

Evolution - worksheet answers

Glossary:

Adaptation: changes in the traits of a population of a species that make it better suited (fitter) for its environment.

Artificial selection: selection by humans of particular traits in a species that humans want to keep or develop.

Convergent evolution: where different species develop similar traits because they share the same environment e.g. penguins, dolphins and sharks.

Divergent evolution: where one species gives rise to separate species over time because of adaptations to a new environment e.g. the Galapagos finches.

Homologous structures: are anatomical structures that are similar.

Mutation: a random change in the DNA of an individual.

Natural selection: where individuals of a species which are better suited (more fit) for their environment, live to breed and produce offspring where as those which are not suited do not (i.e. nature selects).

Parallel evolution: where populations of a species are separated by geography or other circumstances and develop as separate species with similar traits e.g. western and eastern kangaroos.

Speciation: the formation of a new species. i.e. a new population which cannot or will not breed with another population to produce viable offspring.

Variation: the diversity of genetic material within a population.

Questions:

1. A gene pool is the collective genetic information of a population or species.
2. Evolution (to me) describes the changes that have occurred in living organisms over the history of life on earth. By looking at the relationships between species, connections can be drawn to find common origins and ancestors.
3. **Lamarck:**
 - The only Giraffes that can survive are those that can eat leaves from tall trees.
 - Those individuals that can't reach the leaves will eventually stretch their necks.
 - Once an individual has stretched its neck, then this trait will be passed on to the next generation.**Darwin:**
 - Giraffe population is genetically diverse.
 - Some longer necked individuals are able to reach the food source (tall trees).
 - These longer necked individuals are fitter (more likely to survive and reproduce).
 - Over time there are a greater proportion of longer necked giraffe genes in the population.
 - Eventually, over a long period of time, all giraffes have long necks.
4. Selection pressure is the result of the natural or artificial pressures that kill a proportion of a population, but some will survive. Those that survive are the ones that will pass their traits (the very same traits that saved them from being killed by the selection pressure) on to the next generation.
5. The fossil record is incomplete because some animals do not have anatomical structures (like shells, bones) that leave fossil evidence behind. Fossils are usually found in a limited number of places and relate to a limited time period.