

SCIENTIFIC EVOLUTION HISTORY TIMELINE

Major Biological and Geological Transitions

4.54 Billion Years Ago

Hadean Eon: Formation of Earth

Earth forms from the solar nebula. High volcanism and frequent collisions define the early crust development.

3.8 Billion Years Ago

Archean Eon: Origins of Life

First single-celled organisms (Prokaryotes) appear. Evidence of cyanobacteria and the start of photosynthesis.

â€¢ *Stromatolites* â€¢ *Carbon fixation*

541 Million Years Ago

Cambrian Explosion

Rapid diversification of multicellular life. Appearance of most major animal phyla in the fossil record.

â€¢ *Trilobites* â€¢ *Brachiopods* â€¢ *Early Chordates*

252 Million Years Ago

The Mesozoic Era

The age of reptiles. Rise of dinosaurs, first mammals, and the evolution of flowering plants (Angiosperms).

â€¢ *Pangea breakup* â€¢ *First Birds*

66 Million Years Ago

Cenozoic Era: Age of Mammals

Following the K-Pg extinction, mammals diversify to fill ecological niches. Evolution of primates and modern ecosystems.

300,000 Years Ago - Present

Anthropocene: Rise of Homo Sapiens

Anatomically modern humans emerge. Rapid technological evolution and significant impact on global biodiversity.