

Name: _____

Date: _____ Period: _____

Honors Biology: Mechanisms of Macroevolution (15.7-15.13) Guided Reading
What factors have led to macroevolution?

1. On your own...Read Sections 15.7-15.13.

2. Define the following terms:

- Continental drift: *change in position of continents due to the movement of Earth's crust on the mantle*
- Pangea: *a "super" continent containing all the Earth's land mass. formed 250 million years ago*
- Evo-Devo (Evolutionary and Developmental Biology):
research in the field of evolutionary and developmental biology.

3. How has the movement of Earth's land masses affected life on Earth?

- *reshapes physical features / alters habitats*
- *creates new "competition" when land masses join together*
- *changes in weather patterns / climate and in distribution of water*
- *these effects can be seen in modern distribution of animals such as in Australia*

4. What causes can contribute to extinction of a species?

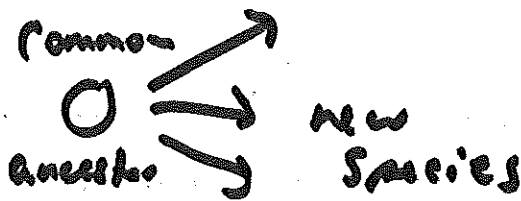
- *changes in habitat, environment / climate, and biological communities (new predators, etc.)*

5. Explain how extinction rates have varied throughout the history of life on Earth and the effects of extinction on biological diversity:

- *major changes in [↑] can lead to massive extinctions (>50% of species extinct)*
- *Permian (250 million) and Cretaceous (65 mil.) mass extinctions evident in fossil record*
 - volcanic eruptions*
 - asteroid / meteor comet*
- *chance events can dramatically reduce diversity and ecological complexity*

6. Explain how diversity can recover from an extinction and the role of adaptive radiation(s) in this process of recovery:

Adaptive Radiation



more new species =

↑ in diversity

7. How do development genes contribute to morphological differences and formation of new/different species?

EVO-DEVO — explains how small genetic changes can lead to major differences between species

Developmental genes control → Rate / timing of development
→ spatial patterns of anatomy
→ regulation of development

8. What is meant by "evolutionary novelties"? How can they arise? Give some examples:

Gradual change (Darwin) can create complex structures through accumulation of small changes

- Eyes... from original light-sensitive cells
- feathers... from insulation... flight from hopping

9. What are evolutionary trends? What accounts for their continuation or cessation?

↓
- pattern that appears to suggest a "direction" in the modification of traits

- Application of "natural selection" to species... those species from which the most "daughter" species diverge are the ones that shape the tree of life