

FACT PATTERNS: A FILM GUIDE

INTRODUCTION

By the time Charles Darwin published *On the Origin of Species* in 1859, he had been accumulating evidence on the natural origin of species and natural selection for over 20 years. The work of Alfred Russel Wallace finally forced Darwin's hand and spurred him to share his ideas with the world. HHMI's short film *The Origin of Species: The Making of a Theory* tells the story of how these two naturalists, working at different times and in different parts of the world, independently made similar observations of the natural world and each came to the same conclusions.

Activity

1. Table 1 lists several observations made by Darwin, Wallace, or both of them. Listen for the observations as you watch the film *The Origin of Species: The Making of a Theory*, and mark an X in the Darwin column if he made the observation or in the Wallace column if he made the observation. If both men made the same observation, mark an X in both columns. Examine the collections of observations and facts—or “fact patterns”—and see what conclusions you can draw from them.

Table 1. Observations on the natural origin and evolution of species.

	Observation	Darwin	Wallace
1.	Fossils of extinct animals turn up where similar animals live today.		
2.	You can tell which island a Galápagos tortoise comes from by the shape of its shell.		
3.	Each Galápagos island has a different kind of mockingbird.		
4.	Islands that are near each other have similar but distinct animals living on them.		
5.	Birdwing butterflies are found throughout the Malay Archipelago, but species differ slightly from island to island.		
6.	Animals have distinct geographic ranges, but more-similar species tend to live closer to each other.		
7.	Some species possess vestigial structures, such as finger bones in the flippers of manatees and similar bones in whale flippers.		
8.	Monkeys and orangutans are found on Borneo, while other islands in the region are home to tree kangaroos but no monkeys.		
9.	Animals living on islands in the eastern part of the Malay Archipelago are similar to Australian fauna, while animals on western islands are similar to Asian fauna.		
10.	Individuals within a given species vary in small ways.		
11.	Animal populations are kept in check because a massive number of young animals die in every generation.		

2. Based on their independent observations, Darwin and Wallace arrived at the same conclusions about the origin of species. For each of the conclusions below, identify – by number— the observations from Table 1 that these conclusions were based on.
 - a. Species change over time. _____
 - b. Species come from other preexisting species. _____
 - c. Small variations within species can confer advantages to certain individuals that allow them to survive, reproduce, and pass their traits on.

 - d. The distribution of species can reflect Earth’s geological history.

3. Find a partner and discuss your answers to Question 2. Make revisions to your answers based on what you learn from your partner.
4. Appoint one member of your team to represent Charles Darwin and the other to represent Alfred Russel Wallace.
 - a. Darwin: Write a paragraph that explains Darwin’s theory of evolution by natural selection based on the facts and observations listed in Table 1.
 - b. Wallace: Write a paragraph that explains Wallace’s theory of evolution by natural selection based on the facts and observations listed in Table 1.

AUTHORS

Written by Mary Colvard, Cobleskill-Richmondville High School (retired), Deposit, New York, and Mark Nielsen, PhD, HHMI

Edited by Laura Bonetta, PhD, HHMI; Copyedited by Linda Felaco

Reviewed by Paul Beardsley, PhD