

# Why is evolution true essay samples

[Law](#), [Evidence](#)



The Scientific Method is a way that Natural Scientists determine, test and prove their hypothesis. It is an organized way to prove or disprove a theory ("Scientific method," 2014).

In the context of evolution, the question to ask is: is evolution true? The next step is to do some preliminary research in order to put the question in the form of a hypothesis. To do this, the background research aims to determine if there is any empirical evidence that may support the question. The other area to explore is to question what else may have contributed to the end result, if not the question that is being asked.

The background research would examine if evolution is true, then is there perhaps another way that we could have arrived at this state without it? All of these questions are called into play during the background research. After the background research is conducted, there may have been several other questions that occurred that will help to form the hypothesis. In the case of evolution, the other questions may be: maybe instead of evolution, there was divine intervention that caused the events and changes.

After the background research is conducted, the hypothesis is constructed. In this context, the hypothesis is: "evolution is true". The hypothesis was constructed based on the evidence gathered during the background research. Now the goal is to determine whether this hypothesis is true, or false. To prove or disprove the hypothesis, an experiment, or many, are conducted in order to gather specific evidence about the hypothesis. In the case of evolution, there is evidence from many fields of natural science including paleontology, genetics, molecular biology, comparative embryology, comparative anatomy, physiology, biogeography, and geology.

In the book “ Why Evolution is True” (Coyne, 2009), the author, Jerry Coyne had evidence from all of the areas noted above to justify his hypothesis, which is, that evolution is true. In fact, he had an overwhelming amount of evidence to support his hypothesis and to write his book, his challenge wasn’t to find the data, but rather, to decide which of the data to include in the book as evidence. Coyne needed to pare down the voluminous amount of evidence that supports his hypothesis that evolution is true. His book is the result of his studies and analyses of the data.

There may be other methods to study natural science, but they are likely quite specific to a particular field of study. There is not one single other structured method like the Scientific Method that provides the time tested, rigorous and organized way by which scientific data is analyzed in order to prove a hypothesis. Scientists from many fields including Albert Einstein have used the Scientific Method to prove their theories. The Scientific Method can be traced back to Aristotle.

Darwin published a book in 1859 titled “ On the Origin of Species” by Means of Natural Selection. In this famous book, Darwin described his theories about evolution and natural selection. The book created a furor with the conservative religious readers, who thought that this type of writing was blasphemous. However, Darwin’s work stand up today and the information in his theory about evolution has been proven over and again. Effectively, the theory is easy to understand -- it states that nature favors those that are able to endure, and therefore procreate, hence surviving whatever elements may cause extinction. He based his work on finches from the Galapagos Islands.

In a paper titled “ Climate Change May Have Spurred Human Evolution” (Irfan, 2013) Scientists were able to examine remains of plants, tools and other artifacts from the Olduvai Gorge in eastern Africa. The Olduvai Gorge was purposely chosen in because during a particular period, two hundred million years ago, and, for two hundred thousand years, the area in this land mass went through extreme and volatile weather conditions. The theory was that this type of climate change must’ve had a major impact upon evolution. Hence, the region was examined for clues about the evolution of human beings. During this time, it was the dawn of Homo Erectus. Prior to this, other species had populated the same region, and now a new species had emerged. The climate change that was occurring during this time allowed scientists to determine how this species needed to evolve in order to survive.

The research conducted examined fossilized artifacts that were preserved in a way that made their structure telling of the types of changes that occurred. In doing so, it could be determined how the human species needed to evolve in order to survive. This gorge represented a closed ecosystem, and due to its optimum conditions, it sealed everything around it – in doing so, it recorded the events in chronological order with layers, like pages in a book (Irfan, 2013). The fossils that were examined were layered in a way so that scientists could determine the period of the occurrences.

The predominant argument presented in this paper is that Homo Erectus needed to adapt to the climate change in order to survive. In the gorge, the landscape continued to change from grasslands to forests and back again to grasslands. In doing this, it made agriculture very tricky for our ancestors to

survive. In order to survive this climate change based on extremes in rain and aridity, Homo Erectus adapted to gathering food. This development of the brain was brought on by the ever-changing climate in the gorge. Other fossilized remains also showed that these extreme climate changes also caused changes in birds and reptiles due to selection pressures. This non-disputable evidence proved that back in those times, animals and organisms either adapted to be able to survive or perished.

The paper provided additional evidence to support the argument by referencing other other scientific studies that have made a connection between brain development (evolution) and climate change. The paper also supports the compelling argument that our ancestors stayed in this severe climate and adapted to it,. Prior to this research, the evidence had pointed researchers in a different direction. Previously, it was believed (but not necessarily supported) that these earlier species dispersed to other areas on earth in order to survive. There have been many journals and other scholarly papers that hypothesized that Homo Erectus survived the harsh and extreme climate change in this region by migrating elsewhere. Now here was true evidence that these homonids stayed in this extreme climate change region and learned how to survive in it through the development of their brains. The development of their brains was an adaptation that was necessary to survive. The higher functioning brain enabled this specieis to survive. More evidence to support evolution was presented and analyzed in “ Global Climate Changes Seen As Forces in Human Evolution” (Stevens, 1990). This paper was consistent in its findings. The points made in the paper supported the adaptation theory. It provided further evidence for its validity. This

particular paper detailed the various phases that our human ancestors went through in order to develop higher functioning brains that ultimately led to the evolution of our current species, Homo Sapien. In this paper, the evolutionary branch that eventually led to our own human ancestors is compared with the robust australopithecines, which eventually became extinct due to its inability to adapt to the changing environment.

This paper draws from research conducted by many Universities that specialize in the study of evolution, including Harvard, Johns Hopkins and the University of Cambridge in England. . Evidence is presented from many sources due to various studies that prove that a cooling period which occurred in Africa changed the climate and required our human ancestors to adapt due to the pressures of selection. This cooling period changed forests full of trees into grasslands that forced our ancestor tree dwelling species to become ground dwellers. It was no longer possible to live in trees, because the trees themselves had perished due to the harsh conditions of this cooling period. As a result, our ancestor species needed to adapt to this new environment, which meant surviving on the ground.

Once on the ground, this Homo species learned that bipedal, erect walking, and, running was a much more efficient way to forage for food. In becoming bipedal, the species adapted further to this physiological change by recognizing that this mode of movement left two arms free to gather and carry the food necessary to survive. Now that gathering was the established method for attaining food, the species extended its range for foraging in order to increase the area from which to gather food. The expanded range exposed the species to new situations and climates, to which its brain grew

in function in order to survive.

Data provided in this paper drew from sources that discussed the life and extinction of the robust australopithecines versus the homonids that eventually evolved to become our ancestors, and eventually to become the species Homo Sapien. Data was cited that showed that the robust australopithecines lived for a million years before becoming extinct. Studies conducted revealed that this species lacked the ability to evolve in order to expand its range. Without an evolved brain with higher functioning capacity, it was not able to escape the harsh climate change that ultimately was its demise. Fossils revealed that this species existed on plants that left fossilized chlorophyll on its teeth. This was evidence that the species remained in place, endured the harsh climate changes and did not ever evolve to gather food – it ate only vegetation, as there seemed to be no evidence of any other form of nutrition. Data gathered also proved that this species lacked the larger, evolved brain that was necessary in order to gather food, and eventually hunt for meat. Due to these limitations, it was not able to evolve to the point of being able to procreate effectively in order for the population to survive the following waves of climate change. Selection pressures had forced this species into extinction.

Contrarily, when the Homo species expanded its range, several benefits occurred, as told by the data: it was able to learn to hunt, therefore, adding much needed nutrition to its diet. This nutrition allowed the Homo species to have the vitality to devote more time to procreating and, for the duties of child rearing. In doing so, the Homo species was able to outlast, and hence survive the robust australopithecines because of the volume of population

expansion that it managed. One species adapted and continued – while the other was not able to adapt and perished.

Fast forward to many millions of years later, today our species has many environmental challenges. Scientists have confirmed that the earth's temperature, on average is higher every year (" Climate effects on," 2014). It is not clear how this global warming trend will affect human evolution. There are already changes occurring in other species, such Polar Bears that live in very cold climates and survive by fishing in ice. Their environment is collapsing due to melting ice and only time will tell how much longer these animals can survive. It is clear based on natural selection, that if the Polar Bear is to survive, that it must adapt to its new climate.

Adaptation is a process that requires changes to the genetic structure of an animal or organism. It is these changes in the animal's or organism's genetics that allow it to survive. A good example of this (" What is an," 2014) are the finches that Darwin studied on the Galapagos Islands. In his studies, Darwin noted that some finches had short beaks, while others seemed to have longer beaks. Yet, the finches all seemed to resemble each other. Upon closer examination, it appeared that the finches with the longer beaks had evolved, or adapted to their environment so that they could use their longer beaks to find and eat more bugs – hence surviving.

In genetic terms, this change in the finches required a mutation of the genes in order for the change in appearance and in function to occur. It all starts with DNA (" What is dna," 2014).

DNA stands for DeoxyriboNucleic Acid. There are four chemical bases, namely, Adenine, Cytosine, Guanine and Thymine that make up the DNA



structure shown above. DNA is the genetic code that makes every organism and animal unique.

DNA is located in the chromosome. There are twenty three pairs of chromosomes in each human cell. Genes are a combination of A, C, G and T, the four chemical bases noted above.

**The relationship between DNA, genes and chromosomes is depicted in this illustration (" What are genes," 2014).**

Each female has two X chromosomes, denoted as XX and each male has one X and one Y chromosome, denoted as XY. When a male and female mate, the result is a female, XX or a male, XY. Sometimes, abnormalities occur and children are born with different traits as a result of the pairing. A good example of this is the XYY male (Holland, 2013). Clearly, this is a genetic abnormality because males are supposed to have only one Y chromosome. When this occurs, the “ XYY male” is different than the XY male. Whereas most people has forty six (46) chromosomes in each cell – or twenty three (23) pairs of chromosomes, the XYY male has forty seven (47) chromosomes in each cell.

XYY males tend to be taller and usually have speech and learning difficulties as a result of the extra chromosome. They are usually sterile, and therefore incapable of passing on this genetic trait to offspring.

There are many other types of genetic abnormalities, such as Down’s syndrome, where one simple coding error creates a baby that has many mental and physical limitations. The genetic code and structure needs to be precisely replicated in order to create a male or female with all of their twenty three pairs of chromosomes, fully intact. References

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