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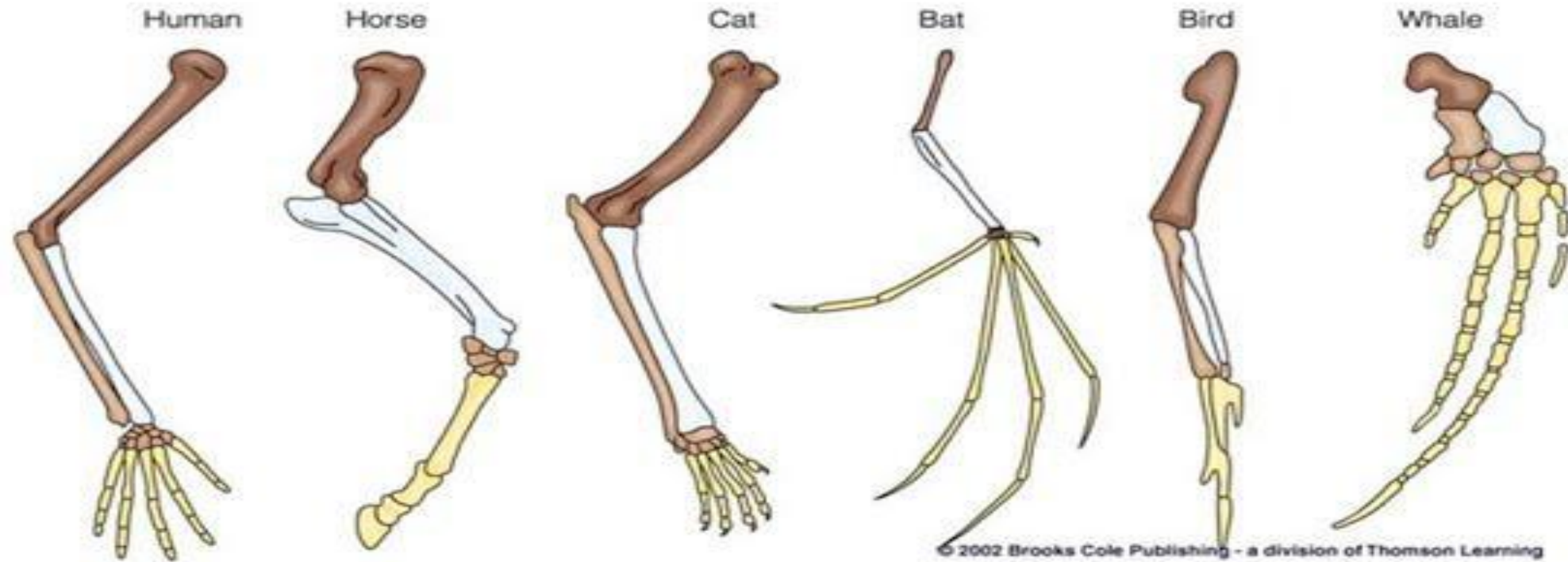
# Types of evolution

- **three main types of evolution:**  
divergent, convergent, and  
parallel **evolution**

# Divergent Evolution Definition

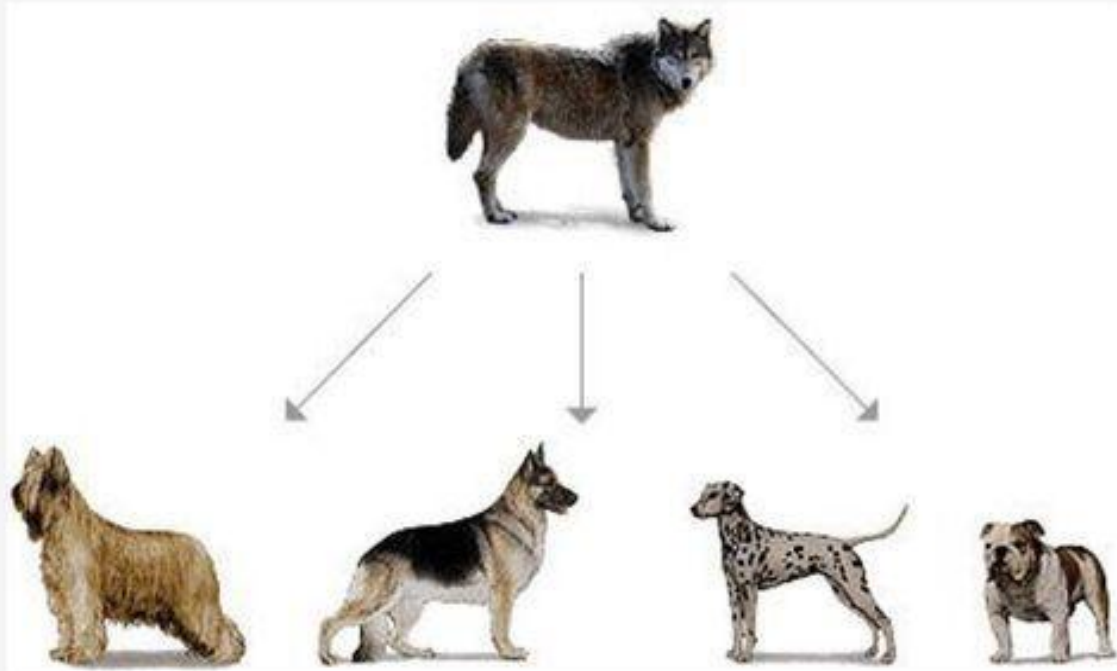
- Divergent evolution is the process whereby groups from the same common ancestor evolve and accumulate differences, resulting in the formation of new species.

# Divergent evolution

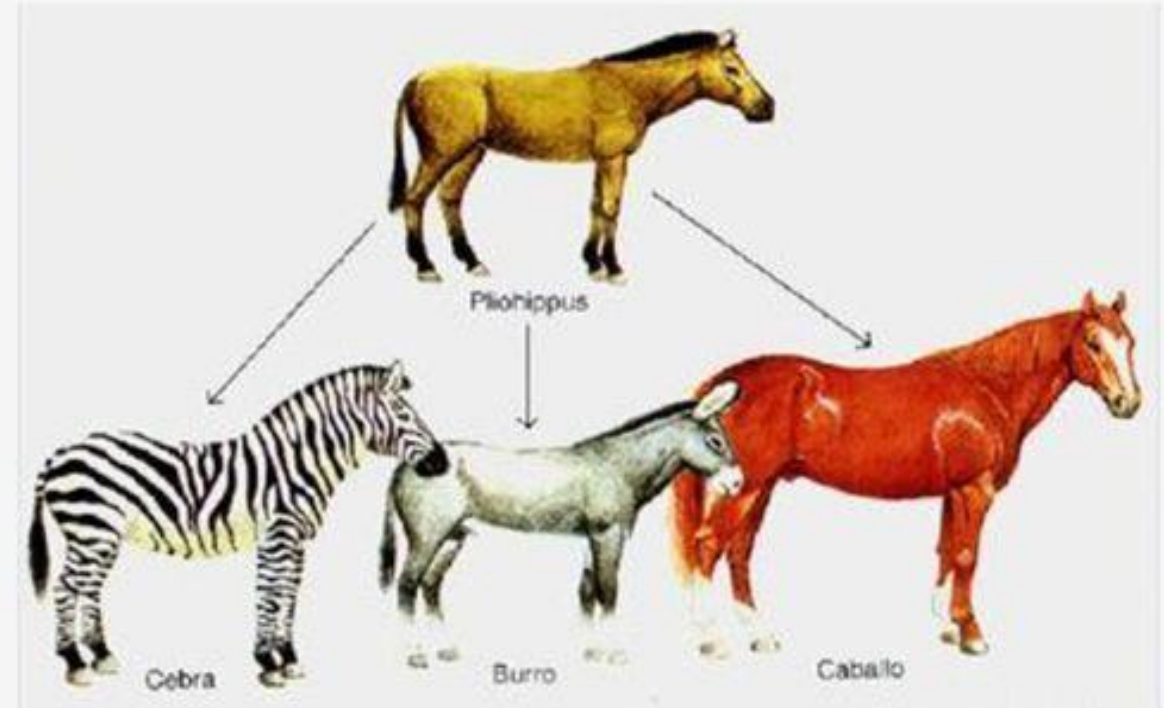


# DIVERGENT EVOLUTION

common ancestor (RELATED) → adapt different traits



**Example 1:** Dog species descend from a wolf



**Example 2:** Zebras, Donkeys, and Horses are related

# Convergent evolution

- Convergent evolution is the independent evolution of similar features in species of different periods or epochs in time

# examples of convergent evolution?

- An **example of convergent evolution** is the similar nature of the flight/wings of insects, birds, pterosaurs, and bats. All four serve the same function and are similar in structure, but each **evolved** independently.

# Convergent evolution

shark



fish

ichthyosaur



reptile















dolphin



mammal



# Convergent Evolution

Niche	Placental Mammals	Australian Marsupials
Burrower	Mole 	Marsupial mole 
Anteater	Lesser anteater 	Numbat (anteater) 
Mouse	Mouse 	Marsupial mouse 
Climber	Lemur 	Spotted cuscus 
Glider	Flying squirrel 	Flying phalanger 
Cat	Ocelot 	Tasmanian "tiger cat" 
Wolf	Wolf 	Tasmanian wolf 

# WHAT IS PARALLEL EVOLUTION

- **Parallel evolution** is the similar development of a trait in distinct species that are not closely related, but share a similar original trait in response to similar evolutionary pressure

*Julidochromis ornatus*



*Tropheus brichardi*



*Bathybates ferox*



*Cyphotilapia frontosa*



*Lobochilotes labiatus*

*Melanochromis auratus*



*Pseudotropheus microstoma*



*Ramphochromis longiceps*



*Cyrtocara moorei*



*Placidochromis milomo*

**Evolutionary level****Parallel evolution****Convergent evolution**

Phenotype

Similar phenotypes occur in closely related taxa

Similar phenotypes occur in distantly related taxa

Gene

Similar phenotypes are produced by orthologous genes (homologues that have diverged from a common ancestral gene)

Similar phenotypes are produced by different, non-homologous, genes

Nucleotide sequence

Similar phenotypes are produced by identical changes in the same gene

Similar phenotypes are produced by different changes in the same gene

# Human Evolution

# Human evolution

Human **evolution** is the lengthy process of change by which people originated from apelike ancestors.

# What did humans first evolve from?

- **Modern humans** originated in Africa within the past 200,000 years and evolved from their most likely recent common ancestor, **Homo erectus**, which means 'upright man' in Latin. **Homo erectus** is an extinct species of human that lived between 1.9 million and 135,000 years ago.

# What are the 4 stages of human evolution?

- The evolution of **modern humans** from our **hominid** ancestor is commonly considered as having involved four major steps: evolving terrestriality, bipedalism, a large brain (encephalization) and civilization.



# the correct order of human evolution?

- Homo-Habilis → Homo-Neanderthalensis → Australopithecus → Homoerectus → Cro-magnon → Homosapiens.



# IMPORTANCE OF EVOLUTION

- Understanding **evolution** is **important**.  
Understanding **evolution** helps us solve biological problems that impact our lives. ...  
To control hereditary diseases in people, researchers study the **evolutionary** histories of the disease-causing genes. In these ways, a knowledge of **evolution** can improve the quality of human life.

THANK  
YOU

