

CHAPTER 4	Thought Lab 4.3: Comparing the Ideas of Lamarck and Darwin Answer Key	BLM 4.2.4A
ANSWER KEY		

Answers to Procedure Questions

1. Lamarck stated that time and favourable conditions have given rise to the diversity of organisms on the earth. He argued that if the environment of an organism changes, the organism will change its behaviour and adapt to fit the new environment. Use of an organ or appendage would cause growth in that structure, whereas disuse would result in the structure shrinking or disappearing. Lamarck said that the results of these changes accumulated over a lifetime were heritable, and could be passed on to their offspring.
Darwin states that natural selection acts on individuals with favorable variations. All species have a variety of traits, some of which have a genetic link. Since organisms differ and are capable of producing a great number of offspring, the chances of individuals in a species surviving and passing on traits to the next generation is very good. Change in species over time will occur when these favoured forms provide a selective advantage over others, and these changes will be passed on to later generations.
2. Lamarck says that it is the use and disuse of traits that result in inheritance. Traits in individuals can change over a lifetime, and these changes will be passed on to descendants. Darwin says that there is “descent with modification,” implying that individuals vary from one to the next, and the ones that survive can pass their traits on to the next generation.

Answers to Analysis Questions

1. a) Lamarck would state that flying fish arose from simpler fish, and over time developed a large pectoral fin because they needed it to outrun predators or hunt for insects above the water. Since the fin was used over and over, the fin got larger and larger, and the modifications were passed on to the next generations of offspring.
b) Darwin would suggest that variation in fin size occurs in the population of fish, and at some point in time, the fish with the larger fins were able to survive, while fish with small fins did not. Those fish with the larger fins reproduced, passing along their large fin traits to their offspring.
2. Natural selection does not imply that species are becoming more and more complex (complexity is not the goal, survival and reproduction are); if this was the case, “simple” bacteria would be long extinct. It is not assumed that each generation is improving; populations change because of selective pressures from the environment.