

Short Communication

Insights in Evolutionary Medicine And in Comparison to Other Species

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Commentary

Evolution is the process of change that occurs over generations in all forms of life, and evolutionary biology is the study of how evolution occurs. Biological populations evolve as a result of genetic changes that correspond to changes in the observable traits of the organisms. Mutations are genetic changes caused by damage or replication errors in an organism's DNA. Natural selection gradually causes traits to become more or less common as a population's genetic variation drifts randomly over generations based on the relative reproductive success of organisms with those traits. The Earth is approximately 4.5 billion years old. The earliest undeniable evidence of life on Earth dates back at least 3.5 billion years. Based on the similarities between all modern organisms, it is assumed that all life on Earth evolved through common descent from a last universal ancestor from which all known species diverged through the process of evolution.

Description

Everyone has hereditary material in the form of genes passed down from their parents, which they pass on to any offspring. Variations in genes occur among offspring as a result of the introduction of new genes through random changes known as mutations or the reshuffling of existing genes during sexual reproduction. Minor random differences exist between the offspring and the parent. If those differences are advantageous, the offspring has a better chance of survival and reproduction. These differences compound, resulting in population changes. This process is responsible for the world's many different life forms. With the publication of Charles Darwin's *On the Origin of Species* in 1859, the modern understanding of evolution began. Furthermore, Gregor Mendel's work with plants aided in the explanation of genetic hereditary patterns. Fossil discoveries in palaeontology, advances in pop-

ulation genetics, and a global network of scientific research have all contributed to a better understanding of evolution's mechanisms. Scientists now have a good understanding of how new species form (speciation) and have observed the process in the laboratory and in the wild. Natural history collections and museums were popular in the nineteenth century. Naturalists were employed during European expansion and naval expeditions, and curators of grand museums displayed preserved and live specimens of various life forms. Charles Darwin was an English graduate who was educated and trained in natural history disciplines. Natural historians of this type would collect, catalogue, describe, and study the vast collections of specimens stored and managed by curators at these museums. Darwin worked as a naturalist on the HMS Beagle, which was on a five-year research expedition around the world. During his voyage, he observed and collected a plethora of organisms, as he was fascinated by the various forms of life along South America's coasts and the neighbouring Galápagos Islands. Darwin gained valuable experience by collecting and studying the natural history of life forms from faraway places. Through his research, he came to the conclusion that each species descended from ancestors with similar characteristics. In 1838, he described how this would happen through a process he called natural selection. The size of a population is determined by the amount and number of resources available to support it. To maintain the same population size year after year, there must be an equilibrium, or balance, between population size and available resources. Because organisms produce more offspring than their environment can support, not all individuals from each generation survive. A competitive struggle for resources that aid in survival is required. As a result, Darwin realised that survival was not determined solely by chance. Instead, an organism's survival is determined by the differences between each individual organism, and "traits," which aid or hinder

survival and reproduction. Individuals who are well-adapted are more likely to have more offspring than their less well-adapted competitors. Characteristics that impede survival and reproduction would vanish over generations. Over generations, traits that aid an organism's survival and reproduction would accumulate [1-4].

Conclusion

Darwin recognised that the unequal ability of individuals to survive and reproduce could result in gradual changes in the population and coined the term natural selection to describe this process. The organism is a common unit of selection in evolution. Natural selection occurs when an inherited characteristic improves or reduces an individual's reproductive success, and reproductive success is measured by the number of offspring that survive. A number of biologists and philosophers have questioned the organism view. Richard Dawkins proposes that we can gain a lot of insight into evolution if we look at it from the gene's perspective; that is, natural selection works as an evolutionary mechanism on genes as well as organisms.

Acknowledgment

None

Conflict of Interest

None

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