🖉🖳Learn Genetics🖮⌛ http://learn.genetics.utah.edu/

Directions: go to the following website: <http://learn.genetics.utah.edu/content/selection/recipe/> Watch the animation and answer the following questions. Then use this handout to complete the crossword puzzle review.

Recipe for Evolution: Variation, Selection & Time

1. The first living thing appeared on earth over
2. The describes how the descendants of this first cell have changed over countless generation to produce the of species on our planet today.
3. The 3 ingredient of this change are
4. The 2 processes that introduce new variation with each generation are
5. The 2 processes stated above are always at work creating this in all life forms.
6. What controls the genetic variations that are kept and the genetic variations that are eliminated?
7. What 3 conditions can eliminate a species. for , and the
8. How does natural selection work with regards to genes and what is passed to the next generation?
9. If natural selection doesn’t have a goal, what is its purpose?
10. Small and gradual changes to influential genes over a long period of time can change a population. What did this generate on our planet?

Now go to the following website: <http://learn.genetics.utah.edu/content/selection/misconceptions/> Watch the animation and answer the following questions. Then use this handout to complete the crossword puzzle review.

Things You May Not Know About Evolution

1. In the game of evolution you don’t have to be the you just have to be better than your
2. Why was moving on land for the first vertebrate a big deal?
3. Evolution can modify existing structures but it has to work within the limits of what is
4. If both humans and other mammals have a larynx, why is it that these other mammals cannot speak?
5. Evolution is not climbing a ladder toward perfection. Why is it advantageous for the ice fish NOT to have red blood cells?
6. How does the parasitic tapeworm obtain its nutrients if it has not digestive system?
7. How does natural selection maintain the traits needed for survival?
8. About how many genes have been preserved over billion years of evolution.
9. What do these 500 genes code for?
10. If a structure is not used and doesn’t affect an animal’s survival, what happens to genes of that structure?
11. What is a theory?
12. If evolution doesn’t explain how life began, what does it explain?
13. Does the number of chromosome determine an organism’s complexity? Explain
14. Explain why evolution is not linear.

Now go to the following website: <http://learn.genetics.utah.edu/content/selection/sources/> Watch the animation and answer the following questions. Then use this handout to complete the crossword puzzle review.

Sources of Variation

1. How does diversity begin?
2. Genes come in with slightly different Each version functions a little differently; for example, two versions of the same gene can produce either brown or blue eyes.
3. What is the primary source of variation for all life forms, from bacteria to humans to large giant sequoia trees.
4. Mutations are like in the DNA coping process. Common mutations involve miscopying a Some mutations involve
5. Mutations that are passed to offspring occur in what type of cells?
6. (circle) True or False? We have mutations in our DNA that was not present in our parents.
7. Mutations occur at random throughout the . In coding regions, mutations can change the of a protein. In controlled regions (called ), mutations can change the timing, location and level of gene activation.
8. Whether a mutation conveys and advantage, disadvantage, or is neutral depends on the organisms’
9. What is the second source of variation is called? What does it do?
10. In organisms that reproduce sexually, how is recombination accomplished?
11. The random processes of mutations and recombination create . The nonrandom process of natural selection acts on this variation.
12. What does natural selection ensure regarding favorable variations, harmful mutations and unfavorable gene combinations?

Now go to the following website: <http://learn.genetics.utah.edu/content/selection/artificial/> Watch the animation and answer the following questions. Then use this handout to complete the crossword puzzle review.

Artificial vs. Natural Selection

1. With the millions of different species on our plant, what is it that these species are competing for?
2. What does natural selection favor regarding the millions of different species?
3. What is selective breeding or artificial selection?
4. What is the goal of natural selection?
5. What is the goal of artificial selection?
6. Two animals are in the “wild”. One was made through artificial selection while the other through natural selection? Which would one survive? Why? Explain.
7. Who has been given credit for the term evolution? Where did he visit and gathered data to support the theory of evolution?
8. What animal did he study? What body structure did he study?
9. What did he conclude regarding the body structure of the above animal?

Now go to the following website: http://learn.genetics.utah.edu/content/selection/related/ Watch the animation and answer the following questions. Then use this handout to complete the crossword puzzle review.

All Living Things are Related

1. Identify evidence that reveal all living things are related?
2. What do the similarities suggest about all living things?
3. What is a phylogenetic tree?
4. What is it about the Tiktaalik that provides evidence of evolution?
5. The fossil shows that birds evolved from reptiles because
6. Fossils documents how mammals transitioned back to the sea. The was the first animals to have four webbed feet.
7. What is a vestigial structure or in the case of the whale, a vestigial leg?

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| 1. (circle) True or False? Whales have legs. 2. Identify the embryos on the right 🡪 3. Both humans and fish have a series of pouches near the developing throat. What do these pouches develop into? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  How are all speices similar at the molecular level? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |

1. How many genes do all species have that are the same? .
2. How closely related are we to chimpanzees?