

LESSON 4. EVIDENCE OF DESIGN IN NATURE.

Preparing to Teach the Lesson:

When we talk about evidence for design in nature, we have to get at least a little bit technical. One of the best sources of information is Michael Behe's book *Darwin's Black Box* (The Free Press, a division of Simon & Schuster, 1230 Avenue of the Americas, New York NY 10020), from which much of this lesson is taken. This would be a valuable addition to your church or personal library. It shows in a detailed yet entertaining way that the structure of living things at the molecular level is clear evidence of design. It is particularly powerful because Dr. Behe (pronounced bee-hee) is not a creationist.

Because a few things in this lesson are fairly technical, you should carefully read through it in advance. The graphics on the overheads will help you visualize the structures discussed in the lesson.

Today's Aim:

By the end of this lesson the students will see that:

- (1) The search for design is a normal part of science. There are objective criteria available to help us determine whether something is accidental or designed.
- (2) The Creator left his fingerprints all over his creation. Though the Bible tells us that "the heavens declare the glory of God, and the firmament sheweth His handiwork" (Ps. 19:1), we need not look at the far reaches of the universe to see the evidence of His work. It is plainly visible right under our noses. Not only are we humans "fearfully and wonderfully made" (Ps. 139:14), so is every living thing.
- (3) No matter what evidence we present for divine creation, most evolutionists refuse to accept it because it goes against the postulates of evolution we saw in the last lesson. Their reasons for ignoring the evidence for creation are religious, not scientific.

Introducing the Lesson:

In the last lesson we saw that belief in evolution is based on a series of postulates. The most important one is that everything must be explainable by purely natural processes; the second is that evolution is the only possible explanation for the origin of everything. In other words, *No God Allowed!*

Dr. Michael Behe is one of a growing number of evolutionists who are willing to admit that living things could be the result of intelligent design. He likens most of his colleagues to detectives investigating a flattened body. As they search for clues to the cause of death they have to keep stepping around the elephant in the room. However, because they have agreed in advance that there is no such thing as an elephant none of them is willing to say, "Maybe the elephant did it." Rather than go against the majority view and be labeled incompetent or superstitious, they keep searching for other explanations. His book *Darwin's Black Box* is an attempt to persuade his colleagues to quit ignoring the elephant and accept the obvious.

Most evolutionists staunchly reject arguments for design in nature because if they admit that God intervened at any point, they have no valid reason to reject the possibility of Biblical creation. Darwin himself admitted that "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" (p. 189 in the 1966 Harvard Press Edition of *The Origin of Species*).

Some go so far as to say that creation's need for a designer removes it from the realm of science. This argument is just plain stupid.

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1. The search for **design** is a normal part of science.

- The government spends billions of dollars searching for extraterrestrial intelligence. What are they looking for? Evidence of design in radio signals from space.
- Every time a plane crashes federal investigators search the wreckage for clues as to whether it was accidental or deliberate.
- Arson investigators search burned buildings to see if fires were accidental or happened by design.
- Medical examiners perform autopsies in case of suspicious deaths to see whether they were due to natural causes or design.
- Archaeologists look for design every time they dig something out of the ground. Is this an eroded rock or an arrowhead? A natural formation or a stone hut?

Later we will see some of Dr. Behe's examples of molecular machinery that could not have come together apart from intelligent design. First, though, let's consider why scientists should open their minds to the possibility of design.

ARGUMENTS AGAINST DESIGN, AND THE RESPONSE.

Evolutionists have two basic reasons for ruling out the possibility of design:

- (1) Things in nature just *can't* be designed because that would bring God into science, and
- (2) Many structures in living things are put together differently than the way *they* would have done it, so there can't be a designer.

How do we respond?

a. REJECTION OF THE SUPERNATURAL.

Suppose while walking through the woods you see a lump of mud. Even though it seems to be a purely natural lump, you can't be sure that it is not the work of an artist who happens to like mud. It's unlikely, but if you insist that it could *not* have been fashioned deliberately, the burden of proof is on you. Likewise, those who say that living things could not have been designed are arguing from a position of weakness.

2. In order to prove that life was not designed, evolutionists would have had to **observe** it since the beginning.

b. THE ARGUMENT FROM IMPERFECTION.

Some argue against design in living things by pointing to structures that seem imperfect. For example, the panda's "thumb" is not a real thumb but a bony protrusion used to strip leaves off bamboo shoots. Evolutionists say that a designer would have given the panda an opposable thumb. Such an argument is not scientific but philosophical, and ridiculous besides. Suppose I don't like the way a certain automobile looks. Does that mean there was no design engineer? Of course not. It just means that we have a different sense of style, or that I don't know his reasons for making it that way.

3. Our disagreement with the way a living thing is put together may simply mean that we have a different sense of style from the designer of life, or that we don't understand his **motives**.

The same principle applies to structures that have no apparent function, such as the "vestigial organs" we discussed in the last lesson. Our ignorance of a function doesn't mean there is none.

HOW TO RECOGNIZE DESIGN.

On the other hand, an evolutionist's inability to disprove design doesn't entitle creationists to claim that it is proven. We need to present our case in a logical manner. Following are the three major arguments for design, from weakest to strongest.

a. MATTERS OF OPINION.

We might say that the beauty of nature implies the existence of a designer with a sense of beauty. However, someone who thinks the world is ugly would not be persuaded. Likewise, we could point to the precision of the earth's orbit as evidence for design. If it were just a little closer to the sun or a little farther away, life as we know it would be impossible. An evolutionist who believes the earth just happened to be in the right orbit to allow us to evolve would not be impressed. Who needs God when you have Random Chance?

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4. Arguments for design based upon **opinion** are not very persuasive to evolutionists.

b. EXTREME IMPROBABILITY - a better argument.

How might complex structures such as the eye have evolved step by step? Evolutionists visualize some wormlike creature that acquired a light-sensitive spot through mutations in its DNA. Over many generations the spot deepened into a pit, which gradually filled with mucus and acquired a primitive lens as the outermost layer hardened. After a great while and a great many mutations, the eye had evolved.

Though stories such as these require a number of very improbable steps, evolutionists argue that they still *could* happen. How can we respond to such claims?

The following illustration from Behe's book shows how ridiculous such multistage evolutionary scenarios are. Imagine a thousand lane super highway with traffic whizzing by in both directions. Though it is a fearful place, a groundhog wants to get across to see his girlfriend. What are his chances? Not very good. He may make it across one lane or perhaps even two or three, but there is no way he is going to get all the way across. It's not that there is any theoretical barrier that says he can't make it - he just doesn't because the obstacles are too great.

Even though a groundhog's chances of making it across *any* highway are slim, let's increase the odds by turning loose a billion of them. We'll be extremely generous and give each of them a 50/50 chance of making it across any one lane. (Under these conditions, the probability that any groundhog will make it across all 1000 lanes is less than one in 10^{300} - a one with three hundred zeroes after it.) About 500 million will make it to lane 2, 250 million to lane 3, and so on. About half are killed in each lane. If you were to work out the math you would see that by the time the last ones get to lane 30, only about two are left out of the original billion. Even if one makes it a few lanes farther - splat. There are still over 960 lanes to go. Once again, it's not that there is any theoretical barrier that says groundhogs can't make it across the highway - they just don't.

5. Though there is no theoretical barrier that says extremely **improbable** events cannot happen by themselves in nature, they simply do not.

Evolutionary stories are a lot like the groundhog story. As long as we don't look at them too closely, we don't see any theoretical barriers that would prevent complex structures from evolving. However, in reality there would have to be so many steps, each with a very low probability of succeeding, that it just wouldn't happen.

To extend the metaphor, evolutionists sometimes cheat and bring their groundhogs most of the way across the highway in helicopters. For instance, we will see in a later

lesson that in origin-of-life experiments, rather than manufacturing desired chemicals the way they think it happened in nature, they buy them in a purified form from a chemical supply house. (The chemistry is too complicated otherwise.) It doesn't do much good. Even if they start their metaphorical groundhogs at lane 760, they only get across a few lanes before the experiments fail in a figurative splat. In trying to prove that intelligent design is not necessary, they've succeeded only in showing that intelligent design *is* necessary to get across more than a few lanes of the highway.

c. IRREDUCIBLE COMPLEXITY - the best argument.

If we find one of our metaphorical groundhogs on the other side of the highway, few evolutionists will admit that somebody might have brought him there. He or an ancestor must have made it across no matter how great the odds.

The best response is to look at the details of living things. Darwin and his contemporaries knew nothing of the molecular structure of cells so they treated them as "black boxes" (hence the name of Behe's book) - that is, nobody knew what went on inside a cell; they just knew what came out of it. It was easy to make up stories about how a structure consisting of billions of cells might have evolved step by step, because nobody could prove you wrong. However, we now know that living things contain many microscopic biological machines that could not have evolved one step at a time.

Most manmade machines are more complex than they need to be. For instance, a car without air conditioning, a horn, lights, and a radio would still get us from one place to another. However, if we remove enough parts there comes a point when it no longer works. Behe describes the minimum operating condition below which the machine stops working as *irreducible complexity*.

This is a key concept for your class to understand. We will see that there are many mechanisms in living things that are irreducibly complex: if just one part is missing or not working right, the whole thing is useless. Such mechanisms could not evolve one piece at a time, but had to appear all at once and fully formed.

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6. A **mousetrap** is an example of an irreducibly complex machine.

At the minimum it must contain five parts: (1) a base to support the trapping mechanism; (2) a hammer to catch the mouse; (3) a spring to operate the hammer; (4) a latch to keep it in a state of readiness; and (5) a trigger to release the latch. (We'll assume that the parts fit together so that separate fasteners are unnecessary.) If we leave out any one of the parts, it is not a mousetrap but a pile of junk wasting resources that could have been better used elsewhere.

Even if all the parts are present, it's not enough.

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7. Besides the minimum number of parts, a useful machine must have at least minimal **function**.

It must function at least well enough to justify the trouble of making it. For example, what good is an outboard motor that turns a propeller only once a day? It would only take up needed space on the back of the boat so we couldn't put a useful motor in its place. Or what good is a mousetrap with a flimsy base that breaks before a mouse has the chance to step on it? What use is the trap if the latch is too short to set it? Why buy it if it has a weak spring that takes five minutes to snap the hammer against the base? The mouse would see it coming and run away! If any one of the parts is the wrong size or strength, the trap no longer works. It is not a mousetrap but a wasteful pile of junk with the right number of parts.

8. Because of the need to maintain at least minimal function, an irreducibly complex machine could not come together by **gradual** changes in the parts of a different type of machine.

We might make a mouse trap by gradually reducing the size of the parts in a rat trap, but if we tried to make one by modifying a can opener we would quickly have a device that could neither open cans nor catch mice.

This principle applies equally well to the irreducibly complex molecular machines found in living things. Those that are essential to life could not develop step by step. There would be many steps where they could not perform the minimum functions necessary to sustain life. They had to come into existence all at once.

How about other machines within the cell that are not absolutely essential for life to be possible, but just seem to make it easier? In order for such a structure to evolve by natural selection, it would have to convey some sort of survival advantage to the host cell. However, until the machine was at least minimally functional the host would be better off with none at all than with a nonfunctional part of one. Until the partially formed machine mutated enough to work, it would do nothing more than take up precious resources and interfere with essential processes and structures. Therefore,

9. Natural selection would work to **eliminate** partly formed machinery, not encourage it.

EXAMPLES OF DESIGN IN NATURE.

Let's look at just a few of the countless examples of design in nature. The arguments for design in these cases have to do with probability, irreducible complexity, or both.

a. DNA.

Every living thing is made up of one or more cells. The cells are able to grow and reproduce because each type of organism has its own version of a molecule known as DNA (deoxyribonucleic acid). This serves as the master building plan of life.

DNA is a double strand of smaller molecules called *nucleotides* (another one of those big words scientists use to intimidate us), represented by the letters A, C, G, and T. Depending on the species, there may be anywhere from a few million to tens of billions of them. The arrangement of the nucleotides carries the information needed to produce living things, much like the way we can arrange letters of the alphabet to say anything we want.

The DNA strand is a double helix, the same geometrical shape as the threads on a screw. It is subdivided into different numbers of *chromosomes* in different kinds of living things. Each chromosome may contain thousands of *genes*, which in turn are made of thousands of nucleotides. The genes are responsible for producing the visible structures in the organism, as well as the structures in its descendants.

We can't appeal to irreducible complexity to show design in DNA. In fact, it is a fantastically complex information storage system that contains far more than the bare minimum needed to keep an organism alive. It has three primary functions:

(1) *Cell Repair and Maintenance.*

Cells are made of proteins, which in turn are made of amino acids. DNA contains the coded instructions needed to put together hundreds of amino acids into each of the thousands of types of proteins the cell needs to function and keep itself repaired. It also tells the cell how to perform the fantastically complex chemistry needed to keep it in good working order.

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(2) *Cell Reproduction.*

DNA contains the coding that then specifies how to put together all those proteins into a complete cell, as well as the instructions to reproduce itself so that descendants can also function properly and reproduce.

(3) *Survival and Diversity of the Kind.*

Genes that produce a visible result are said to be *expressed*. DNA contains far more genes than are expressed in any individual. The unexpressed ones are available to pass on to future generations.

Many visible features in living things are the result of not just one, but a combination of several possible versions or *alleles* of a gene. For instance, skin color is determined primarily by a combination of four alleles that control the amount of melanin in the skin. Few individuals possess all four alleles; most have multiple copies of at least one, and are missing at least one of the others.

This applies to many of the variations within each kind. Because DNA has the potential to carry so many extra alleles not found in most individuals any more, if one breeding pair at the beginning each had the right combination of expressed and unexpressed alleles, they could produce an entire kind that would later diversify into multiple species and breeds.

Do you realize what this means? Not only does God know how many hairs are on your head, He even knows what's in your DNA. When He created Adam and Eve, He put into their DNA the genes necessary to produce each of their descendants - including you. God planned **you** from the foundation of the world!

The extreme improbability of assembling such complexity is the principal argument for design in the case of DNA. It functions like a better designed computer program than any human author has ever written, making excellent use of space, chemical resources, and repetitive subroutines. The probability that such a complex program could come together by random chemical action is comparable to the probability of our hypothetical groundhog making it across thousands of lanes on the superhighway.

A self-replicating, self-correcting digital program does not come together by accident; it requires a programmer.

10. The structure and operation of **DNA** are clear evidence of design.

b. BLOOD COAGULATION. (From *Darwin's Black Box*, pp. 74-97)

When we cut ourselves, the bleeding soon stops by itself. But why should it? Any other system filled with pressurized liquid leaks when punctured until the pressure reaches equilibrium with its environment. Were it not for the blood's ability to coagulate, we would bleed to death.

Behe likens blood coagulation to a Rube Goldberg machine. Goldberg was a cartoonist popular in the first half of this century, known for drawing elaborate contraptions designed to accomplish a simple purpose. (A typical Goldberg drawing was an automatic mosquito bite scratcher that required 16 steps involving such components as a drunken bird and a somersaulting dog.) Though humorous, many of Goldberg's contraptions were irreducibly complex: if any component failed to function properly, the whole thing wouldn't work. (Some of your students may be familiar with the Milton Bradley game "Mousetrap." It works the same way.)

Blood coagulation is much more involved than one of Goldberg's machines, but it too is irreducibly complex. From the time you cut yourself until you stop bleeding, over twenty proteins, enzymes, coenzymes, and other factors are busily at work. Throughout

the process these components cut, fasten, activate and deactivate each other at exactly the right times and rates. There are feedback and feed ahead control loops. The whole cascade involves dozens of steps that continually align and refine the process to keep it working efficiently. If even one of the components fails to work properly you either bleed to death or die of blood clots.

While an evolutionist might argue that our coagulation system could have evolved from a similar one in lower life forms, this doesn't answer the question of how the very first such system could have come into existence. In even the most "primitive" creatures that have such systems, a single malfunctioning component leads to rapid death.

11. It is not possible to put together an irreducibly complex mechanism such as blood coagulation one step at a time by modifying a previously existing mechanism of a **different** type in a lower life form. It had to be designed.

c. ANTIBODY PRODUCTION. (*Darwin's Black Box*, pp. 120-130)

It's a dangerous world, especially at the microscopic level. Our bodies are under constant attack from bacteria, viruses, and who knows what else. Fortunately, a properly functioning immune system can identify and destroy almost any invader imaginable.

How does the immune system know what constitutes a threat? It uses tiny Y-shaped molecules called *antibodies* as markers. These are composed of two "heavy" and two "light" chains of amino acids. The tips of the "Y" have specific shapes determined by the composition of the chains. Because of these shapes, they are able to attach to specific molecules. Any time the immune system detects an antibody attached to a foreign object, it destroys the object.

Human DNA contains about 3 billion pairs of nucleotides. If every one of them were used to code for antibodies, they could produce perhaps a few million types. Since there are billions of possible types of invaders, how can the body produce antibodies to identify them all?

The key is in the programming. Only a small portion of DNA contains the genes that produce antibodies, but it works in an astonishingly efficient way. Researchers have discovered that the code to produce any given antibody does not need to be a continuous segment, but can be interrupted without harm. Thus, the antibody coding genes function like a biological dictionary. Just as we can form a complete sentence by taking a word out of the dictionary, skipping some, taking another, skipping more, taking another, and so on, likewise the cell takes a piece of a gene, skips some, takes another, skips more, takes another and so on, until it assembles the complete gene needed to produce a desired antibody.

The "dictionary" is rather small, consisting of four gene clusters. The first cluster contains about 250 gene segments, the second, ten, the third, six, and the fourth, eight. If we take one from segment one, one from two, one from three, and one from four, there are about 120,000 possible combinations producing distinct types of heavy amino acid chains. Since the light chains need not come from the same segments, the number of possible combinations of heavy and light chains is tens of thousands of times greater. This enables the immune system to produce more than ten billion different types of antibodies.

12. DNA is put together so efficiently that it uses less than **300** genes to produce over 10 billion different types of antibodies.

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This is not to say that the system is perfect - after all, a system perfectly suited to one environment might not fare so well in another - but it is astonishingly efficient. Nevertheless, some might still insist that it could have evolved by chance. Perhaps the groundhog might make it all the way across the highway, but it's not likely. Even if it were possible to assemble this system by accident, there's much more to the immune system than a bunch of antibodies floating around loose.

When the body is invaded by a foreign substance such as a virus, it would be inefficient to have a bunch of the wrong types of antibodies floating in the bloodstream. The immune system needs to be able to rapidly manufacture billions more of only the appropriate ones. This requires at least three components:

- (1) There needs to be a mechanism to attach each of the billions of types of antibodies to the outside of the cells that produced them so that those cells can serve as factories to produce many more when needed.
- (2) There needs to be a manufacturing apparatus inside the cell to duplicate only the desired antibody.
- (3) It would be wasteful if the body manufactured billions of copies of billions of unneeded types of antibodies. There needs to be a "messenger" from the antibody on the outside of the cell to notify the manufacturing apparatus inside that it has captured a prisoner (the virus). Only when the messenger goes to the nucleus of the cell and notifies it to begin mass production does the cell begin its work in earnest. (The messaging system itself is quite complex - details in Behe's book.)

The immune system involves far more than just producing antibodies, but even this one part is irreducibly complex. All three components are necessary for it to work. If any component is missing, the system is useless.

Though we cannot disprove evolutionary claims that our immune system could have evolved from that of lower vertebrates, from what might their system have evolved?

13. **Invertebrates** (animals without backbones) do not use the antibody system we do. There is nothing ours could have evolved from. Since it is irreducibly complex, it had to come into existence all at once. It had to be designed.

d. BACTERIA WITH ELECTRIC MOTORS. (*Darwin's Black Box*, pp. 69-73)

We tend to think of bacteria as very simple organisms. However, some types contain at least one irreducibly complex structure that has no counterpart in more "advanced" cells - their swimming apparatus.

Any mechanism that moves an object through liquid must have at least three components: a paddle or propeller, some sort of motor, and a device to connect the two. Though some bacteria have tiny paddles known as *cilia*, we are going to discuss the other type of propulsion, which uses microscopic propellers known as rotary *flagella*.

Certain bacteria have hairlike filaments with a corkscrew shape. Rather than waving back and forth like flippers, these flagella rotate like propellers. But what turns them? As near as anyone can tell, the power comes from microscopic electric motors! (They get their electricity from positive and negative ions in the cell.) The motors are so small that even our most advanced scanning techniques are unable to reveal all the details, yet we know that they have to have a stator, a rotor, and electrical connections. There must also be some sort of extremely low friction protein bushings where the motor shaft penetrates the cell membrane. On top of everything else, the motors are individually reversible and connect to their respective flagella through biological gear boxes with a 30 to 1 gear reduction ratio! (Personal communication, Dr. Richard Lumsden.)

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This is not a simple system. Over 200 proteins are involved in producing the three parts of this irreducibly complex motor-connector-propeller apparatus. And what might it have evolved from? Nothing. No other form of life, whether higher or lower, has anything like the motors in bacteria. If we were to find electric motors on Mars, there would be no doubt that intelligent life put them there. Yet we find electric motors right under our noses and believe they are an accident!

14. There is no known mechanism in any living thing from which the electric **motors** in certain types of bacteria could have evolved. Their swimming apparatus is irreducibly complex. It had to be designed.

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e. THE BOMBARDIER BEETLE. (Gish, 1977, 51-53; Behe, 1996, 31-36)

One of the most unusual defense mechanisms in nature belongs to the “bombardier beetle,” *Brachinus tschernikhi*. This insect has two internal storage chambers containing a mixture of hydrogen peroxide and hydroquinone, each in a higher concentration than found in any other type of organism. The mixture serves as a fuel that reacts violently when certain chemicals are added. Each storage chamber is connected to an explosion chamber through a narrow tube controlled by a sphincter muscle. The explosion chambers have external protrusions that serve as firing tubes.

When threatened, the beetle aims the tubes at the enemy and squeezes the storage chambers, injecting a precisely controlled amount of the fuel mixture into the explosion chambers. Around the edges of these chambers are glands that add two special activating enzymes to the fuel mixture, causing a violent explosion of boiling hot, foul tasting liquid. A predator hit in the face with such a blast quickly loses interest in eating the beetle.

Since the system would need to have at least minimal function every step of the way, it would be extraordinarily difficult for it to evolve from a different type of structure in some unknown ancestor.

- If the ancestors did not acquire the ability to produce the activating enzymes at the same time as the fuel mixture, all the parts of the system would have been useless and would have taken up precious resources that could have been better used elsewhere.
- If they did not have the ability to regulate the reaction by controlling the quantity of each chemical, they would have quickly become extinct because they would have exploded.
- If the combustion chambers had not been strong enough to withstand the force of the blast the beetles would have blown up. Even if the chambers were strong enough for normal circumstances, too great a concentration of chemicals at even one firing could generate too much heat and explosive force for the beetle’s body to withstand. There has to be a regulating mechanism to precisely control the manufacture and mixing of the chemicals.
- Even if they could produce the chemicals, they needed storage chambers to keep them in; they also needed muscles to squeeze those chambers, connecting tubes, sphincter muscles, combustion chambers, swivel tubes to deliver the blast, and muscles to aim those tubes.

Though evolutionists might be able to invent a story about how such a mechanism could evolve one piece at a time by changes in previously existing components, they are ignoring the need for at least minimal function every step along the way. Everything in the apparatus, from the mix of chemicals to the strength of the sphincter muscles to the shape of the storage and combustion chambers, works together.

15. If any piece of the bombardier beetle's defense mechanism does not work properly the whole thing has no function and just wastes precious resources. Natural selection would serve to **eliminate** it, not develop it.

The whole apparatus exists in the beetle's body because the DNA contains the coded instructions to put it there. Once again we have to ask, what are the chances such a system could develop one mutation at a time? Our groundhog would surely have to make it across a lot of lanes on the highway!

f. CLEANING SYMBIOSIS.

Throughout nature there are numerous examples of symbiosis, in which two unrelated species cooperate for their mutual benefit. Let's consider just two of them.

(1) *Crocodiles and Plovers.*

Crocodiles normally eat anything they can get in their mouths. However, they have a unique relationship with one species of bird, the Egyptian plover. When the plover approaches, the crocodile opens its jaws wide. The bird walks in, picks the leeches off the crocodile's gums, then walks safely back out. The crocodile gets a free cleaning and the bird gets a free lunch.

(2) *Cleaning Stations in the Sea.*

Marine biologists have discovered a number of "cleaning stations" in the sea. Fish of all kinds, including such vicious predators as sharks and barracudas, come to these areas and line up for cleaning. When the cleaners (certain types of small fish or shrimp) approach, the predator opens its gills and mouth and allows the cleaner to swim in and remove fungus, parasites, and damaged tissue. It doesn't allow just any type of fish or shrimp in, only very specific ones. When the cleaner is done it swims back out, the cleaned fish swims away looking for its next meal, and the next in line moves up for its turn.

16. **Cleaning** symbiosis requires specific types of cleaners willing to enter a predator's mouth, and a predator willing to not eat those exact types. It is an irreducibly complex system.

If this mutual behavior is the result of mutations, we have to marvel at how fortunate the cleaners are. Just at the time those exact species acquired a mutation that made them want to walk or swim into a crocodile, shark, or barracuda's mouth, the predator acquired a mutation that made him decide not to eat that particular type of cleaner. If the predator's mutation had come a little after the cleaner's, it would have been all over.

It would not be hard to find hundreds or thousands of other examples of design in nature.

17. When we look at the evidence of nature, it is plain that there must be a **designer.**

In the face of examples such as these, it seems hard to believe that evolutionists still refuse to admit the possibility of intelligent design. In the state of Ohio, for example, they are battling fiercely (as of Fall 2002) to prevent any mention of intelligent design as a possibility in high school science textbooks.

There are two reasons for this denial of the evidence.

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- First, evolution is a logical system based on postulates rather than evidence.
(a) Everything must be explainable by purely natural processes, and
(b) Evolution is the only possibility.
- Second, evolution rests on an invalid use of a logical converse.

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Remember the example from the last lesson. The statement “If I am at Victoria Falls, then I am at one of the highest waterfalls in the world” is true, but its converse, “If I am at one of the highest waterfalls in the world, then I am at Victoria Falls” is unreliable.

Likewise, evolutionists correctly believe, “If our evolutionary story is true then this particular feature would come to exist.” However, they incorrectly turn it around to say, “If this particular feature came to exist, then our evolutionary story is true.” This is absurd. Evolution is only one of the possible explanations for the origin of the features mentioned, and a very poor explanation at that. In light of the irreducible complexity of many molecular machines, intelligent design is a much better explanation.

Nevertheless, evolutionists insist that because they can come up with a made-up story such as the origin of the eye earlier in this lesson, their story must be true. It's only one of the possibilities, but because they refuse to allow the possibility of divine intervention, they insist that *their* made-up story must be taught as fact. All the evidence in the world won't convince someone who insists on believing in evolution. He does so because of faith, not science.

A suggested exercise: Read your students one of Rudyard Kipling's "Just-So Stories" such as "The Elephant's Child." Compare Kipling's made-up story to the made-up stories of evolution. There's not much difference.

As we draw closer to the Lord's return, we must expect to be ridiculed because of our faith in the Bible. Jesus told us in Mark 13:22 that in the last days there would be such deception that, if it were possible, even the elect would be led astray. Don't let it happen to you. Hold onto your faith, knowing that evolution is every bit as religious as Biblical creation, and far less reasonable.

Sample Topics for Further Study:

Migratory behavior in insects and birds

Mutualism between insects and plants

Active transport of minerals in plants

Other defense mechanisms

Sap transport in tall trees

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