

<b>CHAPTER 4</b>	<h1>Summarizing Evidence for the Theory of Evolution Answer Key</h1>	<b>BLM 4.2.10A</b>
<b>ANSWER KEY</b>		

Body of Knowledge	Evidence
Fossil Record	<ul style="list-style-type: none"> <li>• fossils found in young layers of rock are much more similar to species alive today than fossils found in deeper, older layers of rock</li> <li>• fossils appear in chronological order in the rock layers; probable ancestors for a species would be found in older rocks, which usually lie beneath the rock in which the later species was found</li> </ul>
Transitional Fossils	<ul style="list-style-type: none"> <li>• show intermediary links between groups of organisms</li> <li>• link species found in the past with those found today</li> <li>• fill in the gaps in the fossil record of many modern species</li> </ul>
Patterns of Distribution	<ul style="list-style-type: none"> <li>• biogeography is the study of the past and present geographical distribution of organisms</li> <li>• geographically close environments are more likely to be populated by related species than are geographically separate environments with similar conditions</li> <li>• animals found on islands often closely resemble animals found on the closest continent, suggesting that animals on islands have evolved from mainland migrants, with populations becoming adapted over time as they adjust to the environmental conditions of their new home</li> <li>• fossils of the same species can be found on the coastline of neighbouring continents</li> <li>• closely related species are almost never found in exactly the same location or habitat</li> </ul>
Anatomy	<ul style="list-style-type: none"> <li>• homologous structures are those that have similar structural elements and origin, but may have a different function</li> <li>• homologous structures are similar because they were inherited from a common ancestor</li> <li>• homologous structures differ in their anatomy based on an organism's lifestyle and environment</li> <li>• homologous structures can be similar in structure or function or both; functional similarity in anatomy does not necessarily mean that the species are closely related</li> <li>• analagous structures are body parts that serve the same function in different organisms, but differ in structure and embryological development i.e., do not have a common evolutionary origin</li> </ul>

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Embryology	<ul style="list-style-type: none"> <li>• embryos of different organisms exhibit similar stages of embryonic development</li> <li>• similarities among embryos in related groups point to a common ancestral origin</li> <li>• related species share both adult features and embryonic features</li> </ul>
Molecular Biology	<ul style="list-style-type: none"> <li>• evolutionary relationships among species are reflected in their DNA and proteins</li> <li>• in all organisms, all cells that can replicate contain DNA</li> <li>• since DNA carries genetic information, scientists can determine how closely related two organisms are by comparing their DNA</li> <li>• if two species have similar patterns in portions of their DNA, this similarity indicates that these portions of their DNA were most likely inherited from a recent common ancestor</li> </ul>
Genetics	<ul style="list-style-type: none"> <li>• scientists now know how species passed on their traits to their offspring and how genes for these traits could change by mutation</li> <li>• current evolutionary theory connects genetics with the theory of natural selection and how natural selection works on populations</li> <li>• genetic evidence and the understanding of heredity and mutations lend support to hypotheses that stem from observations of fossils, anatomy, biogeography, embryology, and molecular biology</li> </ul>