Evolution is True

Evolution is observable

Species have been observed to evolve into another, both in the wild and under laboratory conditions. Examples include the three-spined stickleback, the Australian bird *Petroica multicolor*, and the London Underground mosquito - a variant of the mosquito *Culex pipiens.*

Genetic code

The evidence from molecular biology is compelling. Uniformity exists in the molecular components of organisms and how they are assembled and used. DNA comprises a different sequence of the same four molecules in all bacteria, plants, animals and humans. Various proteins are synthesized from different sequences of the same twenty-two amino acids. There is genetic continuity and common ancestry of all organisms.

Vestigial forms

Rudimentary body parts, those that are smaller and simpler than corresponding parts in the ancestral species, are called vestigial organs. They are not the product of a separate creation, but have degenerated through lack of use from previous ancestors and natural selection selecting them out. However, the genetic building blocks remain. Examples include the hind limbs of whales, the extra toes of some horses that do not reach the ground, the wings of flightless birds and the eyes of many burrowing or cave-dwelling animals. Humans have many vestigial features proving that we evolved. For example, the appendix that sits at the junction of our large and small intestines, which can too easily become blocked and infected. Humans also have a vestigial tail at the end of the spine, the coccyx, which consists of several fused vertebrae hanging below our pelvis and is what remains of the long, useful tail of our ancestors.

Comparative anatomy

Comparative anatomy is a huge area of study, which has produced massive amounts of evidence. When comparing similar limbs of different species within groups, we notice many similarities. For example, mammalian forelimbs that all have the same number and type of bones, but in different proportions showing that mammals have the same basic body plan. This is due to all mammals having a common ancestor and evolving different uses for the forelimb in different environments. Another example of such similarity is insect mouthparts; all insects have the same basic mouth structure, but have adapted them for use in different ways.

Living intermediates

There are many animals around the world that physiologically show their evolutionary links. The young of the Hoatzin bird (*Opisthocomus hoazin*) have retained reptilian claws on their wings, and the duck-billed platypus (*Ornithorhynchus anatinus*) is a mammal that lays eggs; again a reptilian trait which it retains from its reptilian ancestors.

Tiktaalik

There are detailed records of many intermediate changes. For example, the evolution of the whale, the evolution of the horse and the line from dinosaurs to birds (*Archaeopteryx*). Additionally, from fish to amphibians, *Tiktaalik roseae*, and even human evolution from *Australopithecus afarensis,* to *Homo habilis*, all the way up to modern humans. Just visit any respectable natural history museum and you can see them for yourself. *Tiktaalik* was a fish that had both gills and lungs as well as weight bearing fins for walking. However the term "transitional fossil" is itself confusing. All fossils are transitional (unless they fail to speciate) and are not in the process of "developing" into "fully formed" species. All species are "fully formed".

The 2nd chromosome

Humans have twenty-three chromosomes, but the rest of the ape family has twenty-four. If the concept of evolution and our common ancestry with the rest of the apes is true, then a pair of chromosomes must have fused together at some point in our evolutionary history after the split with our common ancestor. Scientists have discovered that our 2nd chromosome is a fusion of two chromosomes, which directly compares to chromosomes 2a and 2b of the chimpanzee.

End

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