

# Ask®

## Now Hair This

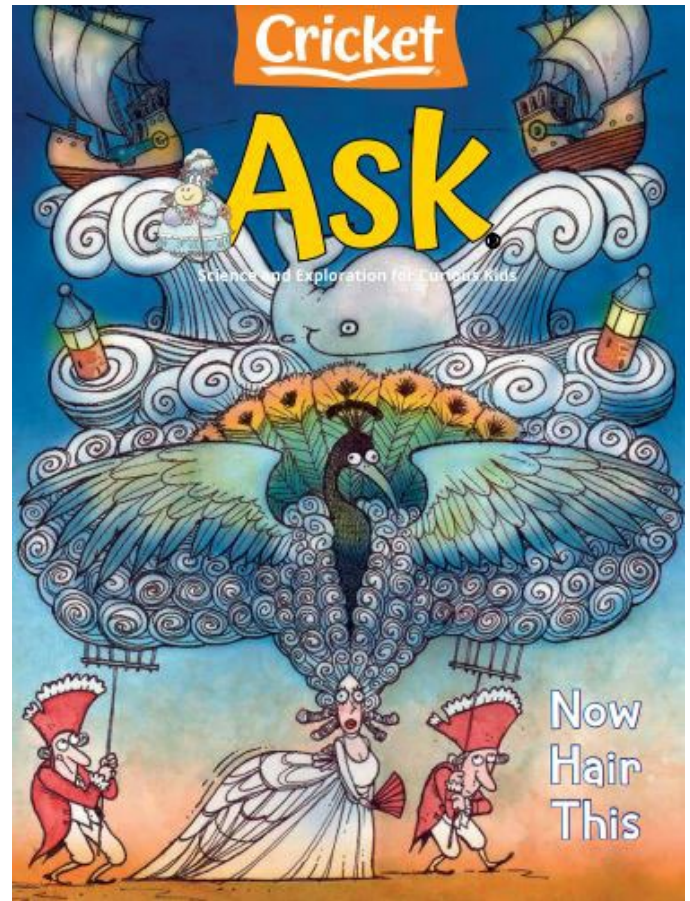
It has often been said that hair is one's "crowning glory," meaning that hair is one of our most notable features. This month's issue of ASK magazine explores the function of hair in the animal world and examines the growth cycle of hair in humans.

### CONVERSATION QUESTION

What is the purpose of hair?

### TEACHING OBJECTIVES

- Students will learn why lions have manes.
- Students will learn a multitude of facts about hair and how it grows.
- Students will learn how manatee hairs have many functions.
- Students will explore how researchers form a scientific conclusion.
- Students will obtain information from a nonfiction text.
- Students will examine the structure and functions of manatee hair.
- Students will create an informational brochure for Serengeti National Park.
- Students will create a "Grass Hair Salon."
- Students will create calligrams.



In addition to supplemental materials focused on core STEM skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

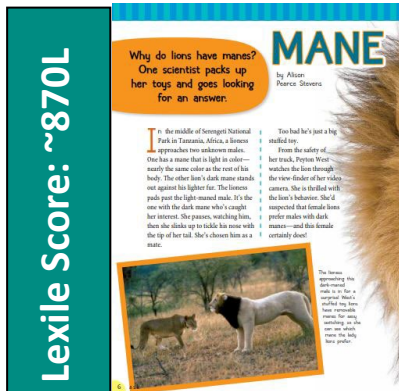
### SELECTIONS

- **Mane Attraction**  
Expository Nonfiction, ~870L
- **Short and Curly, Long and Swirly?**  
Expository Nonfiction, ~720L
- **Hair That Feels**  
Expository Nonfiction, ~980L

## Mane Attraction

pp. 6–10, Expository Nonfiction

Long and shaggy, short or dark, researchers have discovered that a lion’s mane provides both human and animal observers with key information. Readers will learn how mane characteristics can reveal a lion’s age, health, and strength.



## RESOURCES

- Scientific Conclusion: Mane of the Plain

## OBJECTIVES

- Students will learn why lions have manes.
- Students will explore how researchers form a scientific conclusion.
- Students will create an informational brochure for Serengeti National Park.

## KEY VOCABULARY

- slinks** (p. 6) moves in a deliberately quiet and sneaky way
- loped** (p. 10) ran in a relaxed way with long strides
- shifted** (p. 10) moved to a different place or position

## ENGAGE

**Conversation Question:** What is the purpose of hair?

Tell students they will be reading an article about lion research in Serengeti National Park in Tanzania. Explain that a national park is an area of land set aside by a national government for the preservation of the natural environment, especially land and wildlife. Visit the Serengeti National Park website for some motivating visuals and be sure to click the tab labeled “Wildlife.”

## INTRODUCE VOCABULARY

Post and review the three vocabulary words. Tell students that these terms will be found in “Mane Attraction.” Ask students what part of speech the words are (*verbs*), and how they relate to lions (*describe movements*). Then review the meanings of synonyms and have students provide two synonyms for each vocabulary term.

## READ & DISCUSS

After reading, use the following questions for discussion. Then have pairs of students choose one question to investigate further.

- Describe the different types of manes that lions can have.
- What was Charles Darwin’s theory regarding lions’ manes? What issues did Peyton West have with Darwin’s theory?
- What does hair growth depend on?
- How can a lion’s health be determined from the appearance of his mane?
- Why can lions be difficult to observe? How did West solve this problem?

## SKILL FOCUS: Scientific Conclusions

**INSTRUCT:** This article presents the reader with detailed information about how research scientists drew an accurate conclusion about why lions have manes. Distribute the *Scientific Conclusion: Mane of the Plain* graphic organizer. Tell students they will be reviewing the article and highlighting sentences that describe the strategies West used to formulate her conclusion.

**ASSESS:** Reconvene and share answers. Have students discuss how other animals use hair or feathers for specific purposes.

## EXTEND

**Geography** Display a map of the world and have students locate Serengeti National Park in Tanzania. Instruct them to fold a piece of paper into thirds and to create a park brochure. Alternatively, many computer programs will have easy-to-use templates. Using information from the article and other resources, students should include the following: location, climate, land features, plant and animal life, recreation, and interesting facts. Encourage students to include maps and colorful pictures and photos of the animals and plants.

## Mane of the Plain

**Scientific Conclusion** Review the article and explain how a team of researchers formulated a scientific conclusion. Include details.

What centuries-old question did Peyton West and her team of researchers answer?

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Explain the strategies that were used to formulate an accurate conclusion.

1.

2.

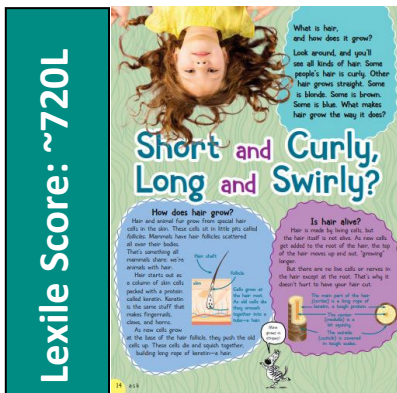
3.

# Ask® Teacher Guide: November/December 2022

## Short and Curly, Long and Swirly?

pp. 14–17, Expository Nonfiction

Hair is one of the defining characteristics of mammals. This article examines the structure and growth cycle of hair and presents readers with some “hair-raising” facts.



## RESOURCES

- Obtain Information: Hair, There, Everywhere

## OBJECTIVES

- Students will learn a multitude of facts about hair and how it grows.
- Students will obtain information from a nonfiction text.
- Students will create a “Grass Hair Salon.”

## KEY VOCABULARY

- **follicles** (p. 14) tiny holes in the skin from which hair grows
- **keratin** (p. 14) the stiff protein that hair, nails, hooves, horns, and feathers are made of
- **melanin** (p. 16) a natural substance that gives color to hair, skin, and eyes

## ENGAGE

**Conversation Question:** What is the purpose of hair?

Create a T-chart on the board with the simple headings “YES” and “NO.” Pose the following question to the class: “Is hair alive?” Tally and discuss the results. Distribute the article and direct the class to read the purple text box on page 14 to find the answer. Tell students to examine the three main components of a hair (cortex, medulla, cuticle) and to draw a cross-section diagram labeling each part.

## INTRODUCE VOCABULARY

Introduce this as a *Jeopardy!*-style learning activity. Provide the class with only the definitions of the key vocabulary terms. Have them read and discuss. Inform students that they will revisit these definitions after reading and pose the proper question using words from the vocabulary-rich article. (What is keratin? What are follicles? What is melanin?) Have them formulate 17 more answers needing questions, for a total of 20, and share with other classes as a post-reading activity.

## READ & DISCUSS

Post and discuss questions prior to reading. Have students read the article independently. Then read the article aloud, pausing when answers to the questions are revealed.

1. How does hair grow?
2. What gives hair its texture?
3. How does hair get its color?
4. Using the diagram on page 15, explain the hair cycle in words.
5. Why do some animals have fur that changes color with the seasons?

## SKILL FOCUS: Obtain Information

**INSTRUCT:** Guide students to obtain information from the text, captions, and photos in the article. Remind them that the article was written to teach readers about the growth cycle of hair and to explain different hair characteristics. Introduce the *Obtain Information: Hair, There, Everywhere* worksheet and instruct students to underline the word from the answer choices that accurately completes the sentence.

**ASSESS:** Review and discuss the answers that students chose to complete each sentence. Have them make corrections if necessary.

## EXTEND

**Biology** This article discusses the hair’s growth cycle. Ask students what other growth cycles they have studied. (Ex: seed --> plant, caterpillar --> butterfly, etc.) Combine topics and have the class make a “Grass Hair Salon.” Give each student a cup to draw a face on. Then have them fill the cup halfway with soil. Next, they will add grass seeds, cover the seeds with more soil, and add water. Allot time every other day for the class to observe and water their seedlings. Once the grass has grown a few inches, it’s time to give haircuts!

## Hair, There, Everywhere

**Obtain Information** Read through the sentences and note the choice of answers. Revisit the article and then underline the correct answer to complete the sentence.

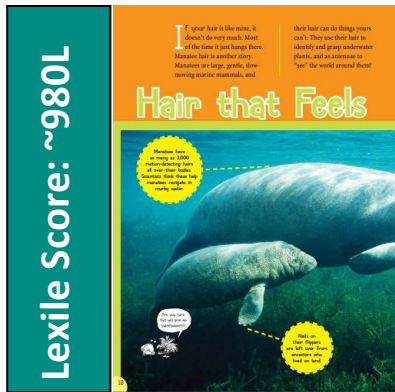
1. The outside of the hair covered in tough scales is called the **(medulla/follicle/cuticle)**.
2. As people age, their hair follicles make less **(melanin/chemicals/curls)**.
3. Special hair cells sit in little pits called **(keratin/follicles/cortexes)**.
4. Hair gets its color from special skin cells called **(shafts/melanocytes/nerves)**.
5. Melanocytes make **(melanin/follicles/protein)** and add it to other cells.
6. When a follicle rests, the hair it was working on **(waves/rests/sheds)**.
7. The **(shape/length/color)** of the hair is what makes it curly or straight.
8. Straight hair is **(flatter/darker/rounder)** than curly hair.
9. Follicles that grow curly hair are **(rough/slanted/jagged)**.
10. At any one time, most follicles are **(shedding/resting/growing)**.
11. Eumelanins are **(dark brown/dark gray/dark blonde)**.
12. The main part of the hair called the **(follicle/cortex/medulla)** is a long rope of keratin.
13. Arm hair has a **(longer/shorter)** growing cycle than the hair on your head.
14. Aging hair turns gray/white because the follicles make less **(melanin/cells/pheomelanins)**.
15. Furrrier animals have lots of **(curls/whiskers/follicles)**.

# Ask® Teacher Guide: November/December 2022

## Hair That Feels

pp. 18–21, Expository Nonfiction

Large, gentle, slow-moving marine mammals, manatees are compelling warm-water creatures. Readers will learn how manatee hairs have significantly more purposes than human hair.



## ENGAGE

**Conversation Question:** What is the purpose of hair?

Introduce the article “Hair That Feels.” Tell students that for perspective purposes, the author compares human hairs to manatee hairs. On average, a manatee’s tactile hairs (the hairs that “sense”) are attached to five times more nerves than human hairs are. Discuss if this makes manatee hair more or less sensitive than human hair. Have students calculate the answer: If a manatee’s tactile hair is attached to 50 nerves, how many nerves is a human hair attached to? (Answer: 10)

## INTRODUCE VOCABULARY

Display the following statements and underline the key vocabulary terms. Review how to infer the meanings of new words using context clues and background knowledge. Then have partners work together to determine the meaning of each word. Reveal definitions.

- When babies touch objects, they are using their tactile sense to learn about the world.
- After not shaving for a week, his face was covered in bristly hairs.
- Sea turtles migrate hundreds of miles to their nesting grounds.

Guide students to notice these words in the reading.

## RESOURCES

- Structure and Function: Manatee Mania

## OBJECTIVES

- Students will learn how manatee hairs have many functions.
- Students will examine the structure and functions of manatee hair.
- Students will create calligrams.

## KEY VOCABULARY

- **tactile (p. 19)** of or connected with the sense of touch
- **bristly (p. 20)** having a stiff or prickly feel
- **migrate (p. 21)** to move from one area to another at different times of the year

## READ & DISCUSS

Pose the following questions to prompt meaningful discussion.

1. What is the primary reason that manatees have hairs all over their bodies?
2. Why do manatees have nails on their flippers?
3. Why are whiskers so sensitive?
4. How did scientists at the Mote Marine Laboratory test the manatees to see how sensitive their whiskers were?
5. What factor is making sea grass harder to find for manatees?

## SKILL FOCUS: Structure and Function

**INSTRUCT:** Elicit from students that the main idea of the article is to provide details about the magnificent manatee, specifically focusing on its hair. Present the *Structure and Function: Manatee Mania* graphic organizer. Tell students they will be using information from the article to record the functions of the hair that covers a manatee’s body.

**ASSESS:** Circulate and discuss content with students. Collect graphic organizers to assess their ability to understand the structure-and-function relationship.

## EXTEND

**Language Arts** Students will create calligrams about manatees. Calligrams are texts (poems or paragraphs) arranged to create a shape. The shape of a calligram represents the topic. Share online examples. Have students use information from the article and/or online resources. They may create a poem or simply arrange facts in the shape of a manatee. Have students do an Art Walk to view each other’s work.

## Manatee Mania

**Structure and Function** Reread the article and highlight sentences that detail the ways in which a manatee's hair helps them to survive and thrive. Explain each function of their hair using details.

