

STEM *Sims*™

Evolutionary Change



Evolutionary Change

**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Start learning right now about the wonders of evolution. Take the following brief quiz to see how much you already know about how organisms change over time. See the bottom of page 4 to check your answers.

1. If the DNA in one cell of your body was stretched out completely, about how long would the DNA strand be from one end to the other end?
 - a. 0.0001 inch
 - b. 0.01 inch
 - c. 1 foot
 - d. 6 feet
2. If all the DNA strands in all your body cells were lined up end-to-end and were stretched out completely, about long would the end-to-end DNA strand be from one end to the other end?
 - a. about 0.1 inch long
 - b. about 6 feet long
 - c. about 100 feet long
 - d. over 14 billion miles
3. Humans and apes share about what percentage of common genetic makeup?
 - a. 1 %
 - b. 25%
 - c. 50%
 - d. 90%
4. About what percentage of a human actually consists of human cells and not bacteria and other organisms?
 - a. 40%
 - b. 60%
 - c. 80%
 - d. 99%
5. Humans evolved from apes and chimpanzees.
 - a. true
 - b. false



From the Past to the Present

Modern humans have been around for about 300,000 years. But our ancestors date back millions of years. Can you order the following skull illustrations from oldest to the present? See the bottom of page 4 for the correct answers.



A



B



C



D



E



F



G



H

—
Oldest

—
Present



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The Noise-Cancelling Frog

The mating sound made by a male green tree frog can be as loud as 90 decibels. That's almost as loud as a typical rock concert. You would think that a female green tree frog would have no problem hearing that sound. However, the normal background noise in the area where tree frogs live can be as loud as 50 - 70 decibels. That means the male's sound may be drowned out by other organisms making their noises.

The female frog has developed a unique way to hear only the male tree frog's mating call... she uses a noise-cancelling technique to isolate the male's sound. The female inflates her lungs by a set amount. The degree of inflation is "tuned" to the frequency of the male's mating call. The lungs act as a filter to other frequency sounds which reinforces and amplifies the male's sound.



Now you might think that finding a mate as a tree frog is a simple matter. Not so fast! The tree frog in the image above is an American green tree frog, while the one to the left is a Cope's Grey tree frog. These two frogs are not the same species and therefore cannot reproduce and create offspring. In fact, the two tree frogs have a different number of chromosomes. The male of both species has a unique mating call that sounds alike to the untrained ear but very different to a female tree frog. The female's lung inflation causes the correct male tree frog's sounds to reverberate within her body and lets her know where her potential mate is located.

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STEMsims.com

Answers: Page 2 Answers: 1) d, 2) d, 3) d, 4) a, 5) b. Page 3 From the Past to the Present Answers: 1) Oldest- E, F, B, A, G, D, H, C - Present.

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