



MIRACLE PLANET

EPISODE 5

Survival of the Fittest

After dinosaurs disappeared from Earth, mammals took centre stage. Eventually, one species—humans—would rise above all others, the result of special adaptations to a changing world.

Before Screening the DVD

1. Where do you think human life began on Earth—Europe, Asia, Africa or North America?
2. What advantages do you think humans have over other species on Earth?
3. Do you think that a species could be intelligent and not use language?
4. If a scientist told you that a chimpanzee could recognize different facial expressions on other chimpanzees, such as anger and happiness, how would you design an experiment to test his theory?

After Screening the DVD

1. What were the strange holes that scientists discovered in the ocean floor near Greenland? How were they connected with a climate change that happened at the time the dinosaurs went extinct?
2. Why was the development of broad-leaved trees, or angiosperms, important for the development of animals?
3. Antarctica once had a temperate climate not much different from Canada today. What caused it to become a frozen wasteland after it separated from South America and Australia?
4. What fundamental change in eyesight favoured the development of humans' distant ancestors?
5. Why was an ability to recognize different facial expressions important in evolution?
6. How did scientists design an experiment to test how many facial expressions a chimpanzee could recognize?
7. What event caused the creation of the Himalayas, the highest mountains in the world? How did these mountains affect the climate in Africa?
8. How was a change of diet connected with human evolution several million years ago?
9. What evidence have scientists discovered that shows that the Neanderthal man was quite advanced?
10. The two human species, *homo sapiens* and Neanderthal man, both had a similar-sized brain. And yet Neanderthal man became extinct roughly 30,000 years ago while we *homo sapiens* survived. What may have been a major advantage *homo sapiens* enjoyed? What physical difference in the skull was it based upon?

Follow-Up Projects

1. What special adaptations do the following creatures have that enable them to see well in their environment: owls, sharks and cats.
2. Although humans are the only animals that have a well-developed ability to communicate thoughts and ideas through words, other animals use simple languages. What do we know about the languages "spoken" by chimpanzees, whales and dolphins?
3. Other than language, one key skill that humans possess is the ability to use tools. See if you can find any examples of other animals that use tools.
4. Over seven million years of human evolution, there have been at least 20 different "human" species. All have gone extinct except *homo sapiens*, the species we belong to today. Choose one of those species, which include Java man and Peking man, and try to learn where they lived and how they lived.
5. Humans have survived a great deal in their time on Earth. What do you think are the biggest challenges that humans face in surviving the centuries ahead?

GLOSSARY

Angiosperm: Broad-leafed flowering trees such as oaks, maples and birches.

Chromosome: A microscopic threadlike structure in cells that carries the genetic material that decides what the thing will look like.

Gulf Stream: A warm current that flows from the Gulf of Mexico northeastward through the North Atlantic Ocean.

Hominids: All the species that include humans and their extinct ape-like relatives.

Homo sapiens: The species that all human beings belong to.

Larynx: part of the windpipe that contains the vocal cords enabling us to speak.

Mantle: The part of the Earth's interior between the outer core and the crust.

Primates: An advanced form of mammals, including humans, apes and monkeys.

Retina: The light-sensitive tissue at the back of the eye that receives images, which are then transmitted to the brain.

Rift Valley: A long, trough-shaped valley formed by a fault or crack in the Earth's surface. One of the most famous examples is the 6,000-kilometre-long Great Rift Valley in Africa.

Tectonic: The large geological forces that shape the formation of the Earth's outer skin—its crust.

Toxins: Poisonous substances produced by certain animals, bacteria or plants.

Suitable for ages 13 to 17

Related subjects: Geography, biology, physics, chemistry, earth science

For more information, visit the Web site at <www.nfb.ca/miracleplanet>.

Study guide available online at <www.nfb.ca/guides>.

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