

☞ The fossil record shows that over time, descent with modification produced increasingly large differences among related groups of organism.

Biogeography

☞ **Biogeography:** the scientific study of the geographic distribution of organisms ☞ the geographic distribution of organisms are influenced by many factors, including continental drift (the slow movement of Earth's continents over time). 250 million years ago → was Pangaea ☞ can use our understanding of evolution and continental drift to predict where fossils of different groups of organisms might be found ☞

☞ Can use our understanding of evolution to explain biographic data ☞ Example: islands that have many plant and animal species are endemic (they are nowhere else in the world) ☞ most island species are closely related to species from the nearest mainland or a neighboring island – Darwin explained this observation by suggesting that islands are colonized by species from the nearest mainland – these colonists eventually gave rise to new species as they adapt to their environments ☞

What is theoretical about Darwin's view of life?

☞ **Pattern of evolution:** the observation that life has evolved over time → has been documented directly and is supported by a great deal of evidence. ☞ **process of evolution:** that natural selection is the primary cause of the observed pattern of evolutionary changes → makes sense of massive amount of data – the effect of natural selection can be observed and tested in nature ☞

☞ A theory (in science) accounts for many observations and explains and integrates a great variety of phenomena ☞ Evolutionary biologists now recognize that natural selection is not the only mechanism responsible for evolution ☞

Test your Knowledge: My Answers (I was right Wow! Hoo!)

1. B 2. D 3. C 4. C 5. A 6. Some drug resistant DDT was present prior were present prior to the administration of the drug and natural selection cause the increase in drug resistant DDT

3. Adaptions are often compromises

Each organism must do many different things

Ability

Trade-off

Humans – prehensile hands and flexible limbs

Prone to sprains, torn ligaments, and dislocations

Seals have flippers to allow them to swim well

Spend part of their time of rock and have to awkwardly waddle around.

4. Chance, natural Selection, and the environment interact

Chance events can affect the subsequent evolutionary history of populations. Ex: population of sparrows flying and some go into/ are trapped in a garage, while the rest are caught in a storm and die. The dead sparrows are less fit than the alive sparrow, but it was just an event of chance.

- ☞ With these constraints, evolution does not craft “perfect” organisms
- ☞ Natural selection operates on a “better than” basis

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