

# Why is Labor a Pain?

## Teacher sheet

This lesson is in the format of a web quest. It was prepared using a free teacher resource called Trackstar 4 Teachers. This resource is available at <http://trackstar.4teachers.org/>. The track number is 292491. Students explore 8 web resources, which explain the evolutionary compromises made in the body to allow humans to become bipedal (walk on 2 legs). At the conclusion of the exercise students should be able to discuss the evolutionary compromises that allow us to be bipedal. They should also be able to make a reasonable prediction about the direction of future evolutionary changes and to defend their arguments. Students should work in groups of two at each computer.

### Site 1-Building Bodies

<http://www.becominghuman.org>

**Learning Objective:** Student will compare and contrast the human and chimpanzee skeletons.

### *Annotations*

According to DNA evidence the chimpanzee is our closest evolutionary relative.

Click on LEARNING CENTER

Click on BUILDING BODIES

Assemble the skeletons

Name 3 similarities between the two skeletons.

Name 3 differences between the 2 skeletons.

Which bones were hardest to place?

## Site 2-Bipedal Evolution

<http://en.wikipedia.org/wiki/Biped#Evolution>

**Learning objective:** Student will explore possible hypotheses for the origin of human bipedal locomotion.

### *Annotations*

A major trait that sets humans apart from other primates is that they are bipedal.

What does Bipedal mean?

Name two Bipedal mammals.

Write a one-sentence summary of each of the hypotheses that explains why people might have become bipedal.

## Site 3-Walking Tall

[http://www.pbs.org/wgbh/evolution/library/07/1/1\\_071\\_02.html](http://www.pbs.org/wgbh/evolution/library/07/1/1_071_02.html)

**Learning objective:** Students will observe the differences between the skeleton of a chimp and the skeleton of a human and the evolutionary rationale behind the traits.

### *Annotations*

Watch the video.

## Site 4- Comparing the Human and Chimp Pelvic Bones

<http://www.eskeletons.org/>

**Learning objective:** Student will analyze differences and similarities between the pelvic bones of the chimp and the humans.

### *Annotations*

Click on COMPARATIVE ANATOMY  
Under TAXON choose HUMAN and CHIMPANZEE  
Under BONE choose OS COXAE (hip bone)  
Under VIEW choose VENTRAL

Describe in several sentences how the two bones differ.

Click LATERAL view.

How are these bones different? State some possible reasons why these two bones are so different, despite serving similar functions.

## **Site 5- Evolution and Human Childbirth**

<http://www.udel.edu/PR/Messenger/93/3/28.html>

***Learning Objective:*** Students summarize how bipedalism has affected human childbirth.

### ***Annotations***

Read the article. Write a paragraph describing how bipedalism has affected human childbirth.

## **Site 6- Pelvic outlet size**

<http://www.indiana.edu/~ensiweb/pelves.html>

***Learning Objective:*** Students will analyze differences in the infant head size/pelvic outlet ratio.

### ***Annotations***

Compare the sizes of the pelvic outlets.

The pelvic outlet is the opening in the pelvic bone through which the emerging infant must pass.

Which organisms have the smallest outlets?

Which organisms have the largest?

Which organisms have "tightest fit"?

How might this affect the delivery of an infant?

## **Site 7- The Twists and Turns of Childbirth**

<http://www.embarazada.com/grafico/mpg/partonatural/partonorm1.mpg>

***Learning Objective:*** Students will view a vaginal delivery of an infant.

### ***Annotations***

Watch the video depicting human birth.

## **Site 8-The Big Compromise**

<http://www.mc.maricopa.edu/~reffland/anthropology/anthro2003/origins/development.html>

***Learning Objective:*** Students will predict the pattern that the evolution will take in these areas in the next 100,000 years.

### ***Annotations***

Read the article. What is the big compromise? Predict how humans will evolve in these areas (birth, development, bipedalism, etc.) in the next 100,000 years. Be sure to explain your reasoning.