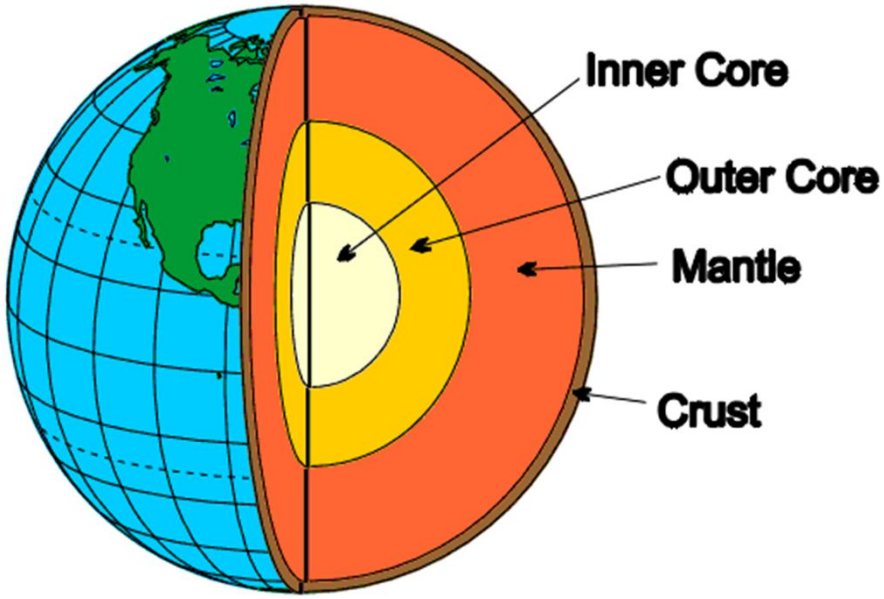
Fossil Evidence of Change

Section 14.1

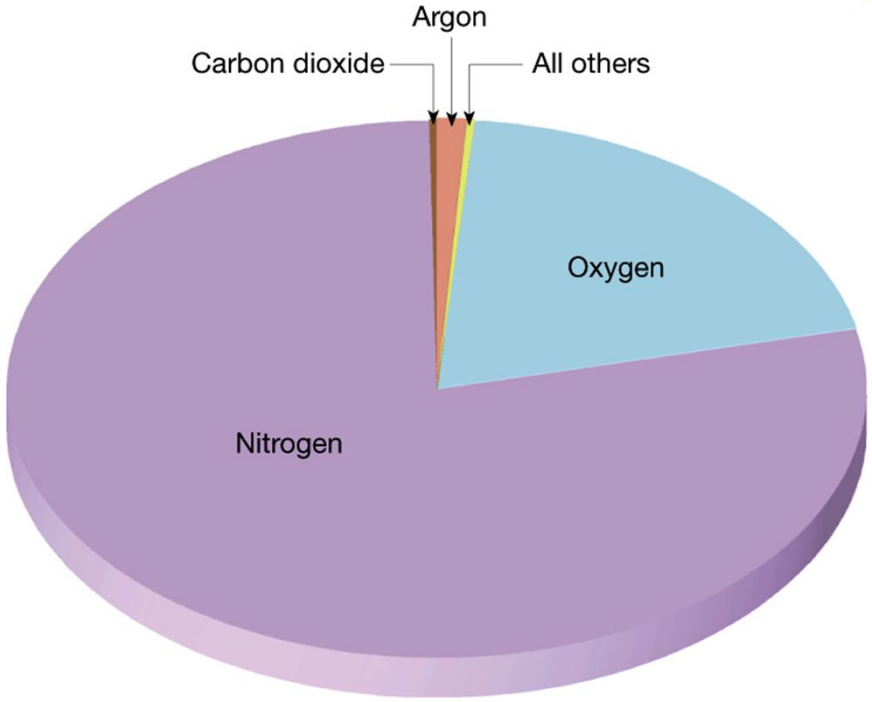
Earth's Early History

- Scientists believe Earth formed 4.6 billion years ago
  - That's 4,600,000,000 years!
- It began as a *molten body* – basically a "lava planet"
- Gravity pulled densest elements to the center
- About 500 million years later the crust began to form



Earth's Early History

- No one knows what made up the early atmosphere
- Most likely were gases given off by volcanoes
- Minerals in oldest known rocks suggest there was almost no oxygen



Clues In Rocks

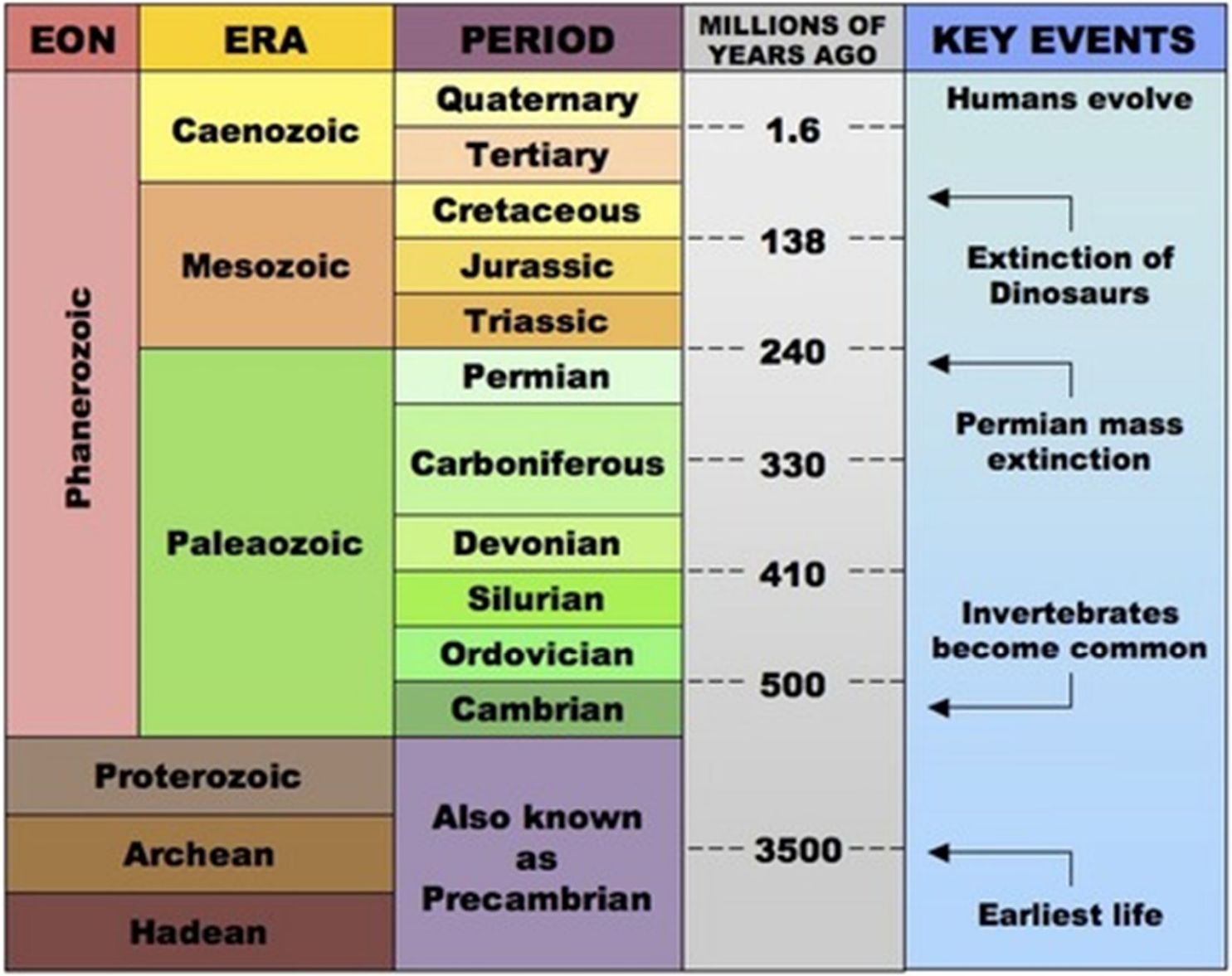
- Earliest clues about life on Earth happen about 3.5 billion years ago
  - That's 3,500,000,000 years!
- **Fossil** – preserved piece or an organism
  - Preserved many of the earliest organisms on Earth
  - Organisms in a fossil are buried rapidly
  - Usually preserved aquatic organisms

Clues in Rocks

- Fossils form only in sedimentary rocks
  - Organism dies and is buried
  - Sediments build up over the remains
  - Younger rocks build over the older rocks
  - Older fossils go to the bottom layer
  - Allows scientist to create a geologic time scale

The Geologic Time Scale

- Identifies all the major geological and biological events in Earth's history
- Divided into two parts:
  - Precambrian time (4.6 billion to 540 million years ago)
  - Phanerozoic time (540 million years to present)
- These are then divided into:
  - **Era** – hundreds of millions of years
  - **Periods** – tens of millions of years
  - **Epochs** – several million years


EON
ERA
PERIOD
MILLIONS OF YEARS AGO
KEY EVENTS
Phanerozoic
Caenozoic
Quaternary
Tertiary
Mesozoic
Cretaceous
Jurassic
Triassic
Paleaozoic
Permian
Carboniferous
Devonian
Silurian
Ordovician
Cambrian
Proterozoic
Archean
Hadean
Also known as Precambrian
1.6
138
240
330
410
500
3500
Humans evolve
Extinction of Dinosaurs
Permian mass extinction
Invertebrates become common
Earliest life