

## Evolution part 2 Review Cards

### Evidence for Evolution

a. Fossils can be dated by a variety of methods that provide evidence for evolution. These include the age of the rocks where a fossil is found, the rate of decay of isotopes including carbon-14, the relationships within phylogenetic trees, and the mathematical calculations that take into account information from chemical properties and/or geographical data.

b. Morphological homologies represent features shared by common ancestry. Vestigial structures are remnants of functional structures, which can be compared to fossils and provide evidence for evolution.

c. Biochemical and genetic similarities, in particular DNA nucleotide and protein sequences, provide evidence for evolution and ancestry.

### Origin of Life

a. Primitive Earth provided inorganic precursors from which organic molecules could have been synthesized due to the presence of available free energy and the absence of a significant quantity of oxygen.

b. Chemical experiments have shown that it is possible to form complex organic molecules from inorganic molecules in the absence of life.

c. These complex reaction sets could have occurred in solution (organic soup model) or as reactions on solid reactive surfaces.

d. The RNA World hypothesis proposes that RNA could have been the earliest genetic material.

### Phylogenetic Trees

a. Phylogenetic trees and cladograms can represent traits that are either derived or lost due to evolution.

b. Phylogenetic trees and cladograms illustrate speciation that has occurred, in that relatedness of any two groups on the tree is shown by how recently two groups had a common ancestor.

c. Phylogenetic trees and cladograms can be constructed from morphological similarities of living or fossil species, and from DNA and protein sequence similarities.

d. Phylogenetic trees and cladograms are dynamic, constantly changing due to current and emerging knowledge.