

# Skeletons Reveal Human and Chimpanzee Evolution Student Worksheet



## About This Worksheet

This worksheet complements the Click and Learn “Skeletons Reveal Human and Chimpanzee Evolution” developed in conjunction with the 2011 Holiday Lectures on Science, “Bones, Stones, and Genes: The Origin of Modern Humans”.

**Author:** Mark Eberhard, St. Clair High School

**Web Link:** [www.hhmi.org/biointeractive/skeletons-reveal-human-and-chimpanzee-evolution](http://www.hhmi.org/biointeractive/skeletons-reveal-human-and-chimpanzee-evolution)

**Click the arrow in the bottom right corner of the screen to proceed to Slide 2 and begin the Click and Learn.**

1. What is a phylogenetic tree used to illustrate? \_\_\_\_\_  
\_\_\_\_\_

**Proceed to Slide 3. Click on the video of Dr. Tim White to listen to his description of the human branch of the tree of life, then answer the following questions.**

2. Based on genetic evidence, humans are most closely related to which two species? \_\_\_\_\_  
\_\_\_\_\_
3. Are humans more closely related to gorillas or orangutans? State the evidence. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Proceed to Slide 4. Click on the video of Dr. White to listen to the explanation of human evolution and answer the following question.**

4. Charles Darwin proposed that modern humans directly descended from chimpanzees. Support or refute this statement with evidence from the video clip. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Proceed to Slide 5. Click on the video of Dr. White to listen to his description of the human branch of the tree of life and then answer the following questions.**

5. What is a hominid (or hominin)? \_\_\_\_\_  
\_\_\_\_\_
6. *Australopithecus* is an early hominid that is now extinct. Why does Dr. White contend that *Australopithecus* is not completely gone? \_\_\_\_\_  
\_\_\_\_\_

**Proceed to Slide 6**

7. Identify at least TWO sources of data scientists can compare to determine the evolutionary relationships between two or more species? \_\_\_\_\_

**View Slides 7 through 12; as you proceed through the slides answer the following question.**

8. Bones are one anatomical feature that can provide a wealth of information. List SEVEN things scientists can learn about an organism by examining its bones.
- a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_
  - e. \_\_\_\_\_
  - f. \_\_\_\_\_
  - g. \_\_\_\_\_

**Proceed to Slide 13. Click on the video of Dr. White to listen to his description of the discovery of *Ardipithecus ramidus*, or Ardi, and then answer the following questions.**

9. Once the finger bones of Ardi were discovered, why does the crew begin to excavate and sieve the surrounding area? \_\_\_\_\_  
\_\_\_\_\_
10. What is the point of marking the excavation site with small yellow flags? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
11. Why did the excavation site for Ardi need to remain wet? \_\_\_\_\_  
\_\_\_\_\_

Proceed to Slide 14. Click each of the anatomical structures to compare Ardi's teeth, pelvis, and feet with those of chimpanzees and humans.

12. List the key features of each structure in the table below .

Anatomical Structure		Chimpanzee	<i>Ardipithecus</i>	Humans
Teeth				
Pelvis	Ilium			
	Ischium			
Feet				

13. State which conclusions can be drawn from each set of information.

- a. Conclusions from teeth comparisons ... \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- b. Conclusions from pelvis comparisons ... \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- c. Conclusions from feet comparisons ... \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

When you have completed the comparisons, click on “Continue to Summary.” This will take you to Slide 15. Proceed to Slides 16 to 20. On slide 18, click on the video of Dr. White discussing Ardi’s unique features and then answer the following question.

14. Where does Ardi belong on the tree of life? State the evidence. \_\_\_\_\_

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15. Based on your answer above, is Ardi the common ancestor to humans and chimps? State the evidence.

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#### About the Holiday Lectures on Science and BioInteractive.org

As part of its mission to strengthen science education, HHMI presents the Holiday Lectures on Science, an annual series that brings the latest developments in a rapidly moving field of research into the classroom. The lectures are given by HHMI investigators and other leading scientists. The series began in 1993.

To complement the Holiday Lectures and enhance their usefulness in the classroom, HHMI produces a variety of free science education materials. Lecture summaries, biographies of the lecturers, and other resources are available at [www.holidaylectures.org](http://www.holidaylectures.org). DVDs and CD-ROMs can be ordered through HHMI’s Catalog at <http://catalog.hhmi.org>.

The BioInteractive website ([www.BioInteractive.org](http://www.BioInteractive.org)) features virtual labs, animations, and other engaging instructional materials. They can be used to supplement the lecture topics or to learn important concepts in the biomedical sciences.

**HHMI**  
HOWARD HUGHES MEDICAL INSTITUTE

Department of Science Education

4000 Jones Bridge Road, Chevy Chase, MD 20815  
(301) 215-8500 • [biointeractive@hhmi.org](mailto:biointeractive@hhmi.org)

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