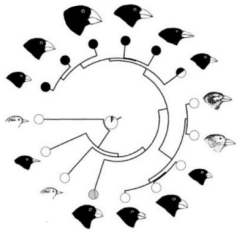


### 8.3 PATTERNS OF EVOLUTION p. 341

Explain **adaptive radiation**.

The relatively rapid evolution of a single species into many new species, filling a variety of formerly empty ecological niches.

What causes adaptive radiation happen? The process usually occurs when a variety of new resources become available - resources that are not being used by other species



The colonizing finch of an island faced stabilizing selection on the mainland. Explain.

The finches evolved into 13 separate species that compete with each other for a specific kind of seed. There were no other species that they competed with for the seed.

Once the finch arrived at the mainland, over two million years it evolved into at least 15 different species of finch. Explain how adaptive radiation would have happened.

Adaptive radiation would have occurred if resources were available in great abundance.

How is the adaptive radiation of cichlid fishes similar to the Galapagos finches?

The species are found nowhere else on Earth

Divergent evolution leads to two predictable outcomes...

1. Competition between species is minimized as new species diverge to fill specialized ecological niches
2. New species continue to evolve until most available resources are used

**Convergent evolution** is observed amongst different lineages. It is the evolution observed of *distantly related species*.

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1. Resources are unused and species can grow, facing little to no competition in the process
2. A variety of resources are left unused and species grew to use them by divergence
3. Based on available resources, divergence occurs from one species branching from another. Convergence occurs from more than one species growing into a similar organism
4. a) divergent, b) allows for greater visibility of each other
5. Has lost instinctual predatorial fear as a result of no competition in its environment
6. Dolphins evolved from a mammal parent species and their anatomy functions similarly to land mammals. Other fish have evolved from reptile species

### 8.5 MACROEVOLUTUON p. 348

Macroevolution is the macroscopic evolutionary changes, including the formation of new species and new taxa.

What is thought to be the cause of the mass extinction that caused the extinction of most dinosaurs 65 million years ago?

An asteroid hitting the Earth

Briefly discuss the differences between the theory of gradualism and the theory of punctuated equilibrium.

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Gradualism: As new species evolve, they appear very similar to the original species and only gradually become more distinctive. Over a long period of time, small changes have accumulated, resulting in dramatically different organisms. When environmental changes are slow, evolutionary changes would likely be gradual.

Punctuated equilibrium: Once a species appears in the fossil record, the population will become stable and show little evolutionary change for most of its geological history.

## **8.7 HUMAN EVOLUTION** p. 359

Primates: A group of relatively large-brained, mostly arboreal mammals that includes prosimians, monkeys, apes, and humans

The common ancestor of primates dates back to 60 million years ago

Based on figure 2, humans are most closely related to which other primate? Chimps

Modern humans evolved around 6 million years ago

Discuss how cultural practices influenced evolution of humans.

Domestication practices resulted in tolerance to a variety of resources