

# Teachers Guide for ASK

October 2012: Bones

*This guide was prepared by Betty Lou Askin, a retired educator who lives in Toronto, Ontario.*

## Objectives:

- To learn about the development and repair of bones.
- To appreciate the similarities in bone structure throughout the animal kingdom.
- To grasp the concept of different skeletal structures.

## Pre-reading:

- \*Let the students predict what they think will be included in this issue of the magazine based on the title.
- \*Ask them what they think is happening on the cover.
- \*View the Contents page and discuss the illustrations.

## Scoops

### Pass the Hot Sauce!

- Explain why astronauts would appreciate some hot sauce while travelling in orbit.

### Let's Talk Tarsiers

- Why are tarsiers unique?
- Why are their sounds so high?

### What Really Sank the Titanic?

- What safety precautions were in place on the Titanic?
- Explain what scientists now think happened to the Titanic.

### Got Fleas? Dino Did

- Describe the prehistoric fleas.
- Why were they different from modern day fleas?

### Nestor's Dock (pages 4-5)

- What was trip's plan?
- Describe what Trip was able to see.
- Why did he continue to wear his glasses?

### When a Bone Breaks (pages 6-11)

Vocabulary: collagen, marrow, fractured, framework, osteoclasts and osteoblasts

Use the following questions to help with the content:

- How does a broken bone start to heal?
- How does an x-ray "see" your bones?
- Describe a **greenstick fracture**.
- What is the difference between a **fracture** and a **compound fracture**?
- What does **setting a bone** mean?
- What materials are used to create a cast?
- Use the **Read Aloud Method** to read page 8. Discuss the information.

- Using the information and pictures on page 9 describe how a bone begins to repair itself.
- Describe the purpose of **osteoclasts** and **osteoblasts**.
- What happens to your bone every 7 to 9 years?
- Describe how you should care for your bones.
- How does a cat's purring help the cat's bones?
- Tell why astronauts' bones are thinner when they are in space.
- Paragraph Writing: In an essay with a least 3 paragraphs and using your own words, describe the information that you have learned about bones.

### **Day of the Dead** (page 14)

- Describe Dia de los Muertos.
- Creative Work: Create decorations for this day of celebration.

### **Fins, Fingers, Wings and Hooves** (pages 15-19)

Vocabulary: vertebrates, evolved, tetrapods and paleontologist.

Use these ideas with this article:

- Choose 3 creatures and describe how they use their limbs.
- Explain why animals/humans that look so different on the outside can be similar on the inside.
- Describe how vertebrates evolved 350 million years ago.
- Explain why a certain **lobe-fin** fish was important to evolution.
- Tell why scientist Neil Shubin's discovery was very important.
- Describe the earliest tetrapods.
- Explain why the variety of tetrapods increased over time.
- Creative Work:
  1. Use a title such as one of the following: **Alike but Different, From Sea to Land** or **Evolution of Tetrapods**. Using your own words and the information from this article develop a 3 paragraph essay.
  2. Create pictures and/or diagrams to accompany your written work.

### **Where Do You Keep Your Skeleton?** (pages 20-23)

Vocabulary: exoskeleton, chitin, calcium, endoskeleton and hydrostatic skeleton

Use these questions/suggestions as leads for discussion:

- Describe the purpose of a skeleton.
- What is an exoskeleton?
- What is the purpose of an exoskeleton?
- What are the drawbacks of an exoskeleton?
- Explain what happens if a creature gets too big for its exoskeleton. Give examples.
- How does an endoskeleton help people?
- What is an advantage to having an endoskeleton?
- Name an advantage that a hydrostatic skeleton creature has over others.

### **What the Bones Say** (pages 24-27)

Ideas to use with this article:

- What stories/information did the burials at Fort James provide the anthropologists?
- Use this chart to organise information about the skeleton of Richard.

### Age of Skeleton

Item	Important Information for Scientists	Age/Findings
Femur		
Teeth		
Male/Female		

- Explain the conclusion regarding Richard's death.
- What was La Isabela?
- Explain how tooth enamel helps scientists.
- Why did two of the skeletons differ from the others?
- Why was there a burial site located in New York City at that time period?
- Describe what the scientists concluded about the bones they had studied.

### Jimmy the Bug

- Use your own words to describe how a seashell finds its way onto the beach.

### Marvin and Friends

- Why was Bone Pony the hit of the party?

### Don't Forget-

- To learn more about Tiktaalik at [tiktaalik.uchicago.edu](http://tiktaalik.uchicago.edu)
- To explore Jamestown at [askmagkids.com/links](http://askmagkids.com/links)
- To enter the contest on page 31, or to follow the instructions and share your work with your classmates.