

## Evolution doesn't just happen by chance

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It is unfortunate when people who hold strong belief in religion also believe the theory of evolution necessarily runs counter to their religious beliefs. Usually this conflict of beliefs arises from inaccurate knowledge of evolution,

An erroneous understanding exists when people believe evolution occurs randomly or solely by *chance*. Thus, they conclude that development of humans from earlier primates, or the marvelous development of eyesight, for example, seem too miraculous to have simply occurred randomly. From their perspective, it seems logical to think there must surely be a supreme being to produce the development of humans. In one sense, they are correct. Such marvelous developments would not occur by mere chance, even in a universe so large that we cannot comprehend its immensity nor its approximate time span of 13.7 billion years.

But the theory of evolution does **not** indicate that things happened by luck nor by chance. Charles Darwin and Alfred Wallace proposed a directing principle called *natural selection*. Geneticists know that our bodies continually replicate new cells to replace aging or damaged ones. This system of replication is guided by deoxyribonucleic acid (DNA). It provides a genetic code for replication and this system works well, but not perfectly. There are variations in the replication of cells, called *mutations*. Some mutations are improvements, but most mutations are not beneficial. An extreme case of unhelpful mutations occurs when we develop cancer or other major defects in cell replication.

In the long run, different species, including humans, benefit through replicating the cells that are the most helpful in improving our capacity to survive. Charles Darwin called this natural process, which goes on in living animals and plants, *natural selection*.

Natural selection provides *direction* towards helping the most fit, the most able to flourish, to reproduce, and it favours mutational changes that offer a *survival benefit*. In this important sense, there is a directing force for the changes that occur over long periods of time among living species. Thus in natural animal reserves, such as Kruger National Park, in Africa, over the long haul, animals such as zebras develop better muscles, keener eyesight, more acute hearing, etc. This evolutionary process allows them to escape from their predators, the lions. The zebras that evolve the

quickest are the most likely to survive, to breed, and to pass on their evolutionary survival benefits to their offspring. Interestingly, the lions too, evolve to have better muscles, and faster and keener hunting skills. The lions that don't evolve will be hungry and unsuccessful and will not live to reproduce. So evolution is not random chance. It is directed towards survival improvement in living animals and plants.

Some religious believers observe the beauty of the sunset; they breathe the oxygen needed to survive, and they think "What a wonderful world (environment) we have. If it were not made just the way it is, we could not live. It must have been designed just this way so humans can exist." For them, it is a kind of "proof" of a supreme being. But for Darwin, who recognized there are many environments, even within our own planetary system, the view is different. The world was not "made" for humans. When it was formed billions of years ago humans did not exist. Much later, humans evolved from primitive life forms, enabling them to survive on planet earth. Like religion, this natural version of evolution can, nonetheless, fill our minds with uplifting feelings of awe and wonder. But we can destroy our ability to survive, if by human action, we pollute our air and water, cause global warming, or deplete our natural resources and thus change our planet to a more hostile and uninhabitable environment.

It is regrettable when religious believers think that religion dictates they must reject belief in evolution, particularly if their understanding of evolution is based on incorrect knowledge of the science that supports evolution. Evolution is not based on pure undirected random chance, and it should not be rejected on that erroneous understanding. Religion and evolution need not be in conflict on this point and enlightened religious believers accommodate both science and religion in their evolutionary concepts.