A Critique of the high school textbook *Biology* by Miller and Levine, Prentice Hall, 2008

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This paper is a review of the content of the *Biology* textbook where it teaches the theory of evolution, in order to point out that:

1. Evolution of the first life, from non-life, and all the way to what we see today, is a theory, not a fact.
2. There are many unanswered questions in the theory of evolution.
3. There is some misleading information in the text, plus information that has been discredited in recent years.

To be clear, "evolution" can mean a number of different things. One definition can be the changes that occur within a group of animals that can interbreed. For example, there are many different sizes and shapes of dogs, or finches can change to have different sized beaks. There is really no debate on this definition, and we will call these changes "microevolution". The "evolution" that this paper focuses on is the theory that all the life we see today began millions of years ago when the first cell occurred by chance, and due to mutations and natural selection, that cell has fathered the popularly known "Tree of Life" with all the many animal and plant variations we see today. This is also called "macroevolution".

This paper contains some of the assertions by the authors of *Biology*, followed by my comments, which are in blue. The sources referenced are exclusively from PhD scientists who have written their own critiques of the theory of evolution and its various weaknesses. The review begins below.

Similar genes due to common ancestry: The first area of note is where the authors of *Biology* assert that similar genes among different organisms are due to common ancestry. They write on p.312, last paragraph: "The striking similarity of genes that control development has a simple scientific explanation: Common patterns of genetic control exist because all these genes have descended from the genes of common ancestors. One such gene, called Pax 6, controls eye growth in Drosophila. A similar gene was found to guide eye growth in mice and other mammals. When a copy of the mouse (eye hox) gene was inserted into the "knee" of a Drosophila embryo, the fruit fly grew an eye on its leg! The fly gene and the mouse gene are similar enough to trade places and still function – even though they come from animals that have not shared a common ancestor in at least 600 million years."

Comment: The authors are somewhat misleading, because that eye on the fruit fly's leg is not functional. Similar genes could also be explained due to a common designer who made us to live in a similar biosphere, needing to digest similar foods, and breathe the same air. For example, there is no surprise that apes and humans have similar genes: They have the same number of fingers and toes, they have similar digestive systems, they both have hair, etc. A common estimate is that their genes are 95% similar. If this is true, then among three billion base pairs of DNA, the genetic *differences* would fill about 50,000 pages of books single spaced. So, even a 5% difference in 3 billion codes is a lot of differences:

3,000,000,000 base pairs x 5% = 150,000,000 / 3000 characters per page = 50,000 pages of differences.

Regarding the statement that similar genes demonstrate descent from common ancestors, Jonathan Wells, PhD. had this response: "'Clarification of the phylogenetic relationships of the major animal phyla has been an elusive problem,' wrote biologist Michael Lynch in 1999, 'with analyses based on different genes and even different analyses based on the same genes yielding a diversity of phylogenetic trees.'

Even when different molecules can be combined to give a single tree, the result is often bizarre: A 1996 study using 88 protein sequences grouped rabbits with primates instead of rodents; a 1998 study based on 12 proteins put cows closer to whales than to horses. Inconsistencies among trees based on different molecules, and the bizarre trees that result from some molecular analyses, have now plunged molecular phylogeny into a crisis"[1].

The authors wrote, regarding genetic variation stemming from mutations, on p. 320: "Breeders can increase the genetic variation in a population by inducing mutations, which are the ultimate source of genetic variability."

Comment: Every mutation we've created or witnessed that has caused variability has stayed within the organism's breeding group or genus (i.e. dogs do not become cats). There has never been a mutation seen that causes change to a different genus. Also, we've not observed mutations increasing the information in DNA, making the organism more complex. Mutations caused by purposeful irradiation sometimes bring about a stronger organism, for example a more hearty lily, but mutations are nearly always neutral or harmful (sickle cell anemia, Downs Syndrome, cancer) to organisms.

Age of the earth, pp. 374-375: Hutton and Lyell hypothesized that layers of rocks are formed very slowly and what we observe in geology today are the same processes as what happened in the past. They theorized the earth is millions of years old.

Comment: This theory about geology is likely included in a biology book, because the theory of evolution *requires* that the Earth be millions of years old, in order for non-life to evolve to life, and then to evolve to the tremendous complexity and variation we see. The focus of this paper is not the age of the earth, and there is evidence on both sides of this debate, but below is some evidence for a younger earth, to demonstrate that there is a debate here:

Why do we find soft tissue and even DNA in fossils? Tyrannosaurus Rex blood vessels and red blood cells containing DNA has been discovered[2] which should have fossilized over if they were really millions of years old. Intact proteins were also found[3]. This may be evidence for a younger earth.

The earth's magnetic field is decaying at a specific rate, and in 1829 was 7% stronger, and if you extrapolate backwards, if the earth were millions or billions of years old, the magnetic field would be too strong for life to exist. Archaeomagnetic data taken worldwide show that the intensity of the earth's magnetic field was about 40% greater in 1000 A.D. than it is today, and that it has declined steadily since then.[4]

The only way to make a fossil is to immediately cover the organism by sediment before the decomposition process goes too far, and before scavengers find it. Millions of fossils have been found in many places on the earth, and a catastrophe is required to cover organisms with so much sediment that

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[1] Jonathan Wells, PhD, "Icons of Evolution, Science or Myth?", Regnery Publishing, 2002, p. 51.

[2] M. H. Schweitzer, et al., "Soft-Tissue Vessels and Cellular Preservation in *Tyrannosaurus Rex*," *Science* 307:1952–1955.

[3] M. H. Schweitzer, et al., "Analyses of Soft Tissue from *Tyrannosaurus Rex* Suggest the Presence of Protein," *Science* 316:277–280.

[4] McDonald, K. L. and R. H. Gunst. "An analysis of the earth's magnetic field from 1835 to 1965," ESSA Technical Report IER 46-IES 1 (July 1967) U.S. Government Printing Office, Washington, D.C., Table 3, p.14.

they will be preserved. Therefore the "slow and steady" rate of sedimentation in Hutton and Lyell's theory is in question.

Just because we don't see many catastrophes happening today doesn't mean that they didn't take place in early earth history. However, we do see some modern-day examples of catastrophes. For example, in 1980 when Mt. St. Helens erupted, it deposited over 25 feet of finely graded sediment in one day[5].

The sun is shrinking and the moon is moving away from us every year. If this had been taking place for billions or millions of years, life on earth would have been impossible due to the enormity of the sun, plus the moon's gravitational forces on the earth would have caused much instability. Also, the earth's rotation speed around its axis is slowing down: Every 18 months or so, scientists add one leap second to our atomic clocks. Extrapolate that back millions of years, and the earth would have been rotating too fast for life to evolve.

Why do we find Carbon-14 in diamonds that supposedly took millions of years to form? The half-life of Carbon-14 is 5700 years, so if the diamonds were millions of years old, there would not be any detectable levels of Carbon-14 left. Carbon-14 tests result in an estimated age of 50,000 years for diamonds, not billions. We also get the same results when measuring Carbon-14 in coal[6].

Again, the purpose of this paper is not to go into in-depth debate about the age of the earth, but the point is that the age of the earth can be debated, and if the earth is younger than billions of years old, macro-evolution would not have had time to occur.

Evidence of Evolution, pp. 382-385: page 382, the last sentence: "By comparing fossils from older rock layers with fossils from younger layers, scientists could document the fact that life on Earth has changed over time…"

Both macroevolutionists and their critics agree there has been "change over time", but what exactly does that mean? The cephalopods depicted on these pages all have similar features, and the pictures demonstrate changes within a genus: There is no new genetic material needed for this to take place. For instance, there have been no wings or feathers developed. The authors depict an example of *micro*evolution (changes over time within a genus), not *macro*evolution (changes that span or create new ones). So this example is consistent with both the Darwinist and non-Darwinist views.

Page 383, first paragraph: "Researchers have discovered many hundreds of transitional fossils that document various intermediate stages in the evolution of modern species from organisms that are now extinct…."

These fossils do not prove that one form evolved to another. There is no way to prove that there was a relationship back then – you can only note that they are similar extinct forms, and then make an inference on what you see, based on your world view. In such cases of historical forensics, you look at the evidence and make a conclusion. The world view of the scientist who presupposes macroevolution is

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[5] Tasman Walker Ph.D., 'The Geologic Record' in *Evolution's Achilles',* ed. Robert Carter Ph.D. (Creation Book Publishers, 2015) p164.

[6] Jim Mason Ph.D., 'Radiometric Dating' in *Evolution's Achilles',* ed. Robert Carter Ph.D. (Creation Book Publishers, 2015) p208.

true, will influence him or her to interpret the evidence one way - that there is a natural cause of events. The world view of one who does not believe in macroevolution will agree that there are changes within the genus, for example wolves to coyotes to various types of dogs, but changes from genus to genus (i.e. dog to cat) have not been observed - they cannot interbreed.

The authors of *Biology* did not provide concrete examples of transitional fossils that go from one genus to another.

On the contrary, what the fossil record actually shows, is:

1. In the Cambrian layer of earth's strata, we see sudden complexity of life forms, rather than gradual increases in complexity[7], and
2. There are many examples of stasis of life forms from these strata, for example, cyanobacteria, which supposedly evolved 3 billion years ago[8], stromatolites, the horseshoe crab, coelacanth, scorpions, dragonflies, etc. etc.[9]

Homologous body structures, page 384: The authors state "Homologous structures provide strong evidence that all four-limbed vertebrates have descended, with modifications, from common ancestors."

As discussed above, one's world view can influence the way evidence is interpreted. Similar structures could be interpreted as being due to common ancestry, as the authors do, or similar structures could be interpreted as having a common intelligent designer using similar structures that function well. For example, antilock brakes exist on both cars and trucks, but we don't say one evolved from another. Rather, we say there's a design that works, that is spread among vehicles that need it. So because the existence of similar structures are an accepted part of both theories, they cannot be used as evidence for one or the other.

Also and very importantly, the concept of homology was discussed by Darwin, but in recent decades, biologists have learned that the homologous features are not due to similar genes, so the mechanism that produces these similar structures remains unknown.[10] Also, what's puzzling to current-day biologists is they are seeing the opposite of homology – where non-homologous structures arise from identical genes in two different organisms. This is actually more common than similar structures coming from similar genes.[11]

Natural selection, polygenic traits, p. 397: In the section titled "Natural Selection on Single-Gene Traits", the authors write, "Natural selection on single-gene traits can lead to changes in allele frequencies and thus to evolution."

There is no debate that natural selection occurs. The question to keep in mind is whether small mutations or changes in allele frequencies (i.e. less red lizards than brown lizards) can bring about

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[7] Emil Silvestru Ph.D., 'The Fossil Record' in *Evolution's Achilles' Heels – 9 PhD scientists explain evolution's fatal flaws – in areas claimed to be its greatest strengths*, ed. Robert Carter Ph.D. (Creation Book Publishers, 2015) pp.126-127.
[8] Ibid, p120.
[9] Ibid, p140.
[10] Jonathan Wells Ph.D, *Icons of Evolution* (Regnery Publishing, 2002) p62.
[11] Ibid, p74.

macroevolution, with new genetic information, and whether natural selection can bring about changes from genus to genus.

Natural selection and speciation with Darwin's finches, p 407, paragraph 5: "By documenting natural selection in the wild, the Grants provided evidence of the process of evolution. The next generation of finches had larger beaks than did the generation before selection had occurred."

It is a fact that larger beak sizes became more frequent during a drought, but what isn't mentioned is that during wetter periods, not as many large nuts are present, so the finches with smaller beaks became more frequent. We see that the number of birds with different beak sizes varies over time, depending on the weather conditions. Again, here is another example of microevolution, not macroevolution.[12]

Studying evolution since Darwin, p.410, paragraph 1: "Scientific evidence supports the theory that living species descended with modification from common ancestors that lived in the ancient past."

The same evidence is there for both camps to review, and again it's a matter of how you interpret the evidence that determines your conclusion. Paragraph two admits they have not seen the formation of new species, but the authors predict that as new fossils are found, the answers to how species evolved will be better known. The problem with that prediction is that no one knows the future, but theories need to have sound evidence to back them up. If your theory depends on digging up more evidence in the future, that is not a good sign for its supportability.

The last paragraph on the page says evolution can be seen today in drug resistance in bacteria and viruses, and pesticide resistance in insects. Again this is microevolution, not macroevolution, and brought about by broken DNA. Where are the examples today of macroevolution taking place?

How fossils form, p.418

The authors write about dead animals sinking to the bottom of a body of water, then being covered by sedimentary layers over time. In reality, this would not happen. For a fossil to be formed, it is required that it be buried quickly, or else the dead organism would decompose or be scavenged for food. Catastrophes like floods (local or global) would bring enough sediment to quickly cover dead organisms prior to them being eaten.

The Miller – Urey experiment, p 424, last paragraph: "Their results were spectacular." And then later: "One of the experiments produced cytosine and uracil, two of the bases found in RNA."

I give credit to the authors by writing at the top of the next page, that a stew of organic molecules is a long way from a living cell, and the "leap from nonlife to life is the greatest gap in scientific hypotheses of Earth's early history." However, back to the reported "spectacular results": Cytosine and uracil are not very complex amino acids, with chemical formulas $C_4H_5N_3O$ and $C_4H_4N_2O_2$, respectively, and are relatively easy to make. The problem is that the chance for amino acids to combine together in just the right order to make up functioning proteins is so infinitesimally small, that we would not expect to see it happen without a designer. For example, the chance for the amino acids that make up the protein hemoglobin to be the correct amino acids, and to be in the right order so that hemoglobin will function

[12] Jonathan Wells Ph.D. *Icons of Evolution* (Regnery Publishing, 2002, pp 165-169.

correctly, is 10^{165}.[13] Note that 10^{80} is the estimate of all the atoms in the entire universe! This massive combinatorial dilemma is similar for all the other proteins that are needed for life. Also, what the text doesn't mention is that in every experiment so far, the amino acids made in these experiments are about 50% left handed and 50% right handed amino acids. This is called chirality, and if you think of a molecule as three dimensional, it's like a right handed glove and a left handed glove. The problem is, every amino acid in life is left handed. If you have a mix of even one amino acid that is right handed, life cannot exist. Scientists cannot make a soup of just left handed amino acids – they always get both in their experiments, and so did Miller and Urey. The only way for them to do experiments with just left handed amino acids is to take them from living things.[14]

Evolution of RNA and DNA, p. 425

Note the frequent occurrences of indefinite phrases, such as "can help", "might have", "have suggested", "could have", "could have led to" and their comment that future experiments are aimed at refining their hypothesis.

The authors don't note that DNA and RNA are both very unstable, and would tend to break apart, rather than form, unless in the perfect buffered solution. Also RNA is even more unstable than DNA. In labs, large organic molecules tend to break apart, rather than to form. One of the foundational laws of science is the Second Law of Thermodynamics, which basically says things tend to become more disordered over time – not more ordered.

The text on pp. 425-428 mentions some of the great thresholds needed for evolution, for example the origin of life from nonlife, the origin of the first eukaryotic cell, sexual reproduction, and multicellular organisms. There is very little evidence to support how these great thresholds could have been achieved naturally.

Dinosaurs to birds, p. 432: "…scientists working in China have found evidence for this hypothesis (dinosaur to bird evolution) in fossils that have the skulls and teeth of dinosaurs but the body structure and feathers of birds."

The authors do not cite their evidence, but this may refer to the fossil Sinosauropteryx, which was touted to have feathers, but in actuality it did not. Another one (which made the cover of Time magazine) was Mononykus, which the magazine illustrated as having feathers, although no trace of feathers had been found. Then, evidence found later indicated it was not a bird, but a theropod.[15] Complicating the evolution of dinosaurs to birds is that their structural differences are many: For example, their hearts and lungs are different, and birds have hollow bones. Bird feathers are extremely complex, requiring a lot of genetic information that is not present in dinosaurs.[16] Also, there is a great debate among evolutionists whether birds came from tree dwelling dinosaurs or land based dinosaurs. Each camp refutes the claims of the other, so it can be argued that neither camp is correct.

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[13] Dr. Stephen T Blume, 'Does Hemoglobin Alone Destroy Evolution?' (https://evoillusion.org/3091-2/)
[14] Jonathan Sarfati Ph.D., 'The Fossil Record' in *Evolution's Achilles',* ed. Robert Carter Ph.D. (Creation Book Publishers, 2015) p100.
[15] Jonathan Sarfati Ph.D., *Refuting Evolution* (Answers in Genesis, 1999) p60.
[16] Ibid, pp63-67.

Mammals evolved, p. 433: "During the Cenozoic, mammals evolved adaptations that allowed them to live in various environments – on land, in water, and even in the air."

As mentioned in various places above in this paper, that is debatable, and many problems exist. For example, 1) where does new DNA (new information) come from, 2) how can a new body feature spread throughout the population of a life form in such a short amount of time, and 3) you can't tell whether the fossils are showing evolution, or if they are the result of diversity from a designer. See below for more.

Whale evolution, p. 433: "During the Tertiary period…whales evolved…"

Evolutionists believe whales evolved from land-based creatures, but they usually don't mention the large number of information-increasing mutations that have to take place in order to survive in the ocean. For example, the nostrils need to migrate to the top of the head, and further mutate into the complex blowhole. They must mutate to develop tremendous lung capacity and the rib cage needs to become flexible, to compact as the whale performs deep dives. The male genitals need to migrate to the inside of the whale, plus added blood flow needs to develop around that area to regulate temperature. The eyes must change to have a high refractive index, in order to see well under water, and also they need to develop the ability to withstand the high pressures of the deep. Legs must turn to flippers. The tail must change into a fluke and the dorsal fin on the back of the whale must develop. The skin quality needs to change, and a thick layer of blubber is needed to keep the body warm from cold water temperatures. Land-based mammals give birth head first, and whales give birth tail first. Then they need to evolve their amazing echo location capability, which is more sensitive than anything our scientists can make today.[17] When DNA mutates, new information is not developed, but usually a degradation in the DNA takes place. With all the mutations going on all around us, life forms on earth are wearing out, like a rusting car. We're not getting better – we're winding down, like a spring loaded clock. This wearing out or winding down is called genetic entropy, a proven concept among geneticists.

For brevity, I am going to skip over other areas in the text that mention evolution, and spend the remainder of this paper on bird and hominid evolution.

Bird evolution, p. 807 (this was also mentioned on p.432): "Paleontologists agree that birds evolved from extinct reptiles. Evidence for this hypothesis is provided by many embryological, anatomical, and physical characteristics shared by modern birds and living reptiles."

The authors do not mention that there are many biologists and paleontologists with Ph.D. degrees that do not agree with that statement. Again, similar characteristics could simply be evidence of a common designer. The evolutionary tree on p. 807 looks good upon first glance, but note the dotted line with a "?" that goes from reptiles to modern birds: That means there are no proven ancestors of modern birds. We discussed dinosaur to bird evolution above, on page 6 of this paper. Even the famous Archaeopteryx has been proven to not be an ancestor of modern birds: It was a bird with no descendants – at the end of its "tree branch". The authors mention claws on the wings as evidence Archaeopteryx evolved from a

[17] Jonathan Sarfati Ph.D., *Refuting Evolution* (Answers in Genesis, 1999) pp69-70.

dinosaur, but a number of modern birds have claws on their wings (ostrich, swan, hoatzin, emu, ibis). The authors mention teeth as similar evidence, but some modern birds have teeth, and some reptiles have teeth. Some don't. Some mammals have teeth. Some don't. Some fish have teeth. Some don't. And we must also remember to return to the problem that new information does not get created by mutations. Instead, mutations break the genetic code.

Evolution of mammals, pp. 821

Be aware of the terms used in this section, for instance "probably" or "may have" throughout the chapter.

Hominid Evolution, p. 835: "Fossil evidence shows that as hominids evolved over millions of years, they became able to walk upright and developed thumbs adapted for grasping…"

We do have many varieties of fossilized bones of hominids, but there's no way to tell if there were simply a number of similar hominids, designed that way, or if one evolved from another. The fossil record does contain some problems for evolutionists, for instance, where a more advanced form is found in lower strata than the less advanced form.

American Museum of Natural History paleontologist Gareth Nelson wrote, "The idea that one can go to the fossil record and expect to empirically recover an ancestor-descendant sequence…continues to be a pernicious illusion."[18]

American paleontologists Niles Eldredge and Ian Tattersall wrote that it is a "myth that the evolutionary histories of living things are essentially a matter of discovery." If it were true, then as more and more bones are unearthed, the story of human evolution would become clearer. They then wrote "If anything, the opposite has occurred."[19]

p. 836 "Many questions remain about how fossil hominids are related to one another and to humans…"

p. 837 "Australopithecus…were bipedal apes…". "Some *seem* to have been human ancestors…" (italics added)

Evolutionary anatomist Dr. Charles Oxnard, who received the Charles R. Darwin award in anthropology, does not accept australopithecines as ancestral to humans. When their anatomy is compared with humans and apes, they fall farther from both of these groups than humans and apes are from each other.[20] Also, "It is now recognized widely that the australopithecines are not structurally close to humans…and lived at the same time as the genus Homo."[21]

p. 838 "…a series of complex adaptive radiations produced a large number of species whose relationships are difficult to determine. Which hominids are true human ancestors? …and how are all those species related to one another and to modern humans? At present, no one can answer these

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[18] Jonathan Wells Ph.D. *Zombie Science – More Icons of Evolution* (Discovery Institute Press, 2017) p31.
[19] Ibid, p75.
[20] Emil Silvestru Ph.D., 'The Fossil Record' in *Evolution's Achilles' Heels*, ed. Robert Carter Ph.D. (Creation Book Publishers, 2015) p145.
[21] Jonathan Sarfati Ph.D., *Refuting Evolution* (Answers in Genesis, 1999) p80.

questions." "It will probably take many years of work to more fully understand this fascinating and complex story."

The authors are assuming that because evolution is true, the answers will come in time. They do not seem to be considering that because there are so many questions, then maybe their theory is what has to change, rather than waiting for more evidence.

Chordate Evolution, p. 849: Paragraph 1 states that chordates developed many adaptations, some simple, and some "far more complex." Also, "All these adaptations were tested and shaped by natural selection."

As mentioned before, mutations have not been observed to increase DNA code, rather they break DNA code. Development of vertebrae, jaws, paired appendages, lungs, amniotic egg, etc. (noted on p. 850) would all involve increased genetic code. Also, I need to ask, "If macroevolution is mindless, then why don't we see organisms in the fossil record that have mutated in horribly wrong directions, producing monsters? Also, evolution, if it is true, should be going on today – so why don't we see that now? But instead, what we see among living things is incredible order, completeness, and beauty.

In evolutionary theory, mutations plus natural selection over time is the engine that brings about change. From all the evidence to-date, that theory is lacking, and we must remember that natural selection has been proven only to bring about the survival of the fittest, but *never* has it been proven to produce the arrival of the fittest.

Summary

A review of this biology textbook, so full of fascinating information about life, reveals life's incredible complexity and brilliant design that defies explanation in evolutionary circles. Here are just some examples of life's complexity and design that are studied in *Biology*:

-The origin of the first life from non-life. Even the first living forms in the fossil record were extremely complex. Cellular reproduction is complex. Each cell has similar complexity to that of a small city.

-DNA is not just random codes, but an incredibly complex information and a language. Every cell contains a storage and retrieval system that, per Bill Gates from Microsoft Corporation in his book *The Road Ahead*, "…is like a computer program, but far, far more advanced than any software ever created." Our scientists still do not understand much of what is going on in cells.

-Regulation of our body temperatures is extremely complex.

-The fine tuning of birds for flight (hollow bones, high metabolism, added muscle, amazingly complex feathers, etc.)

-Our body systems are very complex. Consider how they could have evolved: For example, what came first in the circulatory system, was it the heart? If so, what would have been its purpose – what could it do? You need the heart, plus veins, plus arteries, plus blood, plus lungs and respiration, plus other organs that process blood, the brain to run it all, and more, for the circulatory system to be functional. Some other body systems to consider are:

-our incredibly complex reproductive system in both males and females

-our digestive, skeletal, muscular, immune, and nervous systems

and on and on. These systems all consist of multiple parts, and they could not function without all their parts being present and in working order.

-Finally, the processes of sight and wound healing are all extremely complex, and they also only work properly with all their parts present and in working order. See the appendix, below, for details of the biochemical processes of sight and wound healing.

Our body systems and processes are what is called "irreducibly complex" which means that none of the interacting parts can be missing, or the system or process will not function. There would be no reason for evolution to create the nonfunctioning parts step by step – for example, why build an iris, because there's no advantage to having one unless the complete eye is present. Organisms with nonfunctioning parts would not have an advantage over others, so they would be just as likely to be naturally selected out of future generations. All parts of the eye, or parts of any of the above body systems, or steps in the process of wound healing have to be there all at once, in order to create an advantage over other evolving forms.

Considering all the above and so much more that I didn't touch upon, I believe that when one reads Miller and Levine's *Biology* with an open mind, their book is a great testimony to the incredible complexity - and the *design* of life. I do not believe – and I cannot conceive, how the random process of mutations and natural selection could possibly produce the beauty, complexity, completeness, and functionality of every living organism on earth. I believe that anyone who does believe in evolution, if he or she will thoroughly and honestly examine both sides of the evidence available, they will find the evidence for macroevolution very lacking, and therefore must have a lot of faith that more evidence is to follow in future years. But as for me, again, I see the concept of *design* screaming loudly and clearly, like a flashing neon sign, saying "Look at this - all around you – it's amazing." And then, what follows is that if you have design – you *must* have a designer.

Appendix

Part of the complex molecular process of vision:

When light first strikes the retina, a photon interacts with a molecule called 11-cis retinal, which rearranges within picoseconds to trans-retinal. (A picosecond is about the time it takes light to travel the breadth of a single human hair.) The change in the shape of the retinal molecule forces a change in the shape of the protein, rhodopsin, to which the retinal is tightly bound. The protein's metamorphosis alters its behavior. Now called metarhodopsin 11, the protein sticks to another protein, called transducin. Before bumping into metarhodopsin 11, transducin had tightly bound a small molecule called GDP. But when transducin interacts with metarhodopsin 11, the GDP falls off, and a molecule called GTP binds to transducin.[22]

[22] Phillip E. Johnson, *Defeating Darwinism by Opening Minds* (Downers Grove, IL: InterVarsity Pres, 1997), p. 76

The complex process of wound healing:

1. When you bleed, platelets gather to form a clot, which is reinforced by red blood cells and fibrin. The clot then dehydrates and forms a crust that serves as a protective seal over the wound.

2. Next, there is inflammation of the area, which raises the temperature and kills bacteria. The injured tissue releases histamine, serotonin, and bradykinin, which causes expansion of the size of local blood vessels (vasodilation), the result of which is extra heat to the area. Capillary fluids flow into the tissue area, causing swelling, pain, and possible impairment of the area. Finally, neutrophils and monocytes migrate to the area to ingest bacteria and debris and release enzymes, which causes drainage.

3. In the next step, new tissue is generated and reconstruction begins. Endothelial cells at the wound edges form new capillaries, which migrate across the dermis and connect with other capillaries (author's note: Amazing!). Blood flow is reestablished to the area, providing nutrients for the healing process and the formation of granulation tissue.

4. In the maturation phase, the scar area is structurally reorganized several times, which maximizes its strength.[23]

[23] Theresa O'Hanlon-Nichols, RN, PhD, "Commonly Asked Questions About Wound Healing." *American Journal of Nursing* (April 1995): p. 22.