

CHAPTER 4	The Work of Lamarck and Wallace Answer Key	BLM 4.2.1A
ANSWER KEY		

1. According to Lamarck, the environment produces changes in organisms over time.
2. Wallace contends that variations in an organism might expand the range of available environment for that organism.
3. Lamarck's comments in this passage appear to be based on opinion rather than science. Construction of hypotheses is at the core of the scientific method, yet Lamarck claims that his theory cannot be considered hypothesis or opinion. While he claims that his theory will be supported by observation of the facts, he does not supply any facts or examples to demonstrate his case. A truly scientific theory must begin with a hypothesis, which is then tested and supported by observations.
4. Lamarck's description of modifications in animals corresponding to changes in the environment could be explained in another way: Existing variation in a population includes some phenotypes that are well suited to the new environment. Individuals possessing characteristics that are well suited to the new environment have a high rate of survival and reproductive success compared with individuals lacking these traits. Eventually, the population will consist of more individuals with the favoured characteristic.
5. In the introduction of *On the Origin of Species*, Darwin presents the concept of natural selection:

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.

Darwin's viewpoint, like Wallace's, is based on the idea that existing variation in a population makes some organisms better equipped for the "conditions of life", or the environment.

Darwin describes variation in species in Chapter 2, Variation under Nature, and elaborates on the idea of natural selection in Chapter 3, Struggle for Existence. Ensure that you relate the passage you choose to Wallace's viewpoint.