

EVOLUTION ADDENDUM
For Chapters 1, 2,13,16,17,18,19,26
In the Textbook

BIOLOGY
Foundation Edition
by
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Published by Pearson
2010

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Why an Addendum?

An addendum is necessary because the authors have written the text around the idea that evolution is an essential part of biology (see page 16 and the page 377 comments by Dr. Levine). It should be remembered that biology is the study of living things. It is not necessary to know about an organism's origin or past to determine: (1) how it functions internally and externally, (2) how it relates to other organisms and (3) to make predictions about other organisms. Origin and similarity to other organisms, while interesting, is not necessary to understand the detail functioning of a specific organism.

The term evolution leads to many misunderstandings and unsupported conclusions. Sometimes "evolution" means evidence for small-scale changes within species which we can observe in the present day. At other times, claims of "evolution" are based upon extrapolation and speculation about the deep past. Evolution is discussed in many instances as both fact and theory. Read the next section below of this addendum for an understanding of the problem.

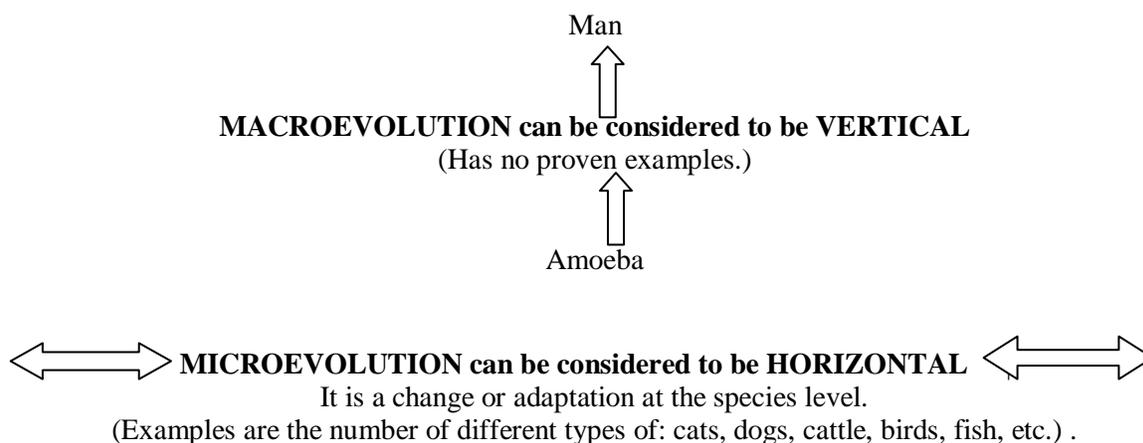
This presentation will provide additional facts concerning evolution so that the student can clearly see problems not answered by the theory of evolution. This addendum presents facts that the student should consider when judging the soundness of the theory of evolution.

Should the student learn about the theory of evolution? Definitely! It is the dominant thinking of today in the fields related to biology.

This paper presents information **only** on the sections of the text where it is felt that additional information would be helpful. The information is presented as simply and briefly as possible since time is crucial in the classroom. Reference to the textbook will be necessary to completely understand this material.

Chapter 1.3 Studying Life Page 15

The textbook authors make the following statement, "*Over generations, groups of living things evolve, or change over time.*" Wherein this statement is true it defines evolution to be simply "*change over time.*" By so doing, the authors set up a situation where the reader is and can be misled because it ignores the fact that there are varying degrees of change which are unrelated to each other and which are often spoken of as micro and macroevolution. Microevolution is more properly called a change or adaptation at the species level and is what Darwin observed. He observed that natural selection was a very strong driving force that could and does cause changes at the species level. On the basis that micro evolution was true he hypothesized that "macro" evolution or "molecules to man" evolution was also true. The textbook defines macroevolution as *large scale major changes in structure, behavior, and ecology.* (Page 456) Macroevolution could be said to occur if a dog became a cat or a dinosaur became a bird. It occurs at the genus or higher level (see text page 431) and implies that all life on Earth descended from a few types of cells that somehow came into being in the past. The diagram below should help you understand the differences in the two terms:



Another way of comparing the two concepts is given in the Table below.

TWO DEFINITIONS

Microevolution:	Macroevolution:
Different types of dogs, Cats, cattle, birds, etc.	A dog-like animal gradually changes into a whale, a dinosaur changes into a bird, etc .
It is a: FACT	BELIEF
Evidence: Yes	No Indirect
Observable Yes	No No Direct evidence - It is imagined
Repeatable Yes	No No Direct Evidence -It is assumed
Testable Yes	No All attempts have failed- Not Testable -
Is: TRUE SCIENCE	PSUEDO-SCIENCE

Based upon these definitions it is easy to see that microevolution is true but the truth of macroevolution has not been established since it has not been observed directly. Using the term "evolution" without specifying which type is being discussed is misleading and unfortunate and has caused much misunderstanding among scientists and the public. The term "macro" (molecules to man) evolution should be used in order to clarify the problem.

Big Ideas in Biology Chapter 1.3 Page 16

Some of the Big Ideas in Biology presented provide a unique opportunity to start practicing "critical thinking." Carefully examine the following "ideas" and decide whether or not they contain statements that can be proven using the definition of "Science" just described.

Information and Heredity

The second sentence says "*The information coded in DNA forms an unbroken chain that stretches back roughly 3.5 billion years.*"

Questions: Does DNA tell time? How does it do this? Since a scientific fact must be testable, devise an experiment that would prove that DNA information tells time and is it accurate?

Evolution

How would you go about proving "evolutionary change" started 3.5 billion years ago?

The previous page defines evolution as "change over time." How do you use this definition to organize biology?

Chapter 2.3 Carbon Compounds Nucleic Acids Page 40

This material is needed to clearly understand the material in chapter 19.3 page 462 (p.18 of this addendum) dealing with the origin of life. Wherein its content logically fits in this part of the textbook it can be put off until considering the material in Section 19.3. Insert it after the last paragraph of this section on nucleic acids.

In order to clearly understand some of the problems inherent in the origin of life (Chapter 19) and mutations (Chapter 13) it is important to recognize that the sugars that are part of DNA and RNA and the amino acids that make up proteins are optical isomers called chiral molecules. These are compounds with the same chemical formula but differ in structure. Compounds that have the same chemical formula but different three-dimensional structures are called isomers. Sugars and amino acids are a special kind of isomer called an **optical isomer**. This means that they have **two structural forms** which are mirror images of each other like our hands. They are referred to as dextro-rotary (D type or right handed) and laevo-rotary (L type or left handed) molecules depending upon which direction they deflect polarized light. The astounding thing is that these molecules occur in nature *in equal numbers* but **living organisms use only one or the other** of these molecules. *Amino acids are always L type and sugars occur only as D type molecules* and only these types are considered as biologic. In other words, D type amino acids and L sugars are non-biologic molecules and do not appear in living organisms even though they have exactly the same chemical equation. To further complicate the problem there is no known method of separating these

molecules in nature and the L and D molecules *show no preference* in joining with each other. If a D amino acid joins in a formation of L amino acids or a L type of sugar joins a chain of D type sugars the resulting isomer is not functional from a biologic view point because it changes the shape. When these facts are considered and the fact that there are thousands of different amino acids besides the 20 biologic ones it should be apparent that the origin of life from purely random chance happenings is impossible.

A more detailed and convincing explanation of its impossibility is presented in Appendix 1 on page 23.

Thinking Critically: What do the L and D type molecules and the great number of possible amino acids do to the origin of life concept? Support your answer.

Chapter 13.3 Mutations Page 316

It is necessary to understand this material from Chapter 13 in order to properly understand the process by which organisms change and its implication regarding the theory of evolution.

The text says on page 316, "*Mutations are changes in the genetic information that can be inherited.*" Recognize that the definition is an oversimplified statement of a very complex problem. It is self evident that as organisms become more complex there must be **additional information** in the DNA in the same sense that it takes more instructions to put together a non assembled bicycle than a velocipede.. "**New information**" must be added in order to build complexity in organisms. The question to keep in mind is, "Does the mutation actually increase the information contained in the DNA or decrease it." It is essential that this need for information be understood. Did the transition from the conventional cars of today to the hybrid cars require additional coherent information or is the hybrid car simply a rearrangement of the information required to build a conventional car? Yes is the obvious answer. Meaningful information had to be added.

The rest of chapter 13 discusses different mutation mechanisms and forces that cause changes in the DNA and therefore changes in organisms. It must be remembered that just because mutational changes do occur at the species level this does not prove that all organisms descended from a common ancestor. The textbook does not discuss some of the factors that give the reader an understanding of how difficult speciation is and the fact that it cannot explain the phenomena of molecules to man or even amoeba to man (macro) evolution.

First of all it must be remembered that the DNA in a living organism contains the complete information necessary to form an identical organism including the instructions of how to make a reader for its own code system. The amount of information stored in the DNA is staggering. Second, the amount of information stored in the DNA of man is 4166 times more than that of the H-39 Mycoplasma - one of the smallest bacteria which is now called a mollicute.¹ To put this in perspective the mollicute (H-39 mycoplasma) DNA (768,000 base pairs)² has the amount of information contained in 160 pages like this addendum page with every page covered by nothing but print with **no** pictures, graphs or headings. The information content in the DNA of man (3.2 billion base pairs)³ is the same as 420 books like this text with **nothing but text** on the pages. Some might argue that the above numbers are highly exaggerated because of what some call "junk DNA" but it is now known that the so called "junk DNA" is not junk. It is made up of introns, exons, promoters and telomeres⁴ which are functional parts of the DNA. These authors mention introns, exons and promoters on p. 310 and telomeres on page 297 as having functions. A major question is where did all of this additional information come from to fill the 420 additional books?

To understand the problem consider the following. There is no known mutational mechanism that will increase the information content of DNA in a **meaningful** manner. In other words, transposons, point and frameshift mutations, duplication errors, jumping genes, gene shuffling, extra chromosomes, and viral or bacterial invasion do not add **meaningful** information to the DNA. Viral or bacterial invasion may add

information but the chances of it being **meaningful** is zero if it occurs **in a random manner**. Think about this problem with respect to this textbook. Does mixing sentences, letters, paragraphs, errors in copying, mixing up chapters, adding two or more identical chapters or randomly adding chapters or books, magazines or newspapers add **relevant meaningful information**? The textbook may contain more pages but does it contain more information? No! It is inconceivable that **meaningful** information can be added to accomplish the bacteria to man requirement of evolution by random chance happenings particularly when the number of times it must happen and the fact that it must occur in the cell that will be involved in reproduction is considered. It should be recognized that natural selection may decrease the information in DNA but it cannot increase it

Think Critically: It has been discovered that the largest bacteria *Epulopiscium fishelsoni* has 85,000 copies of one of its genes and contains approximately 25 times as much DNA as a human cell.⁵ Does this confirm the need for added DNA to be meaningful?

For more detailed information on this subject see Appendix 2, page 25

Unit 5 Evolution Page 377

Dr. Levine, in the introduction to this Unit makes the statement “*Evolutionary theory provides the best explanation for the unity and diversity of life. It unites all living things in a single tree of life and reminds us that humans are part of nature.*”

This quote points out clearly why and how the term evolution, as defined on page 15 of the textbook (*change over time*), can be and is very misleading and even leads to false statements and ideas. Think critically about what the author is saying. How does “*change over time*” unite all living things into a “*single tree of life*”? A tree implies relationships between organisms that have not been addressed at this point. Has the author suddenly changed the definition of evolution into something else? Is Dr. Levine suddenly talking about macroevolution which I defined earlier on page 3 of this addendum? Macroevolution is not defined until 81 pages later in the textbook (page 456).

On page 11 of the text the authors say, “*In science, a theory is a **well-tested** explanation that accounts for a lot of observations and hypotheses and lets scientists make good predictions.*” How can things that happened in the past be testable? How do you go about proving or testing a procedure that happened in the past when no one was present to observe what actually happened? Macroevolution is not testable in the sense of the definition on page 11. The author does attempt to address this subject on page 8 of the text but his explanation and examples do not cover situations similar to those encountered when dealing with how and when organisms appeared and their relationship to each other. There is abundant contradictory evidence that raises serious doubts about macroevolution ever happening? What the authors should have pointed out and said is that micro-evolution is well-supported and testable but macroevolution is not. Some of the contradictory evidence and reasoning will be presented in the following parts of this addendum. The reader will observe that the supposed proofs of evolution are in reality proofs only of micro-evolution.

16.1-2 Darwin’s Voyage of Discovery Page 380

The authors say, “*Darwin developed a theory of evolution that explains how modern organisms evolved over long periods of time from common ancestors.*”

Place this next paragraph immediately after the last paragraph on page 380 of the text.

Because of the way the author defines evolution the sentence is not completely true. There is a “huge body of evidence” supporting micro-evolution (changes at the species level) not macroevolution. There is little, if any, direct evidence supporting macroevolution even though the theory of **macroevolution** was well established **before** Darwin was born (1809). Darwin proposed what was thought to be a reasonable

explanation for the theory by observing only one of the driving forces behind adaptation or micro-evolution. Darwin and others of that time **supposed** that if microevolution was true then macroevolution must be true even though they had **no** supporting evidence. Darwin recognized there was a problem as is evidenced by his book on the “Origin of Species by Means of Natural Selection.” He devoted three of the fifteen chapters (Chapters 6, 7 and 10) of his book to pointing out the problems with his theory and what it would take to disprove it. Interestingly, the problems he saw with his theory have not been resolved. Some of these will be pointed out later in this addendum.

16.3 Evolution by Natural Selection Pages 388-391.

At the bottom of page 391 the statement is made that “*Darwin used the idea that species change over time to explain the great variety of life on Earth.*” Notice that the reference is to **species** which means that natural selection applies at the species level and so is an explanation only for microevolution.

It has already been established that the complete description of an organism is contained in its DNA. In order for a macroevolutionary step to take place **meaningful information** has to be added to the DNA. “*Natural selection acts on phenotypes. It does not act directly on genes*” (page 406) and, therefore, can only select organisms from the gene pool that exists for that organism. Natural selection may increase the fitness of a particular species to survive in its particular environment and therefore acts to stabilize a species. It tends to eliminate changes in a species. Niles Eldridge, curator of the Museum of Natural History in New York City puts it this way, “*But natural selection per se does not work to create new species.*”¹ Natural selection **only works at the species level**. It cannot add the additional information so necessary for macroevolution to take place.

1. Eldridge, Niles, *An Extravagance of Species*. Natural History, Vol. 89, No. 7, (July 1980), p. 46.

• Pitman, Michael. *Adam and evolution*. London: Rider, 1984, p. 76.

16.4 Evidence of Evolution Page 392

The author attempts to prove evolution by listing several different attributes of organisms. Once again note the difficulty in not distinguishing between micro and macroevolution. The examples given are given in support of Darwin’s concept of evolution. The discussions are very short and are stated as though there is no doubt or question about their validity.

16.4 Homologous Structures Page 393

The textbook makes the statement, “*...homologous structures adapted to different purposes are the result of descent with modification from a common ancestor.*” Homology is one of the proofs proposed for macro-evolution. The real question is whether things that look similar **necessarily** have the same origin. Carefully examine the bones of the same color in figure on page 393. **Think Critically**: Can the pattern of the bones tell how they came about? If you were given all the bones of one of these colors in a bag with no labeling would you consider them to be similar? Upon close examination of the structures presented in the figure the major similarity is that they are located in the same relative location on the limbs. Do they have the same bony heads and size? Examination reveals they are not similar after all. The bone lengths, diameters and knobby protrusion locations, shape and size are all different. The information in the DNA must be very different to direct the formation of each of these different bone structures.

The textbook also states, “*Structures that are shared by related species and that have been inherited from a common ancestor are called homologous structures.*” The question arises as to exactly what is meant by the term “related species” and “inherited from the same ancestor.” Who decides what is related and has the same ancestor? It is interesting that this author maintains that the frog, alligator, chicken and horse are homologous and that the bat is analogous or not related (see below under analogous structures). Another

textbook author disagrees when it prints the human, cat, bat, horse and porpoise are homologous. Another author says the human hand, bat wing and mole foot are homologous. Another says the whale, crocodile and bird are homologous. Who is right? Can any of these be right?

Actually all are wrong. It has been known for some time that bone patterns do not reveal anything about how they came to be in the shape we find them in. Back in 1971 Sir Gavin deBeer, Director of the British Museum of Natural History, said that, “*Has Dobzhansky explained it when he stresses that there is no one to one relation between a gene and a trait, that evolution does not consist of independent changes of organs or traits; but what changes is the genetic system. Is this also why organs can be homologous in spite of the genes controlling them being different.*”¹ (emphasis added) The genes reveal that just because a structure is serving a similar purpose in different animals **it may not have come from an identical gene** and therefore have the same ancestor. Even if the genes were similar it is inconceivable that the many mutations required to produce these differences could have occurred by random chance happenings. For instance, the divisions of the fertilized egg (zygote) up to the stage where a complete sphere is formed (blastula) in reptiles and mammals are so different that it is impossible to conceive of the idea that they descended from the same ancestor even though the forelimbs look similar (homologous)² Also, the fore limbs of the newt, lizard and man develop from different parts of the embryo.³ The same is true for the guts of invertebrates. The shark, lamprey and frog are said to be homologous but come from entirely different parts of the embryo.⁴ What is it about a structure which determines common ancestry? There is no clearly defined set of guidelines so that, basically, the decision depends upon what the observer is attempting to prove and is not good science.

Another consideration regarding similarity of structures is whether there is an alternative way to perform a needed function. How many different ways can an appendage like a leg that serves to support an organism be attached to an organism? The requirement that the appendage must have stiffness can only be done in a living organism by bone or cartilage located either in the appendage or on the outside such as insects have. Can you think of another way? Except for the way they are connected together, shouldn't the bones used for support look approximately the same?

Think Critically: If the mutational problems presented earlier are considered is it reasonable that the many differences in DNA could have occurred by random chance happenings occurring one at the time? Why isn't this supposed common ancestor named? Does it really exist? Do the last three paragraphs indicate that genetics plays a part in homology?

1. Sir Gavin deBeer, *Homology: An Unsolved Problem*, 1971, p. 16 (from Readings in Genetics and Evolution, No. 8.)

2. Denton, Michael, *Evolution: A Theory in Crisis*, 1986, p. 145 and Figure 5.4.

3. Ibid. # 2, p. 146

4. The DVD “*Investigating Evolution*” under homology. ColdWater Media, Palmer Lake, CO. See also Wells, Jonathan, *Icons of Evolution*. 2000, pages, 71-78.

16.4 Vestigial Structures Page 393

Further down the page the author implies that so called vestigial structures are homologous. In order to understand the validity of this idea the following information is provided.

Originally, there were thought to be approximately 180 vestigial organs in man. Slowly over the years the number of organs considered vestigial has been reduced to zero. This makes it obvious that just because an organ appears to have no use does not mean that the use will not be discovered later.

Some have maintained that the human tail-bone was a vestige of another way of life. This is no longer a true statement. It is now known that the human tail-bone serves as an attachment point for muscles that allows humans to walk more upright than the primates.¹ Even the appendix was thought to be vestigial but the medical profession now knows that it plays a functional role in the immune system.²

1. Goss, C.M., editor, *Gray's Anatomy*, 25 th edition, Lea and Febiger, 1948, pp. 408-409.

9 Copyright 2006 (see cover

2. Kawanishi, H., *Immunology*, 1987, Vol.60, p.19-28.

16.4 Embryology Page 393

Insert these paragraphs at the end of the short paragraph on this subject.

The last three sentences of this short paragraph reflect the thinking of many years ago but they are no longer accepted as representing the actual facts. The following paragraphs will bring the reader up to date on the subject.

In 1891, Ernst Haeckel produced a series of drawings of vertebrate embryos proposing that they represent a kind of tree of life.¹ The drawings supposedly showed that all vertebrates pass through all of its macro-evolutionary history in arriving at its final state and therefore is a proof of macro-evolution. The assumption was that all organisms looked the same from the zygote stage up through the mid stage which is what Haeckel drew. He used the drawings to illustrate what he called the Biogenetic Law. Haeckel was such an enthusiastic evolutionist that he altered his drawings in order to make his point. These errors were discovered before he died and he was tried in a court by his fellow professors at the University of Jena in Germany and found guilty of fraud.²

Even though it has been known for almost one hundred years that the drawings of Haeckel and the Biogenetic Law are not true, very little effort was made to find out exactly what the facts are. Michael Pitman in 1984 reported³, “*Had he (Haeckel) started at the logical place, the zygote, he would have realized that different classes of egg differ greatly in yolk content, size and shape, cleavage patterns, blastula, and in the organization which prepares them for gastrulation. Haeckel’s series begins at the point when these diverse early stages converge, just before organ formation. This seems, for reasons unknown, to be the only tolerable intermediate stage. Thereafter, divergence again occurs into the diverse adult types.*” In the middle 1990’s Dr. Michael Richardson of St. George’s Medical School conducted a large scale investigation to determine the facts. He found that Pitman was right and that there was little resemblance between Haeckel’s drawings and what he found. What he did find was that **some** embryos do “*pass through an intermediate stage in which some of them superficially resemble each other (Haeckel’s First Stage)*”⁴ as reported by Pitman. It is important to recognize that this one appearance of similarity is true for **this case only** and indicates nothing since the embryos **are very different** for earlier and later development stages. It certainly does not indicate macro-evolution.

The textbook says (page 393), “*Your embryonic cells grew in similar patterns. These patterns of growth produced homologous tissues and organs. These similarities are evidence of common descent.*” If one examines the diagram of the reference 1 below, it becomes apparent that the authors are wrong. Not only are the sizes of the zygotes (eggs) different for the fish, amphibian, bird and mammal but the stages up to Haeckel’s First Stage are entirely different. Do a little Critical Thinking on the subject on the size of the eggs. A fish egg’s volume is about one sixth of the size of a turtle egg yolk which is approximately the volume of a chicken egg (a bird) but the volume of a human egg is about one four thousandth of a turtle egg. If all of these had a common ancestor, why are the egg sizes so different? This fact plus the fact that these organisms do not look similar at all until they get to the stage pictured in textbooks indicates that the homology argument is not valid as Dr. Richardson states.

Keith Thomson, Chairman of the Yale University Biology Department, said, “*Surely the biogenetic law is as dead as a doornail. It was finally exorcized from biology textbooks in the fifties. As a topic of serious theoretical inquiry it was extinct in the twenties.*”⁵ It is interesting that this statement was made 24 years ago but the biogenetic law still appears in modern textbooks.

1. Wells, Jonathan, *Haeckel’s Embryos & Evolution: Setting the Record Straight*. The American Biology Teacher, Vol. 61, (May 1999), Num. 5, p. 345.

2. Pitman, Michael, *Adam and Evolution*. London, Rider, 1984, p. 120.

3. Ibid. for reference 2, pp. 120-121.

4. Ibid. for reference 1, p. 345.

5. Thomson, K.S., *Ontogeny and Phylogeny Recapitulated*. American Scientist, Vol. 76 No. 3 (May/June 1988), pp. 273-275.

16.4 The Age of Earth Page 394

The textbook says, “*Radioactive dating suggests that Earth is about 4.5 billion years old.*” For more details on this subject consult the article on Page 451-52 of the text entitled “Radiometric Dating.” Unfortunately, teachers should not address this subject because of possible legal ramifications. For a closer look at some of the recent findings on this subject look under the heading “*Outside the Classroom*” on this web site

16.4 Recent Fossil Finds Pages 394-95

The authors cover more on this subject in Section 19-1 on pages 450.

This material should be inserted after the last sentence of this heading.

The authors state, “*Today, hundreds of new fossil discoveries show clearly how many modern species have evolved from older species.*” Notice the word species is referred to in this section. In this section it is very important to recognize that the authors start out talking about **gaps that exist in the fossil record at the species level**. Gaps that appear in the fossil record at the **species level** are dealing with micro-evolution - **not** macro-evolution.

The second paragraph starts off talking about microevolution but ends up implying macro-evolution when it says, “*New finds even connect land animals to whales.*” The illustration drawn across pages 394-5 attempt to show how this happened. A closer investigation indicates that this figure is still being widely debated in the literature.

The first thing to be noted is that the drawing of Rodhocetus is incorrect according to Dr. Philip Gingerich, the discoverer of the fossil. In an filmed interview by Dr. Carl Werner he was asked about how he knew it had tail flukes. Dr Gingerich replied, “*I speculated that it might have had a fluke ... I now doubt that Rodhocetus would have had a fluked tail.*”¹ Dr. Werner then asked how he knew that the animal had flippers. Dr Gingerich replied, “*Since then we have found the forelimbs, the hands, and the front arms of Rodhocetus, and we understand that it doesn't have the kind of arms that can spread out like flippers on a whale.*”¹ Does anything more need to be said about this drawing? The net result is that Rodhocetus is a land dwelling animal with a few attributes similar to a whale. Pakicetus and Ambulocetus also exhibit a few attributes similar to those found in whales but not similar to those of Rodhocetus.. The literature brings out that the number of attributes that are similar to the whale are insignificant compared to what has to happen to complete the transition to a whale. Pakicetus is an animal about the size of a wolf and weighs about one hundred pounds

Darwin was somewhat concerned by these gaps in the fossil record at the species level but saw the gaps between the various groups of organisms as lethal to his theory. He wrote, “*Why then is not every geologic formation and stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic change, and this is perhaps the most obvious and serious objection which can be urged against the theory [of macro-evolution].*”² One hundred forty five years after this was written these gaps still exist. Professor Stephen J. Gould of Harvard University (recently deceased) confirmed that Darwin's doubts are still valid when he stated, “*All paleontologists know that the fossil record contains little in the way of intermediate forms; transitions between major groups.*”³

1. *Evolution, the Grand Experiment*. Vol.1, DVD interview on August 28, 2001

2. Darwin, Charles R, *The Origin of Species*. Harvard University Press, 1964, p. 280.

3. Gould, Stephen J., *The Return of the Hopeful Monsters*, Natural History, Vol.86, No.6, June-July 1977, p.24.

16.4 Testing Natural Selection Page 396

The presentation in this section is misleading in that it is not labeled as an example of micro-

evolution. It should be recognized that all of the birds pictured are recognizable as finches and mated together in spite of their different beaks. The variations in beaks is an example of micro-evolution or adaptation and does not in any way indicate the possibility of macro-evolution.. The capability for different types and sizes of beaks was in the gene pool and was selected by the environmental conditions. Darwin called this natural selection as the authors point out. They observed adaptation just as Darwin did.

The report on the observations of the Grants on the changes of the finches in the Galapagos Islands actually verifies the fact that the changes are an example of micro-evolution. What is not reported here is that the Grants noted that the finch's beaks returned to their original, sizes and shapes once the food supply became the same as when they first started their observations. Note that the Grants did not observe the formation of a new species.

16 Solve the Chapter Mystery Page 402

The Hawaiian Honeycreeper is another example similar to Darwin's Finches. Whatever is said about one can be said for the other. Both are good examples of how natural selection works. It must be remembered that no new types of birds occurred, only variations on the existing species.

Chapter 17 Evolution of Populations Page 404-425

This entire chapter deals with how and why species came into being. It is a chapter pointing out the difficulties of microevolution and has nothing to do with macroevolution.

Section 17.1 Sources of Genetic Variation Pages 407

The reader is referred back to the material on mutations on page 4 of this addendum. On page 316 of the textbook mutation is defined as "*changes in genetic material that can be inherited*" and in this section is defined as "*a genetic change.*" The authors discuss lateral gene transfer and sexual reproduction as additional Sources of Genetic Variation.

To get a better understanding of lateral gene transfer consider the following exercise. If this textbook (Biology by Miller and Levine) were considered to contain the information in the DNA of an organism then this section could be likened to a gene. To illustrate lateral gene "transfer" consider the following. Keeping your eyes closed, open the textbook to some page and put your finger somewhere down on a page. At this spot put in section 17-1. What would be the effect? The total information in the textbook has not changed although the information has been rearranged. The shuffling would make the textbook appear different but it would not be as useful.

Critical Thinking:

1. Does the term mutation as defined above by the authors include the terms lateral gene transfer and sexual reproduction?
2. How likely is it that any one section of this textbook could be moved in a purely random chance manner somewhere else in this textbook to make it a better textbook? Does the answer to this question have any relationship to the DNA of an organism?

17.4 Developmental Genes and Body Plans Page 418

Refer back to Chapter 13.4 of this text (p.324) and the section on mutations on page 1 of this addendum. It is significant that all of the thousands of mutational efforts and studies on the fruit fly have never produced anything **but** a fruit fly. There is absolutely no evidence for macroevolution in these experiments. Remember that mutations do not add additional coherent information to the DNA. The conclusion is that wherein the "hox" genes have the capability to change organisms this occurs at the species

level and does not provide any evidence for macro-evolution.

Chapter 18 Classification Page 426-446

This chapter deals with how organisms are named and classified. It must be remembered while reading this material that there are many assumptions involved and so nothing is proved. The basic assumption is that macro-evolution is a given fact even though it has not been proven by anything presented so far in this text nor will it be proven in later chapters. Since macro-evolution assumes that all living things accidentally came from some first accidental organism the attempt is to arrange organisms into what is called a “Tree of Life.” The approach is to develop what is called a “clade” (group of lines drawn off of a single line) showing the supposed macro-evolutionary relationship between these organisms. The idea is introduced on page 434 of the textbook. Numerous “cladograms” are shown throughout the rest of the book.

A very important point to remember when examining cladograms is that the lines represent **guesses** and **not information**. In Darwin’s mind these lines represent the gaps in the fossil record and not factual information as a general rule.

An interesting experiment is to make a cladogram of the evolution of the motor bike starting with the wheelbarrow. They all contain at least one wheel, an axle in the wheel and a supporting frame. Isn’t this proof that they evolved by random chance happenings? How much time is represented by this evolutionary process?

Back on page 391 the authors stated, “*A single ‘tree of life’ that links all living things.*” This conclusion is inconsistent with the facts of natural selection and the fossil record. It ignores the gaps in the fossil record that Darwin recognized and which still exist. The late Steven J. Gould of Harvard said, “*The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches, the rest is inference, however reasonable, not the evidence of fossils*”¹

Another problem with the statement “*A single ‘tree of life’ that links all things*” is that it does not recognize that there are **many** fossils that were once thought to be extinct but have been found alive today. The table below shows a small portion of organisms that have gone through so little change over supposedly hundreds of millions of years that they are still recognizable as the same as the fossils. The above statement therefore is not true as a generalization. Paleontologist Dr. Joachim Scheven claims to have started a museum in Hagen, Germany where he has accumulated almost **two hundred** examples of fossils that were thought to be extinct but have been found alive. He has a video out on the subject. Since the founding of this museum many more fossils have been added to his list. The number is now known to be more than 500 and if bacteria are added the number rises **well above 1,000**. This can be verified easily on the web. Some of the more commonly referred to fossils are shown in this table.

ALIVE ORGANISM	YEARS PRESENT IN THE FOSSIL RECORD
Coelacanth	350 to 70 million years ²
Horseshoe Crab	424 to 50 million years ³
Lingula	510 to 430 million years ⁴
Neoplina	600 to 385 million years ⁵
Graptolites	570 to 360 million years ⁶

1. Gould, Steven J. *Evolution’s Erratic Pace*. Natural History, Vol. 86 (May 1977), p. 14.

2. Hickman, et al., *Integrated Principles of Zoology*. C. V. Mosby, London, 1979, 6th. Edition, p. 508.

3. *ibid.* p. 333.

4. *ibid.* p. 437.

5. *ibid.* p. 270

6. Rigby, Sue, *Nature*. Vol. 362, 18 March 1993, p.209.

19 The History of Life Page 448

Chapter 19.1 Fossils and Ancient Life Page 450

The authors state, “*Fossils are one of the most important sources of information about ancient life. All fossils together make up the history of life on Earth called the fossil record.*”

The material below belongs after the above quote from the first paragraph.

These statements refer to the geologic time scale (geologic column) which is given on page 453 of the text. What must be recognized is that the fossil order and geologic column are based upon macro-evolutionary thinking and **exist only in textbooks** and therefore do not prove macro- evolution.

The Geologic Time Scale was essentially in its present form by 1840 with only some minor adjustments to the dates attributed to the various strata. What this means is that the authors statement above is speculation based upon the assumption that macroevolution is true. The Geologic Time Scale existed before Darwin and long before much was known about world geology. If macroevolution is accurate then the order presented by geology and many biology books, such as this one, is what would be expected in the fossil record. However, there are facts that tend to nullify this assumption. One of these is that many gaps exist in the fossil record. Are these gaps real? Darwin was aware of this problem when he wrote, “*Why then is not every geologic formation and stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic change, and this is perhaps the most obvious and serious objection which can be urged against the theory [of macro-evolution].*”¹ Professor Stephen J. Gould of Harvard University confirmed Darwin's doubts are still valid when he stated, “*All paleontologists know that the fossil record contains little in the way of intermediate forms; transitions between major groups.*”² He also stated, “*The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches, the rest is inference, however reasonable, not the evidence of fossils*”³ Paleontologist Michael Thomas concurs when he says, “*One could argue at this point that such ‘minor’ changes, extrapolated over millions of years, (micro-evolution) could result in macro-evolutionary change. But the observational evidence will not support this argument.*”⁴

Another problem with the statement “A single ‘tree of life’ that links all things” is that it does not recognize that there are **many** fossils that were once thought to be extinct but have been found alive today (see the table on the previous page of this addendum). The table below shows a small portion of organisms that have gone through so little change over supposedly millions of years that they are still recognizable as the same as the fossils. The above statement therefore is not true as a generalization.

Thinking Critically: 1. Does the fact that there are many living fossils affect the accuracy of the so-called geologic column and its dates?
2. In view of the facts just quoted is the statement, “The fossil record tells a Story of Evolution” a reasonable one? Explain.

1. Darwin, Charles R, *The Origin of Species*. Harvard University Press, 1964, p. 280.

2. Gould, Stephen J., *The Return of the Hopeful Monsters*, Natural History, Vol.86, No.6, June-July 1977, p.24.

3. Gould, Steven J. *Evolution's Erratic Pace*. Natural History, Vol. 86 (May 1977), p. 14.

4. Thomas, Michael, *Stasis Considered*. Origins Research, Vol. 12, Fall/ Winter 1989, p. 11.

19.1 Dating Earth's History (Radiometric Dating) Pages 452

It is not recommended that the teacher discuss this topic any more than discussed in the textbook because of possible legal ramifications.

19.2 Macroevolution Page 456

The authors state, “Major changes in structure, behavior, and ecology are macroevolutionary patterns. The ways that new species form and others become extinct are macroevolutionary patterns. The extinction of the dinosaurs is a macroevolutionary pattern.” There is no doubt that these factors cause changes in the populations of the different organisms alive at the time but there is no evidence that this happened on anything except the species level which is micro-evolution. All of the examples cited are examples of microevolution. No proofs of macroevolution are presented.

19.2 Patterns and Processes of Evolution Pages 456, 633, DOL-56

Adaptation and Extinction Page 457

The authors say on page 457, “But clade Dinosauria also included some species that adapted to new conditions. Descendants of those species are still alive today. We call them birds.” The figure on this page gives the cladogram for modern birds which shows **Archaeopteryx** as the supposed link between dinosaurs and true birds. Back on page 632 is another cladogram showing this same supposed relationship with a comment at the bottom of that page saying “Fossils show that one group of feathered dinosaurs included the ancestors of birds.” Page 633 shows an Archaeopteryx fossil and artist’s concept of what it looked like. Page DOL-56 contains an artist’s conception of a recent supposed intermediary or transitional form of dinosaur to bird evolution found in China. The supposed transitional form is called **Microraptor gui** and is supposed to be 125 million years old and related to **Tyrannosaurus rex**. It had 4 wings and appears to be more primitive than Archaeopteryx and therefore a predecessor (a parent). Two other birdlike fossils found in China are the **Protarchaeopteryx** and **Caudipteryx**. The two strata that they were found in are reported dated at 120 and 136 million years and the fossil “birds” were reported to be “more primitive than Archaeopteryx.”¹ The difficulty is that Archaeopteryx, which is recognized as a **true bird** in biology textbooks,^{2,3} is dated at 150 million years old. These so called ancestors of the bird are about than 20 million years younger than the parent. How can they be called intermediates? Can a parent be younger than the children?

Another interesting fossil has been found that nullifies the idea that birds evolved from dinosaurs was reported in USA Today back in June 23, 2000 by John Tuohy. He says “*Longisquama insignis*, a feathered, four legged, 10-inch long primitive reptile, was capable of gliding, probably from tree to tree, 220 million years ago, the scientists say.” He also reports “Archaeologists say a birdlike creature they have discovered is so old that they believe it cripples the theory that birds evolved from dinosaurs.”

1. Ji Qiang, Currie, P.J., Norell, M.A., and Ji Shu-An, “Two Feathered Dinosaurs from Northeastern China.” *Nature* 393 (6687):pp.753-761, 25 June, 1998.

2. *Modern Biology*. Holt, Rinehart and Winston, 2002, p.862.

3. Miller, K.R. and Levine, J., “*Biology*.” Prentice Hall, 2002, p.807.

19.2 Gradualism and Punctuated Equilibrium Page 458

The student should notice that gradualism and punctuated equilibrium are both presented as explanations for macroevolution. The author does a good job of describing each hypothesis. Only one more factor needs to be made clear. The need for the punctuated equilibrium hypothesis has been brought about by the recognized gaps in the fossil record. The Harvard paleontologist Stephen J. Gould, who along with Niles Eldridge and Steven Stanley originated the punctuated equilibrium hypothesis, said, “The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolution trees that adorn our textbooks have data only at the tips and nodes of their branches, the rest is inference, however reasonable, not the evidence of fossils.”¹

The authors of the punctuated equilibrium hypothesis proposed it to explain the gaps in the fossil record at the **species level**. Note that this hypothesis has NO factual evidence supporting it. The ‘evidence and proof’ is the gaps in the fossil record. Contrary to the punctuated equilibrium authors wishes, some have extended the hypothesis to include the gaps at higher levels.

Two of the major objections to the hypothesis are:

1. The lack of evidence as established by the gaps. The feeling is that it would be dangerous to let the idea of lack of evidence as proof get started in science.
2. There is no plausible mechanism or explanation for the genetic changes that occur.

1. Gould, S. J., *Evolution's Erratic Pace*. Natural History, Vol. 86 (May 1977), p. 14.

19.3 Earth's Early History (The Origin of Life) Page 462

The reader of this section should consider what is actually known versus what is proposed, hypothesized, speculated or suspected to have happened to explain a given fact. This is particularly important in this section because the authors present many unproven ideas as fact and oversimplify the origin of life concept. By their very nature the facts presented cannot be proven or demonstrated scientifically. The authors present none of the weaknesses and contradicting information and logic concerning the origin of life. Unfortunately, because of this, the information presented in this addendum concerning this section does not easily integrate into the textbook information and is therefore presented as additional “food for thought.”

In order to bring this discussion of the origin of life into correct perspective several facts must be recognized and kept in mind. The material presented on pages 2-4 of this addendum and entitled Nucleic Acids and Proteins (page 40 of the textbook) is very important and indicative that life could not have originated by random chance chemical reactions.

19.3 The Early Atmosphere Page 462

Think Critically: This section presents a dialogue of the formation of the earth as established fact. How can the truth of these statements be proven? Have they been proven?

Under the heading “Key Question” the authors give a list of compounds that supposedly made up the earth’s atmosphere. Why isn’t oxygen listed? Should it have been listed? Why or why not? The answer appears in the next paragraphs.

A partial answer to the oxygen question is given in the second sentence of the next topic and in the topic entitled “**Production of Free Oxygen**” on page 464. It should be noted that the authors use the term organic molecule in their discussion. The definition of an organic molecule is one that contains carbon as stated on page 36 of the text and developed further on page 4 of this addendum.

In the world as it presently exists, life could not have evolved. Why? The presence of oxygen in the atmosphere precludes the formation of amino acids and the formation of polypeptides, proteins, ATP, nucleic acids in DNA and lipids. ² Alexander Oparin in 1924 attempted to solve this problem by proposing that if the atmosphere contained water vapor, hydrogen, methane and ammonia without any oxygen then energy from the sun and lightning would cause amino acids that would drop into the oceans and form a primordial soup from which life might have evolved.

Think Critically: What effect does the L and D molecule problem have on Oparin’s hypothesis or the atmosphere proposed by the authors or any other proposed atmosphere? Is the formation of a biologic compound more or less probable?

Oparin did not include oxygen as an atmospheric gas because amino acids react readily with oxygen to form non-biologic compounds. His hypothesis led to the Miller- Urey experiments discussed in the next textbook heading. There is, however, abundant evidence that oxygen was in the early atmosphere. Miller- Urey did prove by their experiment that the gases Oparin listed (methane, ammonia, hydrogen and water vapor) can be made to form amino acids (see next section). However, most of the amino acids formed were NOT biologic even though they can be classified as organic. This makes the formation of a biologic compound impossible for reasons given in #3 below. Some more of the problems regarding the origin of life under this hypothesis are:

1. The geologic evidence indicates that the necessary atmosphere **without any oxygen** was **not** present. Many primordial sediments contain red minerals which are metallic compounds of oxygen indicating oxygen was present at the time of their formation. There is geologic evidence that the earliest rocks (dated at 3.7 b.y.) existed in an oxygenic atmosphere¹ so that the formation of amino acids in any significant concentration in the atmosphere and therefore in the ocean was not possible.³
2. Ultraviolet light breaks down water vapor, the third building block of amino acids, into oxygen and hydrogen. The presence of oxygen minimized the formation of any amino acids in the atmosphere.

These first two problems point out that any significant amino acid concentration in water could not come from the reaction of gases in the atmosphere. Even if amino acids could somehow be formed in a pool, lake or sea there are factors such as those listed below that make the formation of life unlikely. Consider the following problem areas:

3. There are two structural types of amino acids and sugars as discussed earlier--- dextro- rotary (D type) and laevo-rotary (L type). Whenever amino acids and sugars are being formed these two types are formed in equal numbers. No known life forms use both types of amino acids⁴ and sugars. Both types of molecules will easily combine chemically with each other but only one of the wrong type of amino acid in a protein or sugar in the DNA or RNA will make it biologically useless from a functional viewpoint as pointed out earlier (pages 2-4 of this addendum). The proteins of living organisms are made up of L type amino acids and the DNA and RNA strands from D type sugars. The duplication process of the cell assures use of only the right type of molecule. There is no other known process for separating and isolating L and D molecules in the natural environment. DNA produces tRNA which promotes the synthesis of L type proteins. There is no evidence that such a separating mechanism was ever present. Replicating life forms are the only known L and D separating mechanisms that occur naturally.
4. Water is a diluting and reacting agent so the question must be answered as to how the amino acids can be concentrated to form polypeptides (chains of amino acids), proteins and, ultimately, organisms when the reaction itself produces more water. The evaporating pool hypothesis, that evaporation will concentrate the amino acids, has the problem that some of the compounds necessary for protein synthesis evaporate⁵ along with the water. Insulin, the smallest protein, requires fifty one L type amino acids (17 different types). It is inconceivable that this many amino acids could be assembled on a molecular basis without the detrimental effects of water, D type or other type of amino acids or other non-biologic compounds interacting. Even if insulin is obtained this does not verify that evolution could take place because many more proteins are needed to have even the simplest living organism.
5. Natural selection only takes place in living organisms.

6. Amino acids are quick to combine with other compounds, including those from which they were formed, to form non-biologic compounds.

7. When two or more amino acids unite by the addition of energy to form a polypeptide, a water molecule is produced. This water molecule must be removed immediately because it will unite with the polypeptide. This means that the polypeptide is not stable unless the water is removed.⁶ How can the water be removed when everything is in water. Ferris states this scientifically as,⁷ *"But it has not proved possible to synthesize plausibly pre-biotic polymers this long (30 to 60 monomers) by condensation in aqueous solution, because hydrolysis competes with polymerization."*

8. Biochemical compounds tend to break down (decay) when not combined within a living organism. When living organisms die they decompose back into their simplest molecular components. The chemical tendency is away from life.⁸ Thus even if a protein were formed it would not have been stable and would not have waited around for a spontaneous combination at some later time with other proteins.

1. Clemmy & Badham, *Oxygen in the Precambrian Atmosphere: An Evaluation of the Geologic Evidence*, Geology, Vol.10 (1982), p.141
2. Fox, S., & Dose, K., *Molecular Evolution and the Origin of Life*, Freeman and Co.(1972), p.44.
- Miller, *Production of Some Organic Compounds under Possible Primitive Earth Conditions*, Journal of Am. Chemical Society, Vol.77, (1955), pp.2351,1361.
3. Clemmy & Badham, *Oxygen in the Precambrian Atmosphere: An Evaluation of the Geologic Evidence*, Geology, Vol.10 (1982), p.141.
4. Cohen, J. *Getting All Turned Around Over the Origins of Life on Earth*. Science, Vol. 267 (1995), pp. 1265-1266
5. Horowitz & Hubbard, *The Origin of Life*, Annuals of Genetics, 8 (1974),p.393.
6. Thaxton, Bradley, & Olsen, *The Mystery of Life's Origin: Reassessing Current Theories*, New York: Philosophical Library,(1984), p.56.
7. Ferris, et al., *Synthesis of Long Prebiotic Oligomers on Mineral Surfaces*, Nature, Vol. 381, 2 May 1996, p. 59.
8. Abelson, *Chemical Events on the Primitive Earth*, Proc. National Academy of Sciences, Vol.55 (1966), pp. 1365, 1369.

19.3 The First Organic Molecules (Miller Experiment) Page 462

The famous Miller-Urey experiment supposedly proved that life could have evolved. The apparatus is shown in the figure on page 463. One of the problems of this experiment was that the experiment produced both D and L type amino acids plus other non-biologic amino acids and polymers which were capable of reacting with the desirable biologic amino acids to produce non-biologic compounds.¹ Additionally, Miller had to use a trap to isolate the products of his experiment and keep them from getting back to the original gases since the biologic amino acids formed would react readily with the excess gases and form non-biologic compounds. As necessary as it is, there is no mechanism in nature that can perform this needed isolation.

Their original experiment came up with a total of only 10 biologic amino acids and 25 non-biologic amino acids, sugars and other compounds all mixed together. The author brings up the fact that Miller Urey continued their experiment and eventually got the number of biologic amino acids up to 12. However, insulin, one of the smallest of proteins, consists of 51 amino acid bonds and requires 17 different biologic amino acids. This simplest of proteins could not have been formed had there been nothing but the Miller biologic amino acids present. Other scientists² have done similar experiments with other sources of energy and formed many other biologic and non-biologic compounds but with similar results. Still other scientists have devised experiments which have produced still other compounds that appear in living organisms. All of the cited experimenters results still involve L and D amino acids and sugars plus other non-biologic amino acids and sugars so that the peptides formed are **non biologic** and therefore not indicative of life.

A further difficulty of the Miller-Urey experiment is that in the atmosphere ultraviolet light breaks down the gases methane and ammonia, two of the three necessary building blocks of amino acids. The

concentrations of these building blocks would have been reduced quickly to such a low level that they could not have played an important part in amino acid formation because the no oxygen hypothesis implies there was no ozone layer to reduce the ultraviolet intensity.

1. Thaxton, Bradley, & Olsen, *The Mystery of Life's Origin: Reassessing Current Theories*, New York: Philosophical Library, (1984), pp. 52-54.
2. Thaxton, Bradley, Olsen, *The Mystery of Life's Origin: Reassessing Current Theories*, New York: Philosophical Library, (1984), pp. 20-39.

16.3 “Primitive” Life Forms Page 463

It is very easy to over simplify the idea of early life being primitive. The complexity of even the simplest life form is far from simple or primitive. As mentioned earlier one of the smallest prokaryotes, a mollicute or H-39 strain of mycoplasma (a bacterium) consists of 640 proteins whose average length is 400 amino acid bondings.¹ This means that it has 256,000 amino acids arranged in a very specific order. These amino acid bonds are coded in the DNA by means of 768,000 base pair bondings in a specific order and 1,536,000 sugar-phosphate pairs. If we add all of this together, we find that there are 4,864,000 individual chemical entities that must come together to form this "simple" bacterium (2x768,000 bases+1,536,000 sugars+1,536,000 phosphates+ 256,000 amino acids). Under ideal conditions, the odds of this many amino acids coming together in the right order are approximately the same as winning the Power Ball Lottery every week for the next 640 years. This neglects the L and D factors and other chemical compounds. How could this have happened accidentally? The step from inanimate organic compounds to a living organism is beyond man's ability to create. If man could finally create a living organism in a laboratory that would not prove that it could happen by random chance happenings.

It is further noted in the textbook that even though science has demonstrated other ways in which vital organic compounds might have been formed there is a vast gap between the forming of individual compounds and their assembly into the precise order necessary to obtain a living organism. As just stated, the H-39 mycoplasma has 4,864,000 compounds which have to be assembled in a precise way. This assumes there are no wrong L or D amino acids or sugars, no non-proteinous amino acids and other compounds such as were formed in the Miller-Urey experiments present. The addition of these unusable compounds greatly increases the already astronomical odds that organic compounds did not form spontaneously so that the Miller-Urey experiment has added additional problems for the evolutionist.

Recent experiments concerning the formation of polypeptides do not enhance the chances of macro evolution taking place unless the polypeptide is one that can be used in the particular organism. If it cannot be used then it is only making macro evolution less likely since it introduces an additional non-usable compound. If it is usable then it must be included in exactly the right place in the protein being formed - a very unlikely scenario.

1. Smith, *Cell Biology*, Academic Press (1971), p.86.

The Unbreakable Cycle

There is an unbreakable cycle in all cells and bacteria that makes any possibility of macro evolution coming about impossible. Part of the problem is that DNA by itself is useless unless the information can be read and acted upon. Another problem is that a cell without any DNA cannot duplicate itself and so does not lead anywhere. The fact that the mechanisms (enzymes) for duplication of cells and reading DNA is contained in the organism but the instructions on how they are to operate and how to form these mechanisms is in the DNA poses another difficulty. In other words, if the reading enzymes somehow came into existence without something to read (the DNA) plus instructions on what to do with the information obtained, they

would be useless. They should have been eliminated according to standard evolutionary theory. In a similar manner, what good are the replication enzymes if operating instructions are not present. All of this information is in the DNA but serves no purpose by itself without some means to read it. The net result is that the DNA and the rest of the organism had to form at the same time. Any one by itself is a dead end. This means that the formation of the first living organism could not have occurred in steps. The complexity and interdependence indicates design and not random chance happenings. Darwin recognized this for living organisms when he said, “*If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down.*”¹ If this is true for living organisms it is also true for nonliving organisms where natural selection does not function. There is no known way for the origin of life theories to account for origin of the first functional genetic code in a living cell.²

Thinking Critically: If all of modern science and technology have been unable to create life, are we to believe it happened by purely natural processes? Support your answer.

1. Darwin, Charles, *The Origin of Species*. Harvard University Press, 1964, p. 179.

2. Trevors, J.T. and Abel, D.L., *Chance and Necessity Do Not Explain the Origin of Life*. Cell Biology International, Vol. 28, pp. 729-739.

19.3 Formation of Microspheres Page 463

The steps from microsphere to an actual cell is beyond comprehension. It should be recognized that the differences between the cell membrane and the microsphere membrane is unbelievably large. The microsphere is an organic bubble. The membrane enclosing a cell is much more complex than a shell like structure in that it has openings which allow only certain chemicals, not just water as the microsphere does, to pass in and out and reject others. If a cell were placed inside a microsphere instead of its own membrane it would not live because there would not be any way to get nutrients into and waste out of the cell. Furthermore, Fox, et al. point out that microspheres are readily dissolved with changes in PH, heat and dilution and are easily broken up by agitation.¹ What this means is that microspheres occur under laboratory conditions and are rarely, if ever, found in nature. Miller and Orgel comment, “*the microsphere’s membranes ... ‘are not biological-like membranes since they do not contain lipids or carry out any of the functions of biological membranes. ... It seems unlikely ...that the division of microspheres is related to the origin of cell division.’*”² The other factor is that the contents within the cell membrane is much more complex than that of the microsphere.³ It should be recognized that the microsphere experiments are carried out in laboratories under carefully controlled circumstances rather than the random chance environment found in nature and so are not the ancestors of any kind of life forms. The authors acknowledge this in the first sentence of the next section.

Thinking critically: If a person puts together ten pieces of a 1,000 piece jig-saw puzzle is it reasonable to assume that the rest of the puzzle will eventually assemble itself if not touched? Is there a similarity between the jig-saw puzzle example and the first living cell from the microsphere example cited in the textbook?

1. Fox, Harada, Krampitz, Mueller, *Chemical Engineering News*. June 22, 1970, p.80.

2. Miller, Stanley L. and Orgewl, Leslie E., *The Origins of Life on the Earth*. Prentice Hall, 1974, p.144.

3. Thaxton, Charles, Bradley, Walter, Olsen, Roger, *The Mystery of Life’s Origin*. Philosophical Library, 1984, pp172-176.

19.3 Evolution of RNA and DNA Page 463

As discussed earlier RNA and DNA nucleotides consist of a base, a phosphate and a ribose sugar. The sugar can be in either the “L” or “D” form which considerably complicates the problem because only “D” or right handed sugars are present in living organisms. If a left handed ribose sugar appears in the chain then the RNA or DNA chain that might be formed is non-biologic. RNA chains have been observed to form as reported in the text but the real question is whether the initial conditions of the experiment truly

represent conditions that would actually occur in a real life situation. It should also be recognized that chains of RNA that may be able to make copies of themselves are of no use unless they are able to make a biologic protein. The formation of a biologic polypeptide is of no consequence compared to the complexity of the first living organism. It should also be recognized that even if a protein is made nothing will be accomplished by repeatedly copying this protein. It takes many different types of proteins to make a living organism. It should also be recognized that the formation of DNA from RNA is not easily accomplished. A number of very specialized proteins are necessary to accomplish this task. Where are they to come from.

19.3 Production of Free Oxygen Page 464

The authors state, *“Those first life forms must have evolved in the absence of oxygen, because Earth’s first atmosphere contained very little of that highly reactive gas.”*

Think Critically:

How many facts are presented in the statement above? How many assumptions are presented?

The following statements occur in the discussion of the “Free Oxygen” heading. What assumption had to be made in order to make each statement?

1. Over time, as indicated by fossil evidence,..
2. By 2.2 billion years ago,
3. One of the first things oxygen did...
4. As atmospheric oxygen concentrations rose, concentrations of methane and hydrogen sulfide began to decrease.
5. The rise of oxygen in the atmosphere drove some life forms to extinction, while other life forms evolved new more efficient metabolic pathways that used oxygen for respiration.
- 6.. Organisms that had evolved in an oxygen free atmosphere were forced into a few airless habitants,...
7. Some organisms, however, evolved ways of using oxygen for respiration and protecting themselves from oxygen’s powerful reactive abilities.
- 8.The stage was set for the evolution of modern life.

19.3 Sexual Reproduction and Multicellularity Page 464

The last paragraph of this Heading states, *“...A few hundred million years after the evolution of sexual reproduction. Early multicellular organisms underwent a series of adaptive radiations. The result was a great diversity of organisms.”*

The last part of the above statement is not backed up by the fossil record and is therefore an assumption. There is a wide diversity of single celled life forms but no known 2, 3, 4, or 5 celled life forms although parasites are known to exist containing 6 to 20 cells. Doesn’t logic dictate that there should be non-parasitic life forms having 2 to 5 cells if multicellular organisms came about through evolution? Based upon what you have already learned would you expect to find these intermediates?

19-3 Evolution of Multicellular Life Page 464-465

The authors continue their dialogue from a dogmatic evolutionary viewpoint and make many statements as fact, not theory. Rather than address each one of these instances individually it is hoped that the information brought out in this addendum has convinced the reader that the case for macro-evolution is basically nonexistent or very weak at best. With this in mind it is believed that the reader can determine the

assumption in the third sentence of this opening section that says, “*In this section, you will get an overview of how multicellular life evolved from its earliest forms to its present day diversity.*” The assumption is that multicellular life evolved. As brought out earlier the fossil record does not support this assumption. It is arrived at by assuming that macro-evolution is a fact.

There are at least four statements besides the one concerning Cambrian fossils on page 430, at least two on page 431, one on page 432, three on page 433 and one on page 434 that are assumptions based upon the assumption that macro-evolution is true. Can you name them?

Quaternary Period Page 469

The authors state, “*Between 6 and 7 million years ago, one group of mammals began an adaptive radiation that led to the ancestors and relatives of modern man.*” A number of assumptions had to be made in order to make this positive statement. There is a very good reason why this is an incorrect statement. Look at the addendum material concerning human evolution addressed on addendum page 22.

Chapters 20-35

In these chapters the authors continue their dialogue from a dogmatic evolutionary viewpoint and make many statements as fact, not theory. Rather than stretch this addendum out to address each one of these instances individually it is hoped that the information brought out in this addendum has convinced the reader that the case for macro-evolution is nonexistent or very weak at best. A friend has counted at least 130 such instances in Chapters 20-35. This should make it clear that the authors are heavily biased regarding evolution so that the presentation in this textbook is not a well balanced presentation of the strengths and weaknesses of macro-evolution. Darwin’s last sentence in his “Origin of Species” encourages everyone to carefully consider the facts and weaknesses of his theory. His statement is given in the second to last sentence in this addendum. You are encouraged to follow his approach.

26.1 Cambrian Fossils Page 625 and 629

The Cambrian Explosion is one of the mysteries of geology in that, as the authors state, “*most animal phyla evolved.*” More phyla have been discovered in these strata than exist now. The real problem is that these organisms seem to appear suddenly without any ancestors. Richard Dawkins, author of *The Blind Watchmaker*, puts it this way, “*...the Cambrian strata of rocks, vintage about 600 million years, are the oldest in which we find most of the major invertebrate groups. And we find many of them already in an advanced state of evolution, the very first time they appear. It is as though they were just planted there, without any evolutionary history.*”¹ For instance, the trilobite is an extremely complex organism with a segmented body and legs including a complex nervous system and one of the most complex eyes known. Science News puts it this way regarding trilobite eyes, “*...the most sophisticated eye lenses ever produced by nature.*”² There are trilobites in the pre-Cambrian strata but they show no signs of being related to the Cambrian trilobites. Even Charles Darwin recognized the Cambrian Explosion problem and had this to say on the subject, “*The case at present must remain inexplicable; and may be truly urged as a valid argument against the views here entertained.*”³

Think Critically: Is this what you would expect if macro-evolution were true? Darwin recognized the Cambrian Explosion as a major problem back in his time. Since that problem still has not been resolved what should be our response? Should we agree with Darwin?

1. Dawkins, Richard, *The Blind Watchmaker*. New York: W. W. Norton, 1987, p. 229.

- Stephen J. Gould of Harvard . *A Short Way to Big Ends*, Natural History, Vol. 95 #1 (January 1986), p. 18 - 28.
- 2. Shawver, Lisa J., *Trilobite Eyes: An Impressive Feat of Early Evolution*. Science News, Vol.105, (2 February, 1974), p. 72.
- 3. Darwin, Charles, *On the Origin of Species*. Harvard University Press, 1964, p. 308.

26.3 Human Evolution Pages 634 - 637

On page 634 a cladogram reveals that the ancestor of humans is the chimpanzee as fact Consider the following facts in deciding whether or not man and chimpanzee “*evolved from a common ancestor.*” A recent article in the Proceedings of the National Academy of Sciences suggests that there is approximately a 5% difference between the DNA of chimpanzees and humans.¹ This information was obtained by comparing approximately 1% of the genome and considered substitutions, insertions and deletions. As more of the genome is considered the difference has risen to 7.7%² and 13.3%. It has even been estimated to be as high as 20%.³ The much publicized number of 1.4% was obtained by considering only substitutions.

Even the 5% difference amounts to a staggering amount of information in the DNA. If the human and chimpanzee genomes are considered to have the same number of base pairs, (3,200,000,000) in spite of the chimp having 2 more chromosomes than the human and 10% more DNA,⁴ the 5% amounts to 150,000,000 bases. This is the amount of information contained in a book whose thickness is equivalent to about 30 books such as this textbook if it contained nothing but full pages of print from cover to cover. If this much information difference exists in the DNA between the chimpanzee and the human the difference between man’s ancestor and man **must be much larger**. It is completely inconceivable that this much coherent information could have been accidentally changed in the DNA of a member of the ape family to get man when the mutational problems discussed earlier are considered. If the transition from ape to man is to be accomplished by mutations, it is apparent that there should be plenty of fossil evidence. Where is the fossil evidence?

Think Critically: If the chimp has 10% more DNA than a human how can it be said that there is only a 5% difference? Which of the differences given above is the most reasonable?

There is much disagreement over whether or not “Lucy” (page 636) is in the ancestral lineage of man. Many reputable paleontologists maintain that she is only a pygmy chimpanzee similar to ones alive today. Paleontologist Adrienne Zihlman, University of California at Santa Cruz says, “*Lucy's fossil remains match remarkably well with the bones of a pygmy chimp.*”⁵ Evolutionists such as Charles Oxnard, Sir Solly Zuckerman, William L. Jungers, Jack T. Stern, Jr and Randall L. Susman all concur.⁶⁻⁹

1. Britten, R.J., *Divergence Between Samples of Chimpanzee and Human DNA Sequences Is 5% Counting Indels*. Proceedings of the National Academy of Sciences, USA, Vol. 99, 2002, pp. 13633-13635.
2. Watanabe, H. et al, *DNA Sequence and Comparative Analysis of Chimpanzee Chromosome 22*. Nature, Vol. 429, 27 May 2004, pp. 382-388.
3. Weissenbach, Jane, *Differences With Relatives*. Nature, Vol, 429, 27 May 2004, pp. 353-354.
4. Hacia, J. G., *Genome of the Apes*. Trends in Genetics, Vol.17 #11, 2001, pp. 637-645.
5. Zihlman, A.L., “*Pygmy Chimps, People, and the Pundits*,” New Scientist, Vol.104, No.1430, Nov.1984, pp. 39.
6. Oxnard, Charles E., *University of Chicago Magazine*, Winter 1974, p. 11.
7. Zuckerman, Solly, “*Beyond the Ivory Tower*,” London: Taplinger Press, 1970, p. 78.
8. Jungers, “*Lucy's Limbs: Skeletal Allometry and Locomotion in Australopithecus Afarensis*,” Nature, Vol. 297, 24 June 1982, pp. 676-678..
9. Stern and Susman, “*The Locomotor Anatomy of Australopithecus Afarensis*,” American Journal of Physical Anthropology, Vol. 60, March 1983, pp. 279-317.

Conclusions

What has been covered in this addendum should be kept in mind as one reads through this textbook. As stated at the beginning of this addendum the authors assume that macro-evolution is true and use this assumption to make unsubstantiated statements addressing the origin of different organisms. The reader should always keep in mind that macro-evolution cannot happen unless a change increases the information

content of the DNA in a meaningful manner. This will help a person to determine whether or not a change is reasonable and/or possible.

Now that the end of this addendum has been reached several conclusions should be obvious such as:

1. It is misleading to use the term evolution without specifying whether it is micro or macro-evolution being discussed.
2. Adaptation or micro-evolution occurs at the species level and is provable using conventional scientific tests and principles. It is a fact.
3. The fact that adaptation of species (micro-evolution) is true does not imply or prove that molecules to man evolution (macro-evolution) occurs any more than the first cool days of October imply or prove that an ice age is beginning or because a person learns something from watching PBS for an hour imply or prove that watching PBS continuously will produce a genius. The major problems that Darwin recognized with his hypothesis are still true plus new ones as science has advanced. Some of these are:

Gaps in the fossil record.

Cambrian explosion

The fossilization process demands catastrophic happenings more violent than what we see today.

Similar genes do not necessarily produce similar structures.

How new meaningful information can be added to the DNA by random chance happenings.

Optical isomers preclude life evolving.

4. Other explanations for what is observed on earth should be examined.

At the end of Darwin's book he wrote, "For I am well aware that scarcely a single point is discussed in this volume on which facts cannot be adduced, often apparently leading to conclusions directly opposite to those at which I have arrived. A fair result can be obtained only by fully stating and balancing the facts and arguments on both sides of each question." I encourage you to follow his advice.

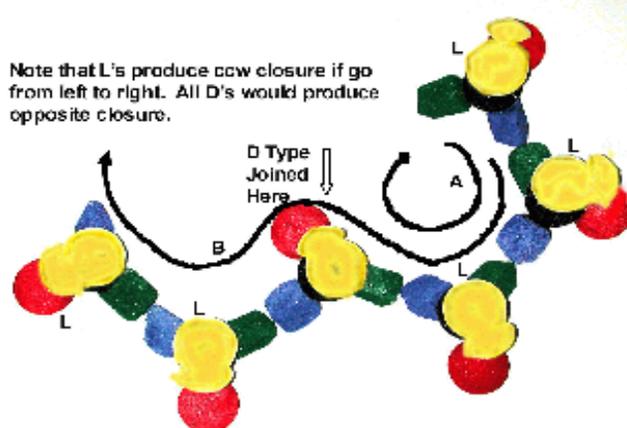
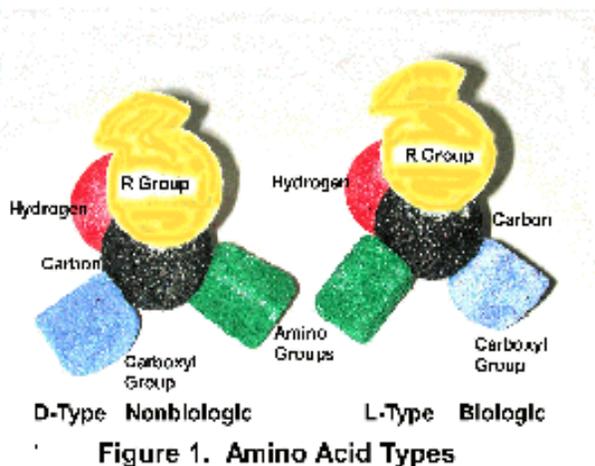
Appendix 1

In order to clearly understand some of the problems inherent in the origin of life and mutations it is important to recognize that the sugars that are part of DNA and RNA and the amino acids that make up proteins are optical isomers called chiral molecules. An isomer is a molecule that has more than one three-dimensional form even though the chemical formula is the same. It is important that this fact be clearly understood when discussing both sugars and proteins. The protein is used for illustration purposes because it is easier to understand. The basic facts that must be recognized and kept in mind are:

(1) A carbon atom, an essential part of an amino acid, has four bonding sites. In forming an amino acid four different elements or compounds join to a central carbon atom as shown in Figure 1¹ on the next page - a Hydrogen atom, a Carboxyl Group (COOH), an Amino Group (NH₂) and an R Group which is a carboxyl/hydrogen based unit. The composition of the "R Group" determines the particular characteristics of the amino acid and therefore its name. Note that the R Groups are **very rarely** symmetrical about an axis. The mock up shown in Figure 1 shows this. The number of compounds that can join to the carbon atom at this spot is much larger than the twenty present in living organisms. Estimates are as high as several thousand. In each case the result is called an amino acid. Of all the possible amino acids occurring naturally only 20 are found in living organisms and are called biologic amino acids. This means that the vast majority of amino acids are classified as non-biologic. If one of the non-biologic amino acids joins with one of the 20 biologic amino acids, the result is a compound that is not useful for biologic purposes.

(2) To further complicate the situation, the exact order in which the Hydrogen atom, the Amino Group, the Carboxyl Group and the R Group join to the central carbon atom determines whether the amino acid formed can be used in forming a biologic protein. Amino acids are optical isomers or chiral molecules

which fall into two structural types --- dextro-rotary (D type) and laevo-rotary (L type). The L and D type molecules are identical chemically but are mirror images of each other just as our hands are. Notice that if the R Group and the H atom are taken as a reference by putting the H atom farthest from the observer as shown in Figure 1 there are only two different ways the Amino and Carboxyl Groups can join the carbon atom - the Amino Group is either on the left or right of the reference. Only the order shown on the right of Figure 1 (Amino Group to the left of the line proposed above) is used in forming a biologic protein. Very



rarely are D amino acids found in living organisms.²

(3) It is important to recognize that the L and D amino acids like that shown in Figure 1 above occur in equal numbers in nature but no known life forms use both types of amino acids.³ In forming a polypeptide the amino acids join to each other by the Amino Group joining the Carboxyl Group. Since these are common to all amino acids this means that there are no preferential connections of biologic versus non-biologic amino acids in forming poly-peptides (chains of amino acids). As shown above, the difference between the L and D molecules is that the Carboxyl Group and the Amino Group swap places on the central carbon atom. In each resultant molecule the chemical equation is the same even though the shapes of the molecule are different unless the R group is symmetrical. This is most easily understood by looking at Figure 1 and connecting the Carboxyl and Amino Groups together. This makes the R Groups point in the opposite directions with respect to the polypeptide chain so that the shapes are different.

(4) If only L amino acids are connected in a chain they form a helix as shown by line "A" in Figure 2. If a single D amino acid is connected into a chain of L amino acids the resultant protein changes shape and becomes non-biologic. Note that not only is the R Group (yellow color) and the opposite direction from that of the L molecules but the shape of the polypeptide has also changed from the closed helix pattern of an all L chain to the shape shown by line "B". If a single D type molecule gets into the chain of "L"s the shape of the molecule has changed even though the chemical equation is the same. It is very important to recognize that the shape of a molecule determines how it will interact with other molecules. It is the shape of the molecule that determines what kind of protein it is. Dr. Mader points this out in her Biology textbook when she says, "*Shape is very important in determining how molecules interact with one another*" and "*Once a protein loses its normal shape it is no longer able to perform its usual function.*"⁴

If a L type sugar were introduced into a chain of D sugars in the DNA strand it would not be able to coil without causing a tangle as illustrated by line "B".. This would be a fatal mistake.

(5) It is also known that nucleotides (DNA) are formed from a deoxyribose sugar molecule bonded to a phosphate molecule and a nitrogen base. RNA has ribose sugars in the place of deoxyribose sugars. The sugars in these nucleotides also occur in L and D type molecules. The arrangement of the sugars in the DNA ladder is shown below in Figure 3. (More details are given in the chapter on DNA.) Two different bases join to form a base pair and make a ladder rung.

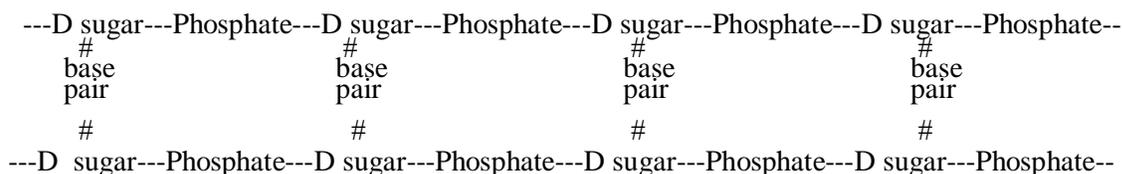


Figure 3. DNA Structure

How proteins formed originally with only L type amino acids and how sugars in the nucleotides (DNA and RNA) formed originally with only D type sugars is an unanswered question. This is particularly puzzling when it is recognized L and D type sugars occur in equal numbers naturally and show no preference when uniting with phosphates. The same holds true for amino acids. A human chromosome consists of about 69 million base pairs on average which means that there are 130 million D type sugars in the DNA of one chromosome. The human genome contains 6,400,000,000 D type sugars.. Logically, half of these should be L type sugars but there are none. How could this have come about?

Think Critically: What do the L and D type molecules and the great number of possible amino acids do to the complexity of life concept?

1. Idea suggested by Figure 2-16 (p.44) of G.J. Tortora, B.R. Funke, C.L. Case, *Microbiology: An Introduction*. Benjamin Cummings, 1989, Third Edition.
2. Tortora, G.J., Funke, B.R., Case, C.L., *Microbiology: An Introduction*. Benjamin/Cummings, 1989, Third edition, p. 44.
3. Cohen, J. "Getting All Turned Around Over the Origins of Life on Earth." *Science*, Vol. 267 (1995), pp. 1265-1266
- Bonner, W., "Origins of Life." 1991,21, pp.59-111.
4. Mader, S.S., *Biology*. McGraw Hill, Seventh Edition, 2001, p. 37 and 47.

Appendix 2

It is hypothesized that these changes in species ultimately lead to changes at the genus level, the family level and on up to the kingdom level. The great complexity and preciseness found in the DNA and the tremendous increases in DNA information content necessary to evolve from "amoeba to man" make the hypothesis unlikely. When duplication errors, favorable mutations rates and the time necessary to establish a trait are considered this becomes apparent.

It is known that duplication (replication) errors are extremely rare. There is no more than one error in 1,000,000,000 base pairs when copying the DNA. The textbook "Biology: The Dynamics of Life" by Biggs, Kapicka and Lundgren (Glencoe, 1995) further complicates the problem when it makes the following statements, "*Sometimes, there is no effect on an organism, but often mistakes in DNA can cause serious consequences for individual organisms*" (p.324). "*Sometimes, the errors caused by point mutations don't interfere with protein function, but often the effect is disastrous.*" (p.325) "*Proteins that are produced as a result of frameshift mutations seldom function properly.*" (p.325) "*Few chromosome mutations are passed on to the next generation because the zygote (several cells beyond conception) usually dies.*" (p.326) "*Mutations often result in sterility or the lack of normal development in an organism.*" (p.328) Other authors comment that only about one in 1000 mutations "might" be beneficial.⁶ This textbook's authors do address some of these ideas very superficially on page 308. Generally it takes about 5 mutations to make a significant physical change in an organism.⁶ Note that this does not mean a new species has been formed. Many more than five mutations at a time have been caused on fruit flies [*Drosophila melanogaster*] with only a deformed fruit fly as a result. Dodson proposes that it takes over 300,000 generations for a slightly beneficial recessive gene to increase in frequency from 1 in 1,000,000 to 2 in 1,000,000.⁷ **It must also be remembered that a mutation in any cell other than the reproducing cell does not have any influence on succeeding generations.** When all of these probabilities are combined, the question must be asked, "How can macro evolution occur from processes that produce many more negative results than positive results?"

The previous paragraph reads so easily that most people do not realize that these apparently simple statements mean that macro-evolution is extremely unlikely. To get an appreciation of this let us examine these probabilities in more detail.

First, consider the two statements that "*Many random mutations are harmful.*" (only one in one thousand is beneficial) and that "*it takes five mutations to cause a significant change in an organism.*" For the sake of discussion assume that information content can be increased by mutations (a false assumption as previously discussed). The question is, "Can progress be made up the evolutionary ladder of increasing complexity with odds that give predominately negative results?"

To illustrate the point, use two pairs of dice to perform the following experiment. If a roll of the dice produces four ones, assume this represents a favorable mutation. The odds of doing this are 1295 to one. This is about the same as the odds mentioned above for a beneficial mutation. All other combinations on the dice represent unfavorable or neutral mutations. The textbook indicates that a majority of mutations are fatal so assume that any time four of any number, other than one, comes up on the dice the organism dies instantly. This means that only five out of the 1296 mutations are considered to be instantly fatal. Compared to the textbook statements this is a very generous assumption. The rest of the combinations represent unfavorable or neutral mutations which do not normally kill the organism but if enough of these mutations do occur then the organism will be weakened and die. A practical demonstration of the problem is to assume twenty unfavorable mutations will kill the organism so that if twenty rolls of the dice do not yield four ones or four of a kind then the organism dies and the evolutionary process must be started over. To keep track of your progress use the line below. The point A represents the original organism and point B represents the organism after 5 mutations. Remember that arriving at point B does not signify a new species.

A-----x-----x-----x-----x-----B

Do you think that you can ever get to point B? Try it! You will quickly convince yourself that it is essentially impossible. The odds of getting to the first x is one in 1295 and for getting between points A and B the odds are one in 3600 trillion if done in 5 *consecutive* dice rolls. The odds of winning the Power Ball Lottery are much better than this. Remember that even if you do feel you could get to point B this does not prove evolution because this has to happen not only **many** times but in the reproductive structures of the organism to get a new species. If twenty mutations were necessary to have a new species there is only one chance in

100,000 of having it happen. Winning the Power Ball Lottery six **consecutive** times has about the same odds. When only these two facts are considered it should be apparent that macro-evolution is unlikely, if not impossible.

Next, let us reconsider the statement that "*This proofreading prevents most errors in DNA replication. Indeed, only one error in 1,000,000,000 nucleotides typically occurs.*"⁸ It must also be recognized that unless the mutation occurs in a **sexually reproductive cell** (gamete) **that has been fertilized** the change in information will **not** be passed on. The mutation must occur in an egg, sperm, seed, pollen, etc. Even in one of the smallest organisms like the H-39 mycoplasma (a bacterium now called a mollicute¹) the odds of this happening are unbelievably small. Consider the following: A mollicute (H-39 mycoplasma) contains about 256,000 amino acid bondings in a particular order (human has about one billion) to make 640 proteins having an average of 400 amino acid bondings each⁹. Since there must also be DNA if the mycoplasma is to replicate there must be 1,536,000 bases in the DNA (human has 3,000,000,000). There is also a sugar and a phosphate for each base. A mutation in the amino acids, sugars or phosphates will not be passed on since the mutation must be in the bases of the DNA to be passed on. So, the odds of having a mutation occurring in the "right place" is much less than one in 1,536,000. Add to this the fact that only one mutation in one thousand is beneficial and it becomes clear that duplication errors do not provide an abundant source of mutations for evolutionary change.

Another factor that must be considered is the amount of time necessary to establish a trait after it has evolved. For instance, apes are all flat footed. If enough mutations occur at one time to make an ape with an

arch like humans have, how long will it take to establish a small population of apes with arched feet? This ape will mate with one who does not have the same gene and, according to Mendel's laws of heredity, probably will not have an offspring with the same characteristic. It will be quite a few generations of inbreeding before this trait will begin to show up with any regularity unless the apes with the arched feet gene only mate with each other. This is very unlikely. If a mutation could become dominant in 10 years (an actual impossibility for members of the ape family) and there are 150,000,000 mutations required to result in man (see section on human Evolution on page 22 of this addendum) then 300 million years would be needed under very unusual and unique conditions for man to have come from the ape family. Not nearly enough time has elapsed to have established a small population of man under this condition since evolutionists claim that the supposed ancestor of modern man came on the scene about 4 million years before man. If the number of mutations, the small probability of a beneficial mutation and the difficulty of establishing a population are all considered, it is inconceivable that man could have evolved from the ape.

Each one of the arguments discussed in the previous paragraphs indicates the macro evolution of man is not a reasonable assumption. When all three are considered at the same time it should be apparent that macro evolution is an impossible scenario.

Examples of mutational changes are particularly instructive when it comes to the evolutionary concept. Mice living at the Chernobyl reactor show mutational changes but they and their offspring are still mice. With all the thousands of mutational experiments carried out on the fruit fly (*Drosophila melanogaster*), where the mutational rate was increased by 15,000 percent,¹⁰ none have produced a better fruit fly nor anything other than a fruit fly that survived and reproduced. In fact, an interesting experiment was carried out in 1948 by Ernst Mayr and reported by J. Rifkin¹¹ that revealed mutations can cause only a limited variation in a species. Starting with a parent stock that had 36 bristles the fruit fly was selectively bred (not a random event) in an attempt to have a fruit fly with no bristles. After 30 generations the number of bristles was lowered to 25 but then the line became sterile and died out. A second experiment was carried out to increase the number of bristles. Once again sterility set in when the number of bristles reached 56. Mayr concludes "*The most frequent correlated response of one-sided selection is a drop in general fitness. This plagues virtually every breeding experiment.*" This addendum's author can confirm this from his experience in raising peaches commercially. The peach trees that produce the prettiest and largest peaches will quickly die if not cared for. This is in direct contrast to wild trees that are seen flourishing around an old abandoned house for years without care. The selective crossbreeding of trees for large fruit with good flavor weakens the ability of the tree to survive. What does all of this mean? It means that when man deliberately introduces mutational changes into the DNA, the probable result is a organism that is not as environmentally adept at coping with the environment as it could originally. Why should an organism be stronger when undergoing random mutations if "controlled" mutations do not do the job?

1. Smith and Wood, *Cell Biology*. Chapman and Hall, 1996, p. 121.
2. Smith, *Cell Biology*,. Academic Press (1971), p. 86.
3. Starr and Taggart, *Biology, The Unity and Diversity of Life*. Wadsworth Group, 2004, p. 254.
4. Campbell, N. A. and Reece, J. B., *Biology*. Benjamin Cummings, 2002 (Sixth Edition), pp. 300-309.
5. Randerson, J., Record Breaker. *New Scientist*, Vol. 174, 8 June 2002, p. 14
- Williams, A., Copying Confusion. *Creation*, Vol. 25, No. 4, Sept.-Nov. 2003, p. 15.
6. Ambrose,E., *The Nature and Origin of the Biological World*, (1982), p. 120-121.
7. Dodson,E., *Evolution: Process and Product*, (1960), p. 225.
8. Johnson & Raven, *Biology, Principles & Explorations*. Holt, Rinehart and Winston, 2001, p. 197.
9. Smith, *Cell Biology*,. Academic Press (1971), p. 86.
- 10,11. Rifkin, Jeremy, *Algeny*. (1983), p. 134.