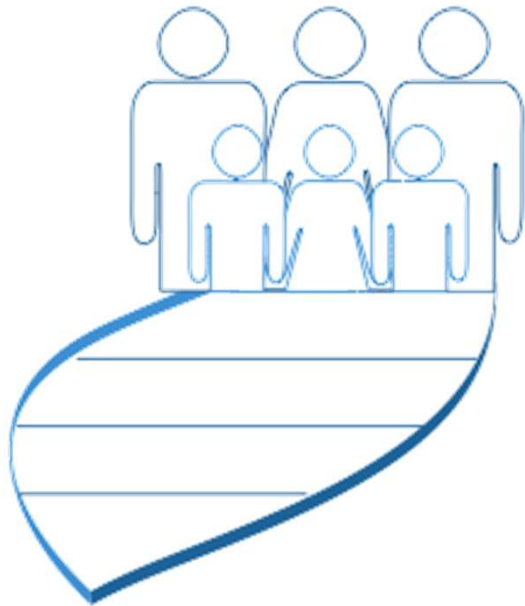


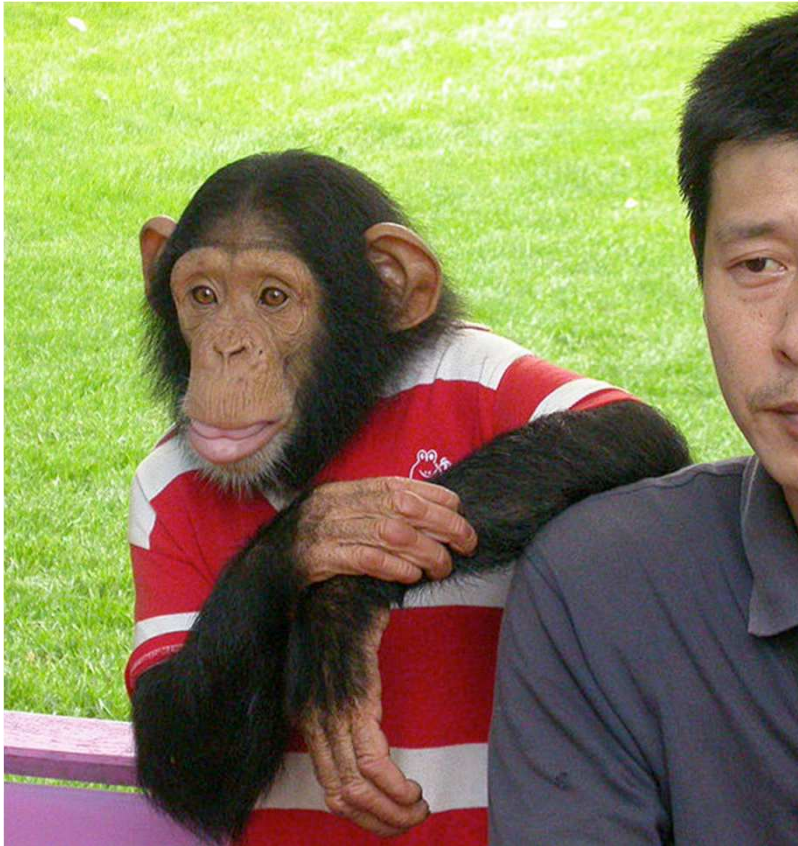
Life Sciences/HHMI
OutReach
PROGRAM



Summer 2009 Workshop
in Biology and Multimedia
for High School Teachers

“No Fur, No Fur!”
Natural Selection and
Homeostasis
By Tracy H. Haswell

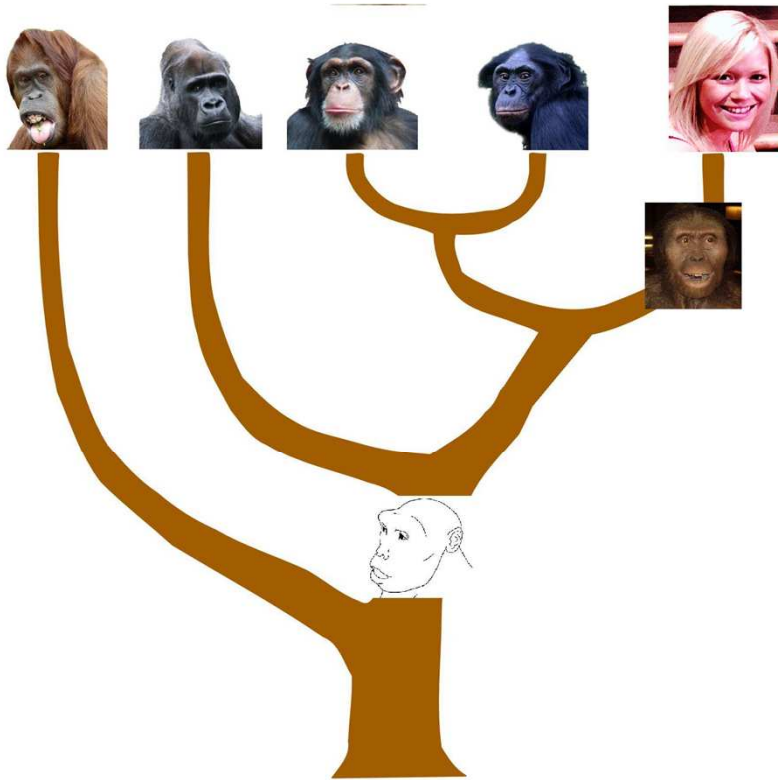
Introduction



<http://commons.wikimedia.org/wiki/File:Chimpanzee.jpg>

- It is thought that humans were naked for more than a million years before we started wearing clothes.
- Really?
- Our closest relatives the chimpanzee have fur, so why did we lose ours?
- Studies show that although humans have the same amount of hair follicles as our fur wearing ancestors, this fur was replaced with the fine hair we have now.
- In this activity students will explore the mechanisms of natural selection in relation to the loss of fur in humans.
- Students will further study the homeostatic mechanisms of thermoregulation and the idea that the loss of fur gave humans an adaptive temperature regulating advantage.

Student Objectives



http://commons.wikimedia.org/wiki/File:Ape_and_Human_Evolution_Tree.JPG

1. Explore the three theories explaining why humans are the only “hairless” primates
2. Students will create a natural selection storyboard which explains how natural selection could have operated making furless humans better adapted to their environment.
3. Depending on time, students can end with a brief class presentation on the storyboard they created or translate the storyboards into PowerPoint presentations, story books or poster presentations.
4. Students will design a model experiment with the goal of testing the thermoregulatory benefits of being furless.

“No Fur, No Fur!” Part I

Three Theories

- Distribute and have students read articles 1 and 2:
 - ○ 1. “What is the latest theory of why humans lost their body hair? Why are we the only hairless primate?” by Mark Pagel, Scientific American June 4, 2007.
<http://www.scientificamerican.com/article.cfm?id=latest-theory-human-body-hair>
 - ○ 2. “Why Humans and Their Fur Parted Ways” by Nicholas Wade The New York Times, August 19, 2003 .
<http://www.nytimes.com/2003/08/19/science/why-humans-and-their-fur-parted-ways.html>
- Have students complete the “Why Did Humans Lose Their Fur? Three Theories ” Handout

Name of Theory	Description
Aquatic	
Parasites	
Temperature	

“No Fur, No Fur!” Part II

Natural Selection Storyboards

- Distribute Storyboard handout
- Students will pick or be assigned one of the 3 explanations for the loss of fur and make a storyboard scenario of at least 4 and no more than 8 panels, which will illustrate one of the 3 theories explaining why humans lost their fur.
- Student groups briefly present their storyboards to the class
- Teachers may want students to translate their storyboards into PowerPoint presentations, story books or poster presentations

What is a Storyboard?

- “Once a concept or script is written for a film or animation, the next step is to make a storyboard.
- A storyboard visually tells the story of an animation panel by panel, kind of like a comic book.”

(<http://accad.osu.edu/womenandtech/Storyboard%20Resource/>)

“No Fur, No Fur!” Part III

Model Temperature Regulation

Lab

- Distribute Lab Template
- Formulate lab groups
- Have students brainstorm ideas in groups as to how they will test the thermoregulatory benefit of hair loss in humans
- Have students fill in the lab template with their own original design to test the thermoregulatory benefit of fur loss in humans

Model Lab Introduction

- Since our ancestors were very physically active as hunters and gatherers design a laboratory in which subjects exercise.
- Temperature regulation during exercise will be examined under normal conditions and conditions in which a person is given something to wear that simulates having apelike fur.
- In designing this lab make sure you identify your control and explain how you will simulate a “furry” human.
- Although your lab is a model and not a lab you will be performing, please make sure it is realistic and includes both qualitative and quantitative measurements.

The Thermoregulatory Advantage of Losing Fur: A Model Lab

- **Purpose:**
- **Hypothesis:**
- **Experiment:**
 - **Materials**
 - **Procedure**
 - **Control**
 - **Dependent and Independent Variables**
- **Predicted Results and Conclusion**

Conclusion



<http://en.wikipedia.org/wiki/File:PetrusGonsalvus.jpg>



<http://en.wikipedia.org/wiki/File:StephanLionFacedMan.jpg>

- Did we really lose our fur?