

The REALL News

The official newsletter of the Rational Examination Association of Lincoln Land

“It’s a very dangerous thing to believe in nonsense.” — James Randi

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Dino-Blood Redux

by Dr. Gary S. Hurd

On 24 March 2005, a team of paleontologists lead by Mary Higby Schweitzer published their discovery of dinosaur soft tissues recovered from the cortical bone of a T. rex femur. The three page paper in *Science* magazine, published by the American Association for the Advancement of Science, presents the striking discovery of apparently preserved organic tissues. These include several cell types that the authors feel able to delineate by direct comparison to modern cells recovered from a recent ostrich femur. (Schweitzer MH, Wittmeyer JL, Horner JR, Toporski JK (2005) Soft-Tissue Vessels and Cellular Preservation in Tyrannosaurus rex. *Science* 307(5717):1952-1955). Within hours of their story’s release creationist email lists and bulletin boards were blazing around the world about the new scientific “proof” of the Earth’s recent creation. One small, and hopeful change from Schweitzer’s similar 1990s “discovery” is that this time both she and Horner have made direct statements that this find is neither a contradiction of the sciences, nor of an ancient Earth.

Some people have wondered why Panda’s Thumb did not immediately post a response to this discovery. And because I have written on the creationist distortion of earlier dinosaur soft tissue research published by Schweitzer, *Dino-blood and the Young Earth*, on the TalkOrigins archive, some have wondered why I haven’t personally retracted. I even received a few emails that demanded that I retract that article. This is an absurd misunderstanding of

that article, the evidence it was based on, and the research published by Schweitzer and various colleagues since the early 1990s.

It may surprise a few people, but I am not interested in dinosaurs. I rented the first *Jurassic Park* movie when it came out on videotape, and I skipped the rest.

The media response: Send in the Clones

The main *Science* article appears as a fairly straightforward report that when the mineral component of a tyrannosaur femur was removed, there remained an organic mass with characters similar to those found in ostrich bone. Schweitzer et al believe they have recovered material that represented osteocytes, blood cells, and vessels. They state, “The vessels and contents are similar in all respects to blood vessels recovered from extant ostrich bone.” (Photos of these can be seen from the original article, and some are also available in Tyrannosaur morsels



on PZ Myers’ personal blog). Schweitzer et al notably offered no alternate explanation for their finding—they are entirely standing on the assertion that these are the original dinosaur tissues. Not until the last paragraph do they even comment that, “Whether preservation is strictly morphological and the result of some kind of unknown geochemical replacement process or whether it extends to the subcellular and molecular levels is uncertain.”

However, alternatives do exist, as has been pointed out in the accompanying perspective article in *Science* written by Eric Stokstad, “Tyrannosaurus rex Soft Tissue Raises Tantalizing Prospects” (*Science*, vol. 307:1852).

Hendrik Poinar of McMaster University in Ham-

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Purpose

The Rational Examination Association of Lincoln Land is a non-profit, tax-exempt 501(c)(3) educational and scientific organization. It is dedicated to the development of rational thinking and the application of the scientific method toward claims of the paranormal and fringe-science phenomena.

REALL shall conduct research, convene meetings, publish a newsletter, and disseminate information to its members and the general public. Its primary geographic region of coverage is central Illinois.

REALL subscribes to the premise that the scientific method is the most reliable and self-correcting system for obtaining knowledge about the world and universe. REALL does not reject paranormal claims on *a priori* grounds, but rather is committed to objective, though critical, inquiry.

The REALL News is its official newsletter.

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REALL Contacts

Chairman, Wally Hartshorn.....chairman@reall.org
Editor, Clark Olson, editor@reall.org
Web Site..... www.reall.org

From the Chairman

Wally Hartshorn

You might have seen some stories in the news recently about a recent dinosaur fossil that contains “soft tissues”. Great! Cool! Exciting! Science at its best!

So naturally the Creationists jumped all over it and declared that it showed that dinosaurs were alive quite recently and that scientists’ claims about fossils being millions of years old were obviously false. *sigh*

The Letters to the Editor in Springfield’s *State Journal-Register* quickly took on the issue. On April 9, Eddie Bratton began the exchange for the creationists’ side. Alice Pazos replied for our side on April 15, followed by REALL member George Free on April 16, and Patrick Tinkham on April 18. Robert J. Rani took up the Creationists’ cause on April 19, not about the soft tissue discovery, but about a dinosaurs-to-birds evolution story in the April 15 issue. Butch Stilwell continued the argument for the Creationists on April 20. John Mark Henry weighed in for the Creationists on April 22. On April 23, Diane Greenholdt wondered whether anybody really cared which side was right.

Well! Given that **we care** which side is right, perhaps it would be worth taking a closer look at the dinosaur “soft tissue” finding.

This entire expanded issue is given over to an article I found on The Panda’s Thumb, a pro-evolution web site. (You can visit it at www.pandasthumb.org.) This article, written by Gary S. Hurd, provides more detail about what was actually discovered and what it means. According to the contributors page at the Panda’s Thumb, “Gary S. Hurd received a doctorate in Social Science from the Uni-

(“Chairman” continued on page 11)

A Nod to Our Patrons

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(“Dino-Blood Redux” continued from page 1)

ilton, Ontario, cautions that looks can deceive: Nucleated protozoan cells have been found in 225-million-year-old amber, but geochemical tests revealed that the nuclei had been replaced with resin compounds. Even the resilience of the vessels may be deceptive. Flexible fossils of colonial marine organisms called graptolites have been recovered from 440-million-year-old rocks, but the original material—likely collagen—had not survived.

In short, there are known instances where reworked material can have the appearance of the ‘tissues’ reported by Schweitzer et al.

As is nearly always the case, the juicy bits are in the background. The great advantage that science journals have today is the ability to put all supplemental details on-line. In this case, the three page “main” article sports a supporting text over four times as long. For example, the main article has left many people with the false impression that the recovered tissues were in a soft pliable state when first exposed. This is not true. All of the fossil material was rehydrated during the same process that removed the mineral components of the bone. They were then buffered, and also some were fixed. The related press reports have created the impression that there are large features with the characteristics of fresh tissue. This is not true. The structures examined are a few millimeters across at most. The last, and rather irritating aspect of this research is not from the *Science* article, or the supporting material, but from the press interviews given by Schweitzer which repeatedly hint at the recovery of DNA, and even of cloning.

The most absurd example of this was a 2 minute video Associated Press distributed on the Schweitzer dino-blood announcement which is linked from the *LA*

Times and other news sources. In outline, we have 37 seconds of “Jurassic Park” clips with lines like “Dino DNA ... is a disaster ...” and then we are treated to Jack Horner’s single sentence; something about “DNA... DNA...DNA...” followed with more “Jurassic Park” until at one minute into the clip, we are shown Mary Schweitzer saying her only line, “No this does not mean that we are cloning dinosaurs in our lab, and we probably will not.” The narrator Rita Foley in her best “ingénues are stupid™” voice, squeaks, “Probably?!!”

A last few seconds of “Jurassic Park” clips and the window to educate the public was closed.

A significantly better video was presented on MSNBC, and is linked from *Scientists recover T. rex soft tissue 70-million-year-old fossil yields preserved blood vessels*. No “Jurassic Park” footage, but here again, Schweitzer made easily misinterpreted statements contradicted by her published work. Just one example was her statement that the contents of vessels could be readily “squeezed out.” Since she offered no laboratory procedure as a context, this left the impression that these remains just popped out of the bone as fresh as if the dinosaur died yesterday.

The print media have been a little better in their reportage. The *Los Angeles Times* ran the story on the 25th (front page below the fold) and used three microphotographs from the *Science* article. But even here, they referred to the recovered material as “fresh” at the same time describing the weeks long labor need to recover and reconstitute them. However, they are obviously following closely to Schweitzer’s statements regarding her results. She stated, “The tissues are still soft. The microstructures that look like cells are preserved in every way” (as quoted in the *LA Times*). Much worse was the later editorial published in the *LA Times*. The antiscience bias of the editorial was manifested by referring to paleontologists as “fossil geeks.” The writer’s scientific incompetence was made manifest by their dismay at the possibility of cloning a *T. rex* based on Schweitzer’s reported material. I was left with the unavoidable conclusion that the editorial’s author had not been able to understand the article by their own reporter, Robert Lee Holtz.

The *New York Times* had an editorial prompted by the discovery, An Unexpected Softness, that made a good observation on science in general, that a tension exists be-



What is wanted is not the will to believe, but the wish to find out, which is the exact opposite.

— Bertrand Russell

tween, "... the effort to consolidate the known facts into a stable theory. The other is to discover new facts—with no guarantee whether they will reinforce or undermine the old consolidations." Beyond this insight, the cloning of dinosaurs again raised its head.

Adding fuel to the simmering sense of cultural inferiority many Americans harbor toward the British, the BBC World News did a much superior job of reportage which is available online at, *T. rex fossil has 'soft tissues'*. There the reader learns that, "Dr. Schweitzer is not making any grand claims that these soft traces are the degraded remnants of the original material—only that they give that appearance." Also, another expert in the small field of molecular paleontology, Prof. Matthew Collins provided comment.

"This may not be fossilisation as we know it, of large macrostructures, but fossilisation at a molecular level," commented Dr Matthew Collins, who studies ancient biomolecules at York University, UK. "My suspicion is this process has led to the reaction of more resistant molecules with the normal proteins and carbohydrates which make up these cellular structures, and replaced them, so that we have a very tough, resistant, very lipid-rich material—a polymer that would be very difficult to break down and characterise, but which has preserved the structure," he told the BBC.

(See *Ancient Molecules and Modern Myths* for a discussion of how creationists have distorted Dr. Collins' research in the past).

Further, totally distinguished from the Associated Press video nonsense, the BBC quoted Schweitzer with more than an out of context sound bite regarding DNA,

"I actually don't work with DNA and my lab is not set up to do that," said Dr. Schweitzer. "Our goal is more to look to see what we can find with respect to the proteins that are coded by the DNA.

To a large degree, most of the chemical studies that have been done suggest proteins are more durable than DNA and they have almost the same kind of information because they use DNA as their template."

In media interviews Jack Horner, Schweitzer's coauthor and former professor, has been much more cautious.

He appeared on a radio program, "On Point" broadcast by National Public Radio where Tom Ashcroft interviewed him along with molecular taphonomist Derek Briggs of Yale University, and science writer Carl Zimmer. Then he repeatedly said that they in fact have no idea what the recovered "tissues" are made of, or actually represent.

Schweitzer did not appear on the program, but this could mean that there are the familiar disagreements that can occur between coauthors and particularly professors and former students. For example, when Ashcroft asked the question,

"If it's soft tissue, what else would it be other than biological?"

Horner replied, "Well that's a good question, but I don't think we go in with the assumption that it is {biological} until we can do our analyses." (approx. minute 30 of the interview) He also said, "It would be nice to know what this stuff is made of ... if there are proteins present, is it biological?" And, "We're not looking for DNA, we are trying to determine what this stuff is and why it is flexible.

The new creationist response: the more it changes, the more it stays the same.

Creationist E-mails, and Bulletin Board quotes.

There are perhaps hundreds of internet sites devoted in at least part to the conflicting views about science and religion that are in sharpest focus when addressing evolution. These discussions can appear in some strange contexts, such as web sites dedicated to competitive weight lifting, "Star Wars" fan clubs, and Christian rock 'n roll bands, as well as the more obvious sites dedicated to fundamentalism and even the "impending" apocalyptic rapture. The first commentary on these sites appeared within minutes of the Schweitzer announcement.

I received my first creationist email within an hour of the Schweitzer announcement which demanded that I retract my earlier writing on creationism and dinosaurs and concluded,

So far, it looks like nearly every new finding falls in line with a 'young-earth' and, people like you who find it so easy to criticize creationist's views (many of which are speculation, I'll agree) seem



to completely ignore the FACT that the entire theory of evolution and 'millions of years' is speculation. I guess 'scientists' may use speculation or guesses but the 'unscientific' creationists must always use true, observable and reproducible science in all their arguments. Okay. In the end, the people who take the Bible literally will win. Not because they are always perfect or right but because God is—and His Word is!

Throughout the next few hours, stretching into days, similar opinion was repeated. A few typical examples follow:

"There were no dinosaurs 70 million years ago. If there is enough DNA some whack job will attempt to clone one. However, if God wanted them here they would still be here so I don't think there will be much success. God is God and we are not!"

"Under no condition could soft tissue exist 70 million years.

Besides, creation is only 6000 years old."

"IMHO, it would take more faith to believe these soft tissues are 70 million years old than it would take to believe Almighty God brought the universe into existence in 6 days.

The invention of man is clever in his own mind and foolishness to God."

"It will take a few days for the evolutionists to circle the wagons and invent another foolish explanation."

"For those who believe in a 6,000 year-old Earth (such as myself): I heard a speaker last year in Tulsa (Dr. Thomas Sharpe) who discussed convincing evidence of a younger earth. Amongst his evidence were some red blood cells discovered inside a T-Rex bone. This discovery stunned some scientists because it was simply impossible that red blood cells could've existed for millions of years, and the find is still hotly debated. (This refers to Schweitzer's graduate work in the 1990s. gh).

Then this week, this was discovered: ..."

"Someone will argue that the bone was encased in enough dirt or rock and deprived of oxygen so

the process of decay was slowed/halted.

There can be nothing that unrepentant man will allow to challenge his arrogant knowledge.

But God will not be mocked."

"As a science teacher, I agree with {the comment above}. There is nothing that an unbeliever will not accept on faith (ha ha) to disprove a real God. They will come up with some explanation for this one. But be encouraged, I am coming across more and more scientists who are also followers of Christ. Do not assume that all scientists are unbelievers. I am one of those EVIL PUBLIC SCHOOL SCIENCE TEACHERS By the way, I also proclaim JESUS whenever presented with the opportunity. And those opportunities come often when working with hurting teenagers."

"Will anyone tell us how the T-Rex tissue remained soft for over 65,000,000 years while the rest of the dead decaying dino carcass either rotted completely away or fossilized?"

Could the real answer be surfacing? That is it's not as old as the EVO-BABBLERS make it out to be?"

"To me this blood sample cant be millions of years old. As a person who has attended deceased bodies, blood specimens cant be in a fluid state surrounded by rock ect. This rock would surly draw out any moisture."

"Actually, the evolution emperor knows he has no clothes...he just has far too much invested in the facade....his empire...his very way of life..."

If the emperor lets even one thread fray in his carefully crafted fallacy, he knows the whole of his foolish empire will unravel and be exposed for the ugly, naked, lie that it is.

You and I will never be able to show the truth to a dedicated evolutionist any more than they will ever convince us that a monkey becomes a man.... because, that (evolution) is what they put their faith in. Just like you and I put our faith in God and His Word.

There is only way to convince such a foul realm of the truth...pray that Almighty God will burn away the fog of imagined intellect that they use to

hide behind and let His light shine truth upon all.”

I just can't believe scientists still perservere with this evolution theory. After such contradictory evidence why are scientists still determined to believe a lie than the truth?

And of course, the constant creationist stand-by all purpose mantra,

“Evolution is one of the biggest lie, the devil ever came up with to deceive mankind”

{Spelling and grammar of all quotes are as in the originals}.

These, and hundreds of similar comments, reduce to just a few themes:

1. The discovery was of “fresh” soft tissue obvious merely by cracking open the bone,
2. Fresh tissue “proves” that these bones are recent,
3. Scientists know this is the case, and lie to the public, (A particularly ironic variation is that scientists have been so indoctrinated that they are incapable of recognizing reality).
4. Evolutionary biology, and related sciences such as geology, paleontology, and anthropology are anti-God, if not actually demonic.

These widely and fervently held beliefs are fueled by professional creationists who profit through promoting ignorance.

The professional creationists weigh in

The creationist public is ill served by a cadre of professional parasites whose major product is an outrageous distortion of scientific research. They also promote a version of theology that I am not qualified to comment on personally, but is clearly contradicted by representatives of nearly every mainline Christian denomination in the world today as evidenced by *An Open Letter Concerning Religion and Science* that has been endorsed the date of this writing by 2,633 members of the clergy.

Within the span of just a few hours from the Schweitzer release, Carl Wieland, über-creationist MD and a lead officer of Answers in Genesis Ministry, Inc. had issued his proclamation *Still soft and stretchy: Dinosaur soft tissue find—a stunning rebuttal of “millions of years.”* It is a condensed reprise of all his similar articles. As I pointed out over a year ago, in “Dino-blood and the Young Earth”

It refers to a non-technical news item as if it were an actual scientific paper. ... It asserts that organic molecules found in ancient material disproves all independent dating methods and therefore implies the Earth is a scant thousands of

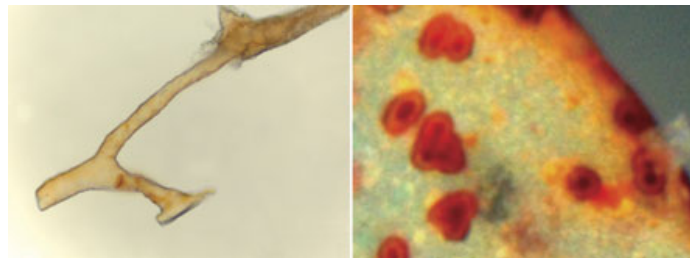
years old.

Note that I had to remove the following sentence from above, “It misrepresents the findings claiming that there were ‘obvious, fresh-looking blood cells’ seen in dinosaur bone.” because in this instance, Mary Schweitzer has hung her professional standing on just this claim. She does in fact, and repeatedly, state that these new materials are obvious fresh-looking cells in both her publications and her popular press assertions. While it is quite true that “fresh-looking” isn’t the same as “fresh” this should afford little protection from the critical review of Schweitzer’s work.

Wieland does provide a few new ‘zingers.’ For example, in the very first sentence he tells us that, “We previously announced the discovery of what seemed to be microscopic red blood cells ...” The day that AiG, and their house rag, *Creation* is the debut publication of mainstream science is the day I’ll shoot myself. The cited items are “announcements” only in Wieland’s fevered imagination. Nevertheless, his major misrepresentations do not begin until the fourth sentence. There were several prior errors of fact and interpretation, but the first gross falsehood was not until the fourth sentence. For AiG this is doing very well (see *Boiled Creationist with a Side of Hexaglycine: Sarfati on Imai et al. (1999)*). Wieland wrote,

The fact that this really is unfossilized soft tissue from a dinosaur is in this instance so obvious to the naked eye that any scepticism directed at the previous discovery is completely “history”.

There are three falsehoods in this sentence; first, there were not soft remains “obvious to the naked eye” unless Wieland has superhuman microscopic X-ray vision. Oddly, one might say ‘suspiciously’ or perhaps more fairly ‘incompetently,’ none of the microphotographs associated with the AiG “announcement” of Schweitzer’s latest publication have the scale bars found on all scientific publications of these results. Even the *LA Times* thought to include the obvious fact that these are microscopic features.



AiG provided their readers with the photos above, credited to Mary Schweitzer. These appeared in the online supplement to Schweitzer et al as Figure S2.C (left), and Figure S1.C (insert) for the image on the right. The

captions are strikingly different between Schweitzer et al and Wieland for these images. For example, of the right image, Schweitzer says,

“Fig. S1(C) A third vessel shows small microstructures either within or attached to the vessel wall. The structures are ovoid and possess an inner opaque core. They are completely consistent in size and shape with nucleated circulating blood cells taken from mature ostrich (D) and extant chicken (E).”

Wieland says,

Right: These microscopic structures were able to be squeezed out of some of the blood vessels, and can be seen to “look like cells” as the researchers said. So once again there is scope for Dr Schweitzer to ask the same question, “How could these cells last for 65 million years?” {again referring to Schweitzer’s popular press article in 1997. gh}

Of course, Wieland neglects to inform his readers that the entire image is about 0.25 millimeters across. The entire long axis of the left image is a grand 0.03725 of a millimeter. Hardly “obvious to the naked eye.”

The second falsehood is that this material is “unfossilized.” The third falsehood is that Wieland asserts without foundation that this newest claim reduces the prior refutations of his nonsense to “history,” by which he means unfounded. The earlier lies promoted by Wieland concerning Schweitzer’s early graduate student work are contradicted by evidence—that evidence being the public record of Schweitzer’s statements and publications. (I do grant Wieland that Schweitzer’s current statements are that she sees essentially intact dinosaurian tissues preserved by some unknown fossilization mechanism, and I think that she should be held to that standard).

However, this misdirection is not the “main event.” Center stage is the YEC fallacy that organic remains recovered from ancient bones forces the conclusion that these bones must be recent. As Wieland phrased the issue,

The reason that this possibility has long been overlooked seems obvious: the overriding belief in “millions of years”. The long-age paradigm (dominant belief system) blinded researchers to the possibility, as it were. It is inconceivable that such things should be preserved for (in this case) “70 million years”.

Wieland concluded,

“I invite the reader to step back and contemplate the obvious. This discovery gives immensely powerful support to the proposition that dinosaur fossils are not millions of years old at all, but were

*mostly fossilized under catastrophic conditions a few thousand years ago at most.*7*

7. Some dinosaur fossils could have formed in post-Flood local catastrophes.

What is inconceivable is that Wieland is honestly ignorant that the dates associated with the age of these remains has anything at all to do with their condition. This is the great fraud perpetrated on their dupes by professional creationists such as Wieland. The age of the specific T. rex bone which was the principle database for Schweitzer et al is not based on either its macro- or microscopic appearance but of the age of the rock that it was found in, “... the base of the Hell Creek Formation, 8 m above the Fox Hills Sandstone, as an association of disarticulated elements.” The appearance of soft tissue, hard tissue or no tissue has no bearing in the age of this material—organic or inorganic. What is the basis for these age determinations is the independent existence of geochemical “clocks” known as radiometric dating. Professional creationists and their prey simply reject radiometric dates, which has always seemed to me to be an odd logical contradiction, or in an anthropological term: cognitive dissonance. If these people are able to ignore geology, chemistry and physics, why do they even bother to lie about biology? Why does Wieland, having left the universe of chemists, physicists, and geologists (the rest of the sciences one also assumes), feel compelled to lie about paleontology, and evolutionary biology?

How do we know the age of these bones, regardless of their condition? The existence of atoms which comprise the elements vary by their number of protons and electrons. This is the basis of the periodic table and of most chemistry. The existence of neutrons, and the discovery that some elements vary in the number of neutrons they have, lead to the integration of atomic theory and observations of radioactivity. A theoretical basis is partially given in Einstein’s theory of relativity where we learn that mass can be considered a form of energy. For a non-technical review of radiometric dating that is particularly appropriate for Christians, I always recommend *Radiometric Dating: A Christian Perspective* by Dr. Roger C. Wiens maintained by the American Scientific Affiliation. ASA is “a fellowship of men and women in science and disciplines that relate to science who share a common fidelity to the Word of God and a commitment to integrity in the practice of science.”

However, for the specific data relevant to the fossils reported on by Schweitzer et al, and manipulated by Wieland (and David N. Menton, to follow) which we recall were found in, “... the base of the Hell Creek Formation...” we need only consult *Radiometric Dating Does Work!* by G. Brent Dalrymple.

There we find the following data for the Z-coal strata

of the Hell Creek Formation presented in the order of; Material, Method, # of samples, Result in Millions of Years

tektites, 40Ar/39Ar total fusion, 28, 64.8 ++ 0.1
 tektites, 40Ar/39Ar age spectrum, 1, 66.0 ++ 0.5
 tektites, 40Ar/39Ar age spectrum, 1, 64.7 ++ 0.1
 tektites, 40Ar/39Ar total fusion, 17, 64.8 ++ 0.2
 biotite & sanidine, K-Ar, 12, 64.6 ++ 1.0
 biotite & sanidine, Rb-Sr isochron (26 D.P.), 1, 63.7 ++ 0.6
 zircon, U-Pb concordia (16 data), 1, 63.9 ++ 0.8

So, the MOR 1125 femur happens to be one of the better dated dinosaur bones known to exist. The independently established age of this bone is based on 86 separate chemical analyses on three different kinds of minerals, based on four independent radiometric decay series. It doesn't get much better than that.

It doesn't matter what the bones look like, or what is in them. If Wieland and his deluded followers want to dispute the age of this fossil, or the Earth, or the Universe, they can not use the presence or absence of organic tissues among their "evidences."

But, it gets even better!

Anatomist David Menton, Ph.D. (biology, Brown University) has been an active creationist his entire life, turning pro after his retirement from Washington University School of Medicine, St. Louis Missouri. His other recent pseudoscience articles include promoting that Neanderthals were modern humans which was once considered a possibility and is now rejected based on modern anatomical studies, and even genetic analysis. Most fatuously, Menton falsely claims that, "the famous "Lucy" fossils belong to a knuckle-walking, apelike creature".

Just four days after the Schweitzer et al announcement, we were treated to his assessment of these results, '*Ostrich-osaurus*' discovery?. It is obvious that Menton should have taken the time to read more carefully or better, to not bother at all.

That said, Menton did avoid many of the gross errors made by Wieland, but managed to make some new ones all his own. In his second sentence, we find the repeated falsehood that the ages of bones are determined by their appearance. In my thirty years of excavation, I have recovered bones that looked quite modern, and others that were little more than a streak of discolored soil. This re-

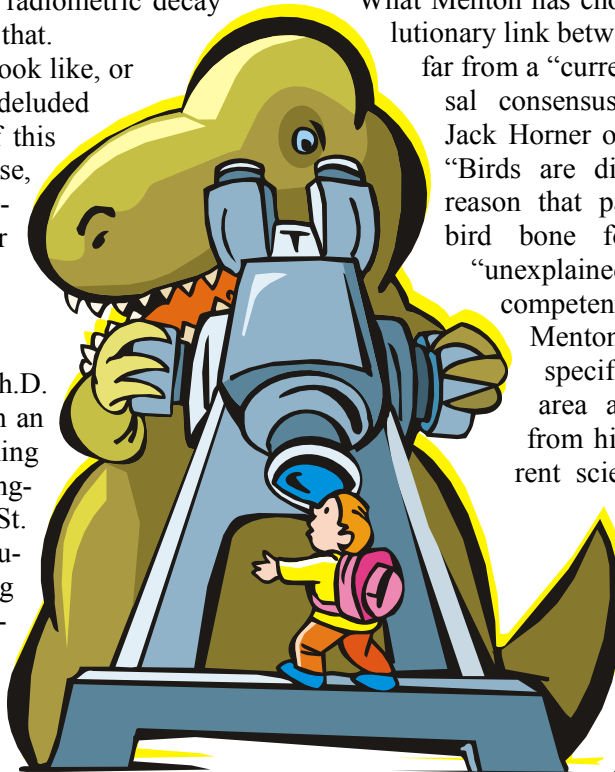
flects the burial conditions and not the age of the bone. The characteristic creationist flourishes such as "supposed evolutionary history," and the false assertion that any water borne sediment implies the Noah's flood myth, have become so familiar that they may pass largely unnoticed. We read to the second page before Menton's ideologue status is fully confirmed.

Menton: "Then, in an obvious effort to capitalize on the current "birds are dinosaurs" craze in evolutionism, the authors go on to compare the microscopic anatomy of their well-preserved dinosaur bone to a bone from a bird. For some unexplained reason, they chose an unidentified area of an unidentified bone from a recently deceased ostrich.

What Menton has chosen to obsess over is the evolutionary link between birds and dinosaurs which, far from a "current craze," is the nearly universal consensus among paleontologists. As Jack Horner observed in a recent interview, "Birds are dinosaurs." The "unexplained" reason that paleontologists would refer to bird bone for comparative material is "unexplained" because no scientifically competent reader needs explanation.

Menton's fatuous complaint that the specific ostrich bone and sampled area are not described must stem from his lack of familiarity with current scientific publishing. As I mentioned above, the three page 'main' article has a nineteen page "on-line supplement" where details of experimental procedure and additional results are presented. This has been the standard procedure for many years now, and the supplement is considered part of the literature associated with the finding.

In the supplement, we learn that the ostrich cortical bone, "was ground for earlier experiments and stored at -20°C for several years." Whether this cortical material came from one specific bone or another is to the best of my knowledge irrelevant. This also addresses Menton's inane, and insulting suggestion that "these paleontologists" had never before "looked at soft tissue or bone through a microscope." What is apparent is Menton is so intent on attacking these results he has missed why any comparison was made to any recent fresh tissue: Schweitzer et al were presenting the case that the ancient material they observed looked like modern cells and tissues. That was all the main paper was claiming, and it is good of Menton to fully confirm these results. If he were



to retain any credibility as a scientist, which his current screed shows he lacks, Schweitzer et al should no doubt have been grateful. Menton's criticism is truly weird; he slams Schweitzer et al for demonstrating to Menton's satisfaction everything which they had set out to demonstrate.

Menton's next error again stems from his failure to read the supplemental data included with the main article. I do not know if he lacks access to *Science*, or the wit to know what supplemental "Supporting Online Material" meant, or how to use the internet. Actually, I can't imagine that a "Professor Emeritus" is denied library privileges or that the Washington University School of Medicine lacks a subscription to *Science* magazine. Regardless, Menton objects that, "While the authors report what appear to be red blood cells in both the dinosaur and the ostrich, they do not mention the presence of nuclei in the red blood cells." There are a number of descriptions of nucleated blood cells in the supplement, including those recovered from MOR 1125, the *T. rex* discussed in the main article, but also, in additional dinosaur bones examined by the team. Most notably, an image taken from cortical bone of *T. rex* FMNH-PR-2081, are directly compared with those from fresh ostrich blood, and fresh chicken blood. Schweitzer et al say,

"These microstructures are of a consistent size and character, and contain what appears to be a central nucleus (inset). These structures are virtually identical in size (approximately 20 μm), shape, and overall appearance with mature nucleated blood cells from ostrich (Fig. SID) and chicken (Fig. SIE).

Why is this so notable? Because the same *T. rex* image was used in Carl Wieland's bloviation, referred to by Menton, and reproduced both by AiG and discussed here.

Merton, leads his conclusion with, "Sadly, we have become accustomed to reading published reports pertaining to evolution and its millions of years in both the popular and scientific literature that are highly biased and lacking in scientific substance."

This is idiocy. The point undertaken by Schweitzer et al in their main paper is conceded in its entirety by Menton—there are residues following the demineralization of dinosaur bone that have the appearance of vessels, blood cells, endothelial cells and osteocytes. Menton's colleague in foolishness, Wieland, cites the discovery as proud "proof" that the Earth is young based on "common sense." Not once in the main article, or the supplement did Schweitzer et al refer directly to the age of the fossil. They needed only refer to the rock where it was found encased. As discussed above this is one of the better dated strata in the world. If Wieland and Menton wish to dis-

pute chemistry and physics, then they should respond to a far different literature. The irony of Menton's statement regarding "bias" and lack of scientific substance is only exceeded by one he makes almost immediately afterward.

But this study and report by Schweitzer and co-workers are lacking in merit even by evolutionary standards.

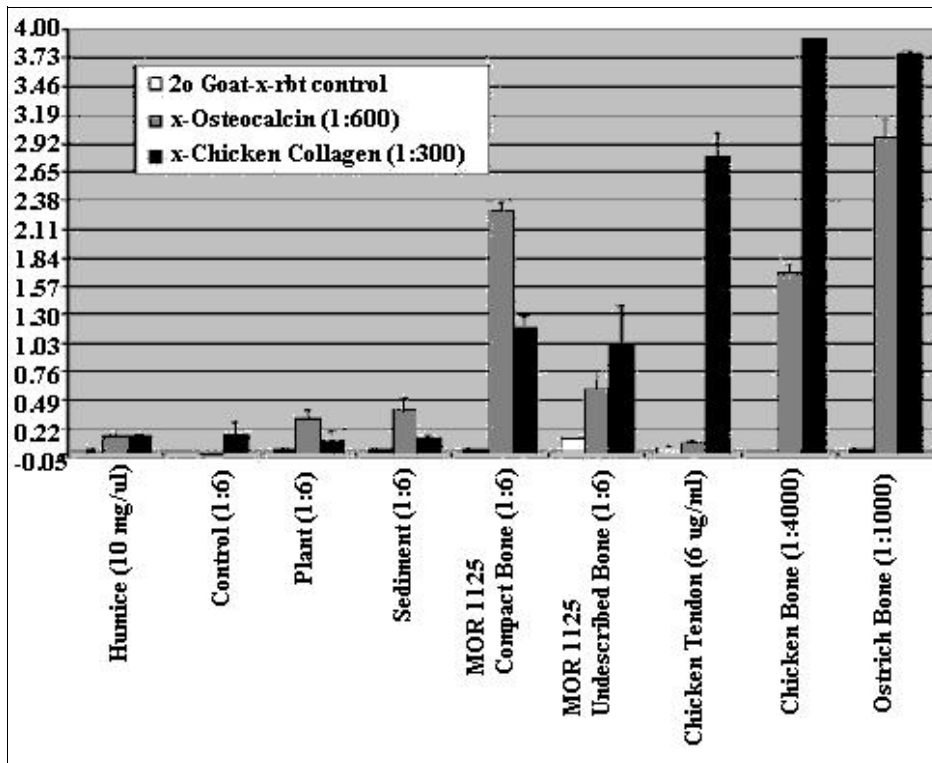
The article received worldwide press coverage. The article hints at unsuspected ways to recover fossil data. The article totally vindicates Schweitzer's graduate work. (It was extremely good of Horner to give her this "second shot" as it were, one which will hopefully bring more attention to her interesting interim papers). Having read a few journal articles by anatomists, though none I recall by Menton, I must say that Schweitzer et al compares very well on the basis of scientific merit (and this is not a criticism of anatomists).

Hinting at an even greater lack of competence that I earlier suspected, Menton continued,

"... why did the authors choose to compare the histology (microscopic anatomy) of this bone to an unidentified bone from a bird—and why an ostrich? Why not compare the histology of the dinosaur bone to that of some living reptile? After all, dinosaurs are reptiles.

Menton is an anatomist, which can be approached as a largely descriptive discipline where an entire career can be spent teaching medical, and allied health students the same muscle inserts and attachments, and the names of the same bones and all their bumps and protrusions. I know, because I did this same thing for some years, though hardly a career's worth. Perhaps this is why Menton fails to grasp the experimental hypothesis subtlety tested. According to the principle of common descent, and modern paleontology, birds have descended from dinosaurs. According to creationists, dinosaurs represent many thousands of extinct forms of the reptiles. As Menton claimed, if creationists are correct, "... dinosaurs are reptiles." (I personally do not understand why Menton wants this to be added to the creationists' "evidences," list but so be it). If then, bird material had failed to match morphologically with the recovered dinosaur material, this would have been a blow against evolutionary theory, and at least indirectly suggesting that there could have been some basis for creationists' (or minimally Menton's) reconstruction of how extinct life forms might be related to modern ones. Evolutionary theory holds the suggestion that both dinosaurs, and by descent, birds are related to reptiles. So there is little to be challenged by evolutionary theory to compare reptiles and dinosaurs because that relationship is already a given fact. A finding that the dinosaur material had not closely resembled that of birds would have strongly challenged current understanding.

By Menton's own formulation, birds should not be related to dinosaurs because "After all, dinosaurs are reptiles," and so he weakens his own position. Again, it is the "Supporting Online Material" that holds the even greater denunciation of Menton's creationism. It is there that we find that Schweitzer et al also prepared organic extracts from the MOR 1125 T. rex, encasing sandstone, and associated fossilized plants. They also prepared similar extracts of modern bird tissues, specifically ostrich bone, chicken bone, and chicken tendon. These extracts were tested by ELISA immunoassay against antisera for bovine osteocalcin, and chicken collagen. Osteocalcin is highly conserved (very little variation) across boney organisms, and it matters little which type is used (See *Ancient Molecules and Modern Myths* for further details). Not so for collagen. In the graph below, these data are summarized with negative controls from blanks, and buffers. The data have been adjusted to account for non-specific reactivity of the controls. Note also the dilution effects.



This graph is David Menton's nightmare; strong indication that there is molecular evidence that birds evolved from the dinosaurs. Notice that the two samples drawn from the fossilized femur MOR-1125 both show significant responses to x-Osteocalcin and x-chicken collagen, as do tissues from modern chickens and ostriches. Comparison to the burial matrix, and other controls which showed little reaction clearly demonstrates that there are protein fragments associated with the fossil bone. The ratio of collagen reaction to osteocalcin reaction contrasted between the dinosaur samples and the chicken tendon and chicken bone samples helps further fix these as bone de-

rived protein fragments. Even though nearly every paleontologist alive feels that the fossil data relating birds and dinosaurs is already adequate, we could be looking at the molecular "smoking gun."

The potential significance of Schweitzer et al was totally over the head of Carl Wieland, who incompetently cheered this paper as "evidence" for a young Earth. Merton's desperate need to attack Schweitzer et al with such flatulence as, "One must assume that the standards for publication in even the most prestigious scientific journals like *Science* are quite different for evolution than for any other branch of empirical science," at least suggests that unlike Wieland, he is aware of the fact that this paper could presage the end of creationism's favorite argument that birds are unrelated to dinosaurs.

What Next?

Horner and Schweitzer have both indicated that there will be much more to be published related to this discovery. Horner indicated in his NPR interview that there were aspects that he could not discuss because they have another article already in review at *Science*. So at a minimum we will see more science and much more fresh creationists' reaction.

Early student work by Schweitzer, and coauthored by Horner, was grossly distorted by creationists. Popular press announcements by Schweitzer were very bold and provocative with hints of dinosaur DNA and linkage to the Crichton/Spielberg "Jurassic Park" series of books and movies. Young Earth Creationists immediately leapt on Schweitzer's claims of "fresh-looking" tissue as proof that the Universe is merely thousands of years old. Schweitzer then spent most of a decade backing away from her earliest claims, and denying that there was any point in confronting creationists' distortion of her work.

The motivation to read and write about dinosaurs comes merely from my interest and, as I see it, obligation to expose fallacious manipulation of science by creationists. I chose to train in anthropology because I am interested in people and our nearest kin. I found that to best understand my interests in human evolution and culture, I needed to learn a modicum of the physical and biological sciences. This modicum at least enables me to carefully read articles such as Schweitzer's. This was the only basis of my only writing about the paleontology of dinosaurs. In my opinion, this obligation to refute 'false teaching' is a general one shared by all scientists, and in the case of

the earlier research by Schweitzer, I personally encouraged her to face this obligation. Nor was I the first to have done so. She declined in 2003 saying to me that it would be best for her career to simply ignore the massive distortion of her work stemming largely from the Answers in Genesis Ministry, Inc. Few scientific colleagues were aware that Schweitzer has become something of a favorite among young Earth creationists, and she was glad to keep it that way. Schweitzer's major professor, Jack Horner, was similarly disinclined in directly confronting creationists. In brief, Mary Schweitzer and Jack Horner, in spite of their protests, have provided creationists with a rich diet for over a decade without ever bothering to publicly refute the gross misrepresentations of their work.

Their new announcement has every indication of following in the same pattern with one exception. This time there could be a slight variation in that Horner and Schweitzer have both publicly acknowledged the creationist distortions of this new publication. In an interview given to Catherine Clabby of the North Carolina "News & Observer," Schweitzer's hometown newspaper, "Creationists welcome fossil find", Schweitzer reports

receiving hostile mail from creationists questioning why she does not admit that her work is compatible with their beliefs. She was quoted as saying, "I'm caught in the middle of something. It feels ugly."

We are all in the middle of something- a creationist attack on reason and science—and it is ugly.

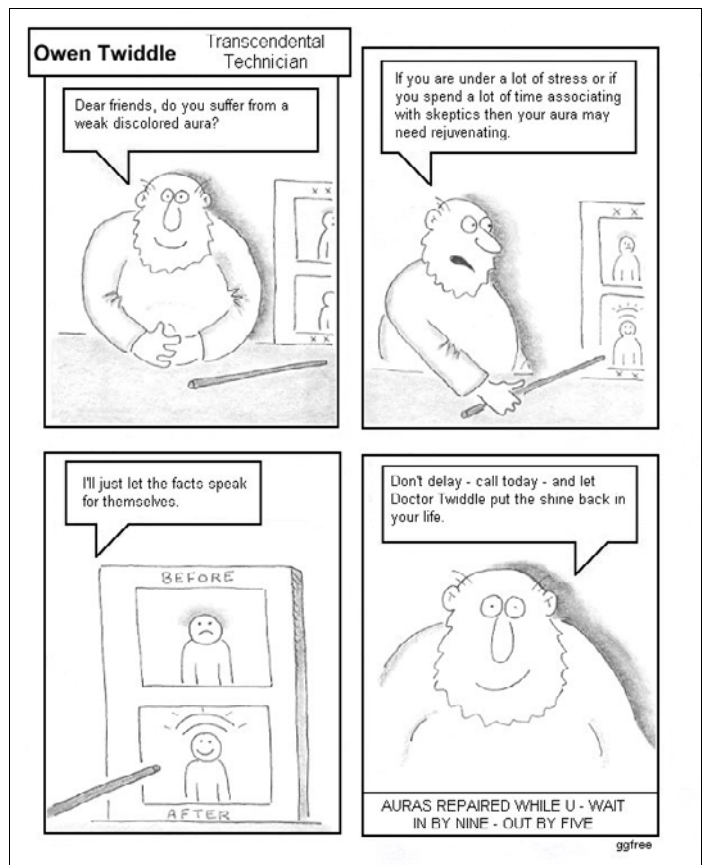
That is why I hope that scientists like Horner and Schweitzer whose creative ability attracts global attention will stop ignoring or denying their responsibility to address the creationist threat. It is no longer adequate to merely present results, but we must also address their larger implication and anticipate creationists' attacks.

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("Chairman" continued from page 2)

versity of California, Irvine in 1976. He subsequently served on the faculties of the California College of Medicine (UCIMC), the Medical College of Georgia (Psychiatry), and held numerous adjunct appointments. Since 1985, he has returned to archaeology, the principle focus of his early research. He has received several honors for teaching and research and has over one hundred publications, including abstracts and technical reports, ranging from topics in psychiatry, mathematics and chemistry to frass, fish digestion, prehistoric ceremonialism and forensic taphonomy. Hurd became actively involved in the creationist anti-science debate while the Curator of Anthropology, and Director of Education for the Orange County Museum of Natural History."

In short, he might not be the world's foremost authority on evolution, but he surely knows more than the average *SJ-R* letter writer. ♡

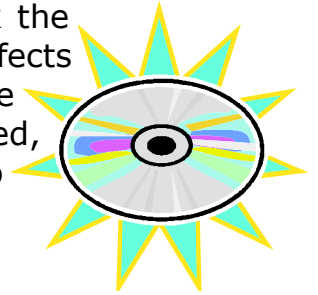


Our Next Meeting

More Mythbusters



At our December meeting, we watched a couple of episodes of the Discovery Channel's *Mythbusters*. The Mythbusters (Jamie Hyneman and Adam Savage) check out urban legends by directly testing the claims. For example, will a sinking ship pull you down to a watery grave? If you fall off a bridge, can you save your life by throwing a hammer to break the plane of the water? With 30 years of special effects experience between them, the Mythbusters test claims like these firsthand, often with explosive results, to declare them confirmed, plausible, or **busted**. Please join us to view and discuss this video presentation.



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