

# Teacher's Supplement



## MAGAZINE ARTICLES

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**Teachers' Guide for *ASK:*  
*Beautiful Blood* October 2015**

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**OVERVIEW**

*In this magazine, readers will learn all about blood.*

***ASK: Beautiful Blood*** includes information about the function of blood, how it moves and what

*it does. View the work of scientists past and present, as they attempt to unlock the mysterious properties of this amazing liquid in both humans and other animals with unique kinds of blood.*

**ESSENTIAL QUESTION:**

***What is the purpose of blood, and how do scientists build knowledge about what it does?***

We invite you to use this magazine as a flexible teaching tool, which is ideal for interdisciplinary learning of social studies and science content and core literacy concepts. Find practical advice for teaching articles individually or utilize a mini-unit that helps your students' make cross-text connections as they integrate ideas and information.

## READ MULTIPLE ARTICLES PAGES 4 - 8

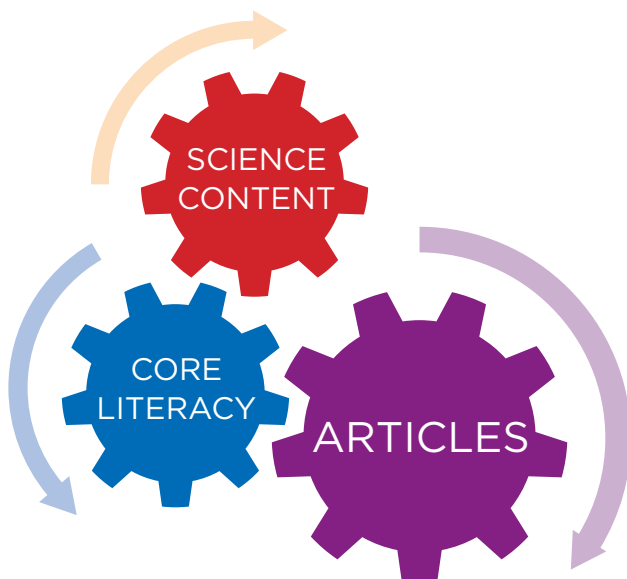
Each article in this magazine is well-suited for teaching Common Core literacy concepts and content area knowledge. For each individual article page in this guide, you'll find the following:

The diagram illustrates the components of an article page from the magazine "MUSE: Bodies...The Inside Story". The article is titled "ARTICLE: What's Mine Is Yours" and is a narrative nonfiction piece. The components and their corresponding Common Core Standards are:

- Essential Question:** What factors contribute to the development of healthier and more efficient human organs?
- Content Concepts:** Next Generation Science Standards
- Key Vocabulary:** CCSS.Reading.4
- Prepare to Read:** CCSS.SpeakListen.1, 2, 4
- Close Reading Questions:** CCSS.Reading.1-10
- Common Core Connections:** CCSS.Writing.1, 2, 3 & 6

## TEACH A MINI-UNIT PAGES 10 - 12

Magazine articles can be easily grouped to make cross text connections and comparisons. Our Common Core mini-unit guides students to read and discuss multiple articles and integrate ideas and information. (CCSS.Reading InfoText.9) Discussing multiple articles (CCSS.SpeakListen.1, 2, 4) prepares students to write informational texts to share and publish in a variety of ways. (CCSS.Writing.2)



## READING

**Core literacy concepts**, such as the ones found in the Common Core State Standards, help students access social studies and science content. Integration of both literacy thinking and content study offers students a great way to become experts in reading informational text and literature for content knowledge. This guide provides questions to cover many core literacy concepts.

**Draw Inferences** (CCSS.InfoText.1)

**Describe Relationships** (CCSS.InfoText.3)

**Analyze Text Structure** (CCSS.InfoText.5)

**Interpret Visual Information** (CCSS.InfoText.7)

**Summarize** (CCSS.InfoText.2)

**Determine Word Meaning** (CCSS.InfoText.4)

**Understand Author's Point of View** (CCSS.InfoText.6)

**Explain Reasons and Evidence** (CCSS.InfoText.8)

### FOCUS STANDARD: CCSS. InfoText 9: Integrate Ideas and Information:

Have students read multiple articles from this magazine on the same topic, build knowledge, and make cross-text comparisons.

## SPEAKING AND LISTENING

Use the articles in this magazine to spark meaningful discussions in person and online. Encourage deeper discussions where students can become topic experts. (CCSS.SpeakListen.1, 2, 4)

### DISCUSSION OPTIONS—IN CLASS OR ONLINE

**Inquiry Discussions:** Pose and open-ended questions that engage students to form an opinion and support it with reasons found directly in the text.

**Jigsaw Clubs:** Form small reading groups of students reading *different* articles. Invite students to share information and resources with each other.

**Whole Class:** Launch with an essential question. Encourage students to find and share evidence from different articles building a greater understanding of the question.

## WRITING

Use the articles in this magazine to prompt **informative/explanatory writing**. (CCSS.Writing.2) Have students use evidence from the texts to share information about social studies, language arts, or science content in the articles. See the **Mini-Unit** section of this guide (pages 10 – 12) as well as the **article pages** (pages 4 - 8) for ways to incorporate writing into your instruction



How do we know about the function of blood in our bodies? This article explores the earliest theories about the purpose of blood and how it works, and how knowledge about blood has been added over thousands of years to our present understanding.

## ESSENTIAL QUESTION

**What is the purpose of blood, and how do scientists build knowledge about what it does?**

## SCIENCE CONCEPTS

Blood circulates in the body to deliver oxygen, and remove carbon dioxide and waste.

## CROSS CURRICULAR EXTENSION

### Mathematics

Support William Harvey's mathematical thinking (p.8) by drawing a diagram that illustrates his figuring.

## KEY VOCABULARY

**gladiator (p.7)** a man in ancient Rome who fought against another man or animal for public entertainment

**circulate (p.8)** to move without stopping through a system, place, etc.

**plasma (p.10)** the watery part of blood that contains blood cells.

**vein (p.6)** any one of the tubes that carry blood from parts of the body back to the heart

## PREPARE TO READ

View the drop of blood in the photo on page 6. Suggest that instead of being squeamish, some people find blood fascinating. Direct students to look at the veins inside of their wrist and feel their pulse. Ask: *What do you know about blood from these observations? What questions do you have about how blood works in your body?*

## CLOSE READING QUESTIONS

- Describe the ways you can experience the blood that circulates in your body, as described throughout this article.
- Why did it take so long for people to understand the purpose of the heart? Find support for your ideas in the article.
- What is the author's purpose for this article? How is the information organized to help you learn?

## COMMON CORE CONNECTIONS

### Describe Relationships *CCSS Info Text 3*

In this article, the author shares information about what people knew about blood in early Greece compared to the 1600s, and today! Create a chart to show what knowledge Galend and Harvey contributed to our knowledge about blood today. Discuss the relationship of scientific knowledge through time.

### Explain Events Supported by Text Details *CCSS Info Text 2, 3*

Use information from the article to list historical assumptions made about blood. Categorize these as either proven true or false. Include details to support these claims.

### Precise Language and Domain Vocabulary *CCSS Writing 2*

Create a poster that with labeled graphics to show the heart and how blood circulates in the body.





Learn about the range of colors and functions of blood. Photos and interesting facts showcase the amazing variety of how blood works in different kinds of animals.

## ESSENTIAL QUESTION

**What is the purpose of blood, and how do scientists build knowledge about what it does?**

## SCIENCE CONCEPT

The structure and function of blood varies between different kinds of animals.

## CROSS-CURRICULAR EXTENSION

### Science

Hemoglobin uses iron to absorb oxygen. Compare the nutritional labels of five or more breakfast cereals to find out which ones provide the biggest boost of iron.

## KEY VOCABULARY

**exception (p.13)** a case where a rule does not apply

**hemoglobin (p.12)** the part of blood that contains iron, carries oxygen through the body, and gives blood its red color

**molecule (p.12)** the smallest possible amount of a particular substance that has all the characteristics of that substance

## PREPARE TO READ

Take a picture tour of the pages of this article. Explain that each of the kinds of animals has blood with special characteristics different from human blood. Ask: *What special survival needs might these animals have? How might blood help animals survive?*

## CLOSE READING QUESTIONS

- Why is some blood a different color than red? Find more than one example in the article.
- Do you think humans could have green or blue blood? Why or why not? Support your reasons with information in the article.
- Explain the difference between the information learned in the photos compared to that in the text.

## COMMON CORE CONNECTIONS

### Fluency and Rhyme *CCSS Foundational Reading 4*

The article begins with a short poem about blood. Students write a rhyme about one animal in the article, using the information so the rhyme makes sense. Read each other's poems for accuracy and fluency practice.

### Key Ideas Supported by Text Details *CCSS Info Text 1*

Draw and color a rainbow with inch-wide stripes. Use information from pages 12 and 13 to record the characteristics of blood in the stripe with the corresponding color.

### Presentation of Knowledge and Ideas *CCSS Speaking and Listening 4*

Each child chooses one of the animals described in the article and presents the information about this animal's special blood within a small group.

# ARTICLE: Icefish Diaries

Magazine pages 16, First Person Narrative Nonfiction/ Diary/ Photo Essay



Come along to Antarctica with teacher, Paula Dell, as you read her diary entries and view photos of what she discovers about the clear-blooded icefish.

## ESSENTIAL QUESTION

**What is the purpose of blood, and how do scientists build knowledge about what it does?**

## SCIENCE CONCEPTS

The structure and function of blood varies between different kinds of animals.

## CROSS-CURRICULAR EXTENSION

### Science-Research

Search the Internet for information about Palmer Station. Explore the research projects scientists are working on in Antarctica.

## KEY VOCABULARY

**adapt (p.18)** to change (something) so that it functions better or is better suited for a purpose

**carion (p.19)** the flesh of dead animals

**trawl (p.20)** a large net that a boat pulls along the bottom of the ocean to catch fish

## PREPARE TO READ

View the photos on pages 16 and 17 to introduce children to the icefish and teacher who takes a trip to Antarctica to find out more about this animal's unusual blood. Ask: *What would it be like to go to a research station in Antarctica. What would you like to explore and do there?*

## CLOSE READING QUESTIONS

- What questions did the scientists have about icefish blood? Find question statements about icefish throughout the article.
- Who is narrating this article? What clues did you find?
- How did the teacher's students feel about her trip? How do you know?

## COMMON CORE CONNECTIONS

### Making Inferences *CCSS Info Text 1*

Icefish have the unusual ability to absorb oxygen without hemoglobin, why are scientists interested in how this works?

### Analyze Text Structure *CCSS Info Text 5 & 6*

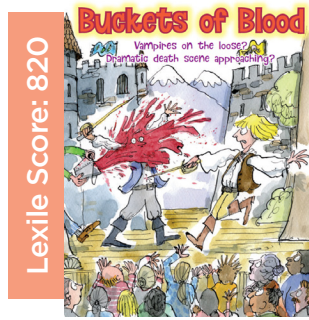
How is information in a diary different from other information articles? Look for sentences in this article where the author offers her impressions and opinions.

### Fluency *CCSS Reading Foundations CCSS 4*

Choose one diary entry from the article and practice reading it aloud. Put on a radio play pretending the diary entries are being transmitting from the Antarctica.

# ARTICLE: Buckets of Blood

Magazine pages 22, Narrative Nonfiction and Activity



Find out how blood is used on screen and use the recipe to make your own fake blood.

## ESSENTIAL QUESTION

**What is the purpose of blood, and how do scientists build knowledge about what it does?**

## SCIENCE CONCEPTS

Characteristics of real blood are duplicated to make fake blood.

## CROSS-CURRICULAR EXTENSION

### Engineering and Design

Design a blood bag for a theatrical scene to use the fake blood in this article. Draw a diagram to show how it works.

## KEY VOCABULARY

**bogus (p.23)** not real or genuine : fake or false

**theatrical (p.23)** of or relating to the theater

## PREPARE TO READ

View the cartoon illustration on page 22. Ask students to describe what is happening and how they are using blood to add drama to the scene. Ask: *What do you think they are using for the fake blood?*

## CLOSE READING QUESTIONS

- What challenges did actors face coming up with fake blood? Find evidence in more than one place in the article.
- How hard do you think it is to use fake blood? Find support for your answer in the article.
- In what ways is Bogus Blood like other recipes you've seen or used?

## COMMON CORE CONNECTIONS

### Summarize Main Ideas *CCSS Info Text 2*

Identify the main purpose and ideas for this article. What interesting details support this main idea?

### Analyze Text Structure *CCSS Info Text 5*

Take a look at the directions for Bogus Blood on page 23. How are these directions similar to a recipe?

### Integrate Information from Two Sources *CCSS Info Text 9*

Read a reliable website about special effects. Share what new information you discover. Share information that extends what you learned about the topic in this article.





Discover the history, significance, and science behind the common leech. Find out why leeches and other animals feed on blood and how they go about getting it.

## ESSENTIAL QUESTION

**What is the purpose of blood, and how do scientists build knowledge about what it does?**

## SCIENCE CONCEPTS

Animals vary in how they obtain food and what they need to eat to stay alive.

## CROSS-CURRICULAR EXTENSION

### Writing

What do you think a leech farm might look like? Describe the farm in a paragraph. Use details so others can picture it in their minds.

## KEY VOCABULARY

**hematophage (p.24)** an animal that feeds on blood

**annelid (p.24)** any segmented worm of the phylum Annelida, including earthworms and leeches

## PREPARE TO READ

This article is all about leeches. Ask: *Have you ever seen a leech? What do you think leeches have to do with learning about blood?*

## CLOSE READING QUESTIONS

- What makes blood a nutritious and practical meal for some animals? Find evidence in the article.
- Why do you think the author says, “Blood eaters prefer to be sneaky, not scary?” on page 24? What information supports this?
- How did the author organize the ideas in the article?

## COMMON CORE CONNECTIONS

### Summarize Main Ideas *CCSS Info Text 2*

Talk with a partner and consider *who, what, where, when, and why* to help you summarize the main ideas in this article.

### Inquiry: Support Your Opinion *CCSS Info Text 1 & 8, Speaking & Listening 1 & 4*

*Are leeches dangerous?* Collect details from the article to support your opinion. Then use these reasons to support your opinion in a class inquiry discussion.

### Comparing Information *CCSS Info Text 1, 2, 3*

Explain the difference between how doctors used leeches in the past compared to how they are used today. *What knowledge has been gained to make a better use of these animals for medical purposes?*

## CROSS-TEXT CONNECTIONS WITH MULTIPLE ARTICLES

### COMPARE ARTICLES

**SYNTHESIZE:** Guide students to compare articles they read. Help students find the connections between pieces of information in multiple texts. Use prompts, such as the following examples, to have students work together to **Integrate Ideas and Information** (CCSS.Reading.9):

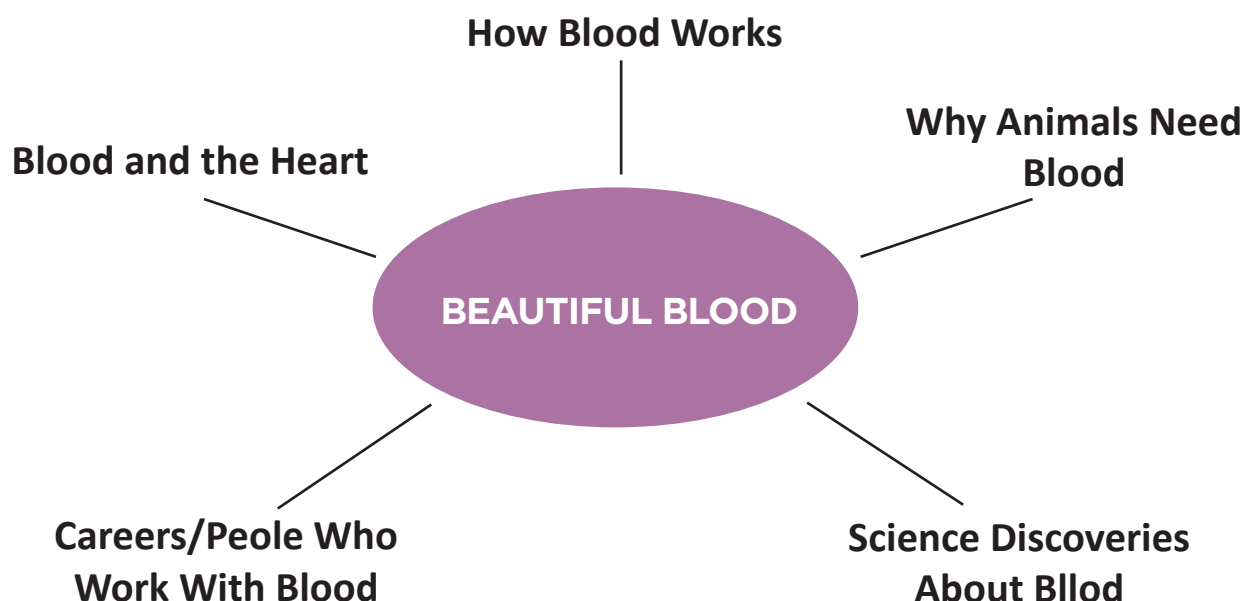
- Use information from multiple articles to create a time sequence of beliefs about blood and show these ideas have changed over time.
- Make a chart of the different type of professionals found in the articles. List their careers and how their work involves learning about blood.
- Create a booklet with the title, What We Know About Blood. Add facts and information in your own words gathered from the material presented in different articles.
- Draw a diagram showing how blood works in the body, drawing from information presented in multiple articles.
- Write a summary about Beautiful Blood sharing the most amazing and important information that supports this issue's title from multiple articles.
- Format a response to the essential question, **what is the purpose of blood, and how do scientists build knowledge about what it does?**, using information from multiple articles.

## EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

The mini unit offers three levels of activities. The Engage section helps activate prior knowledge, Compare Articles offers additional ways to use information from multiple articles that prepares students to integrate their ideas and knowledge in the Apply activity.

**ENGAGE**
**READ AND  
COMPARE**
**APPLY**

**ENGAGE:** Engage students in the topic of blood, how it works, and how it differs in other animals. Ask students to think about how we have learned about blood over time and the discoveries that have been made to help us know more about this life giving substance. Create an idea or concept web to tap into background knowledge.



**Share the essential question:**

What is the purpose of blood, and how do scientists build knowledge about what it does?



**READ AND COMPARE ARTICLES:** Begin with a focus article as a base for building content knowledge and model how to work through the text.

**1) READ ALOUD:** Use the article, Life's Blood pages 6-11, as a focus article, or choose a different article that works well for your teaching goals. Share the article summary on page 4 of this guide. Students can read using their own copies of the article and sticky notes to mark places they find interesting or have questions about.

**2) DISCUSS THE ARTICLE:** After reading, guide students to turn and talk about the article. See the Article Pages for Close Reading Questions.

**3) READ NEW ARTICLES:** Help students choose additional articles to read based on their inquiry questions or what they wonder. Refer to the Article Pages for summaries of each article within *Beautiful Blood*.

**4) COMPARE ARTICLES:** After students have read multiple articles, guide them to make cross-text connections. Refer to page 9 in this guide for prompts that help students integrate ideas and information from multiple articles.

### CHOOSE A PURPOSE FOR READING

**CLOSE READ:** *CCSS Informational Text. 1* Mark the text, noting important details and highlighting what interests, surprises, or confuses you.

**UNDERSTAND MAIN IDEAS TO DEVELOP EXPERTISE:** *CCSS Informational Text. 8* Record the main ideas in the article. Note how these main ideas build on the main ideas from the focus article or other readings. How is your topic knowledge growing?



## APPLY: BLOOD BANK GAME SHOW

**Games engage students and make learning fun and exciting. Use information from the articles to create game show questions that promote higher order thinking and prepare for a quiz-show context.**

### Materials:

Quiz Question Generator graphic organizer, Index cards, glue sticks, 3 bells or buzzers

### Preparing the Game

Divide into teams of 3 to 4 students.

Each team searches for 5 questions that can be answered from information in the articles. Use the Quiz Question Generator graphic organizer as a template to craft questions.

Cut out the questions and correct answers. Glue question and three possible answers to the front of the cards. The correct answer and page are fastened to the back of each card.

Cards are checked and edited then turned in and shuffled with all other cards.

### Set Up

Three teams play at a time. The rest of the class serves as the audience. One contestant from each of the three teams sits at a table with a bell or buzzer within easy reach.

Draw a box as a blood bank on the board for each team.

### Game Show Time!

#### Rules

A game show moderator picks a card and asks the questions with the three possible answers. The first contestant to ring the bell answers the question. If correct, a drop of blood goes into the Blood Bank by drawing a red circle in that team's bank. If incorrect, the card is shuffled into the deck and the next question is asked. A teammate replaces a contestant who gives an incorrect answer.

The first team to gain ten drops of blood in their blood bank wins and three new teams join the game.

After playing a few rounds, take ideas from your class about other versions and rules. Students often contribute successful ways to adapt a game.

**Please note:** Keep the pace of the game moving quickly to engage students. Other team members will replace contestants frequently, at first, and the tone should be fun and active.



**GROUP #:** \_\_\_\_ **NAME:** \_\_\_\_\_

**Mini-Unit Graphic Organizer: Quiz Question Generator**

<p>Question: _____</p> <p>Answer Choices:</p> <p>M. _____</p> <p>N. _____</p> <p>O. _____</p>	<p>Correct Answer:</p> <p>_____</p> <p>Page: _____</p>
<p>Question: _____</p> <p>Answer Choices:</p> <p>M. _____</p> <p>N. _____</p> <p>O. _____</p>	<p>Correct Answer:</p> <p>_____</p> <p>Page: _____</p>
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<p>Question: _____</p> <p>Answer Choices:</p> <p>M. _____</p> <p>N. _____</p> <p>O. _____</p>	<p>Correct Answer:</p> <p>_____</p> <p>Page: _____</p>

NAME: \_\_\_\_\_

### ANALYZE GRAPHIC FEATURES

GRAPHIC FEATURE	PAGE LOCATION	HOW THIS FEATURE HELPED YOUR UNDERSTANDING

**NAME:** \_\_\_\_\_

### CONCEPT CHART

Show how reading multiple articles developed your understanding of the essential question or or your own inquiry question.

**ESSENTIAL QUESTION OR INQUIRY QUESTION:**

**ARTICLE 1:**

**ARTICLE 2:**

**ARTICLE 3:**

**adapt** to change (something) so that it functions better or is better suited for a purpose

*Both red-blooded and clear-blooded icefish have **adapted** to life in extreme cold. (p. 18)*

**annelid** any segmented worm of the phylum Annelida, including earthworms and leeches

*Leeches are **annelids**, cousins of earthworms. (p. 24)*

**bogus** not real or genuine: fake or false

***Bogus** Blood- Title of Activity (p. 23)*

**carrion** the flesh of dead animals

*These big birds eat seafood, **carrion**, and even other birds. (p. 19)*

**circulate** to move without stopping through a system, place, etc.

*He didn't know exactly why blood **circulates**. (p. 8)*

**exception** a case where a rule does not apply

*And of course, there are **exceptions** to every rule. (p. 13)*

**gladiator** a man in ancient Rome who fought against another man or animal for public entertainment

*Galen got his start tending to wounded **gladiators**, professional fighters who fought with real weapons in front of cheering crowds. (p.7)*

**hematophage** an animal that feeds on blood

*The leech in your pond, like mosquitoes and vampire bats, is a **hematophage**, which means "blood-eater." (p. 24)*

**hemoglobin** the part of blood that contains iron, carries oxygen through the body, and gives blood its red color

*In red-blooded animals, the oxygen carrier is called **hemoglobin**. (p. 12)*

**molecule** the smallest possible amount of a particular substance that has all the characteristics of that substance

*It also uses iron, like hemoglobin, but in differently shaped **molecules** that look green. (p. 12)*

**plasma** the watery part of blood that contains blood cells.

*Blood is made up of several different kinds of cells floating in a yellowish liquid called **plasma**. (p. 10)*

**theatrical** of or relating to the theater

*But for home **theatricals**, it is easy to make your own fake gore. (p. 23)*

**trawl** a large net that a boat pulls along the bottom of the ocean to catch fish

*Today we went **trawling** for ocean worms and other creatures that live in the mud. (p. 20)*

**vein** any one of the tubes that carry blood from parts of the body back to the heart

*That's your heart pumping blood through your **veins**. (p. 6)*

## **A TIGER IN YOUR HOUSE**

- <http://www.americasblood.org/about-blood/what-is-blood.aspx>

Information from America's Blood Centers with additional diagrams of the different types of blood cells and systems discussed in the article.

## **HE WHO KILLS WITH ONE LEAP**

- <http://www.usap.gov/videoclipsandmaps/palwebcam.cfm>

The United States Antarctic Program: Palmer Station- Find more information about the research station visited in this article through, maps, images, and view real-time video webcams.

## **WELCOME TO CAT ISLAND**

- <http://www.pbs.org/wgbh/nova/specialfx/effects/trivia.html>

This PBS site explores the world of special effects and offers facts and a quiz to engage students in how effects, such as blood, are achieved in film.

## **CATS THAT PERFORM...SOMETIMES**

- <http://www.biokids.umich.edu/critters/Hirudinea/>

Images show children collecting and investigating leeches accompanied by information and discoveries