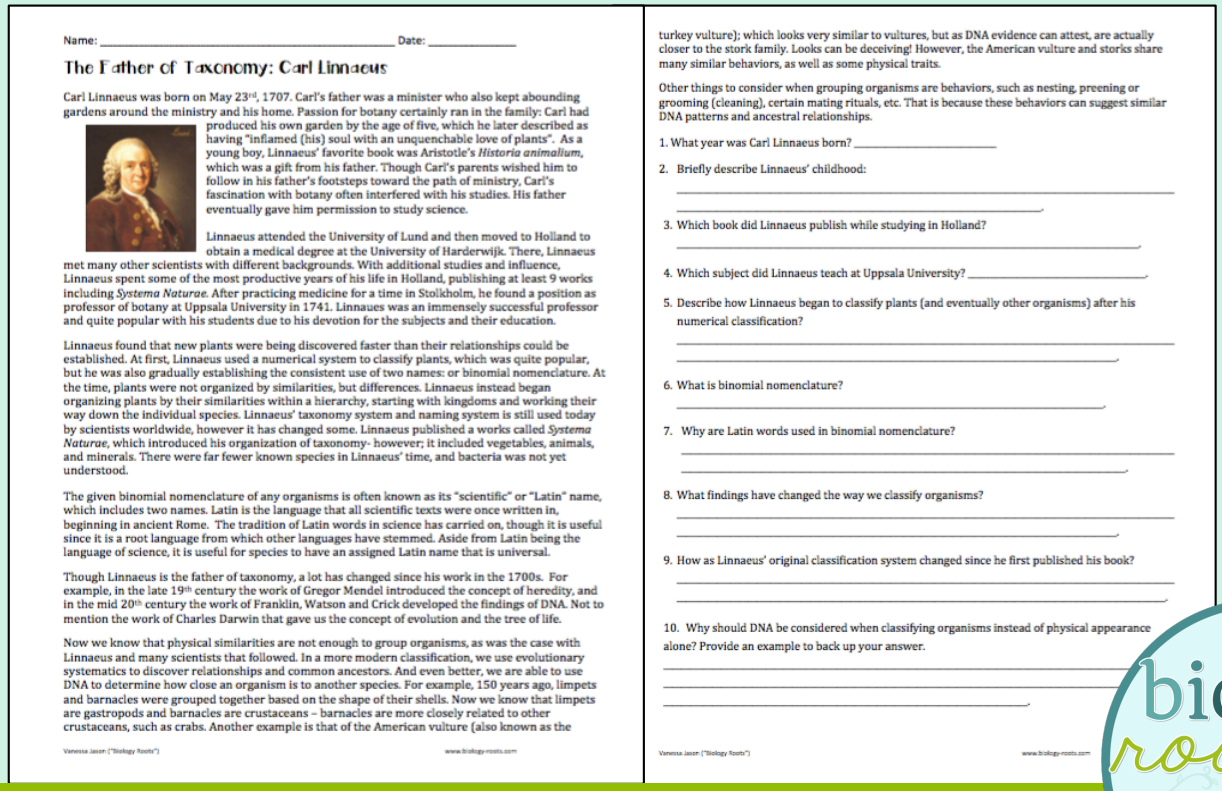
classification Close Reading



Name: _____ Date: _____

The Father of Taxonomy: Carl Linnaeus

Carl Linnaeus was born on May 23rd, 1707. Carl's father was a minister who also kept abounding gardens around the ministry and his home. Passion for botany certainly ran in the family: Carl had produced his own garden by the age of five, which he later described as having "inflamed (his) soul with an unquenchable love of plants". As a young boy, Linnaeus' favorite book was Aristotle's *Historia animalium*, which was a gift from his father. Though Carl's parents wished him to follow in his father's footsteps toward the path of ministry, Carl's fascination with botany often interfered with his studies. His father eventually gave him permission to study science.

Linnaeus attended the University of Lund and then moved to Holland to obtain a medical degree at the University of Harderwijk. There, Linnaeus met many other scientists with different backgrounds. With additional studies and influence, Linnaeus spent some of the most productive years of his life in Holland, publishing at least 9 works including *Systema Naturae*. After practicing medicine for a time in Stolkholm, he found a position as professor of botany at Uppsala University in 1741. Linnaues was an immensely successful professor and quite popular with his students due to his devotion for the subjects and their education.

Linnaeus found that new plants were being discovered faster than their relationships could be established. At first, Linnaeus used a numerical system to classify plants, which was quite popular, but he was also gradually establishing the consistent use of two names: or binomial nomenclature. At the time, plants were not organized by similarities, but differences. Linnaeus instead began organizing plants by their similarities within a hierarchy, starting with kingdoms and working their way down the individual species. Linnaeus' taxonomy system and naming system is still used today by scientists worldwide, however it has changed some. Linnaeus published a works called *Systema Naturae*, which introduced his organization of taxonomy- however; it included vegetables, animals, and minerals. There were far fewer known species in Linnaeus' time, and bacteria was not yet understood.

The given binomial nomenclature of any organisms is often known as its "scientific" or "Latin" name, which includes two names. Latin is the language that all scientific texts were once written in, beginning in ancient Rome. The tradition of Latin words in science has carried on, though it is useful since it is a root language from which other languages have stemmed. Aside from Latin being the language of science, it is useful for species to have an assigned Latin name that is universal.

Though Linnaeus is the father of taxonomy, a lot has changed since his work in the 1700s. For example, in the late 19th century the work of Gregor Mendel introduced the concept of heredity, and in the mid 20th century the work of Franklin, Watson and Crick developed the findings of DNA. Not to mention the work of Charles Darwin that gave us the concept of evolution and the tree of life.

Now we know that physical similarities are not enough to group organisms, as was the case with Linnaeus and many scientists that followed. In a more modern classification, we use evolutionary systematics to discover relationships and common ancestors. And even better, we are able to use DNA to determine how close an organism is to another species. For example, 150 years ago, limpets and barnacles were grouped together based on the shape of their shells. Now we know that limpets are gastropods and barnacles are crustaceans – barnacles are more closely related to other crustaceans, such as crabs. Another example is that of the American vulture (also known as the

turkey vulture); which looks very similar to vultures, but as DNA evidence can attest, are actually closer to the stork family. Looks can be deceiving! However, the American vulture and storks share many similar behaviors, as well as some physical traits.

Other things to consider when grouping organisms are behaviors, such as nesting, preening or grooming (cleaning), certain mating rituals, etc. That is because these behaviors can suggest similar DNA patterns and ancestral relationships.

1. What year was Carl Linnaeus born? _____
2. Briefly describe Linnaeus' childhood:
   _____
   _____.
3. Which book did Linnaeus publish while studying in Holland?
   _____.
4. Which subject did Linnaeus teach at Uppsala University? _____.
5. Describe how Linnaeus began to classify plants (and eventually other organisms) after his numerical classification?
   _____
   _____.
6. What is binomial nomenclature?
   _____.
7. Why are Latin words used in binomial nomenclature?
   _____
   _____.
8. What findings have changed the way we classify organisms?
   _____
   _____.
9. How as Linnaeus' original classification system changed since he first published his book?
   _____
   _____.
10. Why should DNA be considered when classifying organisms instead of physical appearance alone? Provide an example to back up your answer.
    _____
    _____
    _____.

CARL LINNAEUS BIOGRAPHY

- ★ Brief mention of Linnaeus' childhood and passion for botany
- ★ Linnaeus' studies
- ★ Linnaeus as a professor
- ★ Early days of classification
- ★ *Systema Naturae*
- ★ How the Linnaean system played a role today
- ★ How classification has evolved
- ★ 2 pages; 10 questions; answer key included

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