Disclosure

of things evolutionists don't want you to know

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C4 Plants

How evolutionists try to use plants to date fossils.

Last month we told you [1] about the tooth and jaw known as *Graecopithecus freybergi*, which some evolutionists think is the 7-million-year-old missing link between apes and humans.

It was dated using a number of bogus dating methods. One of the ways they determined its age was, "Palaeobotanic proxies demonstrate C4-grass dominated wooded grassland-to-woodland habitats of a savannah biome for the Pikermi Formation." [2]

We, of course, aren't fooled by any of this; but we are not sure if the evolutionists are trying to fool us, or if the evolutionists are just fooling themselves. The article we quoted came from an academic technical journal which is taking this nonsense seriously.

[1] *Disclosure*, July 2017, "The Whole Tooth", http://scienceagainstevolution.info/v21i10f.htm

[2] Madelaine Böhme, *et al., PLOS ONE*, May 22, 2017, "Messinian age and savannah environment of the possible hominin *Graecopithecus* from Europe", http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177347

Lack of space last month prevented us from talking about C4 grasses and how they are used to date fossils. We have space this month.

C4 Grass Dates

Some evolutionists believe man evolved because of climate change. Presumably, because the Prius had not been invented yet, *Graecopithecus freybergi* drove SUVs which polluted the atmosphere, which raised the global temperature, and caused woodlands to be replaced by grasslands. ☺ The inevitable result of this climate change meant that when *Graecopithecus* parked his SUV, he wasn't able to swing through the trees as he had previously been accustomed to doing, so he had to learn to walk upright to see over the grass that his gas-guzzler had caused to evolve. Walking upright left his hands free to make tools, which required him to use his brain, which caused it to evolve because of all that mental exercise. His bigger brain and upright posture made him human. (As a vegetarian, I categorically reject the other evolutionary theory that eating meat is what actually caused humans to evolve from apes. ☺)

Please excuse that short digression on what caused prehistoric climate change, and how it caused humans to evolve. This newsletter is about how one can tell how old fossils are by knowing what kind of vegetation grew at various times in prehistory. Let's get back on track.

How do they know what kind of vegetation grew millions of years ago? From animal fossils, of course! Knowing how long it took for animals to evolve, they know what kind of plants lived at the time. Knowing what kinds of plants are found in the rocks, they can tell the age of animal fossils, which tell them how old the plants are, which tells them how old the animals are, so they definitely

know the age of the plants, which confirms the age of the animals. ☺ (That's called "circular logic," which is flawed reasoning.)

Oh, Say, Can You C (3 or 4)?

Seriously, let's talk about C3 plants, C4 plants, and how they are used to date fossils. It's all about the carbon (C), which may cause some confusion.

You have probably heard about carbon 14 dating. C3 and C4 plants have nothing to do with carbon 14 dating. Carbon 12 (C^{12}) and carbon 14 (C^{14}) are different isotopes of carbon which have different numbers of neutrons in the carbon atoms. C3 and C4 have to do with how plants process carbon, regardless of the number of neutrons in the carbon atoms. Dating methods using C4 grasses have nothing to do with radioactive decay. It is about photosynthesis—not radioactive decay.

Photosynthesis is the process by which plants convert carbon dioxide into fats and sugars (and other organic molecules). Here is more than you really want to know about C4 carbon fixation and photosynthesis:

> C4 carbon fixation or the Hatch-Slack pathway is a photosynthetic process in some plants. It is the first step in extracting carbon from carbon dioxide to be able to use it in sugar and other biomolecules. It is one of three known processes for carbon fixation. The C4 in one of the names refers to the 4-carbon molecule that is the first product of this type of carbon fixation.
>
> C4 fixation is an elaboration of the more common C3 carbon fixation and is believed to have evolved more recently. C4 overcomes the tendency of the enzyme RuBisCO to wastefully fix oxygen rather than carbon dioxide in the process of photorespiration. This is achieved by ensuring that RuBisCo works in an environment where there is a lot of carbon dioxide and very little oxygen. CO2 is shuttled via malate or aspartate from mesophyll cells to bundle-sheath cells. In these bundle-sheath cells CO2 is released by decarboxylation of the malate. C4 plants use PEP carboxylase to capture more CO2 in the mesophyll cells. PEP Carboxylase (3 carbons) binds to CO2 to make oxaloacetic acid (OAA). The OAA then makes malate (4 carbons). Malate enters bundle sheath cells and releases the CO2. These additional steps, however, require more energy in the form of ATP. Using this extra energy, C4 plants are able to more efficiently fix carbon in drought, high temperatures, and limitations of nitrogen or CO2. Since the more common C3 pathway does not require this extra energy, it is more efficient in the other conditions. [3]

Don't worry! This won't be on the test! All you need to know is that C4 plants survive better in the desert than C3 plants. Paleontologists can make some reasonable inferences about climate from the types of plant fossils they discover. We have no argument with that.

But paleontologists also make some unreasonable inferences, too. The unreasonable inferences are the ones we wish to address in this newsletter.

> C4 carbon fixation has evolved on up to 61 independent occasions in 19 different families of plants, making it a prime example of convergent evolution. This convergence may have been facilitated by the fact that many potential evolutionary pathways to a C4 phenotype exist, many of which involve initial evolutionary steps not directly related to photosynthesis. C4 plants arose around 35 million years ago during the Oligocene (precisely when is difficult to determine) and did not become ecologically significant until around 6 to 7 million years ago, in the Miocene Period. C4 metabolism originated when grasses migrated from the shady forest undercanopy to more open environments, where the high sunlight gave it an advantage over the C3 pathway. Drought was not necessary for its innovation; rather, the increased resistance to water stress was a by-product of the pathway and allowed C4 plants to more readily colonise arid environments. [4]

We have mentioned "convergent evolution" briefly in several previous newsletters. Since C4 fixation is a "prime example of convergent evolution," now is a good time to address it in detail.

Convergent Evolution

Let's try to follow the evolutionists' illogical "logic." If two living things share a common characteristic, they obviously inherited that characteristic from a common ancestor. How else could two species have the same characteristic if they didn't inherit it from a common ancestor? A common characteristic is positive proof of evolution, isn't it?

But when two different species have an identical characteristic not found in the alleged common ancestor, that characteristic must have evolved in both species independently. In other words, two (or more) independent evolutionary

[3] https://en.wikipedia.org/wiki/C4_carbon_fixation, 13 July 2017
[4] *ibid.*

pathways must have "converged" at the same destination.

Therefore, identical characteristics found in two species prove that they had a common ancestor—except when they don't. ☺

As biologists learn more about living things (especially as they study DNA), they find more examples of specific characteristics which could not have been inherited from a common ancestor because there is no ancestor with that trait. If there is no common ancestor (and one excludes the possibility of a common designer) the only possible explanation is duplicated dumb luck. (This begs the question of whether it is the luck or the evolutionist that is dumb.) The convergent evolution theory was invented to explain away evolutionary inconsistencies.

That's the idea behind convergent evolution in general. Let's look at a specific example (C3 and C4 photosynthesis) through the eyes of 19th century and 21st century biology.

19th vs. 21st Century

Imagine you are a 19th century botanist. You recognize that there are lots of different kinds of green plants. They are green because they have chlorophyll, which is somehow related to photosynthesis. Photosynthesis is the remarkable ability to use the power of sunlight to combine water and carbon dioxide into sugars and fats which store energy for later use. Photosynthesis is such a complicated process that it is simply mind-blowing to believe that it arose by chance. (One might even say it was "miraculous" for this to have happened—if one didn't have a strong aversion to using the word, "miracle.") Therefore, the only way all these green plants could be able to synthesize food by harnessing the power of sunlight is if they all inherited it from a common ancestor. What stronger evidence could there be for evolution from a common ancestor?

But by the 21st century, botanists (or maybe organic chemists) had figured out how photosynthesis works. There is the C3 method that works well in most cases. But there is another method, the C4 pathway, which works even better in hot, dry climates. By chance, they say, "C4 carbon fixation has evolved on up to 61 independent occasions in 19 different families of plants." In other words, the exact same kind of more-complicated photosynthesis is found in many different kinds of green plants, in many different families of plants, and they could not have inherited it from a common ancestor because there is no assumed ancestor that uses C4 carbon fixation.

Knowing this, what is an evolutionist to do? All they can do is say that all these different species of plants independently converged on the same solution to the problem of surviving in desert locations. Many different kinds of plants all stumbled on the same incredibly complicated solution by accident, so the evolution of C4 carbon fixation must be much easier than it appears, and happens all the time (even though nobody has ever seen C3 photosynthesis turn into C4 photosynthesis in the laboratory, accidentally or on purpose).

When an evolutionist sees that two species have similar characteristics, it is proof to him that both evolved (that is, descended) from a common ancestor. When an evolutionist sees that two species differ, it is proof to him that both evolved (that is, changed) from a common ancestor. Similarities and differences are both proof of evolution. What more proof do you need? ☺

When and How Did C4 Photosynthesis Evolve?

As we saw in a previous Wikipedia quote, "C4 plants arose around 35 million years ago during the Oligocene (precisely when is difficult to determine) and did not become ecologically significant until around 6 to 7 million years ago." How do they know that? We know from that previous quote, "C4 metabolism originated when grasses migrated from the shady forest undercanopy to more open environments, where the high sunlight gave it an advantage over the C3 pathway."

That's right, 35 million years ago scientists watched with jaw-dropping amazement as great herds of grasses migrated out of the forests into the bright light of open prairies. That majestic sight was so impressive that they immediately drew awe-inspiring pictures of those great grass migrations in their journals 35 million years ago. ☺ That's how we know precisely when C4 grasses evolved.

Seriously (not really) the date when C4 grasses evolved is well known from climate science, which (as we all know) is unquestionable. Evolutionists know exactly when Earth went through great periods of warming and cooling from the fossil record (and Al Gore's books ☺). They know when the climate changed by knowing when various plants evolved, and they know when various plants evolved by knowing the climatic conditions which caused them to evolve then, which tells them precisely when that evolution occurred, so they know exactly when the climate changed, and so on. (There's more of that invalid circular logic.)

Photosynthetic Dating

The problem with saying so many things tongue-in-cheek is that my tongue is bleeding so badly now that it is hard to continue; but how can one take something as silly as photosynthetic dating seriously? Just for you, we will try (but not very hard). According to Wikipedia,

> Today, C4 plants represent about 5% of Earth's plant biomass and 3% of its known plant species. [5]

C3 grasses and C4 grasses both exist today, and they existed during the Civil War. Suppose you go to a Civil War cemetery and dig up the bodies of two soldiers. One has C3 grass stains on his uniform. The other has C4 grass stains on his uniform. Which one died first? C3 and C4 grasses have both existed for hundreds of years.

In last month's feature article, [6] Jochen Fuss of the University of Tübingen in Germany claimed that *Graecopithecus freybergi* lived about 7.2 million years ago, based upon Madelaine Böhme's analysis of the grass found in soil believed to be like the soil where the fossil jaw was actually found. ☺ On the basis of the age of this partial jaw and an isolated tooth, which comprise the only fossil evidence for *Graecopithecus freybergi*, Fuss argued that the split between man and ape actually happened about five million years earlier than previously believed.

Disclaimer

Perhaps Fuss and Böhme wrote these articles as a prank to see if they could fool a respected publication into printing totally bogus articles. Regardless of whether or not they are actually bogus, the fact that the editors of the Public Library of Science believed these articles to be legitimate is a sad commentary on the state of science today.

Evolution in the News

Astronomical Time Scale

Did we find a hoax within a hoax?

When people pull your leg, they generally keep pulling harder and harder until you finally realize they are kidding. When we came to the part of a recent article that dated *Graecopithecus* by analyzing geologically preserved residual effects of star-made climate change,[7] we were sure they were joking. To make sure, we did a literature search on "Astronomically Tuned Neogene Time Scale, ATNTS2012" expecting to find nothing. We were shocked to find several papers on it! A paper coauthored by people from Johns Hopkins University and Purdue University begins this way:

> ABSTRACT: An important innovation in the International Geologic Time Scale 2004 is the use of astronomically forced stratigraphy, or cyclostratigraphy, to define geologic time over 0 to 23.03 Ma [million years], much of it at an unprecedented resolution of 0.02 myr [million years]. In addition, 'floating' astronomical time scales with 0.10 to 0.40 myr resolution are defined for entire epochs and stages in the Paleogene and all three Mesozoic periods. Some of these calibrations use a new astronomical model with an hypothesized high accuracy over 0-250 Ma. These accomplishments have motivated the International Commission on Stratigraphy to complete a continuous Astronomical Time Scale ('ATS') for the past 250 Ma, and to initiate a coordinated prospecting for astronomical-like signals in Paleozoic cyclostratigraphy. Astronomically calibrated geologic time with a 0.02 to 0.40 myr resolution is a major breakthrough for the geosciences. Chronostratigraphy between widely spaced horizons dated with high-precision radioisotope geochronology suffers total loss in precision and accuracy; a continuous ATS between horizons can restore this hard-won precision and accuracy. Consequently, estimates of rates and magnitudes for a wide range of Earth system processes that can be examined only in the context of Earth history, e.g., paleoclimatology, geochronology, geodynamics, structural geology, geochemical cycles and biotic evolution, will be improved up to an order of magnitude over what is possible today. [8]

They came up with this because they know radioisotope dating isn't precise or accurate. But they admit their Astronomical Time Scale has problems, too.

> Three sources of uncertainty affect the ATS.

[5] *ibid.*

[6] *Disclosure*, July 2017, "The Whole Tooth", http://scienceagainstevolution.info/v21i10f.htm

[7] Madelaine Böhme, *et al., PLOS ONE*, May 22, 2017, "Messinian age and savannah environment of the possible hominin *Graecopithecus* from Europe", http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177347

[8] Linda A. Hinnov and James G. Ogg, 2007, "Cyclostratigraphy and the Astronomical Time Scale", http://www.earth-time.org/hinnovogg.pdf

First, lack of knowledge about Earth's past tidal dissipation and its effect on the precession translates into an accumulating bias in the timing of obliquity and precession cycles back in time (Berger et al. 1992). This effect is noted in Figure 2E as a 'tidal error' in terms of potential deficit of years in the current La2004 precession model (Lourens et al. 2001, 2004). A second uncertainty source lies in chaotic diffusion in the solar system (Laskar 1990; Laskar et al. 1993, 2004). Earth's orbital eccentricity is likely stable throughout most of the Cenozoic; between 50-100 Ma, however, Earth-Mars orbital resonance is thought to have undergone a transition (Laskar et al. 2004). In particular, the 2.4 myr amplitude modulation of the ~100-kyr terms of Earth's orbital eccentricity may have been affected. The precise timing of this latest transition is not known; prior to the transition, orbital behavior cannot be modelled accurately. Fortunately, the 405-kyr orbital eccentricity term, from gravitational interaction between Jupiter and Venus, g_2-g_5, is thought to have remained very stable as well as dominant (due to the great mass of Jupiter) over several hundreds of millions of years, with an estimated uncertainty reaching only 500 kyr at 250 Ma (see 'maximum error', Fig. 2E). Finally, stratigraphic effects related to random depositional events or non-deposition comprise a third source of uncertainty. In many cases, these effects can be accounted for, for example, turbidites by visual inspection (Maurer et al. 2004), and hiatus detection by quantitative biostratigraphy (Cooper et al. 2001), time-frequency analysis (Meyers and Sageman 2004) and/or cyclostratigraphic correlation (Shackleton et al. 1999). [9]

They think continents have been moving around for millions of years, and the positions of the continents will affect how high the tides will be, so they can't compute the "past tidal dissipation" of energy. Asteroids and comets pass by Earth in a chaotic manner which would affect their calculations. Earth's orbit around the Sun may have changed, so they can't really model that. Most significantly, evolutionists often try to date things by measuring the amount of sediment that has accumulated, even though they know sedimentation probably isn't constant.

Abstract. To explore cause and consequences of past climate change, very accurate age models such as those provided by the astronomical timescale (ATS) are needed. Beyond 40 million years the accuracy of the ATS critically depends on the correctness of orbital models and radioisotopic dating techniques. Discrepancies in the age dating of sedimentary successions and the lack of suitable records spanning the middle Eocene have prevented development of a continuous astronomically calibrated geological timescale for the entire Cenozoic Era. We now solve this problem by constructing an independent astrochronological stratigraphy based on Earth's stable 405 kyr eccentricity cycle between 41 and 48 million years ago (Ma) with new data from deep-sea sedimentary sequences in the South Atlantic Ocean. This new link completes the Paleogene astronomical timescale and confirms the intercalibration of radioisotopic and astronomical dating methods back through the Paleocene–Eocene Thermal Maximum (PETM, 55.930 Ma) and the Cretaceous–Paleogene boundary (66.022 Ma). Coupling of the Paleogene 405 kyr cyclostratigraphic frameworks across the middle Eocene further paves the way for extending the ATS into the Mesozoic.

Limits in the accuracy of the astronomically calibrated geological timescale (ATS) are a consequence of uncertainties in astronomical solutions (Laskar et al., 2004, 2011a, b). Earth's orbital eccentricity, the deviation of Earth's orbit around the Sun from a perfect cycle, is widely used for astronomical calibrations (Hilgen, 2010; Hinnov, 2013). Accurate calculations of Earth's short eccentricity cycle, which has an average period of ~100 kyr, are currently reliable back to 50 Ma and most likely will never extend beyond 60 Ma (Laskar et al., 2011b; Westerhold et al., 2012) due to chaotic behavior of large bodies within the asteroid belt.

Because controversy exists regarding the accuracy of high-precision radioisotope dating and astrochronological calibrations in the Paleocene and Eocene (Kuiper et al., 2008; Westerhold et al., 2012) and the exact age of the Fish Canyon Tuff (FCT) standard for ^{40}Ar = ^{39}Ar dating (Kuiper et al., 2008; Westerhold et al., 2012; Channell et al., 2010; Phillips and Matchan, 2013; Renne et al., 1998, 2010; Rivera et al., 2011; Wotzlaw et al., 2013, 2014; Zeeden et al., 2014), extension of the highly accurate ATS beyond 50 Ma into the early Cenozoic and Mesozoic time is not possible. [10]

They really believe they can date fossils more accurately using residual effects of star-made climate change. That's not real science.

[9] *ibid.*

[10] T. Westerhold, *et al*., 2015, *Climate of the Past*, "Astronomical calibration of the geological timescale: closing the middle Eocene gap", https://www.clim-past.net/11/1181/2015/cp-11-1181-2015.pdf

by Lothar Janetzko

Discovery Institute

Center for Science & Culture

http://www.discovery.org/id/

Discovering Intelligent Design

In last month's website review we looked at a list of books that discuss the ongoing controversy between creation and evolution. I recommended that the reader should obtain one of the books he or she found interesting and read it this summer. Taking my own advice, I decided to obtain an eBook Kindle copy of the first book called The Case for a Creator – A Journalist Investigates Scientific Evidence That Points Toward God by Lee Strobel. In this book, the author describes the evidence of cosmology, physics, astronomy, biochemistry, and biological information. Also, you will find interesting interviews the author had with various scientists that all pointed to intelligent design.

For this month's website review, we will look at the website of the Discovery Institute, particularly the Center for Science and Culture. As you can tell from the link to the site, the primary focus of the site is intelligent design. An *About* link states that "The mission of Discovery Institute's Center for Science and Culture is to advance the understanding that human beings and nature are the result of intelligent design rather than a blind and undirected process. We seek long-term scientific and cultural change through cutting-edge scientific research and scholarship; education and training of young leaders; communication to the general public; and advocacy of academic freedom and free speech for scientists, teachers, and students."

To assist in fulfilling their mission, the website provides a great deal of information organized under the headings of Research, Education, Academic Freedom, and Resources. These links seek to inform the reader on the many facets of the theory of intelligent design. At the bottom of the *About* link on the main page of the site, you will find a link to Frequently Asked Questions you may have about the Discovery Institute itself.

Interesting information about intelligent design can be found on the *Education* link. Here you will find resources such as Intelligent Design: A Briefing Packet for Educators; Student's Guide to Intelligent Design; and Parent's Guide to Intelligent Design.

There is much to explore on this website. One tool you can use is the Intelligent Design Navigator which allows one to view Top Links, News, Events, Subscribe, and Donate. This site really does provide all the information about questions a reader may have regarding the theory of intelligent design.