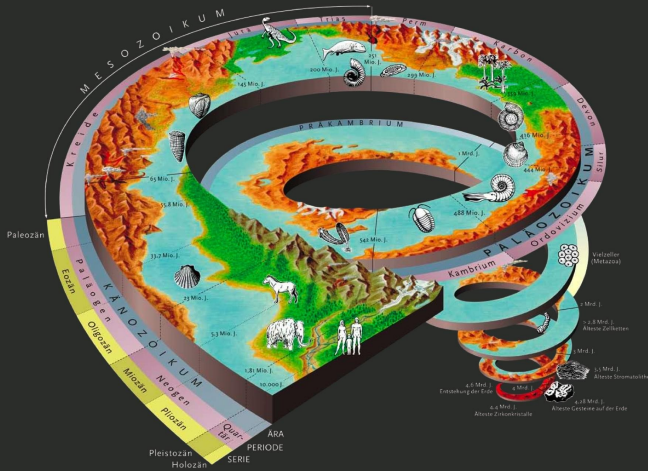


# Origin of Life and Earth's History



According to present knowledge the Earth was formed 4.567 million years ago. Earth's history testified by documents dates back to some 4.3 billion years. The first unicellular organisms have been recorded from some 3.5 billion years old rocks but it seems reasonable to conclude that life existed already before that time. These simple forms developed into complex organisms of which only the strongest and best adapted were successful and survived. Rocks are the best objects to store data about the past much superior to any PC chip. Our detailed knowledge about nature is mostly based on the rock record. They are able store a volcanic eruption as well as past climate changes. Also, the history of life is documented in rocks and in the fossils contained in rocks. However, you have to search for these data and dig for fossils. The name "fossil" is derived from the Latin verb "fodere" which means digging.

Fossils are the remains of ancient forms of life and in particular of hard parts of animals, their imprints and the way they moved on the surface or within a substrate. Also, the once living flora left imprints of the plant or remained as steinkern or petrified wood. Such documents continuously changed during Earth's history comparable to a style in architecture or a dress code. Those who were short-living are regarded as index-fossils while others were more conservative and did not change their look over a longer period. Whether short or long-living, fossils can thus provide some indication about the relative age of a specific rock sequence in which they occur. Some of them may even provide rather exact age data to be fixed in a short time slice of the calendar of geologists.

During the Paleozoic Era, i. e., between 540 and 291 million years ago, age assignments of some hundred thousand years are currently regarded as very precise. Due to the application of radiochemical and other analytical methods the accuracy of dating becomes more and more detailed the younger the rocks are. For example, during the Holocene, i. e. during the last 11,000 years, dating techniques permit an accuracy between 40 and 50 years.