

# **Feacher's Guide Blood**



### Dear Educator,

Tourney through the circulatory system for a revealing look at the liquid that keeps us all alive! With **KIDS DISCOVER** *Blood*, your young hematologists (that's people who study blood!) will learn about the fascinating topics at right.

This Teacher's Guide is filled with activity ideas and blackline masters to help your students enjoy and learn more from *Blood*. Select or adapt the activities that suit your students' needs best.

Thank you for making **KIDS DISCOVER** a part of your classroom.

Sincerely,

### **KIDS DISCOVER**

P.S. We would love to hear from you! E-mail your comments and ideas to teachers@kidsdiscover.com

### Meeting the Standards

 Health Education: Health promotion and disease prevention
 American Association for Health Education

Life Science
 National Science Education Standards

✓ Visit <u>www.kidsdiscover.com/standards</u> to find out more about how KIDS DISCOVER meets state and national standards.

#### PAGES

#### 2–3 Life Blood

What's in a speck of blood?

#### 4–5 The Circle of Blood

A diagram of the circulatory system and what happens when blood doesn't flow well

WHAT'S IN BLOOD

#### 6–7 Blood Quest

Answers to six curious questions about blood

- **8–9 In Sickness and IN HEALTH** Blood donations and blood types in the world population
- 10-11 "The life of the creature is in its blood"
   A close-up photograph of white blood cells and platelets
  - 12–13 IN SICKNESS and in Health How does blood battle germs? How do cuts heal? What are some blood diseases?

### 14–15 Where Killer Viruses were Born

A world map highlighting the birthplaces of 12 serious viruses and their carriers

### 16-17 Beastly Blood

Leeches, fleas, ticks, mosquitoes, and other bloodsucking pests

#### **18–19 Student Activities**

. . . . . . .

Make fake blood, plus a crossword puzzle, bloodsucker match-up, and resources

### • IN THIS TEACHER'S GUIDE •

#### **2** Prereading Activities

3 Get Set to Read (Anticipation Guide)

- **4 Discussion and Writing Questions**
- 5-6 It's in the Reading (Reading Comprehension)

7 Everything Visual (Graphic Skills)

- 8 Cross-Curricular Extensions
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### **PREREADING ACTIVITIES**

## Before distributing KIDS DISCOVER *Blood*, activate students' prior knowledge and set a purpose for reading with these activities.

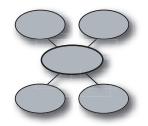
### Discussion

To get students thinking about how this topic relates to their interests and lives, ask:

✓ Would you want to be a doctor or scientist who works with blood? Why or why not?

✓ What questions do you have about blood?

### **Concept map**



Explain to students that they will be reading *Blood.* Ask: *What are some words that are related to blood?* List students' responses on the board. (See box below for some terms they may suggest.) After creating a list, ask

students to group the words into categories, such as **What's in Blood** or **Diseases.** Create a concept map by writing *Blood* on the board and circling it. Write the categories around the circle and draw lines between the ideas to show connections. Then write the words from the list around the appropriate categories. Encourage students to add more words to the concept map as they read *Blood*.

#### **KEY TERMS**

- 🖌 circulatory system
- 🖌 transfusion
- ✓ sickle cell anemia
- 🖌 leukemia
- hematology
- ✓ platelets

✓ clot✓ plasma

🖌 vein

antibodies

#### 🖌 bruise

🖌 blood type

### Get Set to Read (Anticipation Guide)

Copy and distribute the **Get Set to Read** blackline master (page 3 of this Teacher's Guide). Explain to students that this **Anticipation Guide** will help them find out what they know and what misconceptions they have about the topic. **Get Set to Read** is a list of statements—some true, some false. Ask students to write whether they think each statement is true or false in the **Before Reading** column. Be sure to tell students that it is not a test and they will not be graded on their answers. The activity can be completed in a variety of ways for differentiated instruction:

- Have students work on their own or in small groups to complete the entire page.
- Assign pairs of students to focus on two statements and to become "experts" on these topics.
- ◆ Ask students to complete the Before Reading column on their own, and then tabulate the class's answers on the chalkboard, on an overhead transparency, or on your classroom computer.
- **Review the statements** orally with the entire class.

If you predict that students will need assistance finding the answers, complete the **Page Number** column before copying **Get Set to Read**.

### **Preview**

Distribute *Blood* and model how to preview it. Examine **titles**, **headings**, **words** in **boldface type**, **pictures**, **charts**, and **captions**. Then have students add new information to the **Concept Map**. If students will only be reading a few pages at one sitting, preview only the selected pages.

### **BE WORD WISE WITH POWER VOCABULARY!**

Vocabulary blackline masters for every available KIDS DISCOVER title! These activities introduce students to 15 specialized and general-use vocabulary words from each KiDS DISCOVER title. Working with both types of words helps students develop vocabulary, improve comprehension, and read fluently. Follow the links from your Teacher's Toolbox CD-ROM and find your title to access these valuable resources:

- ◆ Vocabulary cards
  - Crossword puzzle
  - ◆ Word find
  - Matching
  - ◆ Cloze sentences
  - Dictionary list





Name \_\_\_\_\_



\_ Date \_\_\_\_

### Get Set to Read

Your blood circulates throughout your body. What do you know about this life-giving substance? In Before Reading, write *true* if you think the statement is true. Write *false* if you think the statement is not true. Then read KIDS DISCOVER *Blood*. Check back to find out if you were correct. Write the correct answer and the page number where you found it.

CHALLENGE: Rewrite each false sentence in a way that makes it true.

Before Reading		After Reading	Page Number
	<ol> <li>Blood is made up entirely of red blood cells.</li> </ol>		
	<b>2.</b> Blood vessels branch into smaller tubes to reach every part of the body.		
	<b>3.</b> Imhotep, an ancient Egyptian, concluded that the heart makes blood move through the body.		
	<b>4.</b> A person with type AB blood can receive only AB blood in transfusions.		
	<b>5.</b> Only blood can flow through the bloodstream.		
	<b>6.</b> Platelets begin the process of healing cuts.		
	<b>7.</b> Most killer viruses travel through the air.		
	8. All animals have red blood.		
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Use the following questions as oral discussion starters or for journaling. For additional in-class discussion and writing questions, adapt the questions on the reading comprehension blackline masters on pages 5 and 6.

#### All pages

- ✓ Why do you think people decide to become doctors?
- ✓ What do you think would be the best part of being a doctor? The worst part?
- ✓ What character traits do you think a doctor should have? Explain.

### Pages 2–3

A speck of blood is made up of several different types of cells and substances. Ask:

✓ Are you surprised to learn that blood is made up of several different substances? Why or why not?

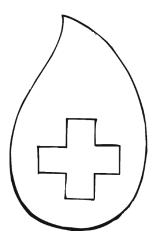
#### Pages 4–5

On page 5, the circulatory system is compared to Venice. Ask:

- ✓ Why do you think the author compared the circulatory system to Venice?
- ✓ Did this comparison help you visualize and remember information about the circulatory system? Why or why not?

### Pages 6–7

- ✓ Are the questions asked and answered on pages 6–7 questions that you had about blood?
- ✓ What other questions do you have about blood? Where can you find answers to these questions?



### Pages 8–9

- ✓ Why do you think some people donate blood?
- ✓ Why do you think some people prefer not to donate blood?
- ✓ When you are older, do you think you will want to donate blood? Why or why not?

### Pages 12–13

- Have you ever had a cut that took a long time to heal? What happened?
- Have you ever had to get stitches to close up a wound? What happened?

### Pages 14–15

Use KIDS DISCOVER to model how to summarize ideas by writing main points on sticky notes and attaching them to the pages.

Although there may be hemorrhagic fever virus in various places in the world, those places are not unsafe to visit. Have students imagine that they can visit one of the places featured on pages 14 and 15: southwestern U.S.; Venezuela; East Africa; Bolivia; Argentina; Democratic Republic of the Congo; China; the Middle East; the former Soviet Union; Nigeria; Guinea; Liberia; Sierra Leone; Egypt; or Scandinavia. Ask:

- ✓ Which place would you most like to visit? Why did you choose that place?
- ✓ Have you ever been to any of the other places? If so, how was life there similar and different to life in the United States?

### Pages 16-17

Have students look at the insects and animals shown on pages 16 and 17. Ask:

✓ Have you ever had an encounter with any of these creatures? What was it and how did it affect you?



Name \_\_\_\_\_

Date \_\_\_\_

### It's in the Reading

### After reading KIDS DISCOVER *Blood,* choose the best answer for each question. Fill in the circle.

Find your answers on the pages shown in the book icon next to each question.

- **1.** Your blood makes antibodies to \_\_\_\_.
  - O A. carry oxygen
  - **O B.** fight diseases
  - **O C.** feed white blood cells
  - O **D.** keep you warm



- O A. are oxygen rich
- **O B.** carry white blood cells
- $\bigcirc$  **C.** reach every organ of the body
- O **D.** have little oxygen
- **3.** An idiom is a phrase that has a meaning different from that of its words. The saying \_\_\_\_\_ is an idiom.
  - O A. "Your circulatory system is a lot like Venice."
  - **O B.** "That person has blood on his or her hands."
  - **O C.** "If blood freezes frostbite occurs."
  - O **D.** "Delivery boats act like red blood cells."

### **4.** Your spleen is like your bone marrow in that they both make \_\_\_\_\_.

- O A. red blood cells
- **O B.** plasma
- O C. white blood cells
- $\bigcirc$  **D.** platelets

### 5. A person cannot donate blood if he or she\_\_\_\_.

- **O A.** has eaten an hour before donation time
- **O B.** is healthy
- O C. is 21 years old
- **O D**. weighs 98 pounds















### It's in the Reading (continued)

### 6. Leviticus 17:11 is referred to on page 12 because it is the \_\_\_\_.

- **O A.** the source of the quotation
- **O B.** the source of the picture
- **O C**. an explanation of the quotation
- O **D.** a primary source document

### 7. The term *germs* refers to \_\_\_\_\_.

- **O** A. poisons
- **O B.** chemicals
- **O C.** unclean surfaces
- **O D**. bacteria and viruses

## 8. Many hemorrhagic fever viruses discussed in the magazine are named

### after \_\_\_\_.

- **O** A. scientists
- **O B.** the carrier of the disease
- **O** C. geographic locations
- O D. Spanish words









### **9.** Viruses can multiply \_\_\_\_.

- **O A.** only in the body of an animal
- **O B.** on unclean surfaces
- $\bigcirc$  **C.** in the air
- **O D**. anywhere

### **10.** Flees and leeches are alike in that both \_\_\_\_.

- **O** A. are insects
- **O B.** feed on blood
- **O C.** live in salt water
- **O D.** have blue blood

### **11.** Why is the blood referred to as a life-and-death issue?



Date \_\_\_\_\_

### **Everything Visual**

Are you looking for a quick and easy way to read data? Look for graphs. Graphs organize data in a visual way. You might find data given in line graphs, bar graphs, pictographs, and circle graphs. Look at the graphs on page 9. Then answer the questions.

- **1.** According to the pictograph and its caption, what percent of people have the blood antigen D?
- 2. What do the blue people in the pictograph represent?

Name

3. If the pictograph showed Asian populations only, how would it differ?

- 4. What is the topic of the circle graph?
- 5. What type of blood do most people have?
- 6. What is the rarest type of blood?

7. Does the pictograph or the circle graph rely more on its caption? Explain.



### **CROSS-CURRICULAR EXTENSIONS**

### ave students try these activities to expand their knowledge and interest in blood.

### Math

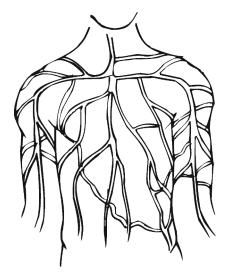
Have students create their own word problems using the information about blood on page 2. For example, How many more red blood cells than white blood cells are in a speck of blood? What is the ratio of platelets (200,000) to white blood cells (5,000)? to red blood cells (5,000,000)?

### Language Arts

Have students select a blood word or phrase that is highlighted in the "Blood is the Word" boxes throughout the issue. On a card, students should write a sentence using the phrase. They should illustrate what the phrase means on a separate piece of paper. Post the drawings and challenge students to match the sentences with the illustrations.

### Language Arts

On pages 2 and 3, students learn about many things that are in a speck of blood, including plasma, platelets, and germs. Have students compare each thing that is found in blood with a common object. One example is: "Fibrinogen is like glue because it causes platelets to stick together at the site of a cut." Then students can draw a picture or write a short play or song to help other students remember the functions and abilities of the components of blood.



### Science

Invite a doctor, nurse, medical researcher, or your school nurse to speak with your class. Discuss interview etiquette and what makes a good interview question. Before the person comes to speak, students should research the person's job and write down some questions they would like to ask.

### Science, Art

Using pages 6 and 7 as a sample, ask students to come up with two or three questions about blood. They should research and illustrate the answers. Display students' work on a bulletin board.



### Science

On page 4, there is an illustration of the major organs and body parts of the circulatory system. Have students choose and research an organ or body part (heart, lungs, liver, stomach, spleen, or kidney). They should write a report and include pictures or illustrations about their chosen body part. Students can present the reports in the order that blood flows through it when it is circulating.

### Art

Have students imagine that they are illustrating an issue of a magazine on blood. They have been asked to make drawings to show one fact about blood. Students can select a fact from the issue, draw a picture to illustrate it, and write a caption that explains what the picture shows. Students should assume their audience is young people, ages 7 to 14.



Name ANSWER KEY



### Get Set to Read

Date \_

Your blood circulates throughout your body. What do you know about this life-giving substance? In Before Reading, write *true* if you think the statement is true. Write *false* if you think the statement is not true. Then read KIDS DISCOVER *Blood*. Check back to find out if you were correct. Write the correct answer and the page number where you found it.

CHALLENGE: Rewrite each false sentence in a way that makes it true.

Before Reading	After Reading	Page Number
1. Blood is made up entirely of red blood cells of red blood cells, white blood cells, plasma, and platelets.	False	<u> </u>
<b>2.</b> Blood vessels branch into smaller tubes to reach every part of the body.	<u> </u>	<u> </u>
<b>3.</b> Imhotep, an ancient Egyptian, concluded that the heart makes blood move through the body.	<u> </u>	<u> </u>
<ul> <li>4. A person with type AB blood can receive only AB blood any type of blood in transfusions.</li> </ul>	False	<u> </u>
<b>5.</b> Only blood Blood, poisons, and germs can flow through the bloodstream.	False	<u>p. 12</u>
<b>6.</b> Platelets begin the process of healing cuts.	<u> </u>	<u>p. 13</u>
<b>7.</b> Most killer viruses <del>travel through the air</del> spread through direct contact.	False	<u> </u>
8. <u>All animals have red blood.</u> Some animals have blood that is different in color.	False	<u>p. 17</u>



Name ANSWER KEY

Date \_

### It's in the Reading

After reading KIDS DISCOVER *Blood*, choose the best answer for each question. Fill in the circle.

Find your answers on the pages shown in the book icon next to each question.

- 1. Your blood makes antibodies to \_\_\_\_.
  - O A. carry oxygen
  - B. fight diseases (main idea and details)
  - **O C.** feed white blood cells
  - O **D.** keep you warm
- **2.** Unlike the arteries, the veins \_\_\_\_\_.
  - O A. are oxygen rich
  - **O B.** carry white blood cells
  - $\bigcirc$  **C.** reach every organ of the body
  - D. have little oxygen (comparison and contrast)
- **3.** An idiom is a phrase that has a meaning different from that of its words. The saying \_\_\_\_ is an idiom.
  - O A. "Your circulatory system is a lot like Venice."
  - B. "That person has blood on his or her hands." (figurative language)
  - O C. "If blood freezes frostbite occurs."
  - O D. "Delivery boats act like red blood cells."

### 4. Your spleen is like your bone marrow in that they both make \_\_\_\_\_.

- O A. red blood cells
- O B. plasma
- C. white blood cells (comparison and contrast)
- **O D**. platelets

### 5. A person cannot donate blood if he or she\_\_\_\_.

- **O A.** has eaten an hour before donation time
- $\bigcirc$  **B.** is healthy
- O C. is 21 years old
- D. weighs 98 pounds (synthesis)















### It's in the Reading (continued)

### 6. Leviticus 17:11 is referred to on page 12 because it is the \_\_\_\_.

- A. the source of the quotation (*writing convention*)
- **O B.** the source of the picture
- $\bigcirc$  **C.** an explanation of the quotation
- $\bigcirc$  **D.** a primary source document

### 7. The term *germs* refers to \_\_\_\_\_.

- **O** A. poisons
- **O B.** chemicals
- O C. unclean surfaces
- D. bacteria and viruses (context definition)

### 8. Many hemorrhagic fever viruses discussed in the magazine are named after .

**O** A. scientists

- **O B.** the carrier of the disease
- C. geographic locations (generalization)
- **O D**. Spanish words
- **9.** Viruses can multiply \_\_\_\_\_.
  - A. only in the body of an animal (main idea and details)
  - **O B.** on unclean surfaces
  - $\bigcirc$  **C.** in the air
  - $\bigcirc$  **D.** anywhere

### **10.** Flees and leeches are alike in that both \_\_\_\_.

- **O** A. are insects
- B. feed on blood (comparison and contrast)
- O **C.** live in salt water
- **O D.** have blue blood

### **11.** Why is the blood referred to as a life-and-death issue?

Students should point out that the blood provides oxygen and nutrients to all organs, giving them what they need to continue operating, but it also can carry germs and poisons that can kill an organism.













Name ANSWER KEY

### **Everything Visual**

Date

Are you looking for a quick and easy way to read data? Look for graphs. Graphs organize data in a visual way. You might find data given in line graphs, bar graphs, pictographs, and circle graphs. Look at the graphs on page 9. Then answer the questions.

**1.** According to the pictograph and its caption, what percent of people have the blood antigen D?

According to the pictograph, 85 percent of all people have the D antigen.

2. What do the blue people in the pictograph represent?

They represent people who do not have the D antigen.

3. If the pictograph showed Asian populations only, how would it differ?

For Asian populations the pictograph would have 99 red figures and 1 blue figure.

4. What is the topic of the circle graph?

"Blood types in the world population" is the topic of the circle graph.

5. What type of blood do most people have?

Most people have type O blood.

6. What is the rarest type of blood?

Type AB is the rarest type of blood.

7. Does the pictograph or the circle graph rely more on its caption? Explain.

The pictograph relies more on its caption because you must read the caption to determine what the figures represent.