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**BIO- Chpt. 10 Sec 10.1**

Web Quest on Evolutionary Thinkers

**Objective**: Students will be able to identify and describe the scientific minds behind the theory of evolution.

When most people think about the topic of evolution, one name comes to mind: Charles Darwin. However, before Darwin developed and investigated his theory, there were many more scientists exploring the idea. By completing this Web Quest, you will be teaching yourself about these scientists and looking at the influences that they had on developing the theory of Evolution. Before you begin your own exploration, here is some information that you should know about evolution.

**“Evolution** is the process of biological change by which descendants come to differ from their ancestors (Nowicki, 2008).” Evolution can take place on a small scale, when one generation differs from the next, or it can take place on a large scale, when a species differs from the generations previous to it over multiple generations. The basic principle of evolution is that all species on Earth share a single common ancestor. The concept of evolution helps us to understand the history of life.

Once you have logged onto your computer open the Internet Explorer and type in the following web address: [**http://www.ucmp.berkeley.edu/history/evotmline.html**](http://www.ucmp.berkeley.edu/history/evotmline.html)

This timeline is a representation of all of the scientific minds that had a part in the evolution of the theory of evolution. We are going to begin our quest by looking at a man who is considered to be a modern thinker, Georges Louis Leclerc de Buffon.

**Georges Louis Leclerc de Buffon**

Students should type in the following web address:

[**http://www.ucmp.berkeley.edu/history/buffon2.html**](http://www.ucmp.berkeley.edu/history/buffon2.html)

Once the page has loaded, students should read the brief excerpt about Buffon and answer the following questions.

1. How many years before Darwin, did Buffon propose the idea that man and ape had a similar ancestry? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Buffon wrote a 44-volume encyclopedia in order to describe his scientific ideas. Name the title of this collection of works. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Gregor Mendel: The Father of Genetics**

Students should type in the following web address: [**http://naturalselection.0catch.com/Files/gregormendel.html**](http://naturalselection.0catch.com/Files/gregormendel.html)

Once the page has loaded, students should begin reading the biography on Mendel and answer the following questions.

1. Identify when was Gregor Mendel born? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Classify the plant that Mendel worked with which led to great scientific advancement. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Mendel developed two laws based off of his experiments. Name the two laws. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Mendel observed that the plants retained traits of the parental generation and therefore he assumed that the plants were not influenced by what external factor. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

After answering these questions scroll further down the page until you reach the section titled Mendel and Darwin. Read this excerpt and answer the following questions.

1. List and describe the two theories that Mendel rejected. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Mendel did not believe in change, he believed in something else that he mentioned 67 times in one of his papers. State the concept that Mendel believed in. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Carl Linnaeus: The Father of Taxonomy**

Students should type in the following web address:

[**http://www.ucmp.berkeley.edu/history/linnaeus.html**](http://www.ucmp.berkeley.edu/history/linnaeus.html)

Answer the following questions using the section titled **Biography of Linnaeus.**

1. In 1727 Linnaeus attended what University in order to study medicine? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Describe Linnaeus’ true passion. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. In 1735 Linnaeus published his first work. Name the title of this work. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. In order to collect information on plants around the world, identify what Linnaeus did. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

After answering these questions scroll further down the page until you reach the section titled Linnaeus’ Scientific Thought. Read this excerpt and answer the following questions.

1. Linnaeus said that species could be grouped into higher categories called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The grouping of species into higher catergories was based off of what principle? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Linnaeus developed a way of naming organisms that was simpler than what had been established and it was accepted across the world. Name this system of classification. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Linnaeus originally thought that species were unchangeable; however, after further study he altered his opinion. Define his belief about how species developed from a genus after the creation of the earth. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Erasmus Darwin**

Students should type in the following web address:

[**http://www.ucmp.berkeley.edu/history/Edarwin.html**](http://www.ucmp.berkeley.edu/history/Edarwin.html)

Students should answer the following questions while reading the passage provided.

1. Identify the familial relationship between Erasmus Darwin and Charles Darwin. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Name the theory that Erasmus developed. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Erasmus believed that all organisms and life evolved from a common ancestor. State the phrase he used to describe this observation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Identify the two qualities that Erasmus believed influenced a change in a species. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Jean-Baptiste Lamarck**

Students should type in the following web address:

[**http://www.ucmp.berkeley.edu/history/lamarck.html**](http://www.ucmp.berkeley.edu/history/lamarck.html)

Students should scroll down the webpage until they reach the section titled Biography of Lamarck. Once their students should read the passage and answer the following questions.

1. Record the job that Lamarck had once he was employed at the royal botanical garden. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. State the term that Lamarck developed once he had a job working as a professor of the natural history or worms and insects. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Name the 1809 work that clearly described Lamarck’s view on evolution. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

After answering these questions scroll further down the page until you reach the section titled Lamarck’s Scientific Thought. Read this excerpt and answer the following questions.

1. Explain the basic idea of “Lamarckism (Jean-Baptiste Lamarck).” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. According to Lamarck a change in the environment causes what two other changes to occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Define the “first law (Jean-Baptiste Lamarck)” developed by Lamarck. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Lamarck looked at evolution as a way to reach perfection, disputing the idea that evolution is driven by what? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Georges Cuvier: Father of Comparative Anatomy**

Students should type in the following web address:

[**http://www.ucmp.berkeley.edu/history/cuvier.html**](http://www.ucmp.berkeley.edu/history/cuvier.html)

Students will read the following passage on Cuvier and answer the following questions.

1. In 1795, Cuvier was asked to come to Paris. Once there he became a professor on what subject? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Name the animal Cuvier studied in order to develop his ideas on comparative anatomy. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. List the four branches of animals that Cuvier established. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Describe the reason for similarities amongst organisms according to Cuvier. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Name the concept that Cuvier established that would change the field of biology. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Recall what Cuvier called the massive periods of extinction throughout the Earth’s history? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Charles Darwin**

Students should type in the following web address:

[**http://darwin-online.org.uk/darwin.html**](http://darwin-online.org.uk/darwin.html)

Once the passage appears on the computer screen, students should read the web page about Charles Darwin. As they read through the piece they should answer the following questions.

1. In October of 1827 Darwin was accepted to Christ’s College; however, he did not truly start attending until what date? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Darwin was not considered to be the best student at the University. Name the activity he spent most of his time doing along with his fellow classmates. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Name the ship that Darwin traveled on in order to continue his studies and further his interest in naturalism. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Darwin’s trip around the world lasted for five years. Out of these five years, Darwin recorded most of his information while visiting what South American lands? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Classify who the geologist that greatly influenced Darwin was. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. After looking at the specimens that he collected, Darwin was informed that the species he had found were not located anywhere else. With this notion Darwin began to dig around and assess how certain breeds came to be. As he continued to study these unique organisms he came to what conclusion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Name the plant that Darwin believed life was like. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Name the group of causes that led to the ability to survive and reproduce over a period of time, according to Darwin. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. According to Darwin’s autobiography, what type of traits would be expressed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. “As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form (Charles Darwin: gentleman naturalist).” From this quote we can see that Darwin believed only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ would be able to pass their genetic material to their offspring.
11. In what year did Darwin create his essay outlining the theory of evolution? \_\_\_\_\_\_\_\_\_\_
12. At a point in time another naturalist by the name of Wallace sent a letter to Darwin outlining his ideas based off of findings in South East Asia. When reviewing the information, Darwin saw that Wallace’s ideas were similar to that of his. Therefore, in July Darwin decided to have his writings read to the Linnean Society. From this reading Darwin’s most famous publication was written. Name this publication. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. List the three main aspects that contributed to evolution according to Darwin’s *Origin of Species.*

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1. Darwin outlined some of the observations he made on the Galapagos Islands, which showed natural selection. Identify the birds he used to support his theory. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. State how Darwin believed that particular species came to be. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. In the year 1909, scientists gathered in order to celebrate the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ anniversary of Darwin’s *Origin of Species.*

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