EVOLUTIONARY/GEOLOGICAL TIMELINE

Time (Myr ago)	Event
4600	Formation of the approximately homogeneous solid Earth by planetesimal accretion
4300	Melting of the Earth due to radioactive and gravitational heating which leads to its differentiated interior structure as well as outgassing of molecules such as water, methane, ammonia, hydrogen, nitrogen, and carbon dioxide
4300	Atmospheric water is photodissociated by ultraviolet light to give oxygen atoms which are incorporated into an ozone layer and hydrogen molecules which escape into space
4300	First minerals (zircons) crystalize on the molten Earth
4000	Bombardment of the Earth by planetesimals stops
3800	The Earth's crust solidifies—formation of the oldest rocks found on Earth
3800	Condensation of atmospheric water into oceans
3500–2800	Prokaryotic cell organisms develop
3500–2800	Beginning of photosynthesis by blue-green algae which releases oxygen molecules into the atmosphere and steadily works to strengthen the ozone layer and change the Earth's chemically reducing atmosphere into a chemically oxidizing one
2400	Rise in the concentration of oxygen molecules stops the deposition of uraninites (since they are soluble when combined with oxygen) and starts the deposition of banded iron formations
2000	The Oklo natural fission reactors in Gabon go into operation and run for about 1 Myr
2000	The Magellanic Clouds tidally interact with the Milky Way thereby starting the Magellanic Stream (MNRAS 198, 710)
1600	The last reserves of reduced iron are used up by the increasing atmospheric oxygen—last banded iron formations
1500	Eukaryotic cell organisms develop
1500–600	Rise of multicellular organisms
1100	Formation of the supercontinent Rodinia
700	Break-up of the supercontinent Rodinia
580–545	Fossils of Ediacaran organisms are made
550	Formation of Gondwana
545	Cambrian explosion of hard-bodied organisms
528–526	Fossilization of the Chengjiang site
517–515	Fossilization of the Burgess Shale
500–450	Rise of the fish—first vertebrates
440	Ordovician mass extinction
430	Waxy coated algae begin to live on land
420	Millipedes have evolved—first land animals
375	The Appalachian mountains are formed via a plate tectonic collision between North America, Africa, and Europe
375	Appearance of primitive sharks
365	Devonian mass extinction
350–300	Rise of the amphibians
350	Primitive insects have evolved
350	Primitive ferns evolve—first plants with roots
300–200	Rise of the reptiles
300	Winged insects have evolved
280	Beetles and weevils have evolved
250	Permian period mass extinction
230	Roaches and termites have evolved
225	Modern ferns have evolved
225	Bees have evolved
210	Triassic mass extinction
200	Pangaea starts to break apart
200	Primitive crocodiles have evolved
200	Appearance of mammals
145	Archaeopteryx walks the Earth
136	Primitive kangaroos have evolved
100	Primitive cranes have evolved
90	Modern sharks have evolved
65	The Chicxulub impact occurs
65	K-T Boundary—extinction of the dinosaurs and beginning of the reign of mammals
60	Rats, mice, and squirrels have evolved
60	Herons and storks have evolved
55	Rabbits and hares have evolved
50	Primitive monkeys have evolved
28	Koalas have evolved
20	Parrots and pigeons have evolved
20–12	The chimpanzee and hominid lines evolve
10–4	Ramapithecus exist
4	Development of hominid bipedalism
4–1	Australopithecus exist
3.5	The Australopithecus Lucy walks the Earth
2	Widespread use of stone tools
2–0.01	Most recent ice age
1.6–0.2	Homo erectus exist
1–0.5	Homo erectus tames fire
0.3	Geminga supernova explosion at a distance of roughly 60 pc—roughly as bright as the Moon
0.2–0.03	Homo sapiens neanderthalensis exist
0.05–0	Homo sapiens sapiens exist
0.04–0.012	Homo sapiens sapiens enter Australia from southeastern Asia and North America from northeastern Asia
0.025–0.01	Most recent glaciation—an ice sheet covers much of the northern United States
0.02	Homo sapiens sapiens paint the Altamira cave and the Chauvet cave
0.017	Homo sapiens sapiens paint the Lascaux cave
0.012	Homo sapiens sapiens have domesticated dogs in Kirkuk, Iraq

0.01	First permanent homo sapiens sapiens settlements
0.01	Homo sapiens sapiens learn to use fire to cast copper and harden pottery
0.006	Writing is developed in Sumeria
0.0046	Oldest known Bristlecone Pine tree starts to grow

Time (Myr ago)	Event
5000–1500	Archeozoic (Archean) era
1500–545	Proterozoic era
	Paleozoic era “Ancient life”
545–505	Cambrian period
505–438	Ordovician period
438–410	Silurian period
410–355	Devonian period
355–290	Carboniferous (Mississippian/Pennsylvanian) period
290–250	Permian period
	Mesozoic era “Middle Life”
250–205	Triassic period
205–135	Jurassic period
135–65	Cretaceous period
	Cenozoic era “Recent Life”
	Tertiary (Paleogene/Neocene) period
65–55	Paleocene epoch
55–38	Eocene epoch
38–26	Oligocene epoch
26–6	Miocene epoch
6–1.8	Pliocene epoch
	Quaternary period
1.8–0.01	Pleistocene epoch
0.50–0.25	Lower Paleolithic
0.25–0.06	Middle Paleolithic
0.06–0.01	Upper Paleolithic
0.01–0	Holocene epoch