**AP Biology 11: Mechanisms of Evolution**

Concept 2: Analyzing Descent with Modification: A Darwinian View of Life (Ch 22)

**Descent with Modification**

You must know:

* ***How Lamarck’s view of the mechanism of evolution differed from Darwin’s***
* *Several examples of evidence for evolution*
* *The differences between structures that are homologous and those that are analogous, and how this relates to evolution*
* *The role of adaptations, variation, time, reproductive success, and heritability in evolution*

There are three key observations about life:

1. The striking ways in which organisms are suited for life in their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The many shared \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(unity) of life
3. The rich \_\_\_\_\_\_\_\_\_\_of life

Charles Darwin was inspired to develop an explanation for these three broad observations.

**But first came Lamarck**

In the 18th century several naturalists suggested that life evolves as environments change but Lamarck was the first to propose a mechanism for\_\_\_\_\_\_\_\_\_\_.

Lamarck was one of the first to recognize that evolutionary change explains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and can be used to match organisms to their environments but he is more famously remembered for his \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mechanisms of evolution.

Lamarck studied fossils & came up with two ideas

**Use and disuse**

* Parts of the body that are used \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_become larger and stronger while those that are not used\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Inheritance of acquired characteristics**

* An organism could pass these modifications to its \_\_\_\_\_\_\_\_\_\_\_\_\_.

Lamarck also thought that evolution happens because organisms have an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to become more complex

**Charles Darwin**

**Observations**

1. Members of a population often \_\_\_\_\_\_\_\_\_\_\_greatly in their traits
2. Traits are \_\_\_\_\_\_\_\_\_\_\_\_from parents to offspring
3. All species are capable of producing \_\_\_\_\_\_\_\_\_\_\_\_offspring than their environment can support
4. Owing to lack of food or other resources, many of these offspring \_\_\_\_\_\_\_\_\_\_\_\_\_survive.

**Inferences**

1. Individuals whose inherited traits give them a higher probability of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in a given environment tend to leave more offspring than other individuals
2. This unequal ability of individuals to survive and reproduce will lead to the accumulation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_traits in the population over generations

**Adaptations & Natural Selection**

Explaining adaptations is essential to understanding evolution. How adaptations arise is centered on natural selection

**A summary of Natural Selection**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in which individuals which have certain heritable characteristics survive and reproduce at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_rate than other individuals
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_natural selection can increase a match between organisms and their environment
* If an environment changes or if individuals move to a new environment, natural selection may result in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to these new conditions sometimes giving rise to new species