BI 101

Deep History of Life on Earth BioInteractive – Howard Hughes Medical Institute

<http://media.hhmi.org/biointeractive/click/deeptime/>

The interactive website (that requires Adobe Flash Player installed on your computer) provides you with a variety of multimedia resources to further explore the progression of life as it evolved throughout time. There are 2 parts to this interactive site. At the top you will see the timeline expressed in millions of years. The timeline is marked at various points with key events that helped shape the landscape of the planet. Near the bottom of the page there is a simplified tree of life, giving you a progression of organisms as they evolved, as well as demonstrate some of the evolutionary relationships some of the major groups have with each other.

When first arriving at the website, the Introduction pop up window should automatically be open. If it is not, click on the Introduction button in the top left hand side of the page. Notice the arrow buttons that you can use to advance the scene and move the timeline forward. By clicking on the advance arrow three times, the timeline expands on the third click to get a more detailed view of the last 500 million years of earth’s history. Read through the instruction before exploring further.

Practically everything in this BioInteractive Click and Learn activity is “clickable”. As you scroll the mouse pointer over the various pictures, you can click on each to view pop-up windows that explore that point in geological history period. Some of the pop-ups have short video segments (1 – 2 minutes long) or interactive animations in them. These may go a bit more in depth that is required for our knowledge, but still worth exploring for funsies!

Answer the following questions as you explore this fantastic resource.

1. How long ago does the first evidence of life appear?
2. What is the name of the organism responsible for accumulation of oxygen in the atmosphere?
3. List some of the molecules that the first organism used to obtain energy from. (I.e. what types of compounds did the first microorganisms metabolize?)
4. Which domain of bacteria does this site suggest gave rise to the eukaryotes?
5. In the lecture materials you learned about the endosymbiont hypothesis. Explain in your own words how this hypothesis explains how eukaryotic life emerged. How is this hypothesis reflected in the tree of life displayed on this interactive timeline?
6. How long ago did the first eukaryotes appear in the fossil record?
7. The earliest eukaryotic fossils have the appearance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. How long ago did the common ancestor of chimpanzees and humans diverge? Explain how this ancestor ties together human and chimpanzee species relationships?
9. Using the tree of life as a guide, create your own timeline of life as it appeared through time. Use your own words and descriptions to mark the major events described in this site. Your goal here is to develop a true understanding of the order of appearance of all the forms of life that you will be exploring in the rest of the course. Keep in mind that memorizing dates is less important that the relative positions of each major event. Entering into the diversity modules with a firm understanding of this timeline will increase your understanding and the connections that you make wit h the material yet to come.