

The Secrets of Fossils - Page 1

Video worksheet - Student's edition

Shape of Life

Video 1

Introduction: A New View of the Evolution of Animals

As you watch the video, take notes and look for answers to the following questions.

1. What four stages of evolution in the history of life does the narrator mention?

2. The narrator comments that there are four exciting branches of evolutionary biology working together today to help us learn what animals' shapes can tell us about their history. Take notes about each of the following branches of evolutionary biology and how they contribute to our understanding of the science:
 - a. Paleontology

 - b. Genetics

 - c. Embryology

 - d. Anatomy

Video 2

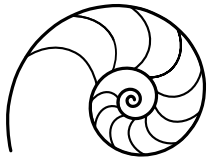
Cambrian Explosion

As you watch the video, take notes and answer the following questions.

- a. What was the Cambrian Explosion?

- b. What mystery are the scientists trying understand?

- c. Why is the Burgess Shale important to evolutionary biologists?



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- d. What was life like before the Cambrian explosion?

- e. What are some traits that characterize organisms that emerged during the Cambrian?

- f. What hypotheses do the scientists in the video have to explain the Cambrian Explosion?

- g. How is the elephant linked to the tiny Pikaia?

Video 3

Jenny Clack, Paleontologist: The First Vertebrate Walks on Land

As you watch the video take notes and answer the following questions.

1. What discovery does Jenny Clack make?

2. What characteristics does Jenny's fossil have that links land and water tetrapods?

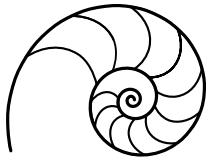
Video 4

Des Collins, Paleontologist: The Burgess Shale

As you watch the video take notes and answer the following questions.

1. What information does this video add to what you have already learned about fossils as missing links?
About anamolocaris?

2. How would you describe the process of piecing together various fossils?



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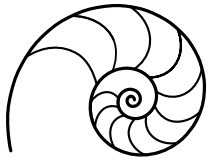
Video worksheet continued - Student's Edition

Look at the cutout pictures of ancient fossils and modern organisms your teacher provided. Match the ancient, Cambrian fossil with the modern day organism to which each is most closely related. Write the connections in the table below and then answer the questions.

Name of Ancient Fossil	Name of Modern Organism

1. How did you determine which animals were related?

2. After more than 500 million years there are animals still living today that look similar to those that came into being during the Cambrian Explosion. With all the animal diversity that has evolved why do you think similar looking animals still exist?



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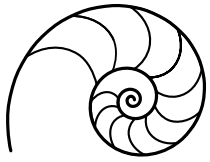
3. What are some differences between the modern animals and the fossils from the Cambrian period?

Problem:

Using the Science Research Worksheet, ask students to work in groups or pairs and brainstorm the solution to the following problem: Imagine you are a paleontologist. You have found a fossil from the Cambrian period. There are many similarities between the fossil animal and a modern organism, the lobster. You hypothesize that the lobster descended from an ancient group of animals similar to the fossil, but many of your colleagues think you are mistaken; that the modern organism is related to a different ancient organism. What evidence would you look for to connect your organism to the Cambrian fossil?

Step 1 - Brainstorm

To solve this problem, I would look for...



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Step 2 - Compare

Watch the third video, *Jenny Clack, Paleontologist: The First Vertebrate Walks on Land*. Take notes and answer the questions on the Video Worksheet, keeping the above problem in mind as you watch.

Step 3 - Make Connections

After watching the video, review the statement you wrote above. How would the fossil record help you make the connection between your modern organism and the Cambrian fossil?

The fossil record would help me by...

Step 4 - Apply

In the video *Cambrian Explosion*, you met the organisms *Anomalocaris*, *Opabinia*, and *Wiwaxia*. Research these animals in the library or on the Internet.

1. What confusion lies in the history of these organisms?

2. What information would help determine how they should be classified?