

Source: [\[\[KBBIologyMasterIndex\]\]](#)

1 | Evolution

The unifying theory of all biology involving any change in the heritable traits in a population over a long period of time.

Causes of evolution – different reproduction rates – Environmental pressures – non-random mate choices – Migration

Evidence for evolution – Lab evidence of short-lifespan bacteria – Fossils and DNA evidence

1.1 | Begin by defining evolution

⇒ Descend with modification

Micro-evolution: changes in allel frequency within a population from one generation to the next

Macro-evolution: descend of different species from a common ancestry over much longer timescales

*Remember: evolution happens over **deep time** — much longer than your monkey brain could feasibly preserved*

The size of civilization to now is about 10,000 years, which is 0.002 seconds if all history is 1 minute.

1.1.1 | DNA Evidence for evolution

Comparing DNA between species could show an idea of common ancestry.

Evolution Experiment

- Take bacteria
- Introduce a filter/challenge (antibiotic)
- Result: resistant bacterial is left, and they prosper

1.1.2 | Fossil Example

- Analyzing fossils over time

1.2 | Origin of Life

(Before there was evolution)

- RNA world Hypothesis ⇒ RNA started self replicating and kabamm
- Metabolism Evolution

The Miller–Urey experiment: fundamental earth molecule + heats and pressure ⇒ kabamm amino acids and DNA and other organic molecules.

1.3 | **Common Ancestry**

All life on earth is related by descent from a universal ancestor.

There is a certain ancestor LUCA — which is the Last Universal Common Ancestor.