

CHAPTER 4	Contributions of Various Scientists to the Theory of Evolution by Natural Selection Answer Key	BLM 4.2.2A
ANSWER KEY		

Complete the table by listing the major observation(s) of each scientist including Charles Darwin.

Scientist	Major Observation(s)
Buffon (1707 – 1788)	<ul style="list-style-type: none"> • publicly challenged idea that life forms are unchanging • noted the similarities between humans and apes, and speculated that they might have a common ancestor • suggested that Earth was much older than 6000 years, as was commonly believed • noted that despite similar environments, different regions of Earth have distinct plants and animals
Cuvier (1769 – 1832)	<ul style="list-style-type: none"> • credited with developing the science of paleontology – the study of ancient life through the examination of fossils • each stratum of rock is characterized by a unique group of fossil species • found that the deeper (older) the stratum, the more dissimilar the species are from modern life • as he worked from stratum to stratum, he found evidence that new species appeared and others disappeared over the passage of time • proposed the idea that Earth experienced many destructive natural events, such as volcanic eruptions or floods, that he called <i>revolutions</i>
Lyell (1797 – 1875)	<ul style="list-style-type: none"> • rejected Cuvier’s idea of revolutions • proposed that geological processes operated at the same rates as they do today • if geological changes are slow and continuous rather than catastrophic, then Earth might be more than 6000 years old • theorized that slow, subtle processes could happen over a long period of time and could result in substantial changes • work inspired naturalist Charles Darwin
Lamarck (1744 – 1829)	<ul style="list-style-type: none"> • by comparing current species of animals with fossil forms, he observed what he interpreted as a “line of descent,” or progression, in which a series of fossils led to a modern species • change occurred because an animal passed on to its offspring physiological changes it had undergone in its own lifetime, and those changes came about by its responding to its survival needs – he called this the inheritance of acquired characteristics • conversely, the disuse of an organ would cause it to wither and disappear

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Darwin (1809 – 1882) and Wallace (1823 – 1913)	<ul style="list-style-type: none"> • accepted that populations changed as time passed • individuals with physical, behavioural, or other traits that helped them in their local environments were more likely to survive and to pass these traits to offspring • reasoned that competition for limited resources among individuals of the same species would select for individuals with favourable traits—traits that increased their chances of surviving to reproduce
Darwin (1809 – 1882)	<ul style="list-style-type: none"> • present forms of life have arisen by descent and modification from an ancestral species • the mechanism for modification is natural selection working for long periods of time • theory of natural selection showed how populations of individual species became better adapted to their local environments over time