

24 The Origin of Species

ESSENTIAL QUESTION: *How did we come to look like this?*

Vocabulary:

Reproductive isolating mechanisms/prezygotic barriers/postzygotic barriers

Temporal isolation/habitat isolation/behavioral isolation/mechanical isolation

Gametic isolation/hybrid viability

Morphological species concept/ecological species concept

Phylogenetic species concept

Allopatric speciation/sympatric speciation

Polyploidy/autopolyploidy

Hybrid zone

Punctuated equilibrium/gradualism model

Macroevolution/preadaptations

Adaptive radiation/extinction

Book Diagrams and Charts:

- *Figure 24-3 Gene Flow*
- *Figure 24.4 Reproductive Barriers*
- *Figure 24.5 Modes of Speciation*
- *Figure 24.6 allopatric speciation*
- *Figure 24.10 sympatric speciation*
- *Figure 24.13 Hybrid zone*
- *Figure 24.17 tempo of speciation*
- *Figure 24.19 single gene speciation*

Questions

1. How and why do species evolve?
2. What are 6 pre-reproduction barriers
3. Allopatric speciation (other country) is what type of pre-reproduction barrier?
4. Sympatric speciation (same country) is what type of pre-reproduction barrier?
5. Give an example of temporal isolation and what does it mean?
6. Give an example of behavioral isolation.
7. Give an example of mechanical isolation.
8. Name two mechanisms that lead to gametic isolation.

9. What are post reproductive barriers?

10. What two scientists are proponents of gradualism

11. What is gradualism?

12. What two scientists are proponents of punctuated evolution?

13. What is punctuated evolution

Name the type of reproductive isolation and whether it is a pre-or postzygotic barrier for the following examples.

Type of Isolation	Pre- or Post	Example
a.	b.	Two species of frogs mate in a laboratory setup and produce viable ,but sterile offspring
c.	d.	Two species of sea urchins release gametes at the same time, but the sperm fail to fuse with eggs of a different species.
e.	f.	The genital openings of two species of land snails cannot line up because their shells spiral in opposite directions.
g.	h.	Two species of short-lived mayflies emerge during different weeks in spring.
i.	j.	Two species of salamanders mate and produce offspring are sterile
k.	l.	Two similar species of birds have different mating rituals
m.	n.	Embryos of two species of mice bred in the lab usually abort.
o.	p.	Peepers breed in woodland ponds; leopard frogs breed in swamps

Fill in the following table to review four of the approaches that biologists have proposed for conceptualizing a species

Concept	Emphasis
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Biological	a.
b.	Anatomical differences most commonly used
c.	Unique roles in specific environments
Phylogenetic	d.

