Dinosaur Bone Blues: Trouble in Evolution's History
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Something strange has been happening in Dino-World. Something disconcerting. It started in 2000 on the dusty plains near Hell Creek, Montana, in a layer of earth deemed to be 65 million years old, when a large female T.rex skeleton was discovered. Ms. T.rex – or perhaps Mrs. T.rex, as she turned out to be pregnant – appeared to be another gift for the standard story of dinosaur history. But the gift turned unexpectedly to be in a box from Pandora herself. As I described earlier (The Strange Chaos of the Dating System, AR #70), because the intact, 3.5-foot-long femur was so large and heavy (3000 lbs.), it had to be broken in half to be lifted out by helicopter. Some fragments of the freshly broken bone were sent to Dr. Mary Schweitzer at North Carolina State.

Mary Schweitzer was tuned to the opportunity. Earlier, while at Northern Montana University, she had discovered hemoglobin molecules in dinosaur bone samples, publishing a paper in 1997 on the subject. Once, curious that she had noted the distinct smell of death on a T.rex, similar to a cadaver in her lab, and given the conventional wisdom that such fossils were made up entirely of minerals, Schweitzer mentioned this anxiously to her mentor, the great dino-fossil hunter, Dr. Jack Horner. Apparently inured to the smell of death, he answered: "Oh, yeah, *all* Hell Creek bones smell."

She was lucky to be at North Carolina State; the 1997 paper had not helped her career. Hemoglobin does not last 65 million years. In fact, the scientific consensus is that the longevity of protein is at maximum 100,000 years. But in 2004, in looking deeply into the T.rex sample from Horner, Mary Schweitzer now discovered soft-tissue, specifically, collagen, the kind of tissue that doesn't last a week when placed on a shelf. More analysis found the fine structure of blood vessels, then osteocytes – the tiny cells of the bone. Another T.rex that strode the earth 68 million years ago revealed a fine network of almost-clear branching vessels, and within, as her 2005 paper in *Science* observed, "round microstructures," namely and less diplomatically, blood cells. So it is not just dinosaur soft tissue, but the presence of detectable proteins such as collagen, hemoglobin, osteocalcin, actin, and tubulin that must be accounted for. These are complex molecules that continually tend to break down to simpler ones. Schweitzer has even recovered fragments of the even more fragile and complex molecule, DNA (max longevity 25,000 years).

These were not the only dinosaurs revealing soft tissue. Schweitzer found this in several, including a 199.6 million year-old specimen. But the problem is beyond Schweitzer's pesky peering, for the list of dinosaurs discovered with soft tissue, even with remnants of skin, is long and growing. Other examples of soft tissue in fossils that are supposedly millions of years old have been found: muscle tissue in a salamander fossil that is supposed to be 18 million years old, retinal tissue in a mosasaur fossil that is supposed to be 70 million years old, and what appear to be bone cells from the same mosasaur fossil. A list can be found on http://www.theologyonline.com/forums/showthread.php?t=92405**.** A fire was burning in Dino-World and there was plenty of material to fuel it. A 2010 *National Geographic's* article titled, "Many dino fossils could have soft tissue inside" reveals that the scientific community is expecting many more examples of dinosaur soft tissue in the future. These facts have been a thorn in their side for several years now as they are incredibly difficult to explain within an evolutionary (millions of years) timeframe.

Kaye made an attempt in a 2008 paper which was briefly hailed as the much needed fire extinguisher. His argument was that these findings were merely "bio-film," that is, a coating from extraneous biological organisms that had made it into the dead dinosaurs. This served briefly as the 'go-to' answer, and dowsed the fire for about as long as it took Schweitzer to publish another paper. This one (*Science*, 2009), examining an 80 million year-old Hadrosaur, demonstrated the reality of the detailed structures via mass spectrometry and molecular analysis. The bio-film theory decayed more quickly than its fossil subjects.

But now Dr. Schweitzer's role in the story changes. She becomes the fire fighter, in fact the chief of the department.. Searching for an answer on how these tissue structures could be preserved for millions and millions of years, she tried something. The common thread running through "many exceptionally preserved fossils,"[1] Schweitzer noted, is the presence of iron. Iron is found in hemoglobin. Iron atoms, once released from their bonds to hemoglobin molecules, would be highly reactive and Schweitzer hypothesizes that such iron "contributes to preservation in deep time, perhaps by both free-radical-mediated fixation and anti-microbial activity." In other words, iron might stabilize bimolecular structures, deactivate enzymes that ordinarily break down tissue soon after death, and possibly inhibit bacterial degradation.

As reported in her November, 2013 article (in *Proceedings of Royal Society B*), to test whether iron such as that carried in hemoglobin can act as a preservative, Schweitzer's team tested it on ostrich blood vessels. They soaked the vessels in one of three liquids: a concentrated solution of blood whose red blood cells had been destroyed, a pH-controlled saltwater solution, or sterile distilled water. They found that while the blood vessels soaked in distilled water and salt water degraded significantly in a matter of 3 days, the ones that had been soaked in the blood concentrate "remained intact for more than 2 years at room temperature with virtually no change." This represented a 200-fold increase in stability in the presence of hemoglobin, Schweitzer reported, confirming hemoglobin's tissue fixation properties and supporting the possibility that iron could thus, under the right conditions, protect biomaterials (tissues, cells, and molecules) from degradation over deep time.

Dr. Schweitzer believes that highly reactive ions known as free radicals, which are produced by iron as it is released from the hemoglobin, interact with the organic tissue causing abnormal chemical bonds to form. These bonds effectively tie proteins in knots at the molecular level, much as the preservative formaldehyde does. This knot-tying makes the proteins unrecognizable to the sorts of bacteria that would normally consume them. This, she theorized, is how the soft tissues manage to survive for millions of years without rotting away.

The power in this argument is its seeming simplicity. The "average Joe" might think; "I get it, iron acts as a preserving agent like formaldehyde, the stuff scientists use to embalm things - like those animals preserved in jars in laboratories. So the iron in the dinosaurs' blood must have preserved the organic material." Thus this finding has been hailed in evolutionist circles as the definitive fire extinguisher. A Google search on the web for "dinosaur soft tissue" yields a preponderance of hits in the flavor of "Researchers Finally Have an Explanation for Dinosaur Soft Tissue Discovery," or "Iron Preserves Ancient Dinosaur Soft Tissue in Fossils," or "Controversial T.rex Soft Tissue Discovery Finally Has an Explanation." Schweitzer's study is clearly now the fire hose of first resort to end discussion and debate on the actual age of the dinosaurs.

The press, however, has distorted the science. While the study represents a first step in understanding how soft tissue can be found in fossils, it doesn't solve the mystery of how it could be preserved for millions of years. There are a few problems.

Problems

So let us first do some math. If we allow that the control ostrich vessels sitting in water lasted 3.5 days, then getting the iron-prepared version to last two years or 720 days is, at 720/3.5 = 208, roughly the 200-fold increase in stability. Yet Schweitzer, as noted earlier, had found collagen in dinosaurs with ages of 145-199 million years. The 199m year figure gives us 72,635,000,000 days. When divided by 3.5, we get a needed 20,752,857,142-fold increase in stability, that is, roughly a 20-billion fold increase. The mechanism that Schweitzer is proposing must have tremendous power if it is truly to preserve tissue through "deep time," that is, we need orders of magnitude more than 200x.

Schweitzer did a microscopic examination of the structure of the vessels after two years to assert they were still "recognizable." It is doubtful that microscopic examination is sufficient to determine the amount of degradation, rather, molecular analysis via mass spectrometry is required to establish whether tissues are breaking down. This is to say, the real question is why there has been no attempt to ascertain the actual *rate* of the degradation. This is the critical component required to even begin projecting the actual amount of time over which preservation could be expected. I suspect it is an answer that would not be welcome in the halls of current theory.

The ostrich vessels were soaked in pure hemoglobin for five days, not lysed cells or materials that could be expected to mimic what would be present in an animal carcass. One can ask how realistic a *concentrated* hemoglobin extract is, compared to the real world? Mama T.rex did not have the advantage of scientists treating her carcass with a blood-soup concentrate. While unrealistically concentrated hemoglobin might preserve for a time, it doesn't follow that natural, *dilute* hemoglobin will act the same way. Indeed, tissues rich in blood vessels, such as lungs and gills, often decay very *quickly*.

It is not plausible that iron could be as good a preservative as formaldehyde, which directly forms covalent cross-links between protein chains, something iron can't do. But even if we grant that it *had* the same preservative power, there is no reason to expect that formaldehyde could preserve soft tissues and fine cellular details for many millions of years. The use of formaldehyde is to slow down, not stop, the relentless process of decomposition. After only some 90 years, the embalmed body of Lenin has been widely suspected of being faked or touched up due to it looking a little too good. More recent photos show it looking distinctly "ragged" compared to earlier photos.

Many of the still-fresh fossil biochemicals described in the literature do not show evidence of nearby iron. For example, researchers have encountered bone cells called osteocytes locked inside dinosaur bones, including a *Triceratops* horn core. These cells have fine, threadlike extensions that penetrate the bone's mineral matrix through tiny tunnels called canaliculi. Could concentrated blood penetrate and preserve those almost inaccessible bone cells? Schweitzer thinks so, writing, "In life, blood cells rich in iron-containing [hemoglobin] flow through vessels, and have access to bone osteocytes through the lacuna-canalicular network." Yet, this was simply asserted, not demonstrated.

But it is worse, for there are finds where the soft tissue is not safely contained within the bones at all, but rather it is the external skin! (See for example, Infrared mapping resolves soft tissue preservation in 50-milion year old reptile skin, *Proceedings of Royal Society B*). Maria McNamara and her colleagues, when examining a salamander fossil supposedly 18 million years old (also in *Proceedings…*), were shocked to find beautifully-preserved muscle tissue on (not inside) the bone. They show that the characteristics of the soft tissue are all very similar to the characteristics of the muscle tissue of modern salamanders, and the few differences that do exist are probably the result of "initial, limited decay." They write:

The muscle is preserved organically, in three dimensions, and with the highest fidelity of morphological preservation yet documented from the fossil record…Slight differences between the fossil tissues and their counterparts in extant amphibians reflect limited degradation during fossilization…Our results provide unequivocal evidence that high-fidelity organic preservation of extremely labile tissues is not only feasible, but likely to be common.

What we are witnessing now is a science that is making a paradigm-saving move. We began with the thesis that the dinosaur is, say, 68 million years old (despite numerous dating technique problems). We add the scientific understanding that no protein, collagen, DNA, etc., can last more than 100,000 years. We then discover that protein, collagen, etc., have been found in these fossils. Therefore, the saving move: protein, collagen and DNA must be able to survive 68 million years, though we don't know how and the deeply mysterious process needs to overthrow current biochemical and even thermodynamic understanding (given the inexorable law of entropy acting on organized structure). Why? Because we know the dinosaur is 68 million years old! Never can we consider that the original theory of 68 million years is wrong. This would mean great amounts of egg protein upon our face (which – even worse – we now know could be there 68 million+ years).

In all this, the question begins to scream: What is the problem with doing a little carbon-14 dating on these fossils? Or should I say, "on these *remains*?" Hitherto, the assumption has been that

199 million year-old fossils could hold not even one atom of C14 given C14's half-life of but 5,730 years and C14-dating's 250,000 year maximum reach into the past. This is now absurd; there is organic matter coming out of these fossils' ears. Clearly the scientific establishment does not want to know the answer. As I had noted earlier (AR #70), "There is not time for Mama T.rex to sleep 65 million years." There is now even less.