similar to Ralph's. You could then write a conclusion to the background story about Ralph finding his family and the events that followed this discovery.
  - draw five pairs of DNA fingerprints that do not match Ralph's, and write a conclusion to the background story in which none of these people are his parents.
  - draw four pairs of DNA fingerprints that are not similar to Ralph's. In the fifth pair of DNA fingerprints, one is similar to Ralph's but the other is not. Write a conclusion to the background story that explains this set of events.

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4. Cut out the DNA fingerprints you drew and exchange them with a classmate. Examine the DNA fingerprints drawn by your classmate. Do you find any DNA fingerprints that matched Ralph's? If so, which one(s)? Record your answers on the lines below.

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5. Cut out your story conclusion and exchange it with the same classmate. Does your answer agree with your classmate's?

**Postlab Questions**

1. Will a child have the same DNA fingerprint as his or her parents? Explain your answer.

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2. How is a DNA fingerprint made?

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3. Where is the DNA in your body?

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## DNA Evidence

Name \_\_\_\_\_

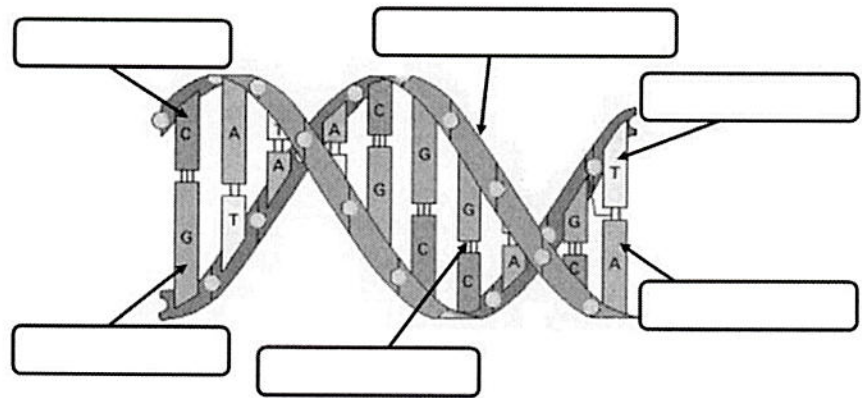
### 1. What is DNA?

- 1 DNA stands for \_\_\_\_\_ and contains \_\_\_\_\_ information.
- 1 It is found on \_\_\_\_\_ located in the nucleus of our cells.

### 2. What makes up a DNA molecule?

- 1 The sides or \_\_\_\_\_ of the DNA molecule are made up of \_\_\_\_\_ (deoxyribose) and \_\_\_\_\_ molecules.
- 1 The rungs that form the middle of the molecule are made up of pairs of \_\_\_\_\_ or nitrogen bases. \_\_\_\_\_ (A) pairs with \_\_\_\_\_ (T), while \_\_\_\_\_ (G) always pairs with \_\_\_\_\_ (C).
- 1 The \_\_\_\_\_ of the bases determines the genetic \_\_\_\_\_.
- 1 Label the diagram ~~using the words listed below~~

~~Backbone~~  
~~Nitrogen Bases~~  
~~Adenine~~  
~~Thymine~~  
~~Guanine~~  
~~Cytosine~~



### 3. How can DNA be used as evidence?

- 1 Each person's DNA is \_\_\_\_\_ from other people (except identical twins).
- 1 DNA collected from a crime scene can either link a \_\_\_\_\_ to the evidence or \_\_\_\_\_ a suspect, similar to the use of fingerprints.
- 1 DNA can identify a victim through DNA from \_\_\_\_\_, even when no body can be found.
- 1 DNA can \_\_\_\_\_ crime scenes together by linking the same perpetrator to different scenes.
- 1 DNA can place an \_\_\_\_\_ at a crime scene, in a home, or in a room where the suspect claimed not to have been.
- 1 DNA can \_\_\_\_\_ a claim of self-defense and put a \_\_\_\_\_ in the suspect's hand.
- 1 It can change a story from an \_\_\_\_\_ to one of \_\_\_\_\_.