Notes ON Evolution

4th Chemistry / Zoology
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Prepared By

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Faculty of science

Vision

The faculty aims at distinction on the local and regional level through: Cooperating with international and regional universities and institutions Doing targeted researches Providing distinct educational services to provide labor market with qualified alumni Providing community services and scientific consultations Ongoing training in education to meet the scientific progress.

Mission

Achieving academic and student community dominated by education, awareness, culture and challenge where all parties are in ongoing dialogue to graduate active alumni equipped with information qualifies them to be producers and creators.

Zoology Department

Vision

The Department strives to be one of the specialized scientific and research institutions, seeks to be a leader in providing outstanding education, high community service, gains a distinguished international reputation and reaching universality in the coming period.

Mission

The Department keens to develop the quality of graduates with an excellent academic background, providing students with high-quality foundations in applied science, preparing graduate students to be specialized scientific cadres and seeks to play an active role in the service of civil society by providing scientific consultations.

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Chapter One

Introduction about evolution idea and its origin

Evolution, as the term is commonly used, refers to scientific theories about life on Earth. But in the simplest of terms evolution is a process of change. Evolution is a type of causal relationship that produces cumulative change in historical systems.

Evolutionary processes, including the evolution of life on Earth, are a fundamental characteristic of our universe. As early as the eighteenth century, scientist knew that evolution – genetic change in a line of decent over time – was a plausible explanation for the diversity of life forms. However, no existing theory was capable of explaining how such drastic change could come about. A fundamental teaching of evolution is that every living thing in our world -whether it be a plant, animal or bird-evolved from other creatures, which ultimately originated from dust, rock, and water.

Before inspecting the efforts of scientists to explain evolution, we want to clarify some of the concepts or terminology:

1- Species: it referred to the word, "species," as the fundamental type. In general, all life forms within a true species can usually interbreed. Plant and animal classifications have been made by men, and errors in labeling can and do occur. There are about three dozen different breeds of domesticated house cats, but a few taxonomists list most of them as different species.

2-Variations: Variations in the offspring of a creature can occur by Mendelian genetics, that is by simple rearrangements or assortments of the existing DNA molecules within genes. All variations always occur within basic types (species); they never go across those types—and produce new types or species. Producing new breeds of animals or varieties of plants is not evolution, because the species did not change. Some species have a broad gene pool and are thus able to produce many

varieties or breeds (such as dogs). Others have a small one (cheetahs have an extremely small one). Changes in color, bill length or shape, etc., can occur within a true species because it has a large gene pool. But a new species has not been produced.

3 - Mutational changes: Occasionally changes in offspring occur because of a mutational defect. Such alterations always weaken the individual that has them. A mutational change is not a normal variational reshuffling of the DNA code, but an actual change in very small item in the code information. The resultant offspring are weaker, and they are more likely to die off.

4- Survival of the fittest: Organisms are damaged by mutations or otherwise tend to be culled out. Evolutionists call that culling out process "survival of the fittest."

5- Evolution by natural selection: A plant or animal evolves by natural selection only when those processes enable it to cross the species barrier and produce a new -

a different -species. But changes occurring within a species are not evolution.

A brief overview of the efforts of scientists about evolution

Emmanuel Swedenborg (1688-1772): In his 1734 book, Principia, he theorized that a rapidly rotating nebula formed itself into our solar system of sun and planets.

Comte de Buffon (1707-1788): Spent his time to criticize the work of Linnaeus. He theorized that species originated from one another and that a chunk was torn out of the sun, which became our planet. As with the other philosophers, he presented no evidence in support of his theories.

Jean-Baptist Lamarck (1744-1829): The theory of Lamarck, which later called "Lamarckism", it is the theory of inheritance of acquired characteristics. For example, evolutionists still teach that giraffes kept stretching their

necks to reach higher branches, so their necks became longer.

Alfred Russell Wallace (1823-1913): is considered to be the man who developed the theory which Darwin published.

Charles Darwin (1809-1882): According to Darwin the evolution was accomplished by "natural selection." He published his book; "The Origin of the Species" and said that natural selection was the primary way that everything changed itself from lower life forms and produced new species.

The Origin of life

Origin of life and understanding the universe had been the matter of inquisitors to mankind. Prior to the middle of the 18th, scientists were researchers who firmly believed that all nature was made by a Master Designer. They were men of giant intellect who struggled against great odds in carrying on their work. They were hard-

working researchers. In contrast, the philosophers sat around, hardly stirring from their armchairs and theorized about everything while the scientists, ignoring them, kept at their work.

The basic unit of all life forms is a cell. All life forms, unicellular or multicellular, originate from a single cell. Biologists know almost everything physical viz. different types of cells of plants and animals, and what function different constituents of cells perform.

Having resolved the mystery of the functioning of the cell and proposed a theory of origin and phenomenon of life; the question which needs to be answered; the initial cells for every species have originated by itself or have been created.

Extraterrestrial Origin (Panspermia)

As the modern variations of the ancient theories of "panspermia", i.e. life here is of an extraterrestrial origin, the result of an astrobiological contamination that could

have occurred, for example, icy comets, meteorites or other cosmic debris from former life-bearing planets, safely encasing bacteria with DNA molecules, crushed into the Earth.

The nature of DNA molecules is such that the only source of DNA is DNA. DNA and complex organic molecules would have been destroyed by the environment of the early Earth, and even proto-organisms would not have been able to survive. Even if assuming that DNA started somehow miraculously to develop on Earth, it would have soon been destroyed, as the early Earth was continually bombarded by meteors, asteroids, comets.

The volatile conditions on the early Earth, coupled with the lack of sufficient atmosphere, extreme temperatures, including repeated melting of surface, insufficient water and continual exposure to gamma, cosmic and UV rays, would have prevented the formation of any complex organic, carbon-based molecules, or

would have destroyed them if they somehow managed to start developing.

Spontaneous generation

Is the theory of life from non-living things. People thought that fruit flies spontaneously came forth from fruit, geese from barnacles and bees from dead calves. Modern evolutionists believe in and teach spontaneous generation (They thought that if a pile of old clothes were left in a corner, it would breed mice! The proof was that, upon later returning to the clothes, mice would frequently be found there).

The evolutionist assumed that, given enough time, all the insurmountable obstacles to spontaneous generation will vanish and life can suddenly appear, grow, and flourish.

Spontaneous generation was believed by many scientists, prior to the careful experiments of some scientists like Louis Pasteur (1822-1895), which totally

disproved that foolish idea. The experiment of Louis Pasteur was very important up to that time, he concluded from his experiment that Life cannot arise from non-living materials and only God could create living creatures.

Because of the barrier of the multibillion DNA code, not only was it impossible for life to form by accident, —it could never evolve into new and different species!

There is no evidence that life has been or can be produced from non-life on this planet.

Special Creation

The theory of special creation assumes that each species that exists or ever existed was separately created, and that each of the specially created individuals of a species was endowed with the power of producing other individuals like itself, but without ability to give rise to individuals differing from it.

The theory of special creation does not assert that all the modern "species" on the earth arose by separate acts

of creation. Also, the theory does not assert that individuals do not have the ability to give rise to individuals differing from them.

As a result of his studies, Linnaeus arrived at a firm belief in Special Creation and the fixity of species. He said, "We reckon as many species as issued in pairs from the hands of the Creator"

The cell being the basic unit of life wherein the „energy" is the source of life or driving force or livingness. In respect of human being, we could accept that the whole humanity originated from the couple of cells; one cell of the male and another cell of the female. Even if scientists may be in position to assemble the cell but to give life to the cell would be beyond human reach because the „energy" required for the cells to be live and functional is not under the control of human being. This also substantiates the existence of perfect designer or creator as the only cause of creation of all life forms on this planet.

After analysis of all the studies conducted regarding the cell and the DNA and also keeping in view what is contained herein one can easily conclude that there is negligible probability that the cells could come into being by itself. How could such a complex and perfect entity come into existence without the intervention of the perfect designer or creator? Any statistician, biologist or a philosopher after due consideration of all aspects of science and philosophy would simply arrive at one and only solution, that the initial cells of every species have been created by a perfect designer or creator.

Evidence of Evolution:

1- Fossil Evidence

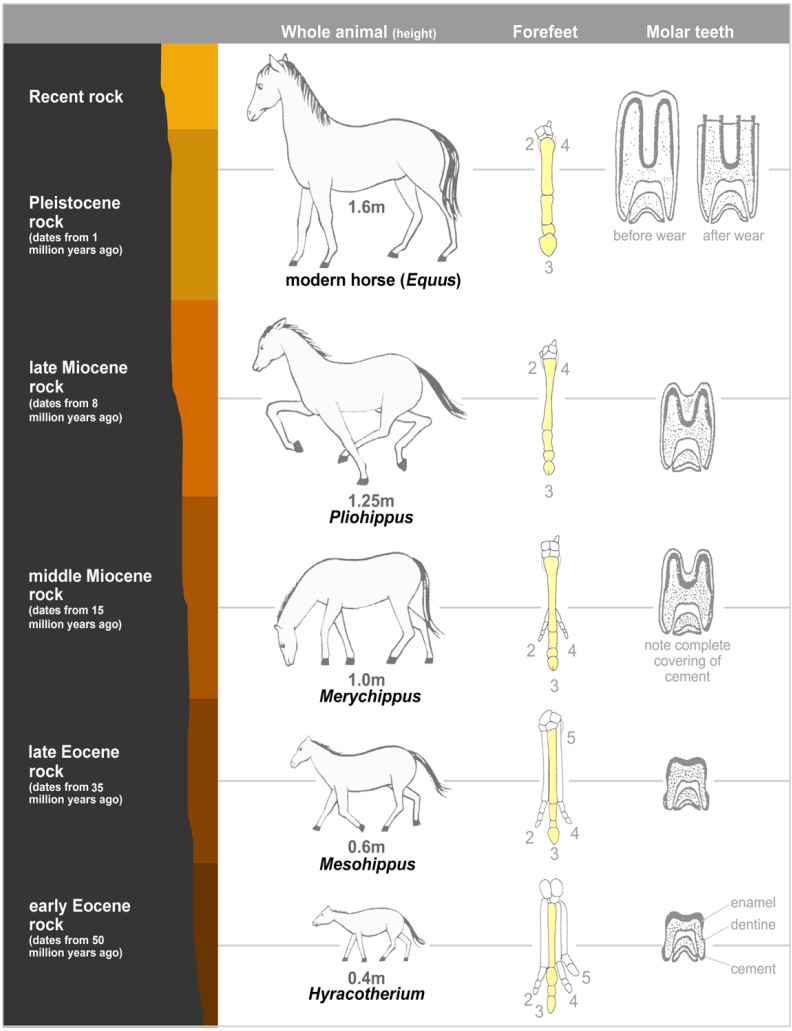
Fossils also provide direct evidence for evolution. Fossilization occurs rarely and only when three conditions are met. The first is that the organism must not be destroyed. Second, it must be buried in sediment.

Finally, the sediment around the organism must become hard and turn into rock. Fossilization requires the harder parts of a creature, such as bone, to be deposited in a stable environment. Even when these three conditions are met, fossils are often inaccessible or destroyed by erosion or other natural disasters.

When fossils are discovered, they can be dated, thus allowing us to infer the chronological order of fossil lineages. By studying each layer, geologists can establish the relative time that the fossil was first deposited at the site.

<u>The evolution of the horse</u>

The evolution of the horse can be followed through a series of fossils dating from 50 million years ago to the present. Hyracotherim is dated from (50) mya, Mesohippus is dated from (35) mya, Meryhippus is dated from (15) mya, Pliohippus is dated from (8) mya, Equus is dated is dated from (one) mya to present.



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2- Evidence from Vestigial structures

The evolution theory says that vestigial structures are parts of organisms that provide a function in the ancestral past, but lost their purpose when these organisms began to use different habitats.

Are there remnants of evolution in the human body? The evolution theory says there are. These are said to be unneeded organs, which "ancestors" used and then passed on to the recent human. Obviously, the "proof" is that there are useless, no longer needed organs which are "vestiges" from evolutionary ancestors. Likes, The Tonsils, The Appendix and The Coccyx:

Vestiges Examples:

1 - The Tonsils: Here is one of those "worthless organs," which we now know to be needed. These two small glands in the back of the throat help in the protection against infections.

2-The Appendix: This is the classic "useless" organ of evolutionary theory. Science recently discovered that man needs this organ; it is not useless after all. It helps protect you from gastrointestinal problems in the lower ascending colon. The appendix is now known to be an important part of what is called the reticulo-endothelial system of the body.

3-The Coccyx: Another organ declared useless, according to evolution theory, is the coccygeal vertebrea (the coccyx). This is the bottom of your spine. Scientists have found that important muscles (the levatorani and coccygeus) attach to those bones. Without those muscles, your pelvic organs would collapse; that is, fall down. Without them you could not walk or sit upright.

4-The Thymus: It was once considered a worthless vestigial structure. Try cutting this one out, and you will be in big trouble! Scientists have discovered that the thymus is the primary central gland of the lymphatic

system. Without it, T cells that protect your body from infection could not function properly, for they develop within it. We hear much these days about the body's "immune system," but without the thymus you would have none.

All this talk about useless organs calls our attention to the fact that everything within us has a special and important purpose. It also emphasizes that Someone very intelligent designed our bodies! We did not just "happen" into existence.

3- Artificial Selection:

Artificial selection demonstrates the evolutionary process first-hand. In a process similar to that of natural selection, artificial selection allows desirable traits to be passed to future generations. The primary distinction between these two processes is the agent of selection. While environmental pressures are the force behind

natural selection, artificial selection is driven by human preference.

An example of a species that has undergone radical changes through artificial selection is the domesticated dog (*Canis familiaris*). This particular species has experienced extreme genetic changes and has a wide variety of phenotypes. Dogs have coevolved with humans over a long period of time. The friendly disposition of domesticated dogs compared to their ancestors is a prime example of the vast genetic changes that occurred. As time progressed, technology gradually.

Artificial selection has a profound effect on a variety of species. This process serves as an appropriate model for understanding natural selection, since the underlying concept is the same – traits that (for whatever reason) have an advantage in reproducing copies of themselves are the ones that will appear in future generations.

There are dozens of varieties of dogs, cats, and pigeons. But no new species have been produced. They are still dogs, cats, and pigeons.

4- Analogous organs and Homologous organs

Analogous organs

Analogous organs are organs present in different animals and perform the same function but have different basic structure. For example, the wings of a bird and the wings of a insects have different structures, but they perform similar function (flying).

Homologous organs

Homologous structures are anatomical structures present in more than one species which have similar basic structure but perform different functions. Ex. The fore limbs of cat, whale and bats have similar bone structure but perform different functions; in cats for walking, in whales for swimming and in bats for flying.

Each of these, Analogous organs (similar function) or Homologies organs (similar structure) found in different species, but these species according to the evolution theory descended from a common ancestor.

5- Evidence from Taxonomy

Taxonomy is the science of classifying plants and animals. Taxonomists have placed all plants and animals in logical categories and then arranged them on several major levels.

Organisms are grouped together according to common characteristics, there for, it assumed that one species evolved from the other or from a common ancestor.

Carolus Linnaeus (1707-1778) was a scientist who classified immense numbers of living organisms. He clearly saw that there were no halfway species. All plant and animal species were definite categories, separate from one another. Variation was possible within a

species, and there were many sub-species. But there were no crossovers from one species to another species.

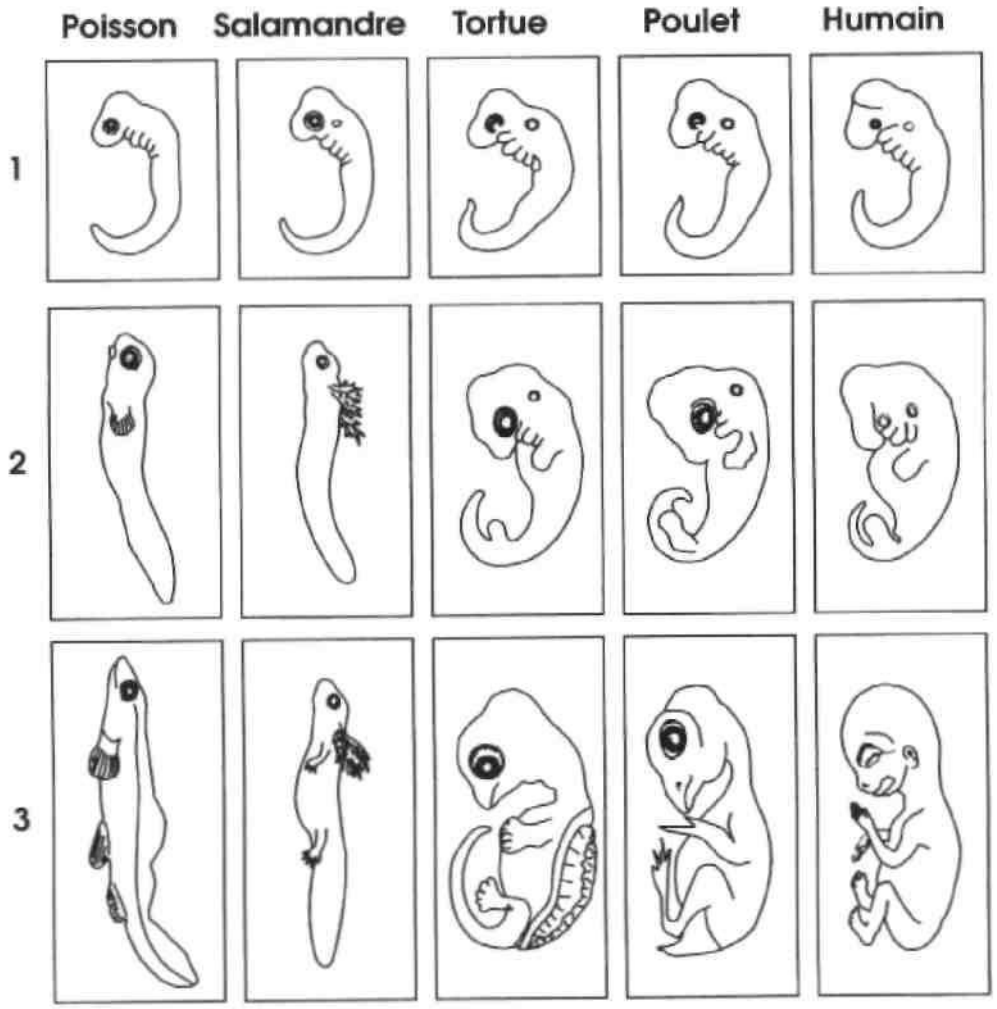
6- Evidence from Embryology:

The field of embryology has long been claimed as a source of evidence supporting descent with modification. The assertion has been that the embryos of related animals are often quite like each other, often much more similar than the adult forms, and hence the embryos provide evidence of their descent from common ancestors.

For example, it is held that the development of the human embryo correlates closely with comparable stages of other kinds of vertebrates (fish, salamander, tortoise, chicken, pig, cow, and rabbit). Furthermore, it is asserted that mammals such as cows and rabbits are more similar in embryological development than with alligators.

The drawings of early vertebrate embryos by Ernst Haeckel have been offered as proof of these presumed

correlations even though the accuracy of those drawings has been widely refuted.



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An embryo is an organism in any of the various stages of its development after fertilization and before hatching or birth. Each part of every embryo was designed and made according to a definite purpose. But when animals are just beginning to form—and while they are very, very small, —there is only one ideal way for them to develop.

It is true that embryonic similarities do indeed exist. Babies, before they are born, look quite a bit alike during the first few weeks. This includes people babies, raccoon babies, robin babies, lizard babies, and goldfish babies.

The problem here is one of size and packaging. Literally hundreds of thousands of parts are developing inside something that is extremely small. When creatures are that tiny, there are only a very few ideal ways for them to be shaped, in order to develop efficiently. They all begin as very tiny round balls. Then, gradually arms, legs, eyes, and all the other parts begin appearing.

The fact that embryos are alike in their earlier weeks reveals they were all designed and made by the same Creator.

Advance planning was required on the part of Someone who carefully thought it through. And that Person designed ALL of those babies—whether they are pigs, frogs, bats, people, pigeons, or cows.

The similarities found in embryos point to a single Creator, not to a common ancestor.

But keep in mind that we are only talking about appearance, not structure and function. Even though a finch embryo and a tiger embryo look alike, everything else about them is different. Yet if you examine that almost microscopic embryo, you find that that human has totally different genes and chromosomes than the embryos of any other type, only the outside appearance may be somewhat similar to that of other embryos.

As it grows, its structures will continue to become more and more diverse from those of any other kind.

Every species has blood cells different from all others, and a totally unique DNA code.

7- Evidence from Molecular biology

Comparison of the genetic sequence of organisms reveals that phylogenetically close organisms have a higher degree of sequence similarity than organisms that are phylogenetically distant. Comparison of the DNA sequences allows organisms to be grouped by sequence similarity, and the resulting phylogenetic trees are typically congruent with traditional taxonomy and are often used to strengthen or correct taxonomic classifications. Sequence comparison is considered a measure robust enough to be used to correct erroneous assumptions in the phylogenetic tree in instances where other evidence is scarce.

Even the genes themselves are very different in mankind, from those found in other animals, each of which has unique gene arrangements.

Since it is the genes that control structure, function, and appearance—how can different animal types have similar appearance when they have different genes? How can there be similarities among life forms with different genes—different DNA codes?

In addition to the DNA sequence there are other factors that effect on the organism's phenotype (observable characteristics). Although there was genetic similarity, the amount of specific produced proteins can be different. In other words, not because DNA sequences are similar this mean that the amounts of the produced proteins are similar. These differences in protein expression can lead to great different responses in the cells.

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Chapter Two

Theories of evolution

1- Lamarckism

Jean-Baptist Lamarck (1744-1829): made a name for himself by theorizing. He accomplished little else of significance. He laid the foundation of modern evolutionary theory, with his concept of "inheritance of acquired characteristics," which was later given the name Lamarckism.

Lamarckism can be summarized into:

1- Organs that are in use or become disused, enlarge or shrink. Therefore, new characteristics are acquired, usually as a result of environmental changes. These acquired traits enable the individual to become better adapted to his environment. The individual who does not acquire this trait, becomes extinct.

2- The acquired trait is inherited by the offspring.

Examples of Lamarckism:

In 1809, he published a book, Philosophie zoologique, in which he declared that the giraffe got its long neck by stretching it up to reach the higher branches, and birds that lived in water grew webbed feet. According to that, if you pull hard on your feet, you will gradually increase their length; and, if you decide in your mind to do so, you can grow hair on your bald head, and your offspring will never be bald. This is science?

http://delusionofevolution.blogfa.com/cat-4.aspx

There are several examples of acquired traits, which were never passed on to offspring: (1) Chinese women bound the feet of their infant girls for several thousand years, yet the feet of Chinese women today are normal in size. (2) The Flat-head Indians of Northwest United States bound the heads of their children to give them unusual shapes. After hundreds of years of this practice, their babies continued to be born with normal-shaped heads.

August Friedrich Leopold Weismann (1834-1914) was a German biologist who disproved Lamarck's notion of "the inheritance of acquired characteristics." He is primarily remembered as the scientist who cut off the tails of 901 young white mice in 19 successive generations, yet each new generation was born with a full-length tail. The final generation, he reported, had tails as long as those originally measured on the first. Weismann also carried out other experiments that buttressed his refutation of Lamarckism.

2- Darwin and Wallace theory:

Alfred Russell Wallace (1823-1913):

Alfred Wallace formulated his theory in Ternate Paper which Darwin, with the help of two friends (Charles Lyell and Joseph Hooker), pirated and published under his own name and obtained the royalties which belonged to Wallace.

In 1980, Arnold, in his book, A Delicate Arrangement, established that Darwin plagiarized Wallace's material. It was arranged that a paper by Darwin would be read to the Royal Society, in London. Priorities for the ideas thus having been taken care of Darwin set to work to prepare his book.

In February 1858, while in a delirious fever on the island of Ternate in the Molaccas, Wallace conceived the idea, "survival of the fittest," as being the method by which species change.

The fittest; which one is that? It is the one that survived longest. Which one survives longest? The fittest. This is reasoning in a circle. The phrase says nothing about the evolutionary process, much less proving it.

In 1875, Wallace declared that; species have changed in the past, by which one species descended from another in a manner that we cannot prove today. That is exactly what modern evolution teaches.

Charles Darwin (1809-1882):

Was born into wealth and able to have a life of ease. He took two years of medical school at Edinburgh University, and then dropped out. It was the only scientific training he ever received. Because he spent the time in bars with his friends, he barely passed his courses. Darwin had no particular purpose in life, and his father planned to get him into a nicely paid job as an Anglican minister. Darwin, never a scientist and knowing nothing about the practicalities of genetics.

But an influential relative got him a position as the unpaid "naturalist" on a ship planning to sail around the world, the Beagle. The voyage lasted from December 1831 to October 1836.

After leaving South America, Darwin was on the Galapagos Islands for a few days. While there, he saw some finches which had blown in from South America and adapted to their environment, producing several sub-species. He was certain that this showed cross-species evolution (change into new species). But they were still finches.

His book, Origin of the Species, was first published in November 1859. The full title, On the Origin of the Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life

Natural Selection

When a plant or animal produces offspring, variations appear. Some of the offspring will be different from other

offspring. Darwinian evolutionists, also called "Darwinists" declare that these variations (which they call "natural selection") alone which have caused all life forms on our planet.

In the years that have passed since Charles Darwin, this theory of "natural selection" has continued as a mainstay of evolutionary theory.

Natural selection examples

A- Resistant flies and bacteria

Another example of what evolutionists declare to be evolutionary change by "natural selection," is the fact that certain flies have become resistant to DDT, and some bacteria are now resistant to antibiotics.

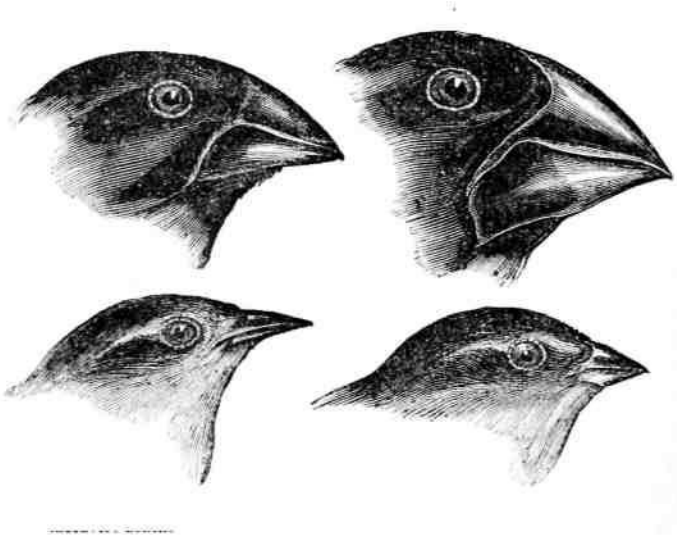
But here again, the flies are still flies, and those bacteria are still bacteria; no species change occurred. In reality, there were various strains of flies and bacteria, and as certain ones were reduced by DDT, other resistant strains reproduced more and became a majority.

B- Galapagos finches

This theory about the finches was the primary evidence of evolution he brought back with him to England. During Charles Darwin's five-year voyage on the Beagle, he visited the Galapagos and found several different finches on the Galapagos Islands. Although they all looked nearly alike, they had developed a number of different habits, diet.

The good examine of all the Galapagos Island finches (often called Darwin finches), will show that they do indeed look just about alike. They are subspecies of a single parent species that, at some earlier time, reached the island from South America.

There are far greater differences among dogs than there are among Darwin finches or than most other sub-species in the world. All biologists classify dogs as being in the same species.



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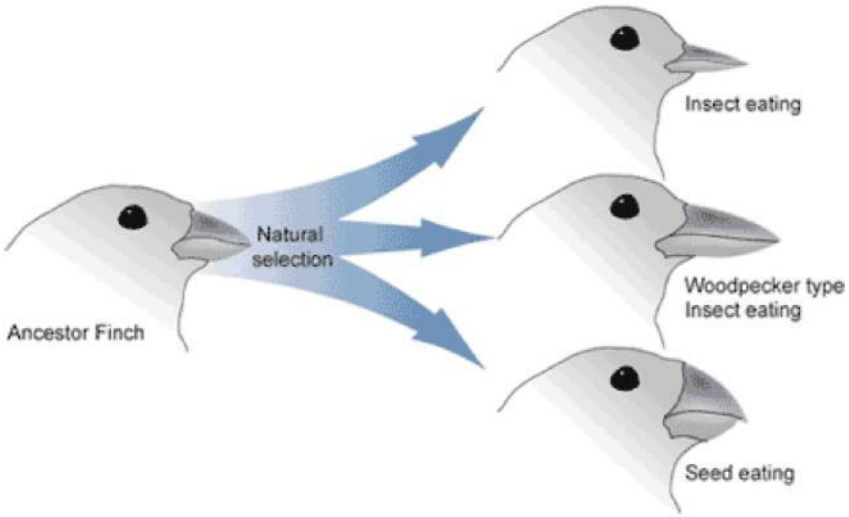

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C- Pigeons

Pigeons can be bred to produce the most astonishing variety of shapes and colors. There are dark pigeons, light pigeons, pigeons that twirl as they fly, and pigeons that have such showy wings they no longer can fly. But they are all pigeons.

Since Darwin did not bring any live Galapagos finches home with him, he decided to work with pigeons instead.

He joined two pigeon clubs, learned how to breed pigeons and then set to work. Studying them on the outside and inside as well, Darwin learned that, although there are seven basic varieties of pigeons, all the pigeons breed with one another.

All were pigeons and sub-species of one basic species type: the rock dove.

Darwin was not able to get his pigeons to become some other kind of species, although he tried very hard to do so.

Not only was the barrier of fixity of species there, but Darwin discovered that, if left to themselves, all the pigeon varieties gradually returned toward the original pigeon: the bluish rock pigeon (*Columba livia*).

If, after years of effort, Charles Darwin with his evolutionary brilliance could not change a pigeon into something else, why should he imagine that the pigeon could do it by itself?

When he wrote his book, Origin of the Species, Charles Darwin gave many examples of variation within species, and tried to use them to prove evolution outside of true species.

All this was before the discovery of Mendelian genetics, the gene, the chromosome, DNA, and the DNA barrier to evolution across basic types. Darwin, knowing nothing of modern genetics and the boundary imposed by DNA to changes across basic types, imagined that perhaps these birds were all different types - and

evolution across types had indeed occurred. In addition, decades of experimentation have revealed they never produce new species.

Obviously, all the above examples are only variations within species; none go across species. That is variation within species, not evolution across species. It is a reassortment of the DNA and genes, but nothing more.

It has been found that natural selection does not produce evolution; that is, change from one true species into another.

In fact, natural selection is obviously misnamed: It is "natural variation," not "natural selection"—for it is only composed of simple variations, or gene reshuffling, within an existing species. Or to be even more accurate, it is "random variation." It is NOT "selection."

Neo-Darwinism

When Charles Darwin wrote Origin of the Species, he based evolutionary transitions on natural selection. In his

book, he gave many examples of this, but all his examples were merely changes within the species. Charles Darwin's theory that evolution resulted from natural selection had to be abandoned.

By the early 20th century, it was obvious that scientific evidence did not exist for species change by natural selection. But, in those first decades of the century, the new science of mutation research had begun.

So, upon the ashes of the theory known as "Darwinism," arose "neo-Darwinism" which proclaimed that evolutionary change from one kind to another was accomplished through mutations, with later refinements effected by natural selection.

Neo-Darwinists speculate that mutations plus natural selection (not natural selection alone) which have produced all life forms on Planet Earth.

"Evolution is, to put it simply, the result of natural selection working on random mutations." This, of course,

assumes that mutations and natural selection are positive and purposive.

3- Mutation theory

Hugo deVries (1848-1935) while working with primroses, thought he had discovered a new species. He actually had found a new variety (sub-species) of the primrose, but deVries conjectured that perhaps his "new species" had suddenly sprung into existence as a *"mutation."* To prove his mutation theory, deVries and other researchers immediately began experimentation on fruit flies; and it has continued ever since—but totally without success in producing new species.

In 1914 *Edward Jeffries discovered that deVries' primrose was just a new variety, not a new species.

Capitalizing on the devries' theory, evolutionists explain that mutations have provided us with the millions of beneficial features in every species in the world. All that is needed is time and lots of random, mutational

changes in the DNA code, and soon myriads of outstanding life forms will emerge. Also, mutations will wonderfully adapt us to our environments.

Some concepts about mutation

A mutation is a change in a hereditary determiner, a DNA molecule inside a gene. Genes, and the millions of DNA molecules within them, are very complicated.

If such a change actually occurs, there will be a corresponding change somewhere in the organism and in its descendants.

If this change occurs in a somatic (body) gene, it only injures the individual; but if to a gametic (reproductive) gene, it will be passed on to his descendants.

If the mutation does not kill the organism, it will weaken it. Mutations generally produce one of three types of changes within genes or chromosomes:

(1) an alteration of DNA letter sequence in the genes.

(2) gross changes in chromosomes structure.

(3) a change in the number of chromosomes.

But whatever the cause, the result is a change in genetic information. Mutation only able to produce changes within species, but never change one species into another.

Several mutation experiments were carried out on the fruit fly (*Drosophila melanogaster*) because of its fast gestation period (twelve days). After decades of study, without immediately killing or sterilizing them, 400 different mutational features have been identified in fruit flies. But none changes the fruit into a different species. "Out of these mutations that have been provided by *Drosophila melanogaster*, there is not one that can be called a new species. It does not seem, therefore, that the central problem of evolution can be solved by mutations."

There are some basic hurdles that scientists must overcome to make mutations a success story for evolution:

1- Mutations must occur quite frequently.

2- Mutations must be beneficial.

3-They must effect enough change (involving, actually, millions of specific, purposive changes) so that one species will be transformed into another.

Although mutation is the ultimate source of all genetic variation, it is a relatively rare event. The frequency of a majority of mutations in higher organisms between one in ten thousand and one in a million per gene per generation. Mutations are simply too rare to have produced all the necessary traits of even one life form, much less all the creatures that swarm on the earth.

Mutations are always random, and never purposive or directed. This has repeatedly been observed in actual experimentation with mutations. Also, mutations are totally unexpected and haphazard. The only thing we can be predicted, as a result of lengthy mutational experiments, is that mutations will not go outside the species barrier and produce a new species.

Mutations are harmful do not help or improve; they only weaken and injure. The great majority of mutations, over 99%, are harmful. In most instances, mutations weaken or damage the organism in addition many mutations are lethal.

These special facts about mutations demolish any possibility that they could mutate even one species into another, much less produce all the species in the world. So not only is it impossible for mutations to cause the evolutionary process, but they also weaken or terminate the life process!

4- Synthetic Theory of Evolution

Modern evolutionary theory, is based on the idea that mutations plus natural selection, plus time can produce most wonderful changes in all living creatures. And this has been responsible for all the astounding faculties and complicated organs that we see in plants and animals.

The best-known contributors to it are; Julian Huxley, Ernst Mayr and George Simpson.

<u>The major elements of the Synthetic Theory</u>

(1) The units of evolution are populations of organisms, not single organisms. (2) Evolution is based on random mutations with respect to the adaptive needs of the organism, resulting in inherited variation. (3) Natural selection (at the level of individual organisms), acting on inherited variation, is the major cause of evolution of adaptive characteristic. (4) Changes in the genetic composition of populations can also result from random genetic drift, especially in small populations. (5) New species are formed by divergence between populations of an ancestral species. (6) Gradual accumulation of changes by these same factors results in character differences that distinguish higher taxa, i.e., macroevolution.

Types of Evolution

1- Theistic evolution

Asa Gray was the first leading theistic evolutionist advocate in America, at the time when Darwin was writing his books.

Theistic evolution is the belief that God used evolution (natural cause) and extensive time as primary mechanism to create the universe and all therein.

All theistic evolutionists believe natural cause and extensive time provide a plausible explanation for the word about us.

All theistic evolutionists believe in a god of some kind.

Some theistic evolutionists believe that, God used natural cause as his creative mechanism. The universe started with a naturalistic Big Bang that created all energy and matter. The universe was so finely-tuned that galaxies, stars, our solar system, and life developed

strictly due to natural cause without God's direct intervention.

Other theistic evolutionists believe God started things in the beginning and occasionally stepped in to jumpstart natural processes when they stalled out.

Some objects exhibit extreme functionally complexity, contain significant design information, are fine-tuned; objects of this nature cannot be plausibly explained by natural cause alone, God' intervention was required.

Some theistic evolutionists believe God performed a series of genetic mutations over millions of years to make evolution possible.

2- Quantum evolution

Quantum evolution according to George Simpson explain the rapid emergence of higher taxonomic groups in the fossil record. According to George Simpson evolutionary rates differ from group to group and even

among closely related lineages. George Simpson postulated that, in quantum evolution new forms evolve very rapidly as they adapt to very different habitats or ways of life.

Intermediate fossils would not be found if the animals involved in the transitions were relatively few in number.

Quantum evolution may occur in any taxonomic rank, but it plays a larger role in "the high taxonomic units of relatively high rank, classes, orders, and families."

3- Divergent evolution

Occurs when two different species share a common ancestor but have different characteristics from one another. This is probably the type of evolution that first comes to mind when the topic of evolution comes up.

After all, evolutionary theory teaches us that every form of life on Earth developed from the first living cells. Over time, the original cells took vastly different paths of

development and ultimately created the diversity of life on Earth – from trees to human.

Each time one ancestral species diverges into multiple descendant species it is called speciation. Speciation is an important result of divergent evolution.

Divergent evolution doesn't have to take place on such a grand scale. It can also be as simply as different population of an organism that adapted to different environment.

Darwin's finches are a good example of divergent evolution. They are different species of finches that live on the Galapagos Islands. Each separate species of finch adapted to a different diet, causing variation in their beak shape and/or size. All of them evolved from one species of finch that was a common ancestor.

The divergent evolution of wolves and domesticated dogs from a common ancestor – presumably the grey wolf- provides another example.

Adaptation and Evolution

Adaptation is a change by which an organism or species becomes better suited to its environment. Adaptation is reversible, so long as the gene pool remains diverse. Adaptation refers to the mutual fitness of organism and environment. Its consideration one of the most fascinatingly interesting phases of biology. Although we often pass the fact by unnoticed, still, when we stop to recognize it, we find that each organism is marvelously fitted for its particular niche in the great world of living things.

In addition to this not only the organism adapted to the average conditions of its environment, but it able to adjust itself to relatively wide variations. For example, if the leg of a crab, the ray of a starfish, the tentacle of a snail, or the tail of a lizard is lost, the part is gradually re-established through new growth.

A good example for adaptation is shown by the peppered moth (*Biston betularia*). There can be light

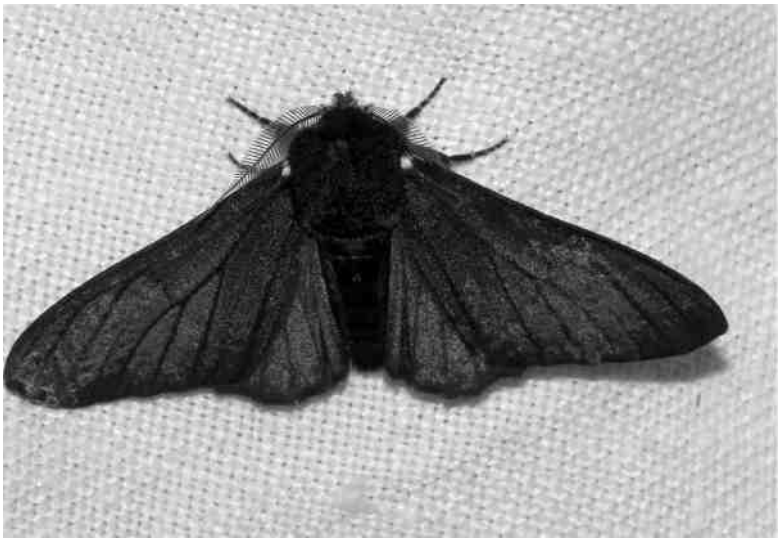
peppered moths and dark peppered moths. They are variations within a single species.

Before 1845 near Birmingham, England, the peppered moth was primarily light colored, but some had darker wings. Yet both varieties continued to be produced. birds, able to see the darker ones more easily, ate them and tended to ignore the light-colored varieties.

But then the industrial revolution came, and the trees became darker from smoke and smog, the birds began eating the lighter ones, but the darker ones kept being born.In recent years, industrial pollution laws are making the air cleaner, and the darker ones are more frequently eaten.

Because of dominant and recessive genes, this little moth continued to produce both light and dark offspring for thousands of years while the birds kept eating that they can see. Yet all that time, dark and lighter ones continued to be born.

https://commons.wikimedia.org/wiki/File:Biston.betularia.7200.jpg



https://commons.wikimedia.org/wiki/File:Biston.betularia.f.carbonaria.7209.jpg

This variations in color in a single species, consider a good example of the adaptation of this species to environmental conditions.

Evolutionists reported in more than one place that, adaptation play an important role in the evolution process;

Lamarckism

Proclaim that, new characteristics are acquired as a result of environmental changes. These acquired traits enable the individual to become better adapted to his environment. The individual who does not acquire this trait, becomes extinct.

Darwinism

When a plant or animal produces offspring, this offspring are different from each other and from its parents due to adaptation to the environment, these variations (which they call "natural selection") alone which have caused all life forms on our planet

According to Mutation theory, mutations will wonderfully adapt us to our environmental needs.

One of the major elements of the Synthetic Theory was evolution is based on mutations that are random with respect to the adaptive needs of the organism, resulting in inherited variation.

Modern conception and future of Evolution:

Species evolution never occurs by means of natural selection. Evolutionists have ransacked the plant and animal kingdoms for examples of cross-species evolution (by any means, natural selection or otherwise!) and have been unable to find them. What they have found are some interesting examples of variations within species.

It is a remarkable fact that species converted to other species was objected by several scientific research findings:

***Carolus Linnaeus* (1707-1778) said that, all plant and animal species were definite categories, separate from**

one another and variation was possible within a species but not cross-overs from one species to another.

Gregor Mendel (1822-1884) was a Creationist who lived and worked near Brunn (now Brno), Czechoslovakia. He was a science and math teacher. Unlike the theorists, Mendel was a true scientist. He bred garden peas and studied the results of crossing various varieties. Beginning his work in 1856, he concluded it within eight years. In 1865, he reported his research in the Journal of the Brunn Society for the Study of Natural Science. The journal was distributed to 120 libraries in Europe, England, and America. Yet his research was totally ignored by the scientific community until it was rediscovered in 1900. His experiments clearly showed that one species could not transmute into another one. A genetic barrier existed that could not be bridged. Mendel's work laid the basis for modern genetics; and his discoveries effectively destroyed the basis for species evolution.

It is considered to be one of the most important discoveries of the twentieth century was the discovery of the DNA molecule. It has had a powerful effect on biological research. Genetic scientists tell us that all variation occurs in living things only within each type, and never from one type to another. It is the complicated DNA code within each plant and animal type.

DNA provides clear evidence that every species is locked into its own coding pattern. It would be impossible for one species to change into another, since the genes network together so closely. It is a combination lock, and it is shut tight. Only sub-species variations can occur (varieties in plants, and breeds in animals). This is done through gene shuffling.

<u>What does this DNA look like?</u>

It has the appearance of two intertwined strips of vertical tape that are loosely coiled about each other. From bottom to top, horizontal rungs or stairs reach

across from one tape strip to the other. Altogether, each DNA molecule is something like a spiral staircase.

Deoxyribonucleic acid (DNA) is a double-stranded helix molecule consists of just four nucleotide units, one containing adenine, one guanine, one cytosine, and one either thymine (in DNA) or uracil (in RNA). Your own DNA is scattered all through your body in about 100 thousand billion specks, which is the average number of living cells in a human adult. The code within each DNA cell is complicated in the extreme! If you were to put all the coded DNA instructions from just ONE single human cell into English, it would fill many large volumes, each volume the size of an unabridged dictionary!

Inside each cell in your body is a nucleus. Inside that nucleus are, among other complicated things, chromosomes. Inside the chromosomes are genes. The genes are attached to chromosomes like beads on a chain. Inside the genes is the complicated chemical structure we call DNA. Each gene has a thousand or more

such DNA units within it. Inside each cell are tens of thousands of such genes, grouped into 23 pairs of chromosomes.

Inside the DNA is the total of all the genetic possibilities for a given species. This is called the gene pool of genetic traits. It is also called the genome. That is all the traits your species can have; in contrast, the specific subcode for YOU is the genotype, which is the code for all the possible inherited features you could have. The genotype is the individual's code; the genome applies to populations, the entire species.

For clarification, it should be mentioned here that the genotype includes all the features you could possibly have in your body, but what you will actually have is called the phenotype. This is because there are many unexpressed or recessive characters in the genotype that do not show up in the phenotype. For example, you may have had both blue and brown eye color in your genotype

from your ancestors, but your irises will normally only show one color.)

Without your DNA, you could not live. Without its own DNA, nothing else on earth could live. Within each DNA base pair is a most fantastic information file. The human body has about 100 trillion cells. In the nucleus of each cell are 46 chromosomes. In the chromosomes of each cell are about 10 billion of those DNA ladders. Scientists call each spiral ladder a DNA molecule; they also call them base pairs. It is the sequence of chemicals within these base pairs that provides the instructional code for your body. That instructional code oversees all your heredity and many of your metabolic processes. DNA has a very special way of dividing and combining. The ladder literally "unhooks" and "rehooks." When cells divide, the DNA ladder splits down the middle. There are then two single vertical strands, each with half of the rungs. Both now duplicate themselves instantly—and there are now two complete ladders, where a moment before there was

but one! Each new strip has exactly the same sequence that the original strip of DNA had.

This process of division can occur at the amazing rate of 1000 base pairs per second! If DNA did not divide this quickly, it could take 10,000 years for you to grow from that first cell to a newborn infant. Human cells can divide more than 50 times before dying. When they do die, they are immediately replaced. Every minute 3 billion cells die in your body and are immediately replaced.

Modern molecular biology with its many discoveries of DNA has added immense confirmation to the great law of heredity. Normal variations can operate, but only within a certain range specified by the DNA for that particular type of organism. Within this range are all the possible variations to be found within each species. Within each species there is a range of possible changes that can be made through gene shuffling within the gene pool of that species. That is why no two people look exactly alike. But

this variation range cannot cross the species barrier. The DNA code forbids it.

All these facts can develop and use in the future to get different variations within the same species in the right way which is beneficial to human. With the progress of modern science and the tremendous scientific discoveries can become clear to us in the future, a lot of scientific facts about the origin and evolved of life and modern concepts of evolution.

There is no evidence that at any time, in all the history of the world, even one new true species has formed from other species.

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