

Chapter 9:

Vestigial Structures

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Why is this Chapter Important?

Most people have heard the common assertion that human bodies have some parts that are “leftover” from the evolutionary process that took “millions of years.” Body parts such as the tailbone, tonsils, and the appendix are commonly placed in this category of “extra” or “unnecessary” body parts.

While many evolutionists are just fine with this assumption, many Christians might ask, “Why would God—who is able to design humans in a complete and perfect fashion—leave such ‘extra’ or ‘unnecessary’ parts?” This question is answered by this Chapter by explaining that these supposedly “extra” parts are not extra at all. We do this by providing current medical research that demonstrates just how intentional God was when He designed the human body.

Introduction

One major supposed proof of evolution is the observation that some organs appear to be degenerate or useless,

often called vestigial organs. As Professor Senter opines, the “existence of vestigial structures is one of the main lines of evidence for macroevolution.”²¹⁴ Vestigial organs are usually defined as body structures that were believed to have served some function in an organism’s evolutionary history, but are now no longer functional, or close to functionless.²¹⁵

Thus, evolutionists teach that “living creatures, including man, are *virtual museums of structures that have no useful function*, but which represent the remains of organs that once had some use”²¹⁶ (emphasis added). Because all of the claimed vestigial organs have now actually been shown to be useful and integral to human function, evolutionists who attempt to salvage their idea have tried to shift gears. They now suggest that some organs have “reduced function,” compared to their function in some undefined past. Thus, a new definition for “vestigial” is being used by some evolutionists. A problem with the revisionist definition is: Just how much reduction is required before the “vestigial” label is appropriate? Is 30% a large enough reduction, or will a 10% reduction suffice? In addition, there are so many putative examples of “reduced size” functional structures that the label “vestigial” becomes meaningless.

For example, an analysis of skull shapes of our supposed evolutionary ancestors shows that our human jaw is vestigial compared to our alleged ancestors, since it is claimed to be much smaller in humans today (and also has a reduced function relative to its strength and ability to chew food).²¹⁷ Furthermore, not only the human jaw and nose, but our eyes, eyebrows, front limbs, ears, and even our mouth could also be labeled vestigial when compared to our alleged ancestors. For this reason, the term becomes meaningless when defined in this fashion. Anything could be “vestigial” if it simply suits the writer.

Darwin discussed this topic extensively, concluding that vestigial organs speak “infallibly” to evolution.²¹⁸ Darwin

asserted that the existence of vestigial organs is strong evidence against creation, arguing that vestigial organs are so “extremely common” and “far from presenting a strange difficulty, as they assuredly do on the old doctrine of creation, might even have been anticipated in accordance with evolution.”²¹⁹

The view that vestigial organs are critical evidence for macroevolution was further developed by the German anatomist Wiedersheim, who made it his life’s work.²²⁰ Wiedersheim compiled a list of over 100 vestigial and so-called “retrogressive structures” that occur in humans. His list included the integument (skin), skeleton, muscles, nervous system, sense organs, digestive, respiratory, circulatory and urogenital systems.²²¹ Most of these remnants of (past physical) structures are found completely developed in other vertebrate groups.²²² Therefore, Wiedersheim concluded that the “doctrine of special creation or ... any teleological hypothesis” fails to explain these organs.²²³

For the medically-informed reader, we left most of the technical language in this chapter in-tact. Readers without this background, however, should still be able to read this chapter and gain an understanding that God has an incredible design for each and every part of the human body!

Vestigial Problems in Your Textbook

Let us now examine the most common vestigial organ claims. We hope your appreciation grows for God Who did in fact know what He was doing when He *created us in His image* (Genesis 1:27) and Who ensured we are *fearfully and wonderfully made* (Psalm 139:14).

The Coccyx (tailbone)

Humans lack a tail. All lower primates have tails and the human coccyx (tailbone) is interpreted by Darwinists as a rudimentary tail left over from our distant monkey-like ancestors that supposedly had tails. Specifically, Darwin claimed that the “coccyx in man, though functionless as a tail, plainly represents this part in other vertebrate animals.”²²⁴

A major problem with the conclusion that the coccyx shows evolution is that our supposed “nearest relatives” including chimpanzees, gorillas, orangutans, bonobos, gibbons or the lesser apes such as siamangs all lack tails! Only a few of the over 100 types of monkeys and apes, such as spider monkeys, have tails. The primates that have tails tend to be the small cat-like lemurs and tarsiers.

In fact, the coccyx “is merely the terminal portion of the backbone. After all, it does have to have an end!”²²⁵ The major function of the coccyx is an attachment site for the interconnected muscle fibers and tissues that support the bladder neck, urethra, uterus, rectum, and a set of structures that form a bowl-shaped muscular floor, collectively called the pelvic diaphragm, that supports digestive and other internal organs.²²⁶

The muscles and ligaments that join to the coccyx include the coccygeus muscle ventrally, and the gluteus maximus muscle dorsally. The coccygeus muscles enclose the back part of the pelvis outlet.²²⁷ The levator ani muscles constrict the lower end of both the rectum and vagina, drawing the rectum both forward and upward.²²⁸ The coccygeus muscle, which is inserted into the margin of the coccyx and into the side of the last section of the sacrum, helps to support the posterior organs of the pelvic floor. The coccygeus muscle is a strong, yet flexible, muscle, often described as a “hammock,” that adds support to the pelvic diaphragm against abdominal pressure. The coccyx muscle system expands and

contracts during urination and bowel movements, and also distends to help enlarge the birth canal during childbirth.²²⁹

Another useful structure connected to the coccyx is the anococcygeal raphe, a narrow fibrous band that extends from the coccyx to the margin of the anus.²³⁰ Without the coccyx and its attached muscle system, humans would need a very different support system for their internal organs requiring numerous design changes in the human posterior.²³¹ Darwin was clearly wrong about the coccyx, and it is way past time that textbooks reflect known science about the well-designed end of the human spine.

The Tonsils and Adenoids

Among the organs long considered vestigial are the tonsils and adenoids. The tonsils are three sets of lymph tissues. The first, called palatine tonsils or “the tonsils,” consist of two oval masses of lymph tissue (defined below) attached to the side wall at the back of the mouth. The second pair is the nasopharyngeal tonsils, commonly called the adenoids. The last section contains the lingual tonsils, which consist of two masses of lymph tissue located on the dorsum of the tongue. The assumption that the tonsils are vestigial has been one reason for the high frequency of tonsillectomies in the past. Decades ago J. D. Ratcliff wrote that “physicians once thought tonsils were simply useless evolutionary leftovers and took them out thinking that it could do no harm. Today there is considerable evidence that there are more troubles of the respiratory tract after tonsil removal than before, and *doctors generally agree that simple enlargement of tonsils is hardly an indication for surgery*”²³² (emphasis added).

In recent years, researchers have demonstrated the important functions of both the tonsils and adenoids. As a result, most doctors are now reluctant to remove either the

tonsils or the adenoids. Medical authorities now actively discourage tonsillectomies.²³³

The tonsils are lymph glands. They help establish the body's defense mechanism that produces disease-fighting antibodies. These defense mechanisms develop during childhood, as children sample and record materials through their mouths. The tonsils begin to shrink in the preteen years to almost nothing in adults, and other organs take over this defense function.²³⁴ Because tonsils are larger in children than in adults, the tonsils are important in the development of the entire immune system.²³⁵ For example, one doctor concluded that:

The location of the tonsils and adenoids allows them to act as a trap and first line of defense against inhaled or ingested bacteria and viruses. The tonsils and adenoids are made up of lymphoid tissue which manufactures antibodies against invading diseases. Therefore, unless there is an important and specific reason to have the operation, it is better to leave the tonsils and adenoids in place.²³⁶

The tonsils are continually exposed to the bacteria in air we breathe and for this reason can readily become infected. As part of the body's lymphatic system, they function to fight disease organisms.²³⁷ The tonsils "form a ring of lymphoid tissue" that guards the "entrance of the alimentary [digestive] and respiratory tracts from bacterial invasion." Called "super lymph nodes" they provide first-line defense against bacteria and viruses that cause both sore throats and colds.²³⁸ Although removal of tonsils obviously eliminates tonsillitis (inflammation of the tonsils), it may increase the incidence of strep throat, Hodgkin's disease, and possibly polio.²³⁹ Empirical research on the value of tonsillectomies in preventing infection demonstrate that the "tonsillectomy

is of little benefit after the age of eight when the child's natural defenses have already made him immune to many infections.”²⁴⁰

Just like calling the coccyx a useless evolutionary left-over, calling tonsils useless vestiges of organs that were only useful in our supposed distant evolutionary ancestor's bodies totally ignores the facts. These organs are well-designed and useful, just as if God created them on purpose.

The Vermiform Appendix

The appendix was one of the “strongest evidences” used by Darwin to disprove creationism in his *The Descent of Man* (1871) book: “in consequence of changed diet or habits, the caecum had become much shortened in various animals, the vermiform appendage [appendix] being left as a rudiment of the shortened part... Not only is it useless, but it is sometimes the cause of death ... due to small hard bodies, such as seeds, entering the passage and causing inflammation.”²⁴¹ Since Darwin, this claim has been repeated often in books and journals. The appendix was once commonly cited in many biology texts as the best example of a vestigial organ.²⁴²

The human appendix is a small, narrow, worm-shaped tube that varies in length from 1 to 10 inches.²⁴³ Its average length is slightly over three inches long, and less than 1/2 inch wide.²⁴⁴ The small intestine empties into the large intestine above the floor of the cecum at an entrance passage controlled by a valve. The lower right end of the large intestine in humans terminates somewhat abruptly at an area termed the cecum. The vermiform appendix is connected to the lower part of the cecum.

The Safe House Role

Most bacteria in a healthy human are beneficial and serve several functions, such as to help digest food. If the intestinal bacteria are purged, one function of the appendix is to replenish the digestive system with beneficial bacteria. Its location—just below the normal one-way flow of food and germs in the large intestine in a sort of gut cul-de-sac—supports the safe house role by protecting and fostering the growth of “good germs” needed for various uses in the intestines, and enabling the digestive bacteria system to “reboot” after bouts of disease such as cholera, or the use of antibiotics. Diarrhea is designed to flush out all bacteria from the colon, both good and bad. The bacteria in the appendix are not affected by diarrhea and can rapidly repopulate the colon to quickly reestablish healthy digestion.

For years, we noticed few effects of removing the appendix. Evolutionists thought that if people don’t need them, they must be useless. And if it’s useless, then it must be a remnant of some evolutionary ancestor that did need it for something. But just because removing a body part does not immediately kill you does not mean that it has no use. One can lose the end of some fingers and still do almost everything that fully fingered people do, but fingertips are still useful. Like fingertips, tonsils and the appendix are useful and, as far as is known, they always have been ever since God created them.

The Functions of the Appendix in Development

The appendix is also involved in producing molecules that aid in directing the movement of lymphocytes to other body locations. During the early years of development, the appendix functions as a lymph organ, assisting with the maturation of B lymphocytes and in the production of

immunoglobulin A (IgA) antibodies. Lymph tissue begins to accumulate in the appendix soon after birth and reaches a peak between the second and third decades of life. It decreases rapidly thereafter, practically disappearing after the age of about 60.

The appendix functions to expose white blood cells to the wide variety of antigens normally present in the gastrointestinal tract. Thus, like the thymus, the appendix helps suppress potentially destructive blood- and lymph-borne antibody responses while also promoting local immunity.²⁴⁵

In summary, researchers have concluded, “Long thought to be an evolutionary remnant of little significance to normal physiology, the appendix has ... been identified as an important component of mammalian mucosal immune function, particularly B lymphocyte-mediated immune responses and extrathymically derived T lymphocytes.”²⁴⁶ Calling the appendix “vestigial” is a big mistake.

The Thyroid

The thyroid is a two-lobed gland connected by a narrow strip located just below the voice box.²⁴⁷ German Darwinist Ernst Haeckel long ago asserted that not only is the thyroid vestigial, but that our body contains “many rudimentary organs.... I will only cite the remarkable thyroid gland (thyreoidea).”²⁴⁸ Because surgeons found that adults could survive after having their thyroid removed, it was assumed by some that it was useless. Wiedersheim listed the thyroid as vestigial because of the “manner in which the thyroid originates.”²⁴⁹ Were they right? Modern medicine has revealed enough about the thyroid for us to find out.

The thyroid is one of the largest endocrine glands, and can grow to as large as 20 grams in adults. The three most important hormones it produces are triiodothyronine (T3) and thyroxine (T4), both of which regulate metabolism, and

calcitonin, which regulates calcium levels. Both T3 and T4 stimulate the mitochondria to provide more energy for the body and increase protein synthesis. Without T3 and T4, humans become sluggish, and growth stops. An oversupply (or an undersupply) of thyroxine results in over-activity (or under-activity) of many organs. Defects in this organ at birth can cause a hideous deformity known as cretinism, shown as severe retardation of both physical and mental development.²⁵⁰ Haeckel was exactly wrong about the Thyroid, but he didn't know its values. Museums and textbook displays still portraying the thyroid as vestigial show an almost criminal disregard of good observational science.

The Thymus

The thymus gland is an example of an important organ that was long judged not only vestigial, but harmful if it became enlarged. Maisel reported that for generations physicians regarded it “as a useless, vestigial organ.”²⁵¹ Clayton noted that an oversized thymus was once routinely treated with radiation in order to shrink it.²⁵² Follow-up studies showed that, instead of helping the patient, such radiation treatment caused abnormal growth and a higher level of infectious diseases that persisted longer than normally.

The thymus is a small pinkish-gray body located below the larynx and behind the sternum in the chest.²⁵³ A capsule, from which fingers extend inward, surrounds it and divides it into several small lobes, each of which contains functional units called follicles.

Functions of the Thymus

This once-deemed worthless vestigial structure is now known to be the master gland of the lymphatic system. Without it, the T-cells that protect the body from infection

could not function properly because they develop within the thymus gland. Researchers have now solved the thymus enigma, finding that far from being useless, the thymus regulates the intricate immune system which protects us against infectious diseases. Thanks to these discoveries, many researchers are now pursuing new and highly promising lines of attack against a wide range of major diseases, from arthritis to cancer.²⁵⁴

The cortex, or outer tissue layer, of the thymus is densely packed with small lymphocytes surrounded by epithelial-reticular cells. The lymphocytes, also called thymic cells, are produced in the cortex and exit the gland through the medulla.²⁵⁵ The medulla is more vascular than the cortex, and its epithelial-reticular cells outnumber the lymphocytes.

Besides being a master regulator and nursery for disease-fighting T-cells, the thymus takes a dominant role reducing autoimmune problems. These occur where the immune system attacks the person's own cells, called the self-tolerance problem.²⁵⁶ As research on immune tolerance continues, "the multiplicity of mechanisms protecting the individual from immune responses against self-antigens" and "the critical role the thymus plays is becoming better understood."²⁵⁷ "Evidence now exists that regulatory cells have a role in preventing reactions against self-antigens, a function as important as their role of clonal deletion of high-affinity self-reactive T-cells."²⁵⁸

Regulatory T-cells also help to prevent inappropriate inflammatory responses to non-disease-causing foreign antigens. This system plays an essential role in preventing harmful inflammatory responses to foreign antigens that come in contact with mucous membranes, such as in many allergies.

In summary, a primary function of the thymus is to nurse to maturity small white blood cells called lymphocytes,

which are then sent to the spleen and the lymph nodes, where they multiply.²⁵⁹ There is nothing vestigial about the thymus.

The Pineal Gland

The pineal was first described by French psychiatrist Philip Pineal in the 1790s.²⁶⁰ The pineal body is a cone-shaped gland positioned deep inside the head, near the brain stem. Scientists are now finding out that the pineal gland's functions include regulating hormones:

Scientists are closing in on a mystery gland of the human body, the last organ for which no function has been known. It is turning out to be a lively performer with a prominent role in the vital hormone producing endocrine system... Medical science is now finding what nature really intended by placing a pea-sized organ in the middle of the head.²⁶¹

Of course, the Creator really deserves credit for the pineal gland, not nature. Nevertheless, the pineal gland also serves in reproduction:

It has long been known that reduction in the amount of light reaching the eyes stimulates this small gland to synthesize and secrete an anti-gonadotrophic hormone(s) which results in marked attenuation of virtually all aspects of reproductive physiology.²⁶²

Researchers at the National Institute of Mental Health found that the pineal gland is a very active member of the body's network of endocrine glands, especially during certain growth stages.

The Pineal Gland and Melatonin Production

The pineal gland's most commonly mentioned function is its role in producing the hormone melatonin.²⁶³ Cells in the pineal gland produce a special enzyme that converts serotonin to melatonin.²⁶⁴ Melatonin is produced mainly in the pineal gland of vertebrates, but is also produced in a variety of other tissues.²⁶⁵

Light-dark levels are communicated to the brain from the retina to the pineal gland and help regulate melatonin levels. Melatonin is also a sleep-inducing hormone. This is why darkness generally promotes sleepiness.²⁶⁶

Melatonin also has important immune function stimulatory properties. It enhances the release of T-helper cell type 1 cytokines such as gamma-interferon and IL-2, counteracts stress-induced immunodepression and other secondary immunodeficiencies, protects against lethal viral encephalitis, bacterial diseases, and septic shock, and diminishes toxicity associated with several common chemotherapeutic agents.²⁶⁷ The administration of melatonin also increases thymus cellularity and antibody responses.²⁶⁸ Conversely, pinealectomy accelerates both thymic involution and depresses the humeral and cell-mediated immune response.²⁶⁹

Pineal and Reproduction

The pineal gland is the primary controller of the timing of the onset of puberty, a critical developmental function. Melatonin regulates the production of anti-gonadotropin hormones. These help block the effects of hormones that stimulate gonad development. Damage to the pineal gland leads to early puberty in males. Conversely, if the pineal gland is overactive, puberty is delayed. Among melatonin's many other reproductive functions is regulation of the estrus cycle in women. Melatonin levels decrease as women age,

particularly after they pass child-bearing age.²⁷⁰ Changes in melatonin levels may be responsible for some sleep difficulties in menopausal females.

Before the advent of modern artificial lighting, the number of hours humans spent in darkness was much greater. Today, bright lighting found in almost all homes and offices may be affecting our reproductive cycle. Exposure to a large amount of light during most of one's waking hours may cause the onset of sexual maturity at an earlier age, and even the higher rate of multiple births.

Studies on "pre-electric" Inuit Indians support the conclusion that light and the pineal gland are important in reproduction. When it is dark for months at a time in their arctic home, Inuit women stop producing eggs altogether and men become less sexually active. When daylight returns, both the women and the men resume their "normal" reproductive cycles.²⁷¹

The "Nictitating Membrane" in the Human Eye

An excellent example of another commonly mislabeled vestigial organ is the so-called nictitating membrane remnant in the human eye. A nictitating membrane, or "third eyelid," is a very thin and transparent structure that small muscles move horizontally across the eye surface to clean and moisten the eye while maintaining sight. It hinges at the inner side of the lower eyelid of many animals. To nictitate means to move rapidly back and forth over the front of the eye.²⁷² The nictitating membrane is especially important in animals that live in certain environments, such as those that are exposed to dust and dirt like birds, reptiles, and mammals, or marine animals such as fish. Charles Darwin wrote about the "nictitating membrane:"

...with its accessory muscles and other structures, is especially well developed in birds, and is of much functional importance to them, as it can be rapidly drawn across the whole eye-ball. It is found in some reptiles and amphibians, and in certain fishes, as in sharks. ... But in man, the quadrumana, and most other mammals, it exists, as is admitted by all anatomists, as a mere rudiment, called the semilunar fold.²⁷³

Many continue to repeat Darwin's wrong idea about this membrane being a vestigial structure, even though, as we will show, it is clearly important in the human eye.²⁷⁴

Its Use in Humans

The classic eye anatomy textbook by Snell and Lemp accurately describes what we now recognize as the mis-named nictitating membrane. The plica semiluminaris, or "plica" for short, is a semilunar fold located on the inner corner of the eye to allow that side of the human eyeball to move further inward, toward the nose.²⁷⁵ Its anatomy reveals a delicate half-moon-shaped vertical fold. The eye has about 50–55% rotation, but without the plica semilunaris, the rotation would be much less. There exists slack that must be taken up when the eye looks forward or side-to-side; hence the fold. No such arrangement exists for looking up or down, for at this area the fornix is very deep. The absence of a deep medial fornix is required for the puncta to dip into superficial strips of tear fluid.²⁷⁶ Because the plica allows generous eye rotation, it actually is an example of over-design.²⁷⁷

Another function of the plica semilunaris is to collect foreign material that sticks to the eyeball. Stibbe notes on a windy day the eyes can rapidly accumulate dust, but due to the plica they can usually effectively remove it.²⁷⁸ To do this, it secretes a thick sticky fatty liquid that effectively collects

foreign material and, in essence, insulates the material for easy removal from the eye without fear of scratching or damaging the delicate eye surface. The critical role of the plica in clearing foreign objects from the eye surface has been recognized since at least 1927. This should be an embarrassment to those who have thought of it as vestigial since then.

Muscle and Bone Variations as Vestigial Organs

Most of the over 100 vestigial organs and structures listed in Wiedersheim's original 1895 work were small muscles or minor variations in bones, and not glands or discreet organs such as the human appendix.²⁷⁹ Many of these muscles were labeled vestigial because they were small and made only a small contribution, or supposedly no contribution, to the total muscle force. The problem is, if a muscle is vestigial it would rapidly shrink, as research on living in a weightless situation, such as in outer space, has documented.

Thus, if a muscle has not atrophied it must be functional. It is now known that most small, short body muscles produce fine adjustments in the movement of larger muscles, or serve other roles, such as in proprioception.²⁸⁰ The proprioceptive system allows the body to rapidly and accurately control limb position. It is why falling cats so often land on their feet. Anatomist David Menton concludes that:

...most muscles have a sensory function in addition to their more obvious motor function. ...that some of the smaller muscles in our body that were once considered vestigial, on the basis of their small size and weak contractile strength, are in fact sensory organs rather than motor organs.²⁸¹

Certain other muscles and bone variations are also labeled vestigial primarily because they are not present in most (or many) people and are not required for survival. As is clearly evident in human skill differences, these muscle variations help to produce the enormous variety in many abilities so evident in modern humans. An example is the gross body muscle development of the stereotyped computer programmer compared with a football player. More commonly, many muscles are not well developed in most persons today in Western society due to our sedentary lifestyle.

This does not mean that they are vestigial, but only demonstrates their lack of use in modern life. It also demonstrates a very different lifestyle today than in the past. Lifestyle differences could cause many of these “less developed” muscles to be much larger. Would evolutionists have called them vestigial if they saw how much larger they were in a more athletic person’s body? The fact that some individuals are superior athletes from a young age is evidence that genetic components clearly play an important role in complex physical activities. DeVries maintains that athletic ability depends on variations of numerous aspects of muscle cell structure and physiology.²⁸² Certain muscles and muscle types must first be present before they can ever be developed by proper training.

Gifted athletes, such as gymnastic and acrobatic stars, may tend to have certain muscles that some people may not even possess, or they can develop certain muscles to a greater extent. Most human abilities appear to be influenced by genetic differences that result from body structure variations. It follows that the human muscle system would likewise be influenced by heredity.

The argument that some small muscle is vestigial depends heavily on judgments as to the value and the individual use of a particular structure. It is clear that none of the so-called vestigial muscles are in any way harmful. Indeed, if they are

developed at all, then those who have them may enjoy an advantage in certain activities, even if it is only an athletic or aesthetic advantage.

Scientists have clearly identified specific and well-designed purposes for every single supposedly vestigial organ so far proposed. Darwinist books, movies, and displays are dead wrong if they promote the concept of vestigial organs, which don't actually exist.

Endnotes



- ¹ Ken Ham, “Culture and Church in Crisis,” AnswersInGenesis.com: <http://www.answersingenesis.org/articles/am/v2/n1/culture-church-crisis> (January 1, 2014) and survey data: [http://www.answersingenesis.org/articles/am/v2/n1/aig-poll \(data\)](http://www.answersingenesis.org/articles/am/v2/n1/aig-poll%20(data)) (January 1, 2014).
- ² Results for this USA Today/Gallup poll are based on telephone interviews conducted May 10–13, 2012, with a random sample of 1,012 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia.
- ³ Frank Newport, “In U.S., 46% Hold Creationist View of Human Origins: Highly Religious Americans most likely to believe in Creationism,” Gallop.com: <http://www.gallup.com/poll/155003/hold-creationist-view-human-origins.aspx> (June 1, 2012).
- ⁴ Kenneth R. Miller & Joseph S. Levine, *Biology* (Boston, Mass: Pearson, 2010): 466.
- ⁵ Introduction and Table from: “The Bible and Science Agree,” Creationism.org: <http://www.creationism.org/articles/BibleSci.htm> (January 1, 2014).
- ⁶ Ken Ham & T. Hillard, *Already Gone: Why your Kids will Quit Church and what you can do stop it* (Green Forest, AR: Master Books, 2009).
- ⁷ S. Michael Houdmann, “How and when was the Canon of the Bible put together?” Got Questions Online: <http://www.gotquestions.org/canon-Bible.html> (November 7, 2013).

- ⁸ The reader is encouraged to review these additional resources: Henry Halley, *Halley's Bible Handbook* (Grand Rapids: Zondervan Publishing House, 1927, 1965); Arthur Maxwell, *Your Bible and You* (Washington D.C.: Review and Herald Publishing Association, 1959); Merrill Unger, *Unger's Bible Handbook* (Chicago: Moody Press, 1967).
- ⁹ For example, in 1946 the Dead Sea Scrolls were discovered, which included over 900 manuscripts dating from 408 B.C. to A.D. 318. These manuscripts were written mostly on parchment (made of animal hide) but with some written on papyrus. Because these materials are fragile, they have to be kept behind special glass in climate controlled areas.
- ¹⁰ Josh McDowell, *The New Evidence that Demands a Verdict* (Nashville: Thomas Nelson Publishers).
- ¹¹ McDowell, *The New Evidence that Demands a Verdict*, p.38.
- ¹² McDowell, *The New Evidence that Demands a Verdict*, p.38.
- ¹³ Most of the 11 verses come from 3 John. See: Norman Geisler & William Nix. *A General Introduction to the Bible* (Chicago: Moody Press, 1986), 430.
- ¹⁴ Geisler & Nix, *A General Introduction to the Bible*, p. 430.
- ¹⁵ Theophilus ben Ananus was the High Priest in Jerusalem from A.D. 37 to 41 and was one of the wealthiest and most influential Jewish families in Iudaea Province during the 1st century. He was also the brother-in-law of Joseph Caiaphas, the High Priest before whom Jesus appeared. See Wikipedia and B. Cooper, *The Authenticity of the Book of Genesis* (Portsmouth, UK: Creation Science Movement, 2012).
- ¹⁶ B. Cooper, *Authenticity of the New Testament, Vol. 1: The Gospels*. Electronic book (2013).
- ¹⁷ The Digital Dead Sea Scrolls Online, Directory of Qumran Dead Sea Scroll: <http://dss.collections.imj.org.il/isaiah> (December 10, 2013).
- ¹⁸ Source for DSS: Fred Mille, "Qumran Great Isaiah Scroll," Great Isaiah Scroll: <http://www.moellerhaus.com/qumdir>.

- htm; Source for Aleppo Codes JPS: “Mechon Mamre” (Hebrew for Mamre Institute): <http://www.mechon-mamre.org/p/pt/pt1053.htm> (December 10, 2013).
- ¹⁹ Norman & Nix. *A General Introduction to the Bible*.
- ²⁰ Samuel Davidson, *Hebrew Text of the Old Testament*, 2d ed. (London: Samuel Bagster & Sons, 1859), 89.
- ²¹ Mary Fairchild, “44 Prophecies of the Messiah Fulfilled in Jesus Christ,” About.com: <http://christianity.about.com/od/biblefactsandlists/a/Prophecies-Jesus.htm> (December 18, 2013).
- ²² See: Genesis 7:19 (“all the high hills under the whole heaven were covered”); Genesis 7:21–22 (“all flesh died that moved upon the earth...all that was in the dry land”); Matthew 24:39 (“The flood came, and took them all away”); and 2 Peter 3:6 (“By these waters also the world of that time was deluged and destroyed.”). God also promised in Genesis 9:11 that there would be no more floods like the one of Noah’s day.
- ²³ Ken Ham, “They Can’t Allow “It”!” AnswersinGenesis.com: <http://www.answersingenesis.org/articles/au/cant-allow-it> (January 1, 2014).
- ²⁴ Eva Vergara & Ian James, “Whale Fossil Bonanza in Desert Poses Mystery,” Science on msnbc.com: http://www.msnbc.msn.com/id/45367885/ns/technology_and-science-science/ (November 20, 2013).
- ²⁵ D.A. Eberth, D.B. Brinkman, & V. Barkas, “A Centrosaurine Mega-bonebed from the Upper Cretaceous of Southern Alberta: Implications for Behaviour and Death Events” in *New Perspectives on Horned Dinosaurs: The Ceratopsian Symposium at the Royal Tyrrell Museum* (September 2007).
- ²⁶ Michael Reilly, “Dinosaurs’ Last Stand Found in China?” Discovery.com: <http://news.discovery.com/earth/dinosaurs-last-stand-found-in-china.htm> (January 1, 2014).
- ²⁷ Michael J. Oard, “The Extinction of the Dinosaurs,” *Journal of Creation* 11(2) (1997): 137–154.

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