

# Evolution



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We act like animals, we eat like animals, and we are animals. The many theories of evolution such as Darwin's theory of evolution prove to us that we choose to believe that we are not animals when we really are. Evolution is the sequential process of change over periods of time, which shapes and establishes the formation of modern man.

In referring to evolution, the word means various changes. Evolution refers to the fabrication and development of life on earth.

“Organic evolution” is the concept that all living beings evolved from simple organisms and have changed throughout the periods of time to create many and various types of species. Organic evolution is better known as the “theory of evolution.” There are three main theories of evolution, which are, the early theories proposed by Comte de Buffon, Baron Cuvier, and Lamarck, the synthetic theory, and the Darwin theory.

In the 1700s, French naturalists, Comte de Buffon and Baron Cuvier concluded with the studies of fossils and comparative anatomy that life on earth had endured many changes through a long period of time.

In the early 1800s, another French naturalist named Lamarck, proposed the first complete theory of evolution. He observed through his observations, depending on the extent to which the use of the structure, that an animal's body structure is able to change during its life span. He also noted that organs and muscles, which were used often, tended to become larger and stronger. On the contrary, the organs and muscles, which were used seldom, tended to become smaller and diminish.

With these observations, Lamarck concluded that these characteristics were hereditary.

Proposed during two decades, the 1930s and 1940s, the synthetic theory involved a group of scientists. The group of scientists included two American biologists, Russian Theodosius and German Ernst Mayr, and the British geneticist and statistician Ronald A. Fisher. Together, they proposed the synthetic theory which combined Darwin's theory of natural selection with the ideals of genetics.

In 1808, French naturalist Chevalier de Lamarck contemplated a theory of evolution, although, his theory of evolution did not gain any recognition until 1858.

In 1858, British naturalist Charles R. Darwin furnished his theory of evolution, also known as Darwin's theory. Along with Darwin's theory of evolution there early theories and the synthetic theory. In 1858, Charles Darwin furnished his theory of evolution and the majority of scientists accept the Darwin theory today.

The Darwin theory states that all species evolved from either many or few common ancestors or descendants under circumstances of natural selection. Three chief resources aided Darwin to develop his widespread theory of evolution.

One, his personal observations, two, the geological theory of British scientist Sir Charles Lyell, and three, the population theory of the British economist Thomas Robert Malthus. Aboard the H. M. S Beagle from 1831 to 1836,

Charles Darwin made many of his observations in his quest to propose his theory of evolution.

On the coast of South America, Darwin came under the possession of many specimens of plants and animals. On the Galapagos Islands, off the coast of Ecuador Darwin discovered many differences between species on the islands and with the species on the mainland.

For example, Darwin noted that certain fossils of extinct species were closely similar to living species in the same geographical area. Darwin also observed that each island possessed its own form of tortoise, mockingbird, and finch. He also discovered various forms of these species were closely similar but differed in structure and eating habits from island to island.

In addition, Darwin discovered varieties of differences between species on one island and another island. With each observation, Darwin came to the question of possible links between distinct but similar species.

British economist Thomas Robert Malthus aided Darwin in creating the theory of natural selection. Malthus proposed how human populations remain in balance. He debated that any increase in the availability of food for basic human survival could not equal the geometrical rate of population growth.

In addition, limitations such as famine, disease, or war, play a major role in deciding the population growth. With this proposal, Darwin quickly applied Malthus's proposal in circumstances of plants and animals. In 1838, Darwin designed a projection of a theory of evolution through natural selection.

Natural selection is a process in which the organisms suited best for their environment tend to reproduce the most and leave the most descendents.

With the limitation of food for each species, competition is formed in which all living beings must compete for the supply of food, water, space, and other resources. Individual plants and animals whose adaptations are suited best for a certain environment tend to have an advantage in the competition for survival. Species with this advantage tend to leave a larger number of offspring than the less fortunate species. As a result, the size of the species which is best adapted to its environment increases from generation to generation.

The term fitness refers to the ability of an organism to reproduce. Scientists use this term to create the concept "survival of the fittest."

Natural selection contains the ability to affect an individual's ability to reproduce. These abilities consist of appearance, body chemistry, physiology, and behavior.

Physiology is how an organism functions. In order for natural selection to function properly, two biological requirements must be encountered. One, individuals of a population require difference in their hereditary characteristics.

An example of the requirement for difference in their hereditary characteristics, human beings differ in almost every aspect of their appearance which include height, weight, and eye-color.

In addition, humans also differ in brain size, thickness of bones, and the amount of fat in their blood. Secondly, for natural selection to function properly, some of the inherited variations must affect chances for survival and reproduction. As a result, the fittest individual tends to pass on more duplications of their genes to their offspring than the less fittest individuals. In the later periods of time, a species creates genes that increase its ability to survive and reproduce in its habitat.

Natural selection consists of three types of selections. One, directional selection.

Two, stabilizing selection. Finally, sexual selection. Direction selection creates new features that aid a species to adapt to its environment.

Directional selection produces a never ending change in the species toward the more complex characteristic. Under the circumstance that a species is already greatly adapted to its environment, stabilizing selection initiates. With stabilizing selection, individuals with average characteristics produce the most offspring.

On the contrary, individuals that differ the most from the average tend to produce the least offspring. For example, stabilizing selection of human beings is the survival rate of human babies according to their birth weight. On average, when an infants weight is average, the baby tends to survive better than those who are either heavier or lighter than the average weight.

On the opposite side of directional selection, stabilizing selection gets rid of complex characteristics, which in turn, decreases the amount of variation in a population. The most common form of natural selection can most likely be

stabilizing selection. Species who favor mates who display certain types of behavior or have certain physical features tend to fall under the category of sexual selection.

Complicated sex rituals can be created through sexual selection. For example, bright coloring can attract a mate. Another example, is that many males of different species of birds have more variety of colors in their feathers than females. Genetic drift represents the random change of genes in populations. Genetic drift is enabled by the random way that egg and sperm cells receive some chromosomes from each parent.

The circumstance that reproductive cells consist of only half a set of chromosomes as the parent cell, leads to the conclusion that only half of a parent's genes are present in an egg or sperm. As a result, some of the parent genes will not be replicated and passed on to its offspring. In addition, genetic drift does not allow species to evolve to accommodate to their environment. The cause of this incapability occurs because genetic drift causes random changes in the cycle of characteristics. Over a long period of time, genetic drift is able to gradually alter the genetic features of a population.

As time goes on, evolution can change in two distinct manners. Evolution can be altered through the most common aspect of natural selection. On the contrary, evolution can also be altered through mutation. Mutation outputs random differences in the genetic features of a species or a population. A population is an accumulation of individuals, which are of the same species and live in the same habitat or area.

Mutation is an altered gene. A gene is the basic and main unit of heredity. Inherited characteristics of an organism is altered from mutations.

Chromosomes are threadlike structures, which transport hereditary characteristics. DNA, the coded information that determines hereditary characteristics, is carried in large numbers by chromosomes. The majority of animals and plants contain a full set of paired chromosomes.

Human body cells, for instance, have forty-six chromosomes, or twenty-three pair. During cell division or reproduction, each offspring receives half the set of chromosomes from each parent. Mutations can most likely be caused by environmental factors, with factors such as chemicals or radiation.

Chemicals and radiation alter DNA genes and even create errors during the replication of DNA during cell division. Nearing the end of cell division, the gene has changed and duplicates itself in the altered form.

Only a mutated gene can introduce new hereditary characteristics.

Mutations are not only the building blocks of evolutionary change, but also, are the building blocks of the development of new species. The majority of mutations tend to create adverse traits, such as, albinism. Albinism is a mutation that contains mutant genes, which lack the ability to generate normal skin pigment. Animals and plants, which contain the albinism gene, are unable to survive and reproduce as much and as well as the animals and plants without the albinism gene.

Thus stating, that organisms with a mutant gene, will be unable to survive and reproduce as well as the organisms without a mutant gene.



On the contrary, many unfavorable genes are eliminated by natural selection because most of the organisms containing the unfavorable genes will die before they are able to reproduce. On the other hand, some mutations benefit organisms in adapting better to their existing environment. For example, a plant in a dry climate may contain a mutant gene, which enables its roots to grow longer and deeper than its surrounding plants. As a result, the plant has a better chance for survival and more reproduction because its roots are able to extend deeper into the soil and collect water. The favorable mutations create the aspects for evolutionary change.

The distinct qualities and features of the Homo sapiens have appalled anthropologists.

Examples of these special qualities and features of the Homo sapiens, which have appalled anthropologists, are features such as language, high technological skills, and the ability to make ethical judgements. Despite these qualities, the most significant and most recent quality, is the Homo sapiens connection with the African apes is practically the same. "The cradle of mankind..." as Darwin said, "...was Africa." Darwin also stated, "In each great region of the world, the living mammals are closely related to the evolved species of the same region. It is, therefore, probable that Africa was formerly inhabited by extinct apes closely allied to the gorilla and chimpanzee: and as these two species are now man's nearest allies, it is somewhat more probable that our early progenitors lived on the African continent than elsewhere.

" On the contrary, many anthropologists disagreed with Darwin's opinion because the Dark Continent, better known as Africa, was not a fit enough place for the origin of a so noble of a creature as the Homo sapiens. Another conclusion made by Darwin was this:" If it be an advantage to man to have his hands and arms free and to stand firmly on his feet,...then I can see no reason why it should not have been more advantageous to the progenitors of man to have become more and more erect or bipedal. The hands and arms could hardly have become perfect enough to have manufactured weapons, or to have hurled stones and spears with true aim, as long as they were habitually used for supporting the whole weight of the body...or so long as they were especially fitted for climbing trees." This was written by Darwin in his book called The Descent of Man.

The Descent of Man was written to distinguish the evolution of humans, bipedalism, technology, and an enlarged brain. In this quote, Darwin is stating that the evolution of the Homo sapiens unusual form of locomotion was directly linked to the production of stone weapons. Furthermore, Darwin linked these evolutionary changes to the origin of the canine teeth in humans. In addition, the canine teeth of a human are unusually small compared to the canines of apes.

As bipedal creatures, Homo sapiens developed a more intense and interactive social mind-frame. With the development of a more intense and interactive social mind-frame, Homo sapiens required more intellect or mentality. As the intelligence of our ancestors, Homo sapiens, increased, the greater was their sophistication and technology.

In 1961, Elwyn Simons, at Yale University, published a monumental document, which stated that a small apelike creature named Ramapithecus, which was the first known hominid species. Hominid is also known as a primate. Parts of an upper jaw were the only remains of Ramapithecus.

He discovered that the cheek teeth, which consist of the premolars and molars, are similar to the human cheek teeth. The cheek teeth of Ramapithecus were flat and not pointed as ape teeth are.

In addition, Simons discovered that the canines were shorter and blunter than the canines of apes. Yet another discovery Simons came to was that the reconstruction of the incomplete upper jaw of Ramapithecus showed a humanlike shape.

The upper jaw of Ramapithecus, is an arch at the roof of the mouth. Similar to humans, Ramapithecus walked upright on two feet, hunted, and lived in a complex social environment. With the aid of Darwin's theory of evolution, Ramapithecus, the very first hominid species, became viewed by many anthropologists as a cultural animal, which states that Ramapithecus is a primitive version of modern humans.

The first human species is believed to have evolved only about 7 million years ago. Data indicated that the blood proteins of humans, chimpanzees, and gorillas are equally different from each other. In other words, a type of evolutionary event 7 million years ago caused a common ancestor to split in three directions at once.

This type of evolutionary event not only led to the evolution of modern humans but also of modern chimpanzees and modern gorillas. In the 1980s, discoveries of much more complete specimens of Ramapithecus fossils, settled the dispute of the evolutionary event.

The original Ramapithecus fossils are undisputedly human like in various ways, but the species of Ramapithecus was not human like. The jaw of Ramapithecus was a V-shape, not a U-shape.

In addition, Ramapithecus had lived a lifestyle in trees, similar to its ancestors, the orangutans. Also Ramapithecus was not a bipedal ape, which proved that it was less of a primitive hunter-gatherer.

The beginning of the apes and forward onto the human proceeds through fourteen different types of primitive Homo sapiens. The first primitive ape, Phiolethecus is similar to a modern-day spider monkey except for its skull, face and teeth. Its skull, face and teeth are similar to the skull, face, and teeth of a gibbon.

A gibbon is described as an animal with a slender body with long dangling arms. Scientists believe that Phiolethecus probably have used its arms in order to swing from tree to tree throughout the jungle. The Proconsul is an early ape, which was once considered to be a distinct genus.

A genus is defined as a class or group of species.

The Proconsul is defined as a subgenus of Dryopithecus. Dryopithecus is an ape that evolved in Africa in various forms. It is believed that they are distant ancestors of the chimpanzee. In addition, it is a larger form and

predecessor of the gorilla. First of the fossil great apes to be discovered, *Dryopithecus* was spread out and distributed throughout Europe, India, China and Africa.

On the contrary, the skeleton of *Dryopithecus* is still frustratingly incomplete. The skeleton has been reconstructed by using the jaw and tooth bone fragments. Standing at about four feet tall and weighing about eighty pounds, *Oreopithecus* is a possible branch of the human's family tree. With the evidence of its teeth and pelvis, *Oreopithecus* is regarded as an ancestor to the ape or an ancestor to monkeys.

As I have described earlier, *Ramapithecus* is the earliest primate to be considered a direct ancestor of modern day human beings. The creature, which is three to four feet tall, is the *Ramapithecus* species.

They were hominid in shape because it only consists of few teeth, and the fragments of the upper and lower jaws are similar to a hominid.

*Australopithecus Africanus* is the first definite human ancestor, which is four million years younger than *Ramapithecus*. During the time of *Ramapithecus* and *Australopithecus Africanus*, these pre-humans made great technological advances. Such advances of becoming bipedal. With the aid of bipedalism, this species lived on the ground for the majority of its life. In addition, the advances of the use of stone, bone and wood were used as tools and weapons.

Similarly to *Australopithecus Africanus*, *Australopithecus Robustus* lived in South Africa. The *Australopithecus Robustus* is a definite descendant of *Australopithecus Africanus*. *Australopithecus Boisei* is the greatest in size of  
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all the australopithecines, which lived in East Africa. It is the largest of the australopithecines because it has developed more massive teeth and jawbones. Unfortunately, *Australopithecus Boisei* became extinct. The Advanced *Australopithecus* is signified from the other australopithecines because of advanced features such as greater intelligence.

Many scientists feel that this australopithecine should be regarded as a true man. They also call Advanced *Australopithecus* "Homo habilis." On the contrary, *Homo Erectus*, in 1950, was classified as the first true man. *Homo Erectus* contained more primitive of a brain, which had a cranial capacity to half of the *Homo sapiens*.

In addition, *Homo Erectus* led a social life and came under the use of fire and could believably talk. The Neanderthal Man was a survivor. It had a cranial capacity, which was similar in size to modern humans. The Neanderthal Man had basic advances in life style.

The Neanderthal Man made basic clothes and constructed tools of advanced design. The Cro-Magnon Man is regarded has the first fine artist on earth. Proof of this fine artistry is that of rich records of accomplishments in cave paintings, which Cro-Magnon made. He made these records From stone engravings and carved figures. Cro-Magnon amazingly spread to all habitable parts of the world. Modern Man, us, has learned from the teaching and evolvment of the Cro-Magnon.

We have learned to grow our own food and domesticate our animals. In addition we possessed the control over the environment and created cites and established civilizations.

We act like animals, we eat like animals, and we are animals. The many theories of evolution such as Darwin's theory of evolution prove to us that we choose to believe that we are not animals when we really are. With the amazing changes and evolution our species has undergone and as the twenty first century approaches us, who knows what forms of evolutionary change will come of us.