

Science and Religion

Workshop 4: Evolution

Science

https://www2.palomar.edu/anthro/evolve/evolve_3.htm

What Is Evolution?

Biological evolution is genetic change in a population from one generation to another. The speed and direction of change is variable with different species lines and at different times. Continuous evolution over many generations can result in the development of new varieties and species. Likewise, failure to evolve in response to environmental changes can, and often does, lead to extinction.

When scientists speak of evolution as a theory they do not mean that it is a mere speculation. It is a theory in the same sense as the propositions that the earth is round rather than flat or that our bodies are made of atoms are theories. Most people would consider such fundamental theories to be sufficiently tested by empirical evidence to conclude that they are indeed facts. As a result of the massive amount of evidence for biological evolution accumulated over the last two centuries, we can safely conclude that evolution has occurred and continues to occur. All life forms, including humans, evolved from earlier species, and all still living species of organisms continue to evolve today. They are not unchanging end-products.

For those who have difficulty in accepting evolution because of what they perceive as contradictions with their fundamental religious beliefs, it may be useful to distinguish the ultimate origin of life from its later evolution. Many, if not most, biological scientists accept that primordial life on earth began as a result of chance natural occurrences 3.5-4 billion years ago. However, it is not necessary to believe in that view in order to accept that living creatures evolved by natural means after the origin of the first life. Charles Darwin modified his religious beliefs, as did many others, as a result of the discovery of convincing proof of evolution. Darwin's religious faith was also severely challenged by the death of his 10 year old daughter Annie in 1851. Apparently, he came to believe that his God created the order of the universe including the rules of nature that result in biological evolution. His famous book, *On the Origin of Species*, was not a denial of his God's existence. However, he did reject a literal interpretation of the Judeo-Christian Bible. His religious beliefs were probably very similar to those who advocate "theistic evolution" today. We now understand that there are a number of different natural processes that can cause evolution to occur.

How Do We Know That Evolution Has Occurred?

The evidence for evolution has primarily come from four sources:

1. the fossil record of change in earlier species
2. the chemical and anatomical similarities of related life forms
3. the geographic distribution of related species
4. the recorded genetic changes in living organisms over many generations

The Fossil Record

Remains of animals and plants found in sedimentary rock deposits give us an indisputable record of past changes through vast periods of time. This evidence attests to the fact that there has been a tremendous variety of living things. Some extinct species had traits that were transitional between major groups of organisms. Their existence confirms that species are not fixed but can evolve into other species over time.

The evidence also shows that what have appeared to be gaps in the fossil record are due to incomplete data collection. The more that we learn about the evolution of specific species lines, the more that these so-called gaps or "missing links in the chain of evolution" are filled with transitional fossil specimens. One of the first of these gaps to be filled was between small bipedal dinosaurs and birds. Just two years after Darwin published *On the Origin of Species*, a 150-145million year old fossil of Archaeopteryx was found in southern Germany. It had jaws with teeth and a long bony tail like dinosaurs, broad wings and feathers like birds, and skeletal features of both. This discovery verified the assumption that birds had reptilian ancestors.

Since the discovery of Archaeopteryx, there have been many other crucial evolutionary gaps filled in the fossil record. Perhaps, the most important one, from our human perspective, was that between apes and our own species. Since the 1920's, there have been literally hundreds of well-dated intermediate fossils found in Africa that were transitional species leading from apes to humans over the last 6-7 million years.

The fossil record also provides abundant evidence that the complex animals and plants of today were preceded by earlier simple ones. In addition, it shows that multi-celled organisms evolved only after the first single-celled ones. This fits the predictions of evolutionary theory.

Chemical and Anatomical Similarities

Living things on earth are fundamentally similar in the way that their basic anatomical structures develop and in their chemical compositions. No matter whether they are simple single-celled protozoa or highly complex organisms with billions of cells, they all begin as single cells that reproduce themselves by similar division processes. After a limited life span, they also all grow old and die.

All living things on earth share the ability to create complex molecules out of carbon and a few other elements. In fact, 99% of the proteins, carbohydrates, fats, and other molecules of living things are made from only 6 of the 92 most common elements. This is not a mere coincidence.

All plants and animals receive their specific characteristics from their parents by inheriting particular combinations of genes. Molecular biologists have discovered that genes are, in fact, segments of DNA molecules in our cells. These segments of DNA contain chemically coded recipes for creating proteins by linking together particular amino acids in specific sequences.

All of the tens of thousands of types of proteins in living things are mostly made of only 20 kinds of amino acids. Despite the great diversity of life on our planet, the simple language of the DNA code is the same for all living things. This is evidence of the fundamental molecular unity of life.

In addition to molecular similarities, most living things are alike in that they either get the energy needed for growth, repair, and reproduction directly from sunlight, by photosynthesis, or they get it indirectly by consuming green plants and other organisms that eat plants.

Many groups of species share the same types of body structures because they inherited them from a common ancestor that had them. This is the case with the vertebrates, which are the animals that have internal skeletons. The arms of humans, the forelegs of dogs and cats, the wings of birds, and the flippers of whales and seals all have the same types of bones (humerus, radius, and ulna) because they have retained these traits of their shared common ancient vertebrate ancestor.

All of these major chemical and anatomical similarities between living things can be most logically accounted for by assuming that they either share a common ancestry or they came into existence as a result of similar natural processes. These facts make it difficult to accept a theory of special and independent creation of different species.

Geographic Distribution of Related Species

Another clue to patterns of past evolution is found in the natural geographic distribution of related species. It is clear that major isolated land areas and island groups often evolved their own distinct plant and animal communities. For instance, before humans arrived 60-40,000 years ago, Australia had more than 100 species of kangaroos, koalas, and other marsupials but none of the more advanced terrestrial placental mammals such as dogs, cats, bears, horses. Land mammals were entirely absent from the even more isolated islands that make up Hawaii and New Zealand. Each of these places had a great number of plant, insect, and bird species that were found nowhere else in the world. The most likely explanation for the existence of Australia's, New Zealand's, and Hawaii's mostly unique biotic environments is that the life forms in these areas have been evolving in isolation from the rest of the world for millions of years.

Genetic Changes Over Generations

The earth's environments are constantly changing, usually in subtle and complex ways. When the changes are so great as to go beyond what most members of a population of organisms can tolerate, widespread death occurs. As Charles Darwin observed, however, not all individuals always perish. Fortunately, natural populations have genetic diversity. Those individuals whose characteristics allow them to survive an environmental crisis likely will be the only ones able to reproduce. Subsequently, their traits will be more common in the next generation--evolution of the population will have occurred.

This process of natural selection resulting in evolution can be easily demonstrated over a 24-hour period in a laboratory Petri dish of bacteria living in a nutrient medium. When a lethal dose of antibiotic is added, there will be a mass die-off. However, a few of the bacteria usually are immune and survive. The next generation is mostly immune because they have inherited immunity from the survivors. That is the case with the purple bacteria in the Petri dishes shown below--the bacteria population has evolved.

People have developed many new varieties of plants and animals by selective breeding. This process is similar to the bacteria experiment described above. Selection of specimens to breed based on particular traits is, in effect, changing the environment for the population. Those individuals lacking the desirable characteristics are not allowed to breed. Therefore, the following generations more commonly have the desired traits.

Species that mature and reproduce large numbers in a short amount of time have a potential for very fast evolutionary changes. Insects and microorganisms often evolve at such rapid rates that our actions to combat them quickly lose their effectiveness. We must constantly develop new pesticides, antibiotics, and other measures in an ever-escalating biological arms race with these creatures.

If evolution has occurred, there should be many anatomical similarities among varieties and species that have diverged from a common ancestor. Those species with the most recent common ancestor should share the most traits. For instance, the many anatomical similarities of wolves, dogs, and other members of the genus *Canis* are due to the fact that they are descended from the same ancient canine species and still share 99.8% of their genes. Wolves and dogs also share similarities with foxes, indicating a slightly more distant ancestor with them.

Given the abundant evidence supporting the theory of biological evolution, it is highly probable that evolution has occurred and is still occurring today. However, there remains speculation in regards to the specific evolutionary path of some species lines and the relative importance of the different natural processes responsible for their evolution.

Q1 What are the most convincing arguments and evidence for the theory of evolution?

Creationism

<http://thetruthwins.com/archives/44-reasons-why-evolution-is-just-a-fairy-tale-for-adults>

“44 Reasons Why Evolution Is Just a Fairy Tale for Adults”

January 8, 2014 by Michael Snyder

Fossil record

Evolutionists would have us believe that there are nice, neat fossil layers with older fossils being found in the deepest layers and newer fossils being found in the newest layers. This simply is not true at all...

The fossil layers are not found in the ground in the nice neat clean order that evolutionists illustrate them to be in their textbooks. There is not one place on the surface of the earth where you may dig straight down and pass through the fossil layers in the order shown in the textbooks. The neat order of one layer upon another does not exist in nature. The fossil bearing layers are actually found out of order, upside down (backwards according to evolutionary theory), missing (from where evolutionists would expect them to be) or interlaced ("younger" and "older" layers found in repeating sequences). "Out of place" fossils are the rule and not the exception throughout the fossil record.

If the theory of evolution was true, we should have discovered millions upon millions of transitional fossils that show the development of one species into another species. Instead, we have zero.

When Charles Darwin came up with his theory, he admitted that no transitional forms had been found at that time, but he believed that huge numbers certainly existed and would eventually be discovered...

Sudden explosion of complex life in the fossil record

If the theory of evolution was true, we should not see a sudden explosion of fully formed complex life in the fossil record. Instead, that is precisely what we find.

Paleontologist Mark Czarnecki, an evolutionist, once commented on the fact that complex life appears very suddenly in the fossil record...

"A major problem in proving the theory has been the fossil record; the imprints of vanished species preserved in the Earth's geological formations. This record has never revealed traces of Darwin's hypothetical intermediate variants – instead species appear and disappear abruptly, and this anomaly has fueled the creationist argument that each species was created by God."

The sudden appearance of complex life in the fossil record is so undeniable that even Richard Dawkins has been forced to admit it...

"It is as though they [fossils] were just planted there, without any evolutionary history. Needless to say this appearance of sudden planting has delighted creationists. Both schools of thought (Punctuacionists and Gradualists) despise so-called scientific creationists equally, and both agree that the major gaps are real, that they are true imperfections in the fossil record. The only alternative explanation of the sudden appearance of so many complex animal types in the Cambrian era is divine creation and both reject this alternative."

Macroevolution

Apes and humans are very different genetically. As DarwinConspiracy.com explains, "the human Y chromosome has twice as many genes as the chimpanzee Y chromosome and the chromosome structures are not at all similar."

How can we explain the creation of new information that is required for one animal to turn into another animal? No evolutionary process has ever been shown to be able to create new biological information. One scientist described the incredible amount of new information that would be required to transform microbes into men this way...

“The key issue is the type of change required — to change microbes into men requires changes that increase the genetic information content, from over half a million DNA ‘letters’ of even the ‘simplest’ self-reproducing organism to three billion ‘letters’ (stored in each human cell nucleus).”

Nobody has ever observed macroevolution take place in the laboratory or in nature. In other words, nobody has ever observed one kind of creature turn into another kind of creature. The entire theory of evolution is based on blind faith.

Contradiction from radiocarbon dating

Anything that we dig up that is supposedly more than 250,000 years old should have absolutely no radiocarbon in it whatsoever. But instead, we find it in everything that we dig up – even dinosaur bones. This is clear evidence that the “millions of years” theory is simply a bunch of nonsense...

It’s long been known that radiocarbon (which should disappear in only a few tens of thousands of years at the most) keeps popping up reliably in samples (like coal, oil, gas, etc.) which are supposed to be ‘millions of years’ old.

The bottom line is that virtually all biological specimens, no matter how ‘old’ they are supposed to be, show measurable C-14 levels. This effectively limits the age of all buried biota to less than (at most) 250,000 years.

Shells from living snails have been “carbon dated” to be 27,000 years old.

Exceptions to the rule

In 2007, fishermen caught a very rare creature known as a Coelacanth. Evolutionists originally told us that this “living fossil” had gone extinct 70 million years ago. It turns out that they were only off by 70 million years.

According to evolutionists, the Ancient Greenling Damselfly last showed up in the fossil record about 300 million years ago. But it still exists today. So why hasn’t it evolved at all over the time frame?

If dinosaurs really are tens of millions of years old, why have scientists found dinosaur bones with soft tissue still in them? The following is from an NBC News report about one of these discoveries...

For more than a century, the study of dinosaurs has been limited to fossilized bones. Now, researchers have recovered 70 million-year-old soft tissue, including what may be blood vessels and cells, from a Tyrannosaurus rex.

Statistical improbability

The odds of even a single self “assembling itself” by chance are so low that they aren’t even worth talking about. The following is an excerpt from Jonathan Gray’s book entitled “The Forbidden Secret”:

Even the simplest cell you can conceive of would require no less than 100,000 DNA base pairs and a minimum of about 10,000 amino acids, to form the essential protein chain. Not to mention the other things that would also be necessary for the first cell.

Bear in mind that every single base pair in the DNA chain has to have the same molecular orientation (“left-hand” or “right hand”)? As well as that, virtually all the amino acids must have the opposite orientation. And every one must be without error.

“Now,” explained Larry, “to randomly obtain those correct orientations, do you know your chances? It would be 1 chance in 2110,000, or 1 chance in 1033,113!

“To put it another way, if you attempted a trillion, trillion, trillion combinations every second for 15 billion years, the odds you would achieve all the correct orientations would still only be one chance in a trillion, trillion, trillion, trillion ... and the trillions would continue 2755 times!

“It would be like winning more than 4700 state lotteries in a row with a single ticket purchased for each. In other words...impossible.”

Implausability

Darwinists believe that the human brain developed without the assistance of any designer. This is so laughable it is amazing that there are any people out there that still believe this stuff. The truth is that the human brain is amazingly complex. The following is how a PBS documentary described the complexity of the human brain: “It contains over 100 billion cells, each with over 50,000 neuron connections to other brain cells.”

If the neutron were not about 1.001 times the mass of the proton, all protons would have decayed into neutrons or all neutrons would have decayed into protons, and therefore life would not be possible. How can we account for this?

If gravity was stronger or weaker by the slimmest of margins, then life sustaining stars like the sun could not exist. This would also make life impossible. How can we account for this?

Why did evolutionist Dr. Lyall Watson make the following statement?...

“The fossils that decorate our family tree are so scarce that there are still more scientists than specimens. The remarkable fact is that all of the physical evidence we have for human evolution can still be placed, with room to spare, inside a single coffin!”

Evolutionists believe that the ancestors of birds developed hollow bones over thousands of generations so that they would eventually be light enough to fly. This makes absolutely no sense and is beyond ridiculous.

DNA is so incredibly complex that it is absolutely absurd to suggest that such a language system could have “evolved” all by itself by accident...

When it comes to storing massive amounts of information, nothing comes close to the efficiency of DNA. A single strand of DNA is thousands of times thinner than a strand of human hair. One pinhead of DNA could hold enough information to fill a stack of books stretching from the earth to the moon 500 times.

Although DNA is wound into tight coils, your cells can quickly access, copy, and translate the information stored in DNA. DNA even has a built-in proofreader and spell-checker that ensure precise copying. Only about one mistake slips through for every 10 billion nucleotides that are copied.

Can you solve the following riddle by Perry Marshall?:

- 1) DNA is not merely a molecule with a pattern; it is a code, a language, and an information storage mechanism.
- 2) All codes are created by a conscious mind; there is no natural process known to science that creates coded information.
- 3) Therefore DNA was designed by a mind.

If you can provide an empirical example of a code or language that occurs naturally, you’ve toppled my proof. All you need is one.

44 In order to believe the theory of evolution, you must have enough blind faith to believe that life just popped into existence from nonlife, and that such life just happened to have the ability to take in the nourishment it needed, to expel waste, and to reproduce itself, all the while having everything it needed to survive in the environment in which it suddenly found itself. Do you have that

Q2 What are the most convincing arguments and evidence against the theory of evolution?

Q3 If the theory of evolution could be conclusively proven, what effect, if any, would this have on Biblical belief?

- a) What are the implications for our faith if the Genesis account of creation is not literally true? What effect would this have on our ability to trust other claims in the Bible?
- b) What are we to make of the claim (in Genesis) that God’s creation was good, if evolution suggests that there was death and predation prior to the emergence of humanity?
- c) What are we to make of the claim in Genesis that evil only entered the world through the sin of Adam if evolution is true?
- d) What are we to make of the Biblical claim that we all have a common ancestor in Adam (i.e. we are all part of the same family) if evolution proves the emergence of Homo Sapiens as a species rather than descended from a single created ancestor?