



Name _____

Use this scavenger hunt through the *Earthquake* and *African Hall* to help answer the following:

What can geology, fossils, DNA, and anatomy tell us about the relationship of species?



Marsupials

Find at least three **anatomical traits** that all marsupials share.

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Consider this: Would it have been possible for marsupial populations to spread from South America to Australia 30 million years ago? What about 60 million years ago? (*Hint: look at the maps of how the continents moved*)

Where do scientists think the earliest marsupials originated? On what evidence is this based?

What type(s) of evidence show(s) that Australian marsupials have evolutionary origins in South America?

How do we know that there were once marsupials living in Antarctica?

Think about **marsupial fossils** you would expect to find on different continents. **Circle the continent** on which you would expect to find the **oldest fossil**. Try to rank the rest by the oldest to most recent marsupial fossils you might find.

Antarctica
Asia

Australia
South America

Plants of Gondwana



Compare the characteristics of these plants.

	King Protea (Sugarbush) <i>Protea cynaroides</i>	Red Silky Oak <i>Grevillea banksii</i>	Fire Bush <i>Oreocallis grandiflora</i>
Present Day Continent			
Anatomical Characteristics			

What does DNA and fossil evidence tell us about the relationship of these three species?

Put a star next to the species that has a more distant common ancestor compared to the other two species.

Flightless Birds



What are the physical characteristics of flightless birds? Start with the Ratites in the *Earthquake* exhibit before moving on to *African Hall* to find the African Penguins.

Ratites	African Penguins
	

Based solely on physical evidence, what would you conclude about how many times flightlessness evolved in the Ratites?

How does DNA evidence change your conclusions about the number of times flightlessness evolved? Explain.

What kind of additional evidence might you want to find to confirm when flightlessness evolved in the Ratites?

If you took DNA from an ostrich, an emu, and an African penguin, which two DNA sequences would you expect to be most similar? Explain your answer.

Variation



Visit the display about variation outside the entrance to *African Hall*.

Evaluate the following statement:

"Variation is the path to speciation."

Using the ladybird beetles as an example, what does this statement mean to you?

Look carefully at the beetles. Try to find two that are identical, then try to find two that are as different as possible. Why do you think these differences exist?