Creation Matters

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Is the External Ear a Rudimentary Organ?

by Jerry Bergman, PhD

One of the most noticeable features of the human face is the external or outer ear, known anatomically as the pinna or auricle. It consists primarily of elastic cartilage covered with skin. Darwin (1879, p. 21) claimed that "The whole external shell of the ear may be considered a rudiment, together with the various folds and prominences (helix and anti-helix, tragus and anti-tragus, &c)…" He considered it to be a functionless remnant of a much larger, functional pinna that our putative evolutionary ancestors possessed. After Darwin, the vestigial claim was often uncritically repeated. A typical example is the claim by Rogers, et al. (1942, p. 313) that the outer

> … ear is another part of the body that shows numerous vestigial features. The entire *outer ear* is so greatly reduced in size and so ineffective as a funnel for concentrating sound waves, compared to its development in many of the lower mammals, that it must itself be regarded as a vestigial organ.

If this claim by Darwin and his successors is true, it is evidence of the loss of function, devolution, not evolution. Just what is the pinna's main role in the body?

Sound collection

The main function of the outer ear is to collect sound within specific frequency ranges and loudness levels that vary, from

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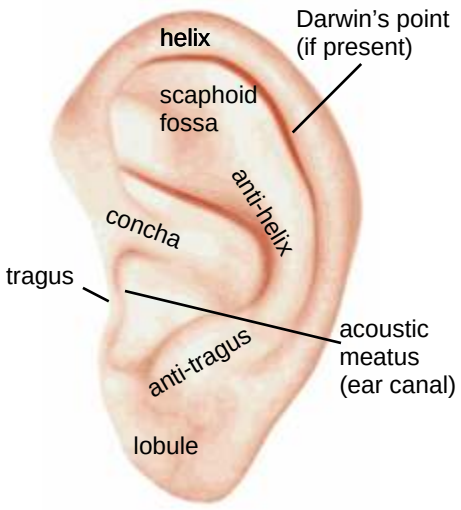

New Geochemical Analysis Debunks Ryan/Pitman Black Sea Flood

by Carl R. Froede Jr., BS, PG

In 1998, naturalists William Ryan and Walter Pitman made a bold proposal that 7,500 years ago the Black Sea Basin was quickly and catastrophically filled by marine water, creating a multicultural diaspora later recorded in the Bible as Noah's Flood. Since this time, many other naturalists have joined in the effort to either support or disprove this controversial idea. This concept intrigues naturalists since it gives weight to a biblical event considered anathema to Naturalism.

Young-earth creationists have also examined the Ryan/Pitman Black Sea flood hypothesis and rejected it, having concluded it to be an interesting story—but one not linked to the Bible (Byers, 2001; Froede, 2001, 2002, 2009; Walker, 2000; 2002).

New research has recently been reported by several naturalists on the geochemical variation of some organic and inorganic parameters in sedimentary cores collected from the Black Sea (Eckert et al., 2013a, 2013b). I review this new information to determine its relevance to the ongoing discussion regarding the naturalistic attempt to link the local Black Sea flood with the global biblical Flood.

Figure 1. The locations of the sediment cores collected and composited as part of the geochemical analyses. Modified from Eckert et al. (2013b, p. 10) Figure DR-1.

A complex water basin

As a large water basin, the Black Sea is a unique feature on Earth (Figure 1). Naturalists generally agree that approximately 12,000 years ago, a small freshwater lake occupied a lower portion of the Black Sea Basin (Morton, 2013). They believe that the eventual rise of sea level allowed warm marine water from the Aegean Sea to flow

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Rudimentary Ear?

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a friend's whispering "in your ear" to normal conversations in a room. It does not amplify sound, but functions as a funnel, collecting and concentrating certain sound frequencies and directing them into the ear canal. When directed by the pinna, sound also goes through a filtering process in which sounds in the frequency range of normal human speech are enhanced, and other sounds, called background noise, are reduced. Ears also have a designed functional geography (McNeill, 1998, pp. 63–64) that involves the rim design

> … called the *helix*, after a fancied resemblance to a coil, and it curves in over the pinna like a breaking wave. A second ridge abuts it halfway down: the *antihelix*. The antihelix swings up into a little plane and down into the *lobe*. While most of the ear is cartilage, the lobe is soft and fatty, just right for hanging [an] ornament. The hollow near the ear canal is the *concha*, from the Latin for "shell."

McNeill (1998, pp. 63–64) added that the small nub of flesh beside the ear, called the *tragus*,

> … protects the ear canal. The name, Greek for "hegoat," stems from the hair on its inward side. It suggested a goat's beard to Rufus of Ephesus, a contemporary of Pliny and the first medical lexicographer, the man who christened the tragus as well as the helix and lobe.

Ward, et al. (2000) noted that the auditory canal is also designed to "greatly" collect sound in an important three kHz region. The head, the pinna, and the ear canal all work as a unit to maximize sound transmission in the two-to-four kHz region by 10 to 15 decibels. They (Ward, et al., 2000, p. 102) concluded that

> … because of the exact dimensions of the convolutions of the pinna, certain sound frequencies are amplified, others attenuated, so that each individual's pinna puts its distinctive imprint on the acoustic wave progressing into the auditory canal. This information is used in the recognition and localization of sounds.

Both the pinna shape and the ear muscle variations produce what is called a distinctive imprint on hearing. This "distinctive imprint" allows humans not only to produce sound differences because we hear differences, but also helps to produce differences in humans that allow us to achieve the variety so necessary for specialization in a large complex modern society.

Sound direction

The external ear is very functional not only for picking up sound, but especially for determining information about the direction of sound. Humans can effectively locate sound due to the fact that we have two ears, which creates an auditory parallax: "Sound waves strike one ear slightly before the other, and the brain notes the difference" (McNeill, 1998, p. 63). The filtering process also adds directional information to the sound. Specifically (McNeill, 1998, p. 63) the pinna helps to locate sound because its

> … ridges and clefts bounce a few sound waves into the ear later than the rest, in a pattern that depends on their source. The brain then decodes it. Scientists have filled subjects' pinnas with wax, and found they perceive sound as coming from inside the skull, as with headphones. Some convolution of the pinna is essential, but extra amounts don't seem to improve performance.

These "extra" convolutions add strength and support, and probably have other functions as well.

This function also allows each person to hear the same sound slightly differently, which is one reason why our music tastes vary. A sound that is pleasant to one person may be less so to someone else. The research cited above documents, in contrast to Darwin's claims, that "The funnel-like curves of the auricle are well-designed to collect sound waves and direct them to the middle ear" (Wynsberghe, et al., 1995, p. 509).

Dewar (1957) argued that if humans had floppy outer ears like dogs, or a projecting pinna like rabbits, damage to the ear pinna would be considerably more common and serious than currently. The ease with which we can move our head from side to side obviates the need for a mobile ear and the modest shape of the human outer ear is

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highly effective in detecting sound.

Darwin's point

Darwin's "point" (also called "tubercle" or "bump") is a small blunt projection from the inwardly folded margin and slightly outwards on the posterior part of the outer ear (the pinna) of some humans. The name is derived from its being called a vestige in Darwin's *The Descent of Man*. Evolutionists claim that Darwin's point represents the "pointed ear" tip that is found on some lower animals, such as the monkey *macacus rhesus* (Wiedersheim, 1895, p. 108; Kelley, 1962).

This projection is not present in most individuals, and thus can hardly be termed a vestige if it is not characteristic of the entire human population. In fact, some individuals may have a bump on one ear but not on the other (McDonald, 2011, pp. 26–27). Even in identical twins, the bump may be present in one twin but not the other, which "suggests that whether a person has Darwin's tubercle depends in part on developmental accidents or other environmental influences, not just genetics." McDonald (2011) concluded that "there may be very little genetic influence on the trait at all."

Ear muscles

The three muscles that surround the pinna are the attrahens, the retrahens, and the attollens auriculam (Wiedersheim, 1895, p. 107). It is often claimed by Darwinists that these muscles are all vestigial; i.e., useless leftovers from our early ancestors who presumably could move their pinnae. Haeckel (1876, p. 437) went much further, concluding that

> … the whole external shell of the ear, with its cartilages, muscles, and membranes, is, in Man, a useless appendage, destitute of the physiological importance that was formerly, erroneously, attributed to it. It is the atrophied remnant of the pointed, freely-moving, and much more highly developed mammalian ear, the muscles of which we retain, although we can no longer use them.

Wiedersheim (1895, p. 107) concluded that the "degeneration of the pinna" is the reason for the lack of development of the facial muscles around the ear in humans, but he never explained *why* this structure would have degenerated in humans. The main question Darwinists must answer is, "Why would this trait be selected against, or at the least why has it degenerated, given the assumption that it has?" Darwin viewed the human external ear muscles as relics of the *panniculus carnosus* system that extended over a large part of the body of the animals that he assumed were ancestral to humans. This muscle system enables an animal to twitch its skin to remove insects from its body surface.

The ability of humans to use these ear muscles to "wiggle" their ears varies greatly, as do most other human traits, producing the variety required for life in a small or large society. Such variation may be the result of existing genetic variations, or differences between individuals that may arise during development. Selim (2004) concluded from a small study that "most people can learn to wiggle their ears." I know of no large study that has empirically explored what percent of the population can learn to use their ear muscles to wiggle their ears.

William Paley in his *Natural Theology* (p. 48; cited in Kaplan, 1993) quotes from an article in *Philosophical Transactions* on the function of the external ear muscles from studying a patient who had damaged his ear drum, the *membrana tympani*. When the patient listened to something that he couldn't distinctly hear, such as a whisper, he could move his pinna to pick up more sound, suggesting that, with practice, the ability to adjust the pinna could become functional in more people, if not most people.

Thus, rather than being vestigial, these muscles may be representative of structures having latent potential utility in response to need, such as to hear faint or far away sounds without the benefit of electronic devices. Additionally, people who can wiggle their ears claim that the trait is very useful to communicate, to entertain, and even to adjust their glasses without using their hands.

Conclusion

The external ear is not the result of evolutionary degeneration, but is rather a complex, well-designed system containing numerous folds and pockets, all constructed to improve human hearing. According to an online neurophysiology course offered by the University of Wisconsin (Anonymous, 1996),

> Far from being vestigial, the complex structures of the pinna and external ear canal are now recognized as a [sic] significant components in the mechanisms that underlie the capacity of a listener to recognize and localize sounds in space.

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Math Matters

by

Don DeYoung, PhD

Maxwell's Equations

This article focuses on two pioneer British scientists, Michael Faraday (1791–1867) and James Clerk Maxwell (1831–1879). Faraday had no formal education, yet he became one of the great experimentalists of all time. Electricity and magnetism were his special interests. Faraday built the first electric motor, and also coined such words as anode, cathode, and electrolysis.

To describe forces which act at a distance he suggested invisible electric and magnetic "fields" or regions of influence. Faraday did not have the background to define these fields mathematically. Instead, he made elegant drawings of field lines which still appear in physics texts today, 200 years later.

Clerk Maxwell was a brilliant physicist and personal friend of Faraday. Maxwell took Faraday's field concepts and put them into the form of differential equations. These elegant *Maxwell equations* unify electric and magnetic forces. The formulas describe how a changing electric field causes a magnetic field and vice versa.

Maxwell's theoretical work also led to the realization that light was a combination of traveling electric and magnetic fields, giving light the term *electromagnetic wave*. The speed of light in a vacuum can be derived from Maxwell's equations.

Both Faraday and Maxwell were men of strong Christian faith. They complemented each other as experimentalist and theoretician. Faraday once wrote a good-natured letter to Maxwell requesting less technical explanations of nature (MacDonald, 1964, p. 49):

> When a mathematician…has arrived at his conclusions, may they not be expressed in common language as fully, clearly, and definitely as in mathematical formulae? Would it not be a great boon to such as I, to express them so, translating them out of their hieroglyphics, that we also might work on them by experiment.

Many today would agree with the sentiments of Michael Faraday.

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Maxwell Faraday

CM

Black Sea Flood

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into the Sea of Marmara. This water continued moving farther north and overtopped the Bosporus Sill where it catastrophically flowed several hundred feet down into the Black Sea Basin. The nature and timing of that interpretation has been the focus of the controversial Ryan/Pitman Black Sea flood event.

Scientists now know that when marine water flows into the Black Sea Basin, it sinks below the freshwater inflow from rivers surrounding the basin because of density differences between the two water sources. These density differences between the marine and freshwater layers have created three layers of water within the Black Sea Basin (Figure 2). A mixed zone of oxygenated, brackish water extends from the surface down to approximately 500 feet. Beneath it is the chemocline, a layer of water with a higher concentration of saltwater and a lower concentration of oxygen. It ranges between 65 and 100 feet in thickness. Below the chemocline is an underlying sulfidic, anaerobic, stagnant (i.e., euxinic) marine water layer which extends downward approximately 1.3 miles to the basin floor. The timing in the development and movement of the chemocline was the subject of a recent geochemical investigation done by naturalists.

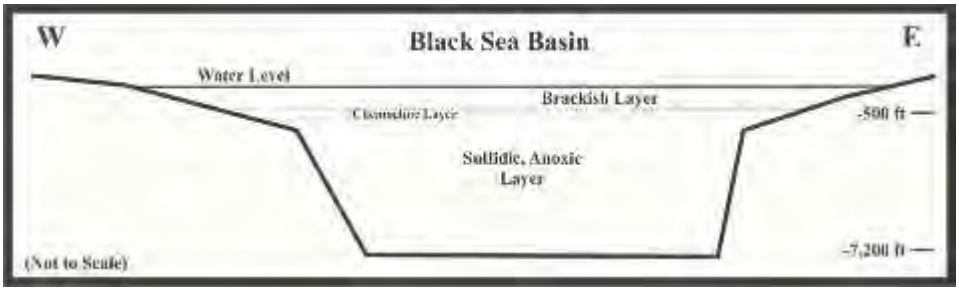

Figure 2. A cross sectional diagram across the present-day Black Sea Basin showing the three stratified water layers. The vertical movement and related age of the chemocline layer was the focus of the Eckert et al. (2013a, 2013b) investigation.

Metals analysis from multiple sediment cores

A rapidly formed, relatively stable (position-wise) chemocline layer would support the concept of a cataclysmic in-filling of the Black Sea Basin by marine water. Conversely, if marine water was added to the basin over a period of time, then the chemocline would slowly develop and show upward vertical migration over time. A team of German and American scientists decided to examine several geochemical lines of evidence to determine which chemocline model fit the collected data.

Seven sediment cores were collected from Black Sea sediments (Figure 1; Table 1). They were geochemically matched where overlap occurred and combined into a single composite core. Several bulk parameters (carbonate, total organic carbon, sulfur), trace metals (Cu, Mo, V), and an isotopic proxy ($^{56}Fe/^{54}Fe$) were analyzed from the composite core. Their measured ratios (Fe/Al wt%, Mo/Al ppm/wt%, and Total Organic Carbon wt%) provided three separate and distinct measurements from which to determine the development and vertical movement of the chemocline. Based on the geochemical differences in the sediments collected from varying depths, three different sedimentary layers were identified

in the composited core. This allowed a reconstruction of the vertical movement of the chemocline.

Based on the variation in geochemical parameters, Eckert et al. (2013a, 2013b) determined that marine water first entered the Black Sea Basin around 9,000 years ago (ka). At approximately 7.6 ka, the marine and freshwater layers differentiated sufficiently to form an anaerobic layer in the bottom marine water. Around 5.3 ka, based on a layer of iron enrichment from the composite sediment core, a chemocline layer had fully developed. With the continued in-filling of the Black Sea by marine water, the chemocline continued to ascend vertically and it stabilized in its current position approximately 2.7 ka.

As a result of their analysis, Eckert et al. (2013a, p. 433) claim that:

> Our high-resolution composite geochemical core log and Fe isotope data demonstrate that the establishment of the chemocline and euxinic conditions in the Black Sea water column did not occur in a single step.

While this determination creates no problems for young-earth creationists who accept the global nature of the Genesis Flood, it does have broader implications.

Discussion

As with any examination of earth history, there is some level of subjectivity (based on the forensic evidence) in advancing and testing a hypothesis. This is true whether one defends a naturalistic or biblical framework. In the case of the Eckert et al. (2013b) investigation, several naturalistic assumptions were made to adjust for the unknown conditions derived from the composited sedimentary core and associated geochemical data, including:

1. establishing a "standard reference" ratio for isotopic iron ($^{56}Fe/^{54}Fe$) for naturalistic age-dating purposes
2. the connection of geochemical peaks to an assumed naturalistic age
3. the variation in ratios of stable oxygen isotopes derived from ostracod shells and the assumed naturalistic age of the material
4. assumed uniformitarian inflow and outflow volumes of marine water equal to current flow rates
5. assumed uniformitarian sedimentary depositional rates
6. the introduction of numerical "accumulation rate factors" in the deposition of the organic-rich sediments (i.e., sapropels) in the euxinic portion of the basin.

Table 1. Water depth and approximate core lengths collected and geochemically composited as part of the Eckert et al. (2013b) analyses.

Sediment Core ID	Water Depth (ft)	Core Length (ft)
GeoB-7604	-6486.2	2.6
GeoB-7607	-5124.7	2.6
GeoB-7608	-3943.57	2.6
GeoB-7609	-3087.3	2.6
8-GC-1	-3487.5	2.6
14-GC-3	-879.3	2.6
22-GC-7	-2782.2	2.6

Although based on multiple assumptions from unknown conditions in Earth's past, naturalists believe that this reconstructed geochemical history is "scientific" and sufficient to demonstrate that the Ryan and Pitman (1998) hypothesis is no longer valid. However, as a result of these multiple assumptions and the possible inconsistencies inherent in each method, the Ryan and Pitman concept of a local Black Sea flood still exists in the realm of possibility. The point is that naturalistic "science" constructed from the past (i.e., forensic evidence) can never be resolved because of the assumptions made in the original hypothesis and the assumptions made in either supporting or attacking it.

A far more serious outcome of this exchange between the Black Sea flood advocates and those conducting work to discredit it is the subtle, indirect attack on the history and authority of the Bible. Although several young-earth scientists have already examined the Ryan and Pitman (1998) claim and rejected it, naturalists continue to link the Ryan and Pitman story with that of the Bible. To naturalists, disproving the Black Sea flood hypothesis also disproves Bible history. This attack on the authority of the Bible by way of the Black Sea flood story is documented in an interview with Christian Maerz, one of the authors in the Eckert et al. (2013) study.

The article is entitled "Black Sea Chemistry Debunks Noah's Flood." What the title should have more accurately portrayed is "Black Sea Chemistry Debunks the Ryan and Pittman Black Sea flood hypothesis." But the attack does not stop with the article title. Morton states:

> Located north of Turkey, the Black Sea has been a hot spot of debate for decades, with some historians and a few scientists arguing that the basin was the location of Noah's Flood, as depicted in the Bible. (2013, p. 18)

More accurately, naturalistic marine scientists William Ryan and Walter Pitman published a book in 1998 that claimed a historic flooding of the Black Sea was the same Flood recorded in the Genesis account. From that concept, several naturalistic historians and scientists have joined in the investigation and discussion. This more accurately reflects the history of this investigation.

The naturalistic geochemist Christian Maerz adds clarification to the purpose of

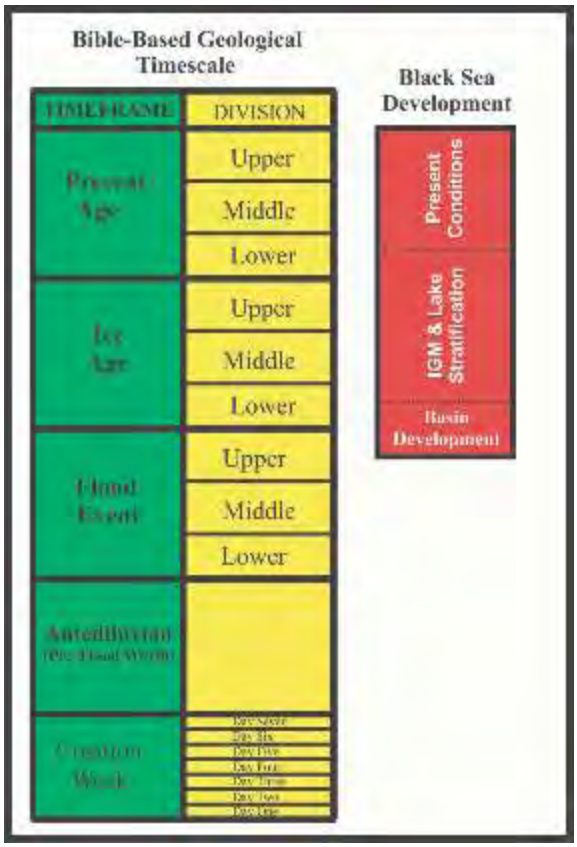

Figure 3. A Bible-based geologic timescale showing, 1) the probable period of basin development based on limited sedimentary fill, 2) the period of Floodwater displacement by a substantial influx of glacial meltwater (IGM) and onset of stratification, and 3) the establishment of the current three layers of stratified water. The specifics in understanding all three of these events relative to the Biblical Geologic Timescale remain to be defined.

their work:

> Remains of a number of ancient civilizations that seem to all have been terminated at a certain point have been found in and around the Black Sea. Proponents of the Great Flood hypothesis cite these ruins as evidence that the inundation of the lake by seawater happened as a catastrophic event. Our study puts forward new evidence that the Great Flood probably didn't take place. (Morton, 2013, p. 18)

For those individuals who seek compromise with naturalism and its ever changing interpretations, this conclusion presents a quandary. The Bible, as an accurate historical account of earth history, is anathema to naturalism. In discrediting the Ryan/Pitman hypothesis, naturalists believe that they have now also discredited the Bible.

Conclusion

While the Ryan/Pitman Black Sea flood hypothesis debate will continue, Christians can have total confidence that the Flood account recorded in Genesis was a real event of global proportion and not limited to a local flood envisioned by Ryan and Pitman (1998). The addition of other naturalistic "scientific" literature to either defend or discredit the Ryan/Pitman hypothesis has no bearing on our confidence in Bible history.

An unfortunate outcome of all this work is that no naturalist appears to be willing to read the actual Bible account of the Genesis Flood. If they had, then perhaps none of this work on the subject of a Bible-based Black Sea flood would have been necessary. Instead, focus would have been directed toward end-of-Flood conditions and the transition into and through the Ice Age Timeframe (Figure 3). This is when the Black Sea would have likely formed and developed its three stratified water layers, possibly displacing any humans living around a former lake (which has not yet been documented from actual archaeology or the remains of a drowned community/city). The geological development of Bible history remains an open arena, not only to challenge naturalistic storytelling, but to develop a geologic history consistent with the Bible. The workers are few and the task is overwhelming. But it is time to get started.

Acknowledgments

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Letters

A Mature Universe

Editor:

In Dr. Samec's (2013) recent article, he stated that

> As far as the *miraculous creation cosmology*, the "mature universe," we can at least reflect. That is, there is no reason for God to create the universe so that the age of the stars decreases with distance other than to simulate and thus affirm the current cosmological models, which makes no sense at all. I imagine the response of the mature universe people would be that this is the way God made it and we cannot question or hypothesize why, since the creation of the universe is not a valid area for scientific inquiry.

I find the mature universe idea far more appealing than any of the other explanations, and I do not mind questioning and hypothesizing why God did it that way. I accept the Bible literally and therefore am in the young earth camp and believe that creation took place in six literal days. One point of reference as to God's approach in His creation process is that He created Adam and Eve as mature adults, even fully conversant in language, within a single 24-hour day.

A second point of reference is that each day He completed (and declared good) what He set forth to create that day, fully functional ("mature") for that phase of creation. This includes setting the stars and planets in place for the benefit [light and time keeping] of man that He would form a few days later.

Creation was miraculous

The whole process of creation was miraculous as plainly stated in the scriptures. Our world/universe was called into existence from nothing, and this includes light itself. If God used the process of setting the "lights" in place and then having them emit, we would still be waiting to see all of them, except those which are very close, since we accept that light moves at a constant speed and most "lights" are more than six or seven thousand light years away. Therefore, He did something for the benefit of man outside of our currently observed processes and laws of physics. All theoretical ideas, including those mentioned in the article such as "creation-based time dilation cosmologies," would actually require one or more miracles, i.e., violating the current laws of physics in one form or another.

So, it seems to me we have a situation where God did one of two things. Either He placed (created/formed in place) the "lights" where they were that day and at the same time [same day] created/placed the moving light between each of them and the earth so man could see them, including their dynamic red, blue, and metallicity shift content. Or, He created all of them in an area near the earth, cosmologically speaking, and then stretched them out to their starting locations leaving behind the trail of light with corre-

sponding shift content, but with the shifts "normalized" to appear dynamically as they do now.

I say "normalized" because if He moved the "lights" from a near-earth location to initial placement in one day the red shifts would be enormous compared to what we see. Also, if He moved them that far in one day, they had to move at speeds greatly exceeding the speed of light and of course nothing with mass can exceed the speed of light [without a miracle] as far as we know based on relativity/time-dilation theories. So which miracle is more preferred?

As to "why" God would make it this way, certainly not to "simulate and affirm current cosmological models" but perhaps for the same reason He made Adam mature and functioning the day he was created. Likewise, He created the laws of physics so they would be fully functional when He completed his day/week's work as a part of the complete operating universe "system." I like to think of God as the first "Systems Engineer." This "system" then is continuing to operate within these laws of physics (except for instances when God intervenes with a miracle) that man is encouraged to observe and understand (scientifically inquire) to the degree man's collective intelligence is capable.

For God's glory

What purpose is served by these scientific inquiries? Besides obtaining God's intended material benefits (to have dominion) here on the earth, creation itself gives us clear insight and understanding of who God is and an inkling of his power: "For since the creation of the world His *invisible* attributes are clearly seen, being understood by the things that are made, even his eternal power and Godhead…" (NKJ Rom 1:20) More to the point, since we are talking about cosmologies and questioning God here, why would God make the heavens so vast and complex and interesting? The amount of raw power/energy coupled with such complex design that God put into something to give man some light and a time keeping system is beyond amazing. Answer: "The heavens declare the glory of God…" (NKJ Psalm 19:1) God is not only good, loving, intelligent, and powerful, He is glorious.

As true science continues to inquire, and understand more and more about creation at the micro and macro levels, the difference between man and God in intelligence and power becomes more and more evident. Thus, our ability to worship humbly and in truth becomes ever more intense and meaningful by recognizing how truly great, and glorious, our God is.

— John V. Davis

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Author's Response: Testing Cosmologies

In answer to Mr. Davis, I first want to state that the *mature creation* idea does not *just* mean that God created a fully functioning, mature creation, nearly instantaneously (all young earth creation scientists believe that!) What it actually means is that "God created the *light already filling the space between the farthest galaxies and the Earth*." And it involves much, much more than this as we will explain. In the following response, I presume to speak for the time dilation cosmologies.

I fully and whole heartedly accept Mr. Davis's second paragraph. We all believe in a six-day literal creation of the cosmos. We all believe in six 24-hour days. We also believe in the creation of a mature, fully functioning cosmos in six days. He goes on to state that creation-based time dilation cosmologies violate the laws of physics. However, the "star light and time" cosmologies are a serious attempt to answer big bang cosmologies with a theory that *actually fits the laws of physics*.

Not to replace God

The idea is not to replace God with a scientific theory, but to show that the creationists have a model that fits the creation account, and that we do not have to succumb to the false world view of big bang cosmology. We might say, "God could have used this method to create the cosmos" and it fits current science. I do not say that God absolutely did it this way, but it is in the realm of possibility. And there are different creation cosmologies. The question is, which fits the facts, both the biblical and the observational facts (the biblical narrative taking precedence as absolutely true).

Yes, there are a few problems, just as there are problems with any far reaching scientific theory. But it offers a *viable alternative*, which is all we need to offer for the scientific mind. And Russ Humphreys' model (2010) has been around long enough to actually have had that effect. At the recent ICC creation conference, two scientists confessed to me that it was the Humphreys' white hole cosmology that brought them back into the young earth creation community.

I can only think of one miracle that was noted in the first cosmology of Humphreys (2010) — changing a sign in the mathematics to turn the natural occurrence of a black hole into a white hole. Yes, this is a miracle, but one that is needed, since a white hole is a "creation engine," putting matter, light, energy, and order into the universe. The expanding universe is a result of this, to transport creation materials, like matter, out to the furthest reaches of the universe. This was done in a brief time (physics tells us the speed of expansion of the universe has no speed limit, i.e., the speed of light). It put the building blocks of the universe "out there" so God could form it into the objects we observe.

From an earthly perspective

As viewed from the Earth, the forming of the stars happened on day 4. The problem of bringing the light here was already resolved since a concentrated mass produces a deep potential well, or rather, a potential hill as Hartnett says (Hartnett, 2007, p. 88), and causes time dilation to occur for objects in the well, like the earth, so that time is slowed with respect to the 'outside,' and the light came from deep space naturally.

For the miracles of the mature creation, they are manifold—some of which I will recount here. Those holding to a mature creation cosmology affirm that God created the light already filling the space between the farthest galaxies and the Earth. But, light waves, or *photons*, code and carry information, viz., a history of what has happened and what is happening to the object under observation (with a time delay). This means that a future history must have been created along with the light. Also, mass particles must be created in transit including neutrinos and cosmic rays (mostly protons) along with light waves. Since the universe is dynamic, a "living full sky 4-D illusion or simulation complete with forces" must have been created along with the light. The usual example, as given by Humphreys (2010), is Super Nova 1987a (SN 1987a). However, any dynamic phenomenon more than 7000 light years away would suffice.

But in the case of SN 1987a, 3½ hours before it was seen to explode in the heavens, three neutrino telescopes (Japan, Lake Erie, Russia) recorded 25 SN neutrinos. These lightweight, weakly interacting mass particles came from some 180,000 light years distant. They *passed right through the Earth* from the Southern hemisphere to be detected. In SN, electrons crush into nuclides forming neutrons and releasing fantastic numbers of neutrinos

($\sim 10^{58}$) that spread out to the stars. Then the SN exploded near the Tarantula nebula in the Large Magellan Cloud. For the next month or more the decay of radioactive elements spawned in the SN provided much of the light following the initial explosion.

Later, the well-known triple ring (as illuminated by the supernovae shocks) developed from fast winds from the blue giant progenitor's colliding with slow winds previously emitted from the red giant stage. Thus, we observed the history of previous mass-loss episodes long before the super nova exploded! As Humphreys explains, (2010, p. 44)

> God made, about 6000 light years away from us along the path between us and the Magellanic clouds, the light-wave images of an exploding star. He would also have made the high-energy particles (gamma rays and neutrinos), as observed from the exploding supernova. At the instant of creation, further along the path, he would have made the images of an already exploded star and its expanding shell of debris. The rings seen in 1994 were from images placed by God in the path about 7 LY further back.

To the person who accepts the mature creation idea:

1. Supernovae and related phenomena are *illusions* or simulations created by God. All phenomena >7,000 LY [light years] distant are illusions also.
2. Most of what we call astronomy is fiction! Astronomy is not a science, it is an illusion created by God!
3. White dwarfs, pulsars, supernovae remnants, planetary nebulae, and all fossil remnants of stars that "lived" in the past are fictional relics! Their progenitors never existed, indeed, they do not exist!

If creation geologists had the same view of fossils in the earth's crust, they would have overlooked the evidence that fossils give in support of the validity of the worldwide Flood of Noah! Did God create a false history, a deception written in the stars? How does this affect the most important attribute of God: "Truth"?

In my astronomy class I give the students what I call the "Adam illustration" to further explain this (condensed):

> Just suppose God created Adam with a preprogrammed memory of his 'youth.' Perhaps he would remember that he loved going to the lake as a young boy with his dad and fishing. And he remembers his dog and the funny things he would do.

Of course, Adam never had an earthly father, nor a dog, nor any kind of childhood history. If anyone taught such an idea, theologians would have major problems since all of this would say that this memory is false history. The same is true about activity in galaxies and events that happen far away in space. Since it did not occur, it is a false history, a lie. We read in Titus 1:2 that God cannot lie.

What is time?

Time is not absolute. Time can be manipulated (by God in this case) in the physical universe without destroying it and killing all life by changing fundamental constants of nature. Time dilation (speeding up time) is the method of bringing together the light and history, and leaving the nature of the universe unhampered. I believe in a young earth and universe, as measured in *earth time*. In earth time, a day is defined as a single rotation of the earth —24 hours. Time elsewhere, we could call it "apparent time," was accelerated with respect to earth time. A mature universe with a true history is the result.

Time, apparently outside of the region beyond the solar system, was accelerated with respect to earth time. A mature universe came about and the science of astronomy was born. All the events we see in the universe actually happened and are not miraculously "painted" or "sculpted" by God in the cosmos. I am a young earth creationist and what God has done is marvelous in my eyes. A mature universe came about in a short ~7000 years of earth time. I encourage Mr. Davis to re-read the time dilation papers and books in the context of this response, and compare them to his beliefs. I believe that we are actually very close in our beliefs.

—Ronald G. Samec

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Editor's Note

For more about a "mature creation" cosmology, the reader is referred to the articles cited below.

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Speaking of Science

...continued from page 11

— all the volatiles would have been lost by degassing immediately. "That is somewhat **difficult to explain with the current popular moon-formation model**, in which the moon formed by collecting the hot ejecta as the result of a super-giant impact of a martian-size body with the proto-Earth," he said.

The evidence of water is in anorthosites, a mineral found in the lunar highlands — thought to be the oldest rocks on the moon — indicating the water was there when the moon formed. It's not liquid water; it's in the form of hydroxyl ions (OH^-). But it's water nonetheless: The paper in *Nature Geoscience* states flatly, "Here we show that this **primary crust of the Moon contains significant amounts of water.**"

The latest study adds to increasing evidence of water on the moon: "Over the last five years, spacecraft observations and new lab measurements of Apollo lunar samples have **overturned the long-held belief that the moon is bone-dry.**" Those observations are discussed in the article.

The hydroxyl groups the team detected are evidence that the lunar interior **contained significant water during the moon's early molten state, before the crust solidified**, and may have **played a key role in the development of lunar basalts.** "The **presence of water**," said [Hejiu] Hui [U of Notre Dame], "**could imply** a more prolonged solidification of the lunar magma ocean **than the once-popular anhydrous moon scenario** suggests."

One of the rocks examined was the so-called "Genesis Rock" from Apollo 15, so named because "the astronauts thought they had a piece of the moon's primordial crust." Christian astronaut James Irwin was one of the discoverers of that rock.

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Matters of Fact

by
Jeffrey Tomkins, PhD

Are Pseudogenes Broken Genes?

Editor's note: Jeffrey Tomkins, research associate at the Institute for Creation Research, serves as guest respondent to this issue's featured question. You may submit your question to Dr. Jean Lightner at jean@creationresearch.org. It will not be possible to provide an answer for each question, but she will choose those which have a broad appeal and lend themselves to relatively short answers.

Q Are pseudogenes really broken genes?

A One of the evolutionary paradigms falling by the wayside in the wake of new research is the idea that "pseudogenes" are just broken genes. When scientists first began sequencing the DNA of plants and animals, they began finding gene-like sequences that appeared to have coding errors that would prevent them from making functional proteins. Because these gene-like sequences, called pseudogenes, were also similar to other genes in the genome that did produce functional proteins, they were dismissed as broken, defunct remnants or genomic fossils. However, scientists have recently discovered that these so-called fossil sequences are not "pseudo" after all, and that they are required to sustain healthy life processes in the cell.

Unprocessed pseudogenes

Pseudogenes are generally categorized into two different classes. The first type, which best fits the so-called broken-gene concept, is called an "**unprocessed pseudogene.**" This type has all the standard features of a protein-coding gene, such as exons (coding segments), introns (intervening non-coding segments), and a control region in front of the gene, called a promoter, that acts like a genetic switch. However, because of certain DNA sequences that cause stop signals in the gene's code, it cannot produce a functional protein. Unprocessed pseudogenes are thought to occur in the genome as the result of duplication of another gene, a largely hypothetical evolutionary explanation in most cases.

A famous example of an unprocessed pseudogene which is often used as an example by evolutionists is the human "beta-globin pseudogene." However, a variety of research papers in recent years has shown that it is fully functional and produces a variety of regulatory RNAs that regulate other genes (see review by Tomkins, 2013). Research has also indicated that the beta-globin pseudogene is highly intolerant of mutation compared to other beta-globin genes, and is required for proper blood chemistry (Giannopoulou, et al., 2012; Tomkins, 2013). When this pseudogene is mutated, various types of blood diseases, classified broadly as beta-thalasemia, are the result.

Another human unprocessed pseudogene that has been well studied is called the PTEN pseudogene (PTENpg) which functions both forwards and backwards as part of a highly complex gene regulatory network (Johnsson, et al., 2013). The PTENpg encodes at least two different variants of regulatory RNA transcripts as part of the complexly-regulated 4-exon gene. These two PTENpg RNAs regulate the transcripts of the protein-coding PTEN gene by binding to them in a complementary fashion. However, the PTENpg also codes for a regulatory transcript on the other DNA strand of the gene — in the opposite direction. This RNA molecule regulates a class of regulatory molecules called microRNAs, specifically the microRNAs that regulate the PTEN protein coding gene.

In other words, this amazing gene encodes RNA transcripts in two different directions that regulate a protein coding gene in different ways. And if, because of mutations in the pseudogene, these diverse functions of the PTENpg are not properly controlled and regulated in the genome, then cellular dysfunction and cancer is the outcome. It is very hard to imagine how a complicated gene like this could have evolved through duplication and random shuffling. And it is certainly no genomic fossil.

Processed pseudogenes

Another category of pseudogene is called a "**processed pseudogene**" because it lacks the intervening non-protein coding sequences called introns, which are typically spliced out when a messenger RNA (mRNA transcript) is transcribed from a gene. Because of this characteristic, evolutionists have postulated that processed pseudogenes arose from the sequence of a mRNA that was copied from a gene, reverse transcribed, and then re-inserted into the genome as sort of a genetic accident. Another name often used for these types of pseudogenes is "retrogenes." Despite the oft-touted myth that processed pseudogenes or retrogenes are also genomic fossils, scientists have been identifying important functions for these sequences in mammals since 1985. (Soares, et al.)

A recent discovery of life-sustaining function for a human processed pseudogene called PPM1K was just reported (Chan, et al., 2013). Scientists discovered that the PPM1K pseudogene was not only actively transcribed, but when the cells of cancer patients were examined for PPM1K gene transcript levels, they were found in abnormally low levels compared to healthy humans. The PPM1K RNAs were not only found to regulate a protein-coding version of the PPM1K gene involved in tumor suppression, but also another gene called NEK8, that is also associated with cancerous cell growth. Amazingly, if the PPM1K pseudogene is mutated and not properly regulated, cell cycle dysfunction and cancer are the outcome.

So why do these evolutionary predictions about pseudogenes continually fail in the light of new research discoveries? Primarily it's because scientists who use evolutionary presuppositions view the genome as the product of errant random processes. The most productive view of the genome from a research perspective would be one that expects pervasive functionality and incredible bioengineering as the product of an omnipotent and wise Creator.

For a creationist review about pseudogenes and their origins and functions, see the recent article in *CRSQ* by Bergman (2013). Also see a recent secular review by Wen, et al. (2012).

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...without excuse!

The Testimony of the Mullerian Three-Step

by Timothy R. Stout

Sometimes things seem so obvious that it is hard to imagine someone's not being able to understand them. The intelligent design argument of *irreducible complexity* (IC) is one of these. It was initially formulated by Behe (1996). Although Behe worded it somewhat differently, the underlying concept is simple: an intelligent being can make objects composed of interacting parts, each of which must be in place for the object to function. An irreducibly complex object cannot be formed without foresight to the final function. IC's utility to creation biologists and the responses of Darwinists has been discussed recently by Bartlett (2010).

IC targets evolutionary theory at its foundation. If living systems are characterized by irreducible complexity, then the atheist has no excuse for his atheism. At this point, the debate leaves the realm of unbiased intellectual logic and enters into the realm of spiritual warfare. As can be expected, atheistic evolutionists reject vigorously the entire concept of IC.

One of the common arguments atheists present against IC is called the Mullerian two-step (M2S). Numerous presentations of M2S are available on the web, with one of the best known having been written by Theobald (2007) as a direct rebuttal to Behe's hypothesis. Theobald wrote:

> With Behe's error now in hand, we immediately have the following embarrassingly facile solution to Behe's "irreducible" conundrum. Only two basic steps are needed to gradually evolve an irreducibly complex system from a functioning precursor:
>
> 1. Add a part.
> 2. Make it necessary.
>
> It's that simple. After these two steps, removing the part will kill the function, yet the system was produced directly and gradually from a simpler, functioning precursor. And this is exactly what Behe alleges is impossible.

Theobald then illustrated M2S in action, showing how the Mullerian two-step can be used to form an irreducibly complex stone bridge (see inset) using only unguided natural processes. However, there is a major weakness in his argument. Theobald specifically states that M2S starts with a functioning precursor. This is so essential to his argument that it should be stated as the first step, making the argument the Mullerian "three-step" (M3S). Thus, the argument becomes:

1) Start with a functioning precursor.

2) Add a part.

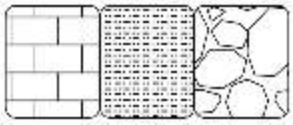
3) Make the part necessary.

With this more accurate three-step representation of the Mullerian process, attention becomes focused on its major weakness — the initial requirement of a functioning precursor. Information-driven systems such as computers and living cells provide clear examples of IC; ones for which the M3S is impotent to create from scratch.

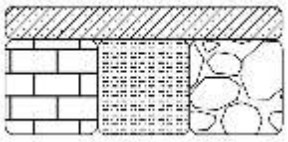
Computers are systems which require the simultaneous first appearance of 1) a reliably functioning, large body of information which defines the operation of a machine, and 2) a complex hardware mechanism. The hardware mechanism must be capable of reading the information from its information-storage media, decoding the information and using the information to perform useful tasks. The information is useless without the complete hardware system in place to use it. The hardware is useless without the information to operate it. Both information and hardware must appear simultaneously in minimally complete, reliable form. There is no functioning precursor to an information-driven system. The first step of the M3S is not available. M3S cannot produce information-driven machines. IC as the product of intelligent action stands as a legitimate argument.

A living cell provides another clear illustration of IC. It is comprised of a number of essential components, all of which are needed for proper functioning of the cell. These include (Mignea, n.d.):

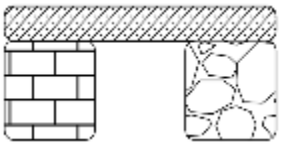
Mullerian Steps



A) Start with a simple functioning precursor, such as a road on the top surface of three blocks.



B) Add a component, such as a layer of strata which eventually hardens into rock. This is the first step of the Mullerian two-step.



C) Make the component essential, such as by removing the middle lower block. This turns the added component into an irreducibly complex bridge. This is the second step of the Mullerian two-step.

The unnumbered step A) is actually the most significant step, for it assumes a functioning precursor. Many essential biological systems do not offer simpler precursors. As an example, the genetic information to build, operate, and replicate a living cell and the cellular hardware to read and use it represent an irreducibly complex system with no known functioning precursors possible.

- genetic information
- information translation system
- an energy system
- a means of isolating the cellular components from the environment
- a means of controlling the inflow of supplies into the cell and waste products out of the cell
- a means of cellular replication

There is no functioning precursor to the first living cell. Each of the cell's components is typically irreducibly complex as well, greatly increasing the complexity of the cell as a whole. Not only must these components appear simultaneously at the cell's first appearance, but they must also interact with each other for the cell to function properly. Intelligent foresight is required to do this in a single step. The M3S is irrelevant.

Once an information-driven machine appears, it can be conditionally modified. In other words, essential components may change (adapt) so long as their essential functions remain intact. Biblical examples of this are provided by the specialization of the initial biblical created kinds into modern species.

Previously, I discussed the distinction between absolute philosophical proof and absolute judicial proof (Stout, 2013). Irreducible complexity appears to be a perfect illustration of these distinctions. The attempts of evolutionists to rebut IC are at the philosophical level. They consist of an abundance of unprofitable, wrangling words, while the essence of the argument is not discussed with understanding. By contrast, God claims that He provides us absolute legal proof of His existence through creation (Romans 1:18–2:6), proof that He claims is so strong that a person will have no excuse for rejecting it.

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Speaking of Science

Editor's note: Unless otherwise noted, S.O.S. (Speaking of Science) items in this issue are kindly provided by David Coppedge. Opinions expressed herein are his own. Additional commentaries and reviews of news items by David, complete with hyperlinks to cited references, can be seen at: http://crev.info/. Unless otherwise noted, emphasis is added in all quotes.

Intact Biomolecules Said to Be 350 Million Years Old

The oldest recovered biomolecules have been found in crinoid fossils – but are they really that old?

A trio of Ohio State researchers, publishing in *Geology*,[1] described intact biological molecules in crinoids they found in Carboniferous strata in Ohio. Rather than question the ability of fossils to maintain biological molecules for 350 million years, they used the evidence as support for evolution:

> Results suggest that the **preservation of diagnostic organic molecules is much more common that previously realized**, and that preserved organic molecules **may provide an independent method to unravel phylogenetic relationships** among echinoderms and, perhaps, other fossilized organisms.

The press release from Ohio State[2] shows the crinoids (sea lilies) in situ in the rock, clearly distinguishable by color. Analysis of the material in the colored specimens suggests that the molecules are quinones, used by the animals for coloration or as toxins to deter predators.

"When a crinoid dies, the tissue will start to decay, but calcite will precipitate into the pores, and **calcite is stable over geologic time**," the article claimed. "Thus, **organic matter may become sealed whole within the rock.**" The researchers did not watch the organic matter for that long, though, to see if it is empirically true, nor did they explain how the pores would remain sealed through hundreds of millions of years of asteroid strikes, earthquakes, and other catastrophes.

It's uncanny how these people never ever question the time scale. They can't. It would be their undoing. "Geologic time" must remain a Law of the Misdeeds and Perversions that cannot be altered. An earth even one third or one fourth as old as claimed would lead to the collapse of the quaint Victorian myth they hold so dear. But when miracles of time and chance multiply in the evolutionary scenario, it becomes indistinguishable from any other human-concocted creation myth. Creation accounts with an Eyewitness are vastly superior. Do you know of more than one?

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Lunar Impact Theory Is All Wet

Significant amounts of water in lunar rocks cast into doubt the popular impact theory for the origin of the moon. A press release from the University of Michigan[1] summarizes a paper in *Nature Geoscience*[2] with the headline, "Water on the moon: It's been there all along."

The lunar highlands are **thought to represent the original crust**, crystallized from a magma ocean on a mostly molten early moon. The new findings indicate that the **early moon was wet and that water there was not substantially lost during the moon's formation.**

The results seem to contradict the predominant lunar formation theory — that the moon was formed from debris generated during a giant impact between Earth and another planetary body, approximately the size of Mars, according to U-M's Youxue Zhang and his colleagues.

Zhang explained that an impact would have formed a dry moon

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All by Design

by Jonathan C. O'Quinn, D.P.M., M.S.

Mucous Sleeping Bags

Everywhere in nature, there are numerous examples of animals and plants possessing unique characteristics that Darwinists would have us believe evolved by accident over vast periods of time. Does this hold up under logical analysis?

The parrotfish is a brightly colored marine fish that inhabits coral reefs. Also living in coral reefs are tiny crustaceans known as gnathiid isopods. These small animals feed on the blood of fish and are similar to ticks. They typically target the gills of fish or the insides of their mouths. During the day, many fish make regular stops at "cleaning stations" about the reef, where tiny cleaner fish gladly pick off and eat the isopods during daylight hours. Parrotfish, which are active by day and retire at night, are frequent visitors at cleaning stations.

At night, however, the parrotfish are vulnerable to isopod attacks, but have an ingenious way of deterring the isopods. Each night at "bedtime," parrotfish secrete

a mass of thick mucous from specialized glands in their gills. The sleepy parrotfish then wiggles into this mass of mucous, which forms a sort of cocoon, encircling its body. Scientists have found that this mucous repels approximately 90% of the isopods, who do not like to try to wiggle through it to get to the sleeping fish. In this way, a parrotfish can sleep soundly at night with less risk of anemia from blood-sucking parasites. In the morning, the fish wakes up, eats the mucous, recouping most of the energy it used to produce it, and goes about its day.

These mucous cocoons either served their functions from day one, or they didn't. Could the parrotfish have recognized its need for a nocturnal cocoon AND spontaneously developed the specialized gill glands needed to produce just such a cocoon, or was this a gift from an all-knowing Creator? Which view requires more faith?

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Photo caption: A midnight blue parrot-fish. ***Credit****, Florida Keys National Marine Sanctuary.* ***Photographer****, Kevin Hogan.* ***Image ID****: reef2582, NOAA Photo Library*