

# Theory of natural selection



Evolution occurs through many generations of a species. The process can best be defined as a change in the gene pool from one generation to the next. The posing question of how evolution happens was among scientists, although theories had already been formed on the matter. Lucky for them, Charles Darwin had an answer that would serve to be quite insightful for understanding the process. Darwin believed in evolution and suggested that natural selection was the leading factor in the process of evolution. This is known as Darwin's theory of natural selection today. Not only did this theory shed light on the process of evolution, it also led to several advances in scientific research.

Darwin had been working on the idea for years, collecting research, making observations, and testing his hypothesis. During his travels as a young man, he realized there were species in certain areas that differed from the same breed of species in other areas. This brought about the idea that each species adapted to the environment they were in, and not all of the same breed were equipped the same way due to this. Darwin also believed that each species started as a very small number, but as each new generation was formed through evolution, the population of each species grew. Thus began the study of natural selection. After much thought and research, Darwin explained his theory of natural selection to be when one generation has an advantageous heritable trait that provides them the means of high survival probability in their given environment. Through the reproductive process, the advantageous gene is passed onto following generations. The advantageous gene becomes more frequent in species through each new generation. Throughout several generations, this causes species to become

well equipped to their environments they are in giving them a higher chance of survival, and the process continues as each generation is conceived, causing a new breed of species to form. It is not a process that happens overnight, or even throughout one generation. It happens over many years and multiple generations. This is an ongoing process that leads to small changes throughout all species throughout several years.

An example of natural selection could be the distinction between polar bears and black bears. Although they are both from the same genetic make or population, they share very different heritable traits that make them suited for their environments. Polar bears are well adapted to the cold environments of Antarctica, and do not survive well if they are placed somewhere that is hot such as California where it is warm year round. A black bear however, generally lives in warmer areas that experience four distinct seasons, but hibernate during the winter months. A black bear could not survive if it was placed in an area that was cold year round because it's heritable traits are not designed for that environment. This is an example of how one in the same population has branched off through the process of evolution and has become more adapted to the environments they are in, causing a new variation of species to be formed. They are still from the same population, but are each different species within the population.

Darwin's Theory of Natural Selection was a major breakthrough for scientists. Prior to this theory being brought to light, scientists were under the impression that through uniformitarianism was the key to how evolution occurred. There were several other theories prior to this, but all of them had been discredited by the next scientist who had a more accurate and

provable theory. The theory of uniformitarianism was what brought Charles Darwin to his conclusion of natural selection. (World Transformation Movement, 1998) Through the discovery of Darwin's theory, scientists were able to better understand how species were able to become more suited to their environments over periods of time, and light was shed on new leads for understanding humankind. After his theory was deemed to be true, scientists only then discovered DNA three years after. Several advances came about after Darwin proved his theory. Without the discovery of natural selection, these advances may not have been possible.

Although natural selection is one of the main driving forces of evolution, there are a few others that play a part as well. These factors are mutation, genetic drift, and gene flow. (Live Science, 2007) Mutation is one of the less common occurrences to happen in evolution. This is the result of a natural process that affects DNA and can cause changes in the evolution of species such as color. Like the previous mentioned example of polar bears and black bears, this is also an example of genetic mutation. The most distinctive difference apart from the environment they reside in, is the color between the two. Polar bears are white as to where black bears are black and other types of bears can be brown. Genetic drift is where certain advantageous traits do not carry on to the next generation and essentially die out. Gene flow is where certain heritable traits are shared between more than one variation of the same species. This process can lead to big changes fairly quick, unlike natural selection where changes occur at a slow prolonged pace. Again, the example of polar bears and black bears could serve as an example for gene flow. They both share the same heritable traits of hunting,

for fish especially. These are both traits needed to survive in each individual environment between the two variations.

Some people argue that evolution altogether is a false theory. There are however, several forms of evidence to support its validity. Humans are one of the best examples. We have evolved into a very intelligent and intellectual population, who started out as quite the opposite. Through the process of natural selection, we have thrived and became an incredible population of many varieties. Evolution is happening all around us everyday in every part of the world. DNA is another great example to prove how evolution is real. Darwin was discredited for a long time even after he was dead by those who believed evolution was false and that God was the only factor behind the variations in species and how they change. Some now believe that God is the creator, but natural selection still plays a hand in the differentiations of species.

Charles Darwin May not have been the founder of evolution, but he did play a roll in finding out how evolution occurs and what the driving factors behind it were. If his theory had not been formed, where would we be today on the knowledge of evolution? Maybe everyone would still believe in creationism or that uniformitarianism was the only process behind evolution. We have come a long way since those theories were first introduced, and we continue to move forward daily with advances in the topic occurring often. Evolution is by far one of the most incredible scientific findings scientists have made.

## References

- All About Science, (2002). Darwin's Theory of Evolution. Retrieved from <https://www.darwins-theory-of-evolution.com/>
- Doc, T. (2015, November 24). Home. Retrieved from <https://www.famousscientists.org/evolution-theories-before-darwin/>
- Live Science Staff, (2007, August 15). Forces of Evolution. Retrieved from <https://www.google.com/amp/s/amp.livescience.com/1796-forces-evolution.html>
- World Transformation Movement. (1998). ' Natural Selection' allowed the human condition to be explained. Retrieved from [https://www.humancondition.com/freedom-expanded-book1-natural-Selection/?ref=adgrants-search\\_biology&gclid=Cj0KCQjwov3nBRDFARIsANGsdoFRSuRTAHPOog\\_ghwVtuH\\_8t2XOqKJq720ZPdulkQJOxP0NShnuEAaAginEALw\\_wcB](https://www.humancondition.com/freedom-expanded-book1-natural-Selection/?ref=adgrants-search_biology&gclid=Cj0KCQjwov3nBRDFARIsANGsdoFRSuRTAHPOog_ghwVtuH_8t2XOqKJq720ZPdulkQJOxP0NShnuEAaAginEALw_wcB)