

# Darwin's Epic Journey

- The process of change over time is called **evolution**.
- **Charles Darwin** developed a scientific theory of biological evolution that explains how modern organisms evolved over long periods of time through **descent from common ancestors**.

# Observations Aboard the *Beagle*

- Darwin was invited to sail on the **HMS *Beagle*'s** five-year voyage mapping the coastline of South America.
- As he traveled, Darwin noticed three distinctive patterns of biological diversity:
  1. Species vary **globally**
  2. Species vary **locally**
  3. Species vary **over time**

# Species Vary Globally

- Darwin noticed that **different**, yet similar, species inhabited **separate** habitats around the globe.
- Darwin found flightless, ground-dwelling birds called rheas living in South America. Rheas look and act a lot like ostriches. Yet rheas live only in South America, and ostriches live only in Africa. Darwin found another large flightless bird, the emu when he visited Australia.



# Species Vary Locally

- Darwin noticed that **different**, yet, related species occupied **different** habitats within a **local** area.
- Darwin saw differences among the giant land tortoises that inhabit the Galapagos islands. The **shape** of the tortoises' shells corresponds to different **habitats**.





# Species Vary Locally

- Isabela Island has high peaks, is rainy, and has abundant vegetation that is close to the ground. A tortoise from Isabela Island has a dome-shaped shell and short neck.
- Hood Island is flat, dry, and has sparse vegetation. A tortoise from Hood Island has a long neck and curved shell.



# Species Vary Over Time

- Darwin also collected fossils, which are the **preserved remains** or traces of ancient organisms.
- Darwin noticed that some fossils of extinct animals were **similar** to living species.



# Species Vary Over Time

- One set of fossils unearthed by Darwin belonged to the long-extinct **glyptodont**, a giant armored animal similar to the **armadillo**.
- Darwin wondered if the armadillo might be related to the ancient glyptodont.

