Carbon-14-dated dinosaur bones are less than 40,000 years old

I have placed the data, including pdf's of original laboratory reports you can download, at the top of the page for people who are in a hurry. And yes, it was dinosaur bones that were tested, not petrified fossils (replaced with minerals and turned to stone). You can read what lab technicians said about processing the bone samples. Published reports by Dr. Mary Schweitzer and others since 2007 confirmed the survival of original dinosaur tissue, as explained below. That fact has not yet trickled down to grade school teaching, where armchair critics of this work seem to have gotten all their information.

The preservation of dinosaur soft tissue and DNA fragments points to dinosaur bones being tens of thousands, not tens of millions, years old, contradicting the geologic time scale. So do the Carbon-14 tests:

The Data: Carbon-14 in dinosaur bones

Dinosaur (a)	Lab/Method/Fraction (b,c,d)	C-14 Years BP (Before Present)	Date	USA State
Acro	GX-15155-A/Beta/bio	>32,400	11/10/1989	TX
Acro	GX-15155-A/AMS/bio	25,750 ± 280	06/14/1990	TX
Acro	AA-5786/AMS/bio-scrapings	23,760 ± 270	10/23/1990	TX
Acro	UGAMS-7509a/AMS/bio	29,690 ± 90	10/27/2010	TX
Acro	UGAMS-7509b/AMS/bow	30,640 ± 90	10/27/2010	TX
Allosaurus	UGAMS-02947/AMS/bio	31,360 ± 100	05/01/2008	CO
Hadrosaur #1	KIA-5523/AMS/bow	31,050 + 230/-220	10/01/1998	AK
Hadrosaur #1	KIA-5523/AMS/hum	36,480 + 560/-530	10/01/1998	AK
Triceratops #1	GX-32372/AMS/col	30,890 ± 200	08/25/2006	MT
Triceratops #1	GX-32647/Beta/bow	33,830 + 2910/-1960	09/12/2006	MT
Triceratops #1	UGAMS-04973a/AMS/bio	24,340 ± 70	10/29/2009	MT
Triceratops #2	UGAMS-03228a/AMS/bio	39,230 ± 140	08/27/2008	MT
Triceratops #2	UGAMS-03228b/AMS/col	30,110 ± 80	08/27/2008	MT
Hadrosaur #2	GX-32739/Beta/ext	22,380 ± 800	01/06/2007	MT
Hadrosaur #2	GX-32678/AMS/w	22,990 ±130	04/04/2007	MT
Hadrosaur #2	UGAMS-01935/AMS/bio	25,670 ± 220	04/10/2007	MT
Hadrosaur #2	UGAMS-01936/AMS/w	25,170 ± 230	04/10/2007	MT
Hadrosaur #2	UGAMS-01937/AMS/col	23,170 ± 170	04/10/2007	MT
Hadrosaur #3	UGAMS-9893/AMS/bio	37,660 ± 160	11/29/2011	CO
Apatosaur	UGAMS-9891/AMS/bio	38,250 ± 160	11/29/2011	CO

None of the above samples were obtained from the Carnegie Museum of Natural History, and none had been coated with shellac.

(a) Acro (Acrocanthosaurus) is a carnivorous dinosaur excavated in 1984 near Glen Rose TX by C. Baugh and G. Detwiler; in 108 MA Cretaceous

sandstone - identified by Dr. W. Langston of Un. of TX at Austin.

Allosaurus is a carnivorous dinosaur excavated in 1989 by the J. Hall, A. Murray team. It was found under an Apatosaurus skeleton in the Wildwood section of a ranch west of Grand Junction CO in 150 Ma (late Jurassic) sandstone of the Morrison formation.

Hadrosaur #1, a duck billed dinosaur. Bone fragments were excavated in 1994 along Colville River by G. Detwiler, J. Whitmore team in the famous Liscomb bone bed of the Alaskan North Slope - validated by Dr. J. Whitmore.

Hadrosaur #2, a duck billed dinosaur. A lone femur bone was excavated in 2004 in clay in the NW 1/4, NE 1/4 of Sec. 32, T16N, R56 E, Dawson County, Montana by the O. Kline team of the Glendive Dinosaur and Fossil Museum. It was sawed open by the O. Kline, H. Miller team in 2005 to retrieve samples for C-14 testing.

Triceratops #1, a ceratopsid dinosaur. A lone femur bone was excavated in 2004 in Cretaceous clay at 47 6 18N by 104 39 22W in Montana by the O. Kline team of the Glendive Dinosaur and Fossil Museum. It was sawed open by the O. Kline, H. Miller team in 2005 to retrieve samples for C-14 testing.

Triceratops #2, a very large ceratopsid-type dinosaur excavated in 2007 in Cretaceous clay at 47 02 44N and 104 32 49W in Montana by the O. Kline team of Glendive Dinosaur and Fossil Museum. Outer bone fragments of a femur were tested for C-14.

Hadrosaur #3, a duck billed dinosaur. Scrapings were taken from a large bone excavated by Joe Taylor of Mt. Blanco Fossil Museum, Crosbyton TX in Colorado in Cretaceous strata.

Apatosaur, a sauropod. Scrapings were taken from a rib still imbedded in the clay soil of a ranch in CO, partially excavated in 2007 and 2009, in 150 Ma (late Jurassic) strata by C. Baugh and B. Dunkel.

(b) GX is Geochron Labs, Cambridge MA, USA; AA is University of Arizona, Tuscon AZ, USA; UG is University of Georgia, Athens GA, USA; KIA is Christian Albrechts Universitat, Kiel Germany.

(c) AMS is Accelerator Mass Spectrometry; Beta is the conventional method of counting Beta decay particles.

(d) Bio is the carbonate fraction of bioapatite. Bow is the bulk organic fraction of whole bone; Col is collagen fraction; w or ext is charred, exterior or whole bone fragments; Hum is humic acids.

Bioapatite is a major component of the mineralised part of bones. It incorporates a small amount of carbonate as a substitute for phosphate in the crystal lattice.

Charred bone is the description given by lab personnel for blackened bone surfaces.

Collagen is the main protein found in the connective tissue of animals, making up from 1 to 6 percent of muscle mass. It can be as high as 20% in normal bone but decomposes over time so that there should be none after ~100,000 years. Yet it is found in four-foot long, nine-inch diameter dinosaur femur bones claimed to be greater than 65 million years old. The "Modified Longin Method" is the normal purification method for bone collagen. Dr. Libby, the discoverer of Radiocarbon dating and Nobel Prize winner, showed that purified collagen could not give erroneous ages.

View laboratory reports:

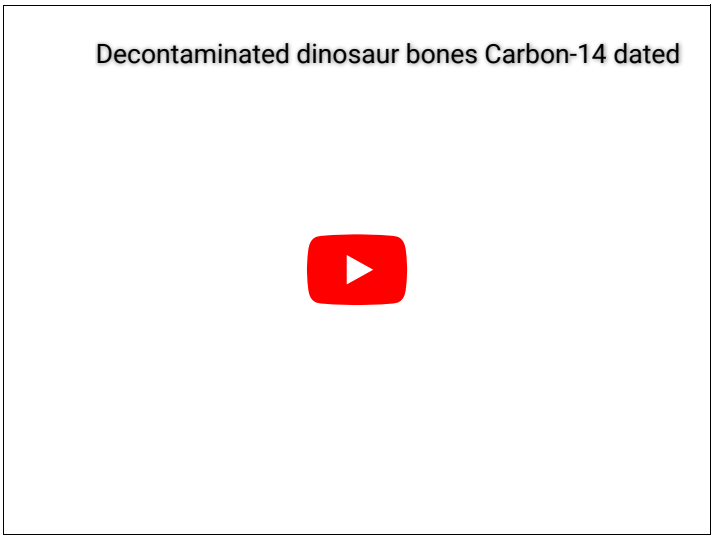
UGAMS-9891,9893 UGAMS-8824 UGAMS-7509a/b UGAMS-11752,a
UGAMS-04973a UGAMS-02947 UGAMS-03228a,b UGAMS-01935/01936/01937
GX-32678 GX-32739 GX-32372 GX-32647 GX-15155-A,-A-AMS AA-5786

Other researchers should attempt to replicate these results, as two did in 2015. This is from their data table:

Taxon	Radiocarbon Years BP	pMC	δ13	Stratigraphy - Formation	Sample date	Note
Edmontosaurus sp.	25550 ± 60	4.15	-0.5	Lance	5/30/2014	vertebra
Edmontosaurus sp.	32420 ± 160	1.77	-6.1	Lance	2/26/2013	phalanx
hadrosaur vert	28790 ± 100	2.78	-20.11	Hell Creek	3/20/2013	cortical bone
hadrosaur vert	20850 ± 90	7.46	-24.51	Hell Creek	3/20/2013	medullary bone
hadrosaur	32770 ± 100	1.69	-3.5	Horseshoe Canyon	7/14/2014	caudal vertebra
ceratopsian	26300 ± 60	3.78	-3.6	Horseshoe Canyon	7/14/2014	metacarpal V
ceratopsian	36760 ± 130	1.03	-1.7	Horseshoe Canyon	7/14/2014	caudal vertebra

Data from page 301 of: Thomas, Brian, Vance Nelson. Spring 2015. Radiocarbon in Dinosaur and Other Fossils. Creation Research Society Quarterly, Vol. 51, No. 4, pp. 299-311

A similar result (24,600 years BP) was obtained for a Mosasaur in 2011. Lindgren J, Uvdal P, Engdahl A, Lee A H, Alwmark C, Bergquist K E, Nilsson E, Ekström P, Rasmussen M, Douglas D A, Polcyn M J, Jacobs L L (2011). Microspectroscopic Evidence of Cretaceous Bone Proteins. PLoS ONE 6(4): e19445 DOI:10.1371/journal.pone.0019445



Radiocarbon basics

Radiocarbon (RC) or Carbon-14 (C-14) dating of linen, cotton, bones, fossils, wood, sea shells, seeds, coal, diamond (anything with carbon) is one of the most common and well understood of the various scientific dating methods.

Carbon-14 is a radioactive isotope of carbon that is formed naturally in the atmosphere. All plants and animals have a regular intake of carbon while they are alive. When an animal or plant dies, it no longer takes in carbon of any form. C-14 has a half-life of 5730 years. The theoretical limit for C-14 dating is 100,000 years using Accelerator Mass Spectrometry (AMS), but for practical purposes it is 45,000 to 55,000 years, depending on the type of equipment. Older dates are considered to be tentative. If, as generally believed, dinosaurs have been extinct for 65 million years, there should not be one atom of Carbon-14 left in their bones.

The accuracy of carbon dates depends on whether the ratio of Carbon-14 to Carbon-12 was the same in the past as it is today. There can also be small equipment and processing errors. Even with reliable results there is always a degree of uncertainty, and dates are usually given as plus or minus so many years.

There are two types of C-14 dating technologies. The earlier one, counting Beta decay particles, is a multistep process and requires sample sizes of several grams. The newer method of AMS requires smaller sample sizes and is more accurate. Beta counting is prone to possible errors in each of the many phases. AMS actually counts the Carbon-14 atoms as they are separated from the sample. The equipment accelerates streams of charged atomic particles to high velocities in order to sort and analyze them. AMS dating is usually preferred because of its superior accuracy, but the conventional method is used when large samples are available in order to completely rule out contamination.

Carbon-14 dating of bone is one of the most difficult tasks in carbon dating, and requires the most care of any carbonaceous material. This is mainly due to the nature of bone, which is a very porous material. Certain parts of bone look like a sponge under the microscope. Many dinosaur remains are hard as rock because the original material has been replaced with a material such as quartz. These are petrified. Our group used un-mineralized dinosaur bones. We scraped off the outer surface to get rid of surface contamination and radiocarbon dated the inner material. One can date either the purified bioapatite, the total organics, or the collagen, or a combination of these.

For example, Triceratops and Hadrosaur femur bones in excellent condition were discovered in Glendive Montana, and members of the Paleochronology group received permission to saw them in half and collect samples for Carbon-14 testing. Both bones were tested by a licensed lab for presence of collagen, and they did contain some collagen. The best process (Accelerator Mass Spectrometry) was used to date them. Total organic carbon and dinosaur bioapatite was extracted and pretreated to remove potential contaminants, and concordant radiocarbon dates were obtained. They were similar to radiocarbon dates for ice-age megafauna such as Siberian mammoths, saber tooth tigers of the Los Angeles LaBrea Tarpits, sloth dung, and giant bison.

Dinosaur soft tissue

Many dinosaur bones are not petrified. Dr. Mary Schweitzer, paleobiology researcher and professor of biological sciences at North Carolina State University, surprised scientists in 2005 when she reported finding soft tissue in dinosaur bones. She started a firestorm of controversy in 2007 and 2008 when she reported that she had sequenced proteins in dinosaur bone.

Critics charged that the findings were mistaken or that what she called soft tissue was really biofilm produced by bacteria that had entered from outside the bone. Schweitzer answered the challenge by testing with antibodies. Her report in 2009 confirmed the presence of collagen and other proteins that bacteria do not make. -- Schweitzer, Mary H. et al. 01 May 2009. Biomolecular Characterization and Protein Sequences of the Campanian Hadrosaur *B. canadensis*. Science, Vol. 324, No. 5927, pp. 626-631 DOI:10.1126/science.1165069

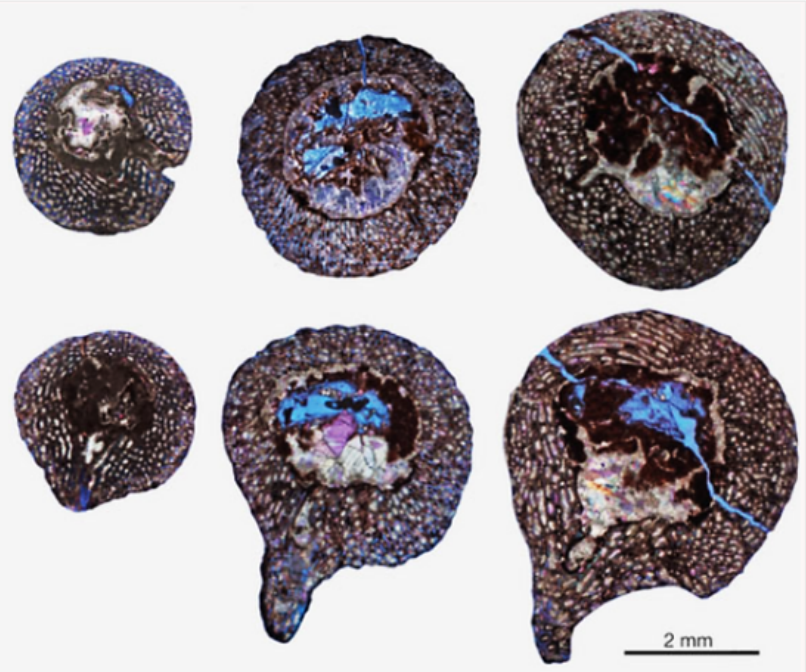
Biofilms might actually improve preservation, according to a 2010 study.

"Although microorganisms are traditionally thought to rapidly metabolize and destroy organic material, decreasing the chances for fossilization, this study has shown that not only may microorganisms play an integral role in the formation of fossils by mineralizing soft tissues, but also that in some cases biofilms may directly enhance the preservation of vertebrate primary soft-tissues."

"The results of this study indicate that exquisite preservation of pliable soft-tissues may be related to a microbial masonry process whereby the formation of microbial biofilms wall off internal surfaces of bones during early taphonomic stages. These biofilms metabolize organic materials and mineralize, forming resistant structures or microbial masonry wall surfaces across internal pores openings in bones. These results have potential to allow for more detailed taphonomic reconstructions and contribute to a more nuanced understanding of fossil preservation in the form of soft-tissues structures and biomolecules."--Peterson, Joseph E., Melissa E. Lenczewski, Reed P. Scherer. October 2010. Influence of Microbial Biofilms on the Preservation of Primary Soft Tissue in Fossil and Extant Archosaurs. PLoS ONE, Vol. 5, No. 10, e13334. DOI:10.1371/journal.pone.0013334

In 2011, a Swedish team found soft tissue and biomolecules in the bones of another creature from the time of the dinosaurs, a Mosasaur, which was a giant lizard that swam in shallow ocean waters. -- Lindgren et al., 2011. Microspectroscopic Evidence of Cretaceous Bone Proteins. PLoS ONE, Vol. 6, No. 4, 11 pages, e19445, DOI:10.1371/journal.pone.0019445

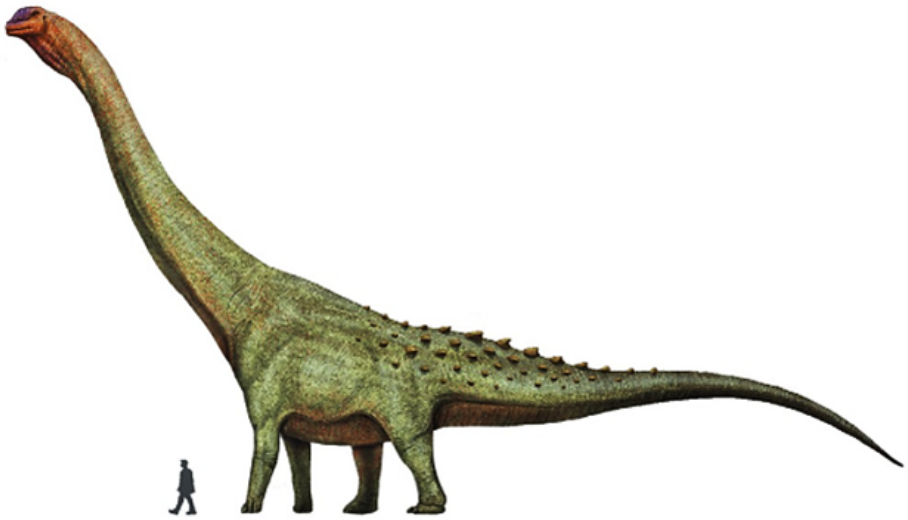
A remarkable find was published in the journal *Nature* in April 2013: "we report the discovery of a monotaxic embryonic dinosaur bone bed in Lower Jurassic [190-197 million year old] strata near Dawa, Lufeng County, Yunnan Province, China". The "bone bed is characterized by the presence of completely disarticulated skeletal elements at various stages of embryonic development". "This discovery also provides the oldest evidence of in situ preservation of complex organic remains in a terrestrial vertebrate."



"There are no preserved nest structures or uncrushed eggs." "In contrast to previous studies of organic residues based on extracts obtained by decalcifying samples of bone, our approach targeted particular tissues in situ. This made it possible to detect the preservation of organic residues, probably direct products of the decay of complex proteins, within both the fast-growing embryonic bone tissue and the margins of the vascular spaces." "Previous reports of preserved dinosaur organic compounds, or 'dinosaurian soft tissues', have been controversial because it was difficult to rule out bacterial biofilms or some other form of contamination as a possible source of the organics. Our results clearly indicate the presence of both apatite and amide peaks within woven embryonic bone tissue, which should not be susceptible to microbial contamination or other post-mortem artefacts."

-- Reisz, Robert R., Timothy D. Huang, Eric M. Roberts, ShinRung Peng, Corwin Sullivan, Koen Stein, Aaron R. H. LeBlanc, DarBin Shieh, RongSeng Chang, ChengCheng Chiang, Chuanwei Yang, Shiming Zhong. 11 April 2013. Embryology of Early Jurassic dinosaur from China with evidence of preserved organic remains. Nature, Vol. 496, pp. 210-214. doi: 10.1038/nature11978.

A study of a titanosaur skeleton (MPMPV 1156) reported finding soft-tissues, including vessels, osteocytes, and bone matrix proteins (collagen I and fibronectin). About 70% of the postcranial skeleton of the massive 69-ton animal was uncovered in southern Argentina in Late Cretaceous strata (83.6 - 66 Ma).



The study used "microscopy, in-situ localization (immunofluorescence), immunoreactivity to chemical extracts (enzyme-linked immunosorbent assay), and silver-staining of chemical extracts. All results support the conclusion that biomolecules are preserved in the fossils of MPMPV 1156, and fail to show evidence of similar molecular content in the entombing sediment or chemical reagents used. These results provide the first direct evidence of collagen I in a sauropod dinosaur, and the first report of fibronectin from pre-Quaternary fossils."

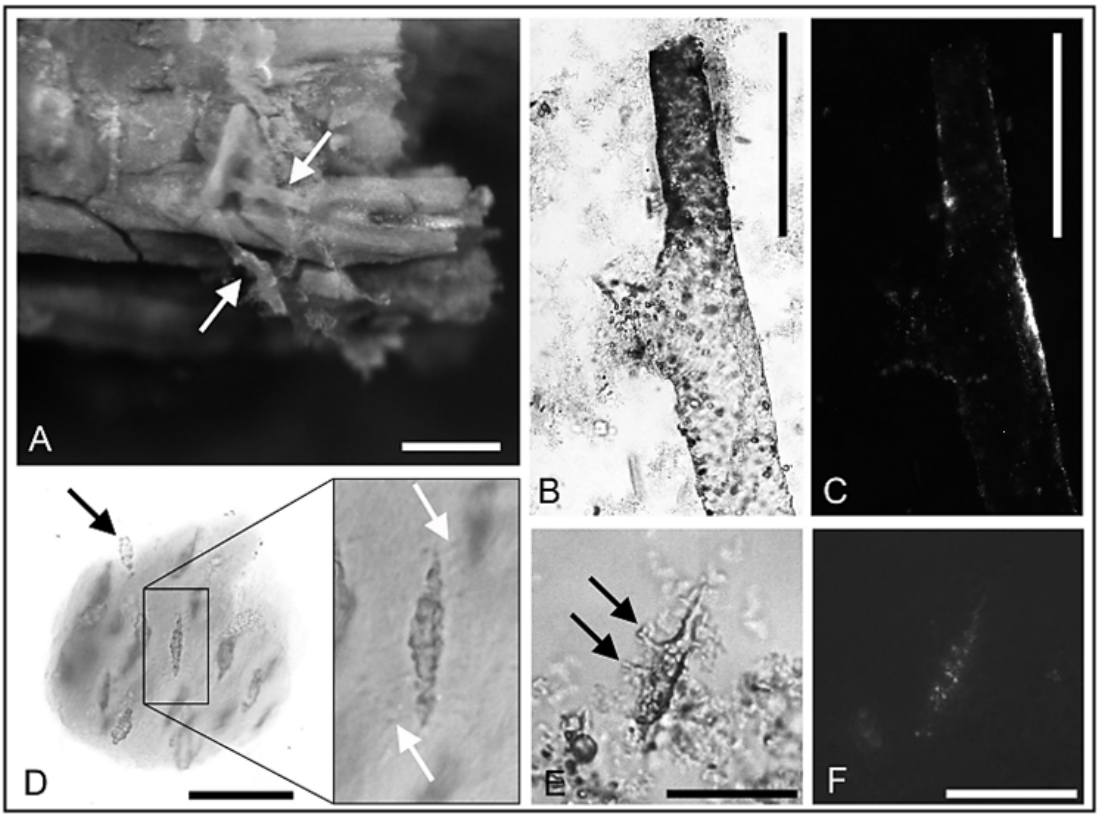
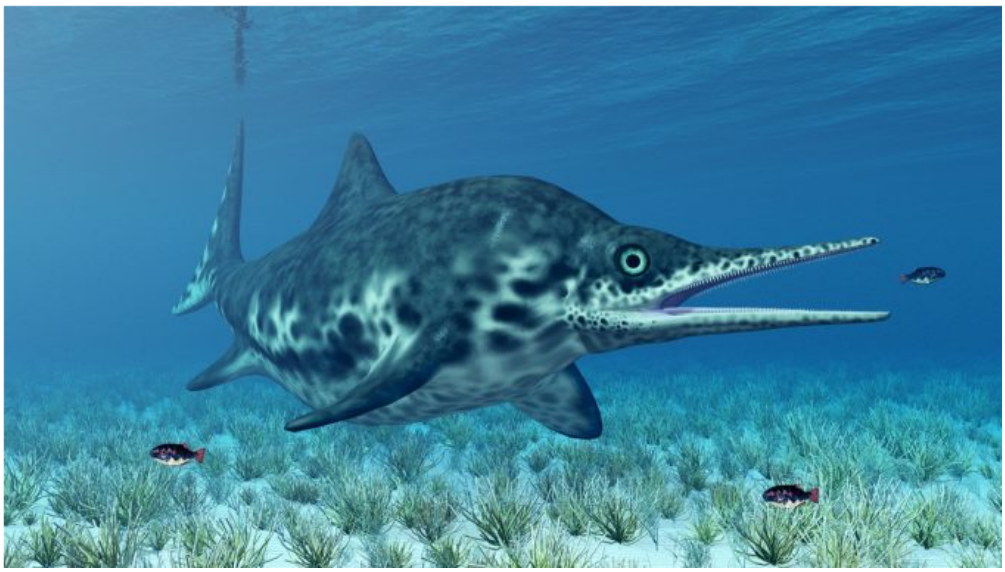


Figure 4.3 Structures recovered from MPMPV 1156 that are morphologically consistent with soft-tissues. **A**. White arrows indicate pliable, hollow tubes emerging from a humeral fragment as the mineral phase is dissolved in EDTA. **B**. 'Vessel' imaged under transmitted light. **C**. 'Vessel' imaged under cross-polarized light showed minimal birefringence, indicating it is not a mineralized structure. **D**. Fibrous 'matrix' with embedded 'osteocytes.' 'Osteocytes' can be observed emerging from the matrix (black arrow), confirming they are three-dimensional in structure. Inset of the 'osteocyte' shows distinct, lateral projections from the cell-like structure into the surrounding matrix, which may represent preserved filopodia or empty canniculi. **E**. Isolated 'osteocyte' imaged in transmitted light. Note the narrow, branching structures consistent with filopodia (black arrows). **F**. 'Osteocyte' imaged under cross-polarized light. Minimal birefringence indicates this structure is not a mineral in-fill of a lacuna.

--Schroeter, Elena A. R. August 2013. The morphology, histology, and molecular preservation of an exceptionally complete titanosaur from southernmost Patagonia. Ph.D. thesis, Drexel University. DOI:10.17918/etd-6996

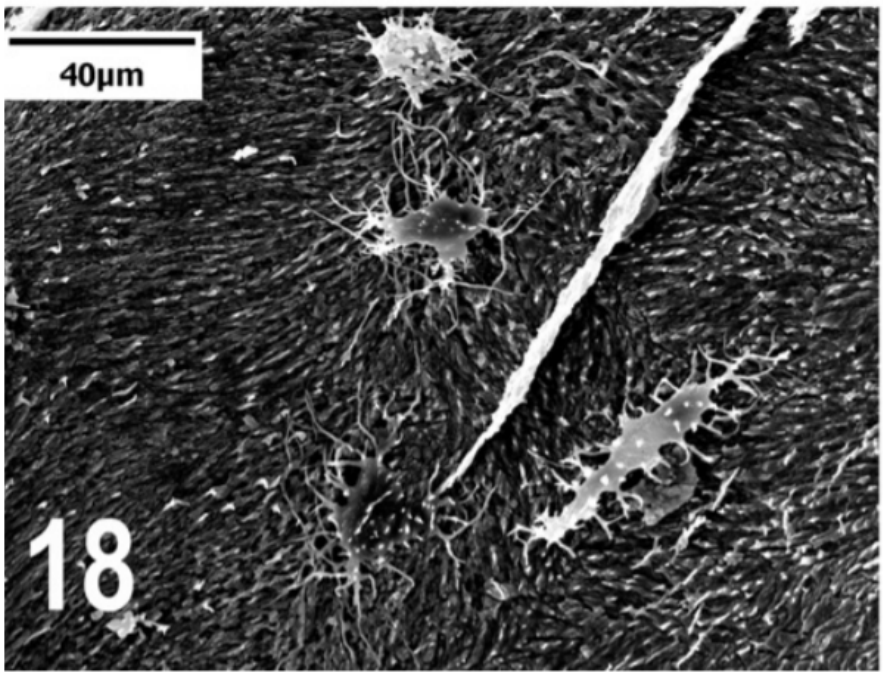
The discovery of original organics in an ichthyosaur supposedly 180 million years old (Early Jurassic) leaves no doubt about the preservation of soft tissue and biomolecules.



Researchers from North Carolina State University and Sweden's Lund University reported their findings in 2018: "Our analyses

recovered still-flexible remnants of the original scaleless skin, which comprises morphologically distinct epidermal and dermal layers. These are underlain by insulating blubber that would have augmented streamlining, buoyancy and homeothermy. Additionally, we identify endogenous proteinaceous and lipid constituents, together with keratinocytes and branched melanophores that contain eumelanin pigment."-- Lindgren, Johan *et al.* 2018. Soft-tissue evidence for homeothermy and crypsis in a Jurassic ichthyosaur. Nature, Vol. 564, pp. 359–365 DOI:10.1038/s41586-018-0775-x

Microscopist Mark Armitage found sheets of soft tissue with bone cells (osteocytes) in a triceratops horn. This scanning electron microscope image from a paper published in Acto Histochemica in 2013 (Volume 115, Issue 6, July 2013, pages 603-608) shows "four osteocytes lying on fibrillar bone matrix." "Tiny white filipodial processes from cells beneath the layer can be seen extruding".



Dr. Schweitzer wondered why such materials are preserved when all the models say they should be degraded. She coauthored a paper published in 2014 proposing that there is a role for iron in preserving proteins in fossil tissues. However, iron is not always present in dinosaur soft tissue. Jasmina Wiemann coauthored a paper published in 2018 proposing a different solution to the problem: polymerization of proteins in oxidative settings. A 2019 report in Science magazine explained more about these findings, showing that although the protein structure in selected dinosaur bones was changed, their organic material is apparently original. Yet the associated brown and black bones and residues constitute only a portion of the preserved organics in dinosaur bones, as described by Brian Thomas.

However it might have been preserved, if the original organic material in dinosaur bones contains measurable Carbon-14, it could reasonably be expected to be less than 55,000 years old. For years, until their access was blocked, the Paleochronology group had AMS laboratories conduct Carbon-14 tests on dinosaur bones. The tests yielded dates in the range of 22,000 to 39,000 years before present, as shown in "The Data" table above.

Dinosaur DNA fragments

From a paper published in 2013
Researchers "conducted in-depth chemical and molecular analyses on two dinosaurs, Tyrannosaurus rex and Brachylophosaurus Canadensis."

"Four independent lines of evidence support the presence of a component chemically consistent with DNA."

The team also presented "molecular analyses of the soft tissue structures consistent with osteocytes, recovered from two dinosaurs whose handling history and geological setting are well defined, and show that these structures demonstrate characteristics of bone cells."

They found "immunological and mass spectrometry evidence for preservation of proteins comprising extant osteocytes (Actin, Tubulin, PHEX, Histone H4) in osteocytes recovered from two non-avian dinosaurs. Furthermore, antibodies to DNA show localized binding to these microstructures, which also react positively with DNA intercalating stains propidium iodide (PI) and 4',6'-diamidino-2-phenylindole dihydrochloride (DAPI). Each antibody binds dinosaur cells in patterns similar to extant cells. These data are the first to support preservation of multiple proteins and to present multiple lines of evidence for material consistent with DNA in dinosaurs, supporting the hypothesis that these structures were part of the once living animals."

"[I]t has been suggested that these microstructures may be biofilm 'morphs' of original cells, but there is no direct evidence that biofilm will form in osteocyte lacunae, nor that biofilm would retain this three-dimensional structure after demineralization, if it did. Furthermore, the data presented here and elsewhere are not consistent with a biofilm source." "The persistence of original cells, retaining morphology, transparency and flexibility comparable to those in living tissues, in fossils dating to the Mesozoic (~ 250–65 MYA) is highly controversial. It has been proposed, as mentioned above, that the 'vessels' and 'cells' arise as a result of biofilm infiltration; but no data exist to support this hypothesis."

"The conclusion that these are remnants of the cells of the once living organisms is supported."

--Schweitzer, Mary Higby, Wenxia Zheng, Timothy P. Cleland, Marshall Bern. January 2013. Molecular analyses of dinosaur osteocytes support the presence of endogenous molecules. Bone, Vol. 52, No. 1, pp. 414-423 DOI:10.1016/j.bone.2012.10.010

From a paper published in 2021:
"Here, we analyze additional dinosaur cartilage in *Caudipteryx* from the Early Cretaceous [145 - 100.5 million years ago] Jehol biota of Northeast China. Cartilage is a skeletal tissue that is less studied than bone or teeth in most branches of vertebrate paleontology."

This "is a well-preserved, complete and partially articulated specimen of Caudipteryx. In [this specimen], we report another example of exquisitely preserved dinosaur cartilage cells, **with one cell showing a nucleus with intracellular chromatin threads that have retained some of their original chemistry**."

"In living organisms (Eukaryotes and Archaea), **chromosomes represent the highest level of condensation of chromatin, which is**

composed of condensed DNA molecules coiled around histone proteins."

"We used an array of microscopy methods that complement each other, including ground-sections [thin slicing], scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDS), histochemical staining, and transmission electron microscopy (TEM). The histochemical stain Hematoxylin and Eosin (that stains the nucleus and cytoplasm in extant cells) was applied. The common histochemical [tissue chemistry] stain Hematoxylin and Eosin (H&E) [is] used worldwide in biology laboratories. Hematoxylin reveals nuclei and nucleic acids in blue/purple and Eosin stains proteins of the cytoplasm and of the extracellular matrix."

"One dinosaur chondrocyte revealed a nucleus with fossilized threads of chromatin. The most logical conclusion is that the H&E staining is binding to endogenous structures and that this Caudipteryx cell preserves an original dinosaur nucleus. It sits within the cell cytoplasm, is delimited by a nuclear membrane and further contains darker stained material showing the morphological characteristics of condensed chromatin threads."

"Due to the fragility of nucleic acids, nuclei are thought to degrade extremely rapidly after death (sometimes within hours postmortem), leaving almost no chance for these structures to enter the fossil record. However, the paleontological literature is full of histological reports of fossil tissues with exquisitely preserved nuclei and even sub-nuclear structures like nucleoli or chromosomes in multiple stages of cell division. These examples are numerous and include nuclei from permafrost-preserved Cenozoic mammals, Mesozoic dinosaurs, various Cenozoic, Mesozoic, and Paleozoic plants, and even embryo-like fossil cell clusters that are more than 600 Million years old. All of this published, abundant evidence shows that recent claims that histochemistry is inappropriate for fossil tissues are completely invalid and unsupported."

"Since the chromatin threads that we report here in Caudipteryx were identified specifically in a non-ironized cell, this suggests iron may not always play a role in cellular nor nuclear preservation."

"Articular cartilage is shielded from external contaminating microbes by the surrounding tissues of the joint capsule and by subchondral bone. It also lacks vascularization and innervation, which offers protection against microbial invasions and the alteration of organic components. Moreover, cartilage has a low cell density and its cells have an anaerobic metabolism. These characteristics apparently play a role in delaying the autolytic processes (i.e., the autodestruction of cells by their lytic enzymes) that should otherwise start almost immediately after death."

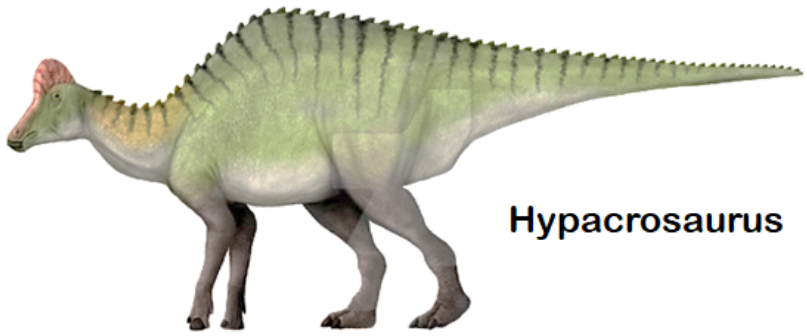
"Even though hematoxylin binds to DNA in extant cells, H&E alone cannot be considered a powerful enough stain to suggest that ancient DNA is preserved in this fossilized material (for this, more specific DNA stains like the Feulgen stain, or DNA fluorescent dyes like Propidium Iodide or DAPI would be preferred). The H&E staining observed here does however show that differences in chemistries between the chondrocyte cytoplasm and the nucleus were preserved for millions of years, still retaining the ability to properly interact with standard histochemical stains. It also shows that some of the original nuclear biochemistry is preserved in this dinosaur cartilage material."

"In the present study, histochemistry has helped discover structures that were unobservable in the thicker ground-sections [slices]. Proposing a contamination of this dinosaur cell by a chromatin mimicking structure or by a chromatin shaped organism is not scientifically sound."

-- Zheng, Xiaoting, Alida M. Bailleul, Zhiheng Li, Xiaoli Wang, Zhonghe Zhou. 24 September 2021. Nuclear preservation in the cartilage of the Jehol dinosaur Caudipteryx. Nature Communications Biology, Vol. 4, No. 1125, pp. 1-9. DOI:10.1038/s42003-021-02627-8

From a 2020 news release

"Researchers from the Chinese Academy of Sciences and North Carolina State University have found evidence of preserved fragments of proteins and apparent chromosomes within isolated cell-like microstructures in cartilage from a baby duckbilled dinosaur. The findings further support the idea that these original molecules can persist for tens of millions of years."



"The team included Mary Schweitzer, professor of biology at NC State with a joint appointment at the North Carolina Museum of Sciences, as well as other researchers from Canada and the U.S."

"Alida Bailleul, a paleontologist from the Chinese Academy of Sciences... noticed structures within certain tissues that were consistent with chondrocytes, or cartilage cells, and within these were internal structures resembling nuclei and chromosomes."

"The cartilaginous tissues and chondrocytes from the dinosaur skull reacted with antibodies to collagen II, but the surrounding bone did *not* react with collagen II antibodies. This is significant because collagen II is found only in cartilage, while collagen I dominates in bone."

Schweitzer noted that "bacteria cannot produce collagen, which rules out contamination as the source of the molecules."

"The researchers also tested the microstructures for the presence of chemical markers consistent with DNA using two complementary histochemical stains that bind to DNA fragments within cells. These chemical markers reacted with isolated cartilaginous cells, supporting the idea that some fragmentary DNA may remain within the cells."

"We used two different kinds of intercalating stains, one of which will only attach to DNA fragments in dead cells, and the other which binds to any DNA," Schweitzer explains. "The stains show point-reactivity, meaning they are binding to specific molecules within the microstructure and not smeared across the entire 'cell' as would be expected if they arose from bacterial contamination."

-- Peake, Tracey. March 2, 2020. Original Cartilage and Evidence of DNA Preserved in 75 Million-Year-Old Baby Dinosaur. North Carolina State University news release. https://news.ncsu.edu/2020/03/duckbill-dna/

From the paper published in 2020
"A nesting ground yielding dozens of disarticulated nestlings assigned to the herbivorous duck-billed dinosaur *Hypacrosaurus stebingeri* was discovered in the 1980s in the Upper Cretaceous (Campanian) Two Medicine Formation of northern Montana."

"Several limb and skull elements of these nestlings were subjected to microscopic analyses." They found a place where "cartilage could be distinguished from bone". "Other juvenile hadrosaur material from the Two Medicine formation showed exquisite preservation of cartilage." "Although osteocytes [bone cells] have previously been isolated from dinosaur bone, here, we show the first isolated dinosaur chondrocytes [cartilage cells]."

"Hypacrosaurus calcified cartilage shows positive, localized staining when exposed to antibodies raised against avian collagen II". "As an additional specificity control, fossilized cartilage was exposed to antibodies raised against avian collagen I, the dominant protein in bone. Because extant primary cartilage does not usually express collagen I, no binding was expected, and none was observed in ...Hypacrosaurus". The "study specimen had not been previously embedded in resin."

"The most parsimonious explanation for these results is that epitopes [antibody binding sites] of collagen II are preserved in this 75 million year-old dinosaur. Collagen II is not produced by microbes; positing a microbial source is not parsimonious or congruent with the data."

"[W]e tested these microstructures for the presence of chemical markers consistent with DNA using two complementary histochemical stains, propidium iodide (PI) and 4',6'-diamidino-2- phenylindole dihydrochloride (DAPI)." "PI does not stain DNA in a living cell, but only in dead cells. Therefore, positive PI staining cannot arise from contamination with living (i.e., microbial) cells. DAPI binds preferentially to double-stranded DNA in both living and dead cells. It is sequence dependent requiring at least three successive AT [Adenine-Thymine] base pairs as a binding site."

"Specific staining of both PI and DAPI is observed inside the isolated cartilage cells of Hypacrosaurus, following the pattern seen in extant cells, but diminished in the ancient ones. **This not only supports that the compound within these cells is chemically consistent with DNA, but that material is double stranded, and of a minimum length of 6 base pairs.**"

"[T]he combined data at the histological, cellular and molecular levels robustly support the hypothesis that **the cartilage of Hypacrosaurus has remnants of** original chondrocytes, **original nuclear material, and endogenous compounds chemically consistent with DNA**."

"An alternative hypothesis, that the staining arises from microbial contaminant, is not supported; there is no mechanism for exogenous DNA to penetrate an intact membrane and localize to a single point specifically inside the cell, demonstrating no reactivity in any other region."

"Although it has been suggested that similar, cell-like structures recovered in dinosaur bones could be the result of biofilm infiltration, the pattern of reactivity observed when biofilm was exposed to DAPI and PI staining during a previous study is inconsistent with the one observed here."

"The identification of chemical markers of DNA in Hypacrosaurus suggest it may preserve much longer than originally proposed. Even though it is clear that contamination does exist in fossil material and complicates identifications of original organic molecules, it can be accounted for with proper controls. Contamination is not a plausible explanation in this case".

"The assumption of a temporal limit on molecular longevity has hindered the pursuit of molecular data from fossils older than ~1 million years".

-- Bailleul, Alida M., Wenxia Zheng, John R. Horner, Brian K. Hall, Casey M. Holliday, Mary H. Schweitzer. Advance access publication, 12 January 2020. Evidence of proteins, chromosomes and chemical markers of DNA in exceptionally preserved dinosaur cartilage. National Science Review, 8 pages. DOI:10.1093/nsr/nwz206

Michael J. Benton, Professor of Vertebrate Palaeontology at the University of Bristol wrote an opinion piece on the Hypacrosaurus findings. He believes the DNA is from bacteria, ignoring the staining test that refutes a bacterial source by binding to DNA fragments in isolated cartilage cells, but he did say something useful: "Those studying what they believe to be ancient DNA are now careful to decontaminate their samples and work in antiseptic conditions. But we now also know that DNA molecules break down very easily and will typically survive only a few years. Hundred-year-old samples of DNA from museum specimens are massively fragmented and the breakdown of their molecular structure continues rapidly. ...DNA from fossils maybe 50,000 years old can be reconstructed from millions of short fragments. The oldest such samples are 700,000 years old - a long way from the 66 million year of the last dinosaurs." That's right, Michael; therefore...

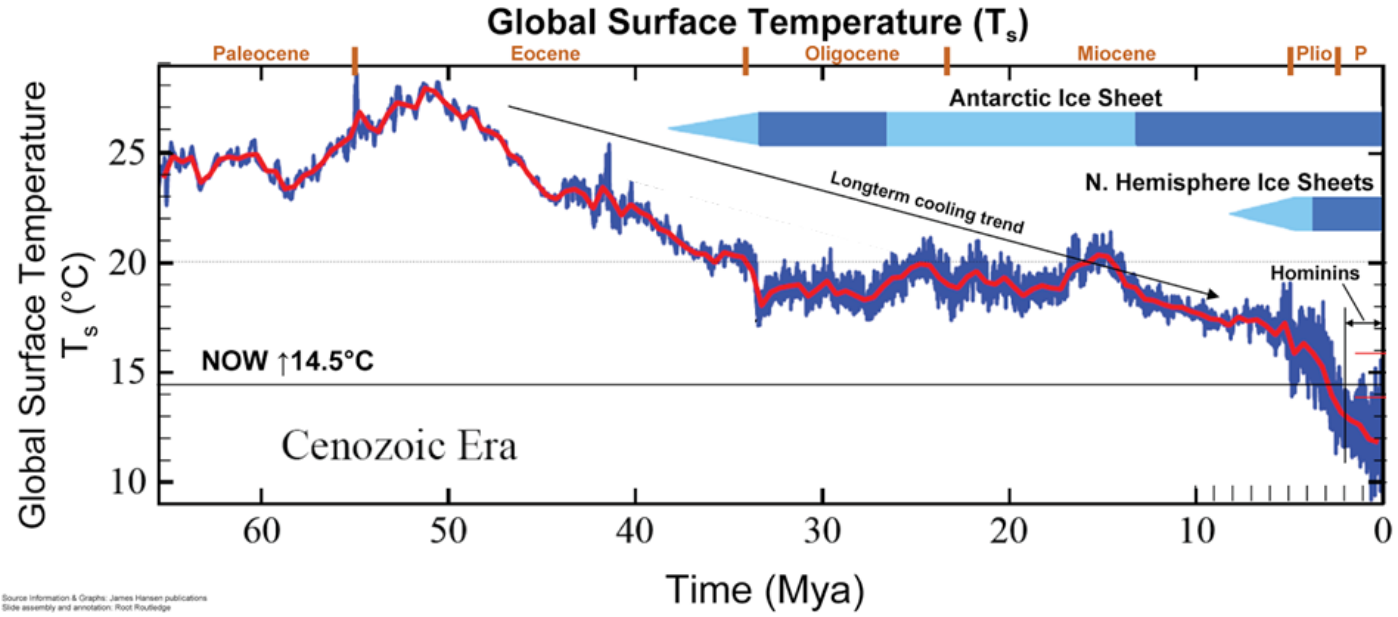
A 2012 study supports this conclusion, showing that, even under ideal conditions, all mitochondrial DNA bonds would be broken by 6.83 million years; and "we show that nuclear DNA has degraded at least twice as fast as mtDNA. These results provide a baseline for predicting long-term DNA survival in bone." Here is their Table 1: (a base pair, bp, is two nucleobases bound to each other)

Table 1. Predictions of decay rates (k) of mtDNA in bone at various temperatures (based on equation (3.3)). Estimates of mtDNA half-lives for three fragment lengths are indicated as well as the expected average read length ($1/\lambda$, where λ is damage fraction) after 10 000 years. The decay rates do not account for the potential initial *post-mortem* phase of rapid DNA decay governed by nucleases. Still, the results indicate that under the right conditions of preservation, short fragments of DNA should be retrievable from very old bone (e.g. greater than 1 Myr). However, even under the best preservation conditions at −5°C, our model predicts that no intact bonds (average length = 1 bp) will remain in the DNA 'strand' after 6.8 Myr. This displays the extreme improbability of being able to amplify a 174 bp DNA fragment from an 80–85 Myr old Cretaceous bone [1].

temperature	k per site per year	half-life (years), 30 bp	half-life (years), 100 bp	half-life (years), 500 bp	average length at 10 kyr	time (years) until average length = 1 bp
25°C	4.5×10^{-5}	500	150	30	2 bp	22 000
15°C	7.6×10^{-6}	3000	900	180	13 bp	131 000
5°C	1.1×10^{-6}	20 000	6000	1200	88 bp	882 000
−5°C	1.5×10^{-7}	158 000	47 000	9500	683 bp	6 830 000

From: Allentoft, Morten E., et al. 10 October 2012. The half-life of DNA in bone: measuring decay kinetics in 158 dated fossils. Proceedings of the Royal Society B, Vol. 279, No. 1748. DOI:10.1098/rspb.2012.1745

Looking at the table, we immediately go to the 6.83 million year line. But that is only if the preservation temperature is minus 5 degrees Celsius. The current global surface temperature is around 14.5 degrees Celsius. The chart below shows that, in the geologic time scale since the end of the Cretaceous, the global surface temperature was 25 degrees Celsius or higher for many millions of years. That's a different line on the table.



Ancient illustrations

Interestingly, our ancestors around the world made depictions of living dinosaurs.

Censorship

Our researchers found a reason for the puzzling survival of soft tissue and DNA fragments in dinosaur bones - the bones are younger than anyone ever guessed. Carbon-14 (C-14) dating of multiple samples of bone from 8 dinosaurs found in Texas, Alaska, Colorado, and Montana revealed that they are only 22,000 to 39,000 years old.

Members of the Paleochronology group presented their findings at the 2012 Western Pacific Geophysics Meeting in Singapore, August 13-17, a conference of the American Geophysical Union (AGU) and the Asia Oceania Geosciences Society (AOGS).

Since dinosaurs are thought to be over 65 million years old, the news was stunning - and more than some could tolerate. After the AOGS-AGU conference in Singapore, the abstract was removed from the conference website by two chairmen because they could not accept the findings. Unwilling to challenge the data openly, they erased the report from public view without a word to the authors. When the authors inquired, they received this letter:

Asia Oceania Geosciences Society
www.asiaoceania.org

AOGS Society T03SS0141H
AOGS Secretariat Office
C/o Meeting Matters International
Tel: (65) 6472 3108 Fax: (65) 6472 3208
Add: #06-23, ONE COMMONWEALTH
1 Commonwealth Lane, Singapore 149544
Email: info@asiaoceania.org

Hugh Miller, Consulting Chemist
Paleo Group, USA
Email: hugoc14@aol.com

Dear Mr. Miller,

Presentation: BG02-D3-PM2-Leo2-005: A Comparison of δ13C & pMC Values for Ten Cretaceous-jurassic Dinosaur Bones from Texas to Alaska, USA, China and Europe

As a result of comments from attendees at the recent AOGS-AGU (WPGM) meeting in Singapore we have examined your abstract which was delivered in session BG-02.

The interpretation which you present in your abstract is that the age of various dinosaurs, previously interpreted as being Mesozoic in age, are less than ~50,000 years. Your report that these ages were calculated using C-14 methods. There is obviously an error in these data. The abstract was apparently not reviewed properly and was accepted in error. For this reason we have exercised our authority as program chairs and rescinded the abstract. The abstract will no longer appear on the AOGS web site.

Program Chairs,
Minhan Dai, Xiamen University
Peter Swart, University of Miami

The interpretation which you present in your abstract is that the age of various dinosaurs, previously interpreted as being Mesozoic in age, are less than ~50,000 years. Your report that these ages were calculated using C-14 methods. There is obviously an error in these data. The abstract was apparently not reviewed properly and was accepted in error. For this reason we have exercised our authority as program chairs and rescinded the abstract. The abstract will no longer appear on the AOGS web site.

Program Chairs,
Minhan Dai, Xiamen University
Peter Swart, University of Miami

They did not look at the data and they never spoke with the researchers. They did not like the test results, so they censored them.

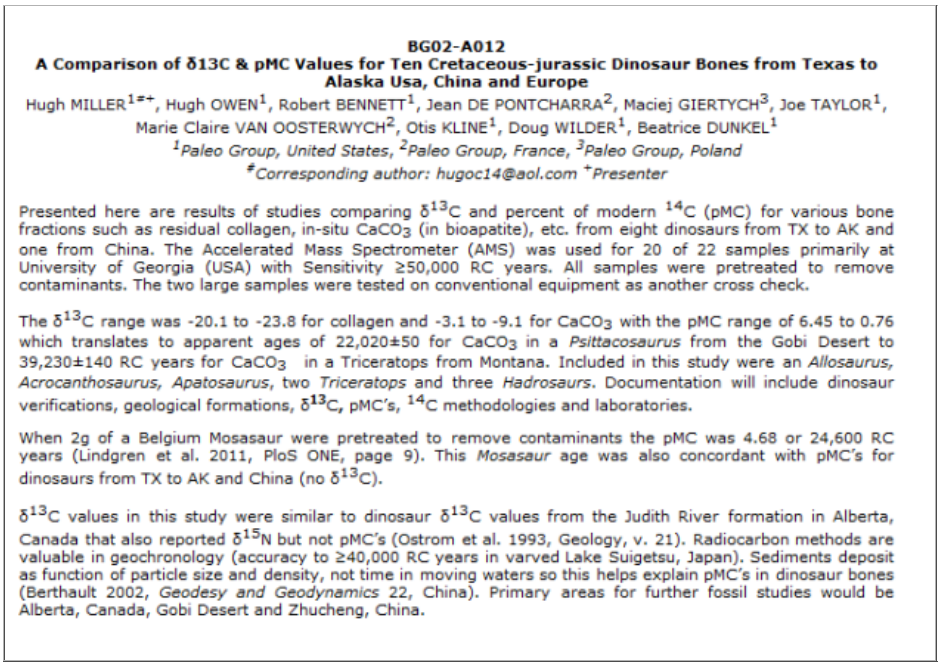
Carbon-14 is considered to be a highly reliable dating technique. It's accuracy has been verified by using C-14 to date artifacts whose age is known historically. The fluctuation of the amount of C-14 in the atmosphere over time adds a small uncertainty, but contamination by "modern carbon" such as decayed organic matter from soils poses a greater possibility for error.

Dr. Thomas Seiler, a physicist from Germany, gave the presentation in Singapore. He said that his team and the laboratories they employed took special care to avoid contamination. That included protecting the samples, avoiding cracked areas in the bones, and

meticulous pre-cleaning of the samples with chemicals to remove possible contaminants. Knowing that small concentrations of collagen can attract contamination, they compared precision Accelerator Mass Spectrometry (AMS) tests of collagen and bioapatite (hard carbonate bone mineral) with conventional counting methods of large bone fragments from the same dinosaurs. "Comparing such different molecules as minerals and organics from the same bone region, we obtained concordant C-14 results which were well below the upper limits of C-14 dating. These, together with many other remarkable concordances between samples from different fossils, geographic regions and stratigraphic positions make random contamination as origin of the C-14 unlikely", he said.

Watch a video of the conference presentation

See the conference schedule for presentation of abstract BG02-A012 at 17:00



BG02-A012
A Comparison of δ13C & pMC Values for Ten Cretaceous-jurassic Dinosaur Bones from Texas to Alaska Usa, China and Europe

Hugh MILLER[1#+], Hugh OWEN[1], Robert BENNETT[1], Jean DE PONTCHARRA[2], Maciej GIERTYCH[3], Joe TAYLOR[1], Marie Claire VAN OOSTERWYCH[2], Otis KLINE[1], Doug WILDER[1], Beatrice DUNKEL[1]
[1]Paleo Group, United States, [2]Paleo Group, France, [3]Paleo Group, Poland
[#]Corresponding author: hugoc14@aol.com [+]Presenter

Presented here are results of studies comparing $\delta^{13}C$ and percent of modern ^{14}C (pMC) for various bone fractions such as residual collagen, in-situ $CaCO_3$ (in bioapatite), etc. from eight dinosaurs from TX to AK and one from China. The Accelerated Mass Spectrometer (AMS) was used for 20 of 22 samples primarily at University of Georgia (USA) with Sensitivity ≥50,000 RC years. All samples were pretreated to remove contaminants. The two large samples were tested on conventional equipment as another cross check.

The $\delta^{13}C$ range was -20.1 to -23.8 for collagen and -3.1 to -9.1 for $CaCO_3$ with the pMC range of 6.45 to 0.76 which translates to apparent ages of 22,020±50 for $CaCO_3$ in a *Psittacosaurus* from the Gobi Desert to 39,230±140 RC years for $CaCO_3$ in a Triceratops from Montana. Included in this study were an *Allosaurus, Acrocanthosaurus, Apatosaurus*, two *Triceratops* and three *Hadrosaurs*. Documentation will include dinosaur verifications, geological formations, $\delta^{13}C$, pMC's, ^{14}C methodologies and laboratories.

When 2g of a Belgium Mosasaur were pretreated to remove contaminants the pMC was 4.68 or 24,600 RC years (Lindgren et al. 2011, PloS ONE, page 9). This *Mosasaur* age was also concordant with pMC's for dinosaurs from TX to AK and China (no $\delta^{13}C$).

$\delta^{13}C$ values in this study were similar to dinosaur $\delta^{13}C$ values from the Judith River formation in Alberta, Canada that also reported $\delta^{15}N$ but not pMC's (Ostrom et al. 1993, Geology, v. 21). Radiocarbon methods are valuable in geochronology (accuracy to ≥40,000 RC years in varved Lake Suigetsu, Japan). Sediments deposit as function of particle size and density, not time in moving waters so this helps explain pMC's in dinosaur bones (Berthault 2002, *Geodesy and Geodynamics* 22, China). Primary areas for further fossil studies would be Alberta, Canada, Gobi Desert and Zhucheng, China.

On the conference website, the abstract was removed from position number 5.

Clearly something is wrong with the conventional wisdom about dinosaur bones, but it has been hard to reach the public with the information. Despite being simple test results without any interpretation, they were not allowed to be presented in conference proceedings by the 2009 North American Paleontological Convention, the American Geophysical Union in 2011 and 2012, the Geological Society of America in 2011 and 2012, nor by the editors of various scientific journals. On one occasion they were allowed to display a poster. The information was finally published in a minor online journal on January 3, 2020, presenting the Carbon-14 data from dinosaur bones alongside similar data from other material in the geologic column.

Watch a video of what happens when you try to get members of the academic community involved.

Banned by the Center for Applied Isotope Studies

From 2007 through 2011 the Paleochronology group had 11 dinosaur bone samples carbon dated by the Center for Applied Isotope Studies at the University of Georgia, and for good reason. Senior research scientist Alexander Cherkinsky specializes in the preparation of samples for Carbon-14 testing. He directed the pretreatment and processing of the dinosaur bone samples with the Accelerator Mass Spectrometer, though he did not know the bones were from dinosaurs, and he signed the reports. Carbon dating at this facility is certainly the very best.

But in 2014, someone told the director of the facility, Jeff Speakman, that the Paleochronology group was showing the Carbon-14 reports on a website and YouTube, and were drawing the obvious conclusions. So when he received another bone sample from the Paleochronology group, he returned it to sender and sent an email saying: "I have recently become aware of the work that you and your team have been conducting with respect to radiocarbon dating of bone. The scientists at CAIS and I are dismayed by the claims that you and your team have made with respect to the age of the Earth and the validity of biological evolution. Consequently, we are no longer able to provide radiocarbon services in support of your anti-scientific agenda. I have instructed the Radiocarbon Laboratory to return your recent samples to you and to not accept any future samples for analysis."

Jeff Speakman

From: Jeff Speakman
Sent: Monday, July 21, 2014 12:28 PM
To: 'HugoC14@aol.com'
Subject: Radiocarbon Dating

Dear Mr. Miller,

I have recently become aware of the work that you and your team have been conducting with respect to radiocarbon dating of bone. The scientists at CAIS and I are dismayed by the claims that you and your team have made with respect to the age of the Earth and the validity of biological evolution. Consequently, we are no longer able to provide radiocarbon services in support of your anti-scientific agenda. I have instructed the Radiocarbon Laboratory to return your recent samples to you and to not accept any future samples for analysis.

Sincerely,
Jeff Speakman

Jeff Speakman, Ph.D.
Director, Center for Applied Isotope Studies
University of Georgia
120 Riverbend Rd.
Athens GA 30602-4702

Notice that he did not say the radiocarbon reports of the dinosaur bone samples were inaccurate. No, his objection was that the Paleochronology group was using the reports as evidence that dinosaurs lived thousands, not millions, of years ago. So I asked him 3 times over 3 weeks what is the right conclusion to draw from the test results they provided us; then I asked his entire scientific staff. None of them had an answer.

This is an attitude we encountered among members of academia: there is an established truth, and all evidence contrary to it is rejected. Anyone who challenges the established truth is made an enemy.

The threat hangs over everyone. A manager of a commercial laboratory that does Carbon-14 dating, Beta Analytic Inc., reviewed a poster display of the dinosaur data and discussed it with a member of the Paleochronology group. Her interest led us to propose that her company perform a Carbon-14 test on a T-rex bone we acquired. She wrote back:

Bernadett Limgenco
Operations Manager - Australia and Southeast Asia
Beta Analytic Inc. 4985 SW 74 Court Miami, Florida 33155 USA

Thanks for considering our service in this project.
We wish you well in your research but must choose to opt-out of the analysis.
Since you have identified it as T-rex, and these are known to be extinct for 50 million years, it is beyond the limit of our dating. If a "recent" result was derived it would be universally challenged with possible risks of poor result claims for our laboratory.

This is a project much better suited for collaboration with a university laboratory.

Regards,
Bernadett

Radiocarbon Dating Results that Withstand the Test of Time

BETA is an Accredited ISO/IEC 17025:2005 testing laboratory operating in conformance with ISO 9001:2008 management system requirements. It has demonstrated both the technical competency and management system requirements necessary to consistently deliver technically valid test results. These standards are universally recognized as the highest level of quality attainable by a testing laboratory.

Mark Armitage and the triceratops horn

Mark Armitage served as the Manager for the Electron and Confocal Microscopy Suite in the Biology Department at California State University Northridge from January 2010 to February 2013. Mark was suddenly terminated by the Biology Department when his discovery of soft tissues in a Triceratops horn was published in Acta Histochemica. The university claimed his appointment had been temporary and that they lacked funding for the position. This was news to him, and contradicted prior statements and documents from

the university. He sought relief with a legal action for wrongful termination and religious discrimination by California State University Northridge (CSUN).

Mark Armitage has a MS degree in biology and has been a microscope scientist (microscopist) for 30 years. He was the president of the Southern California Society for Microscopy for several years. He has some 30 publications to his credit. Mark's micrographs have appeared on the covers of eleven scientific journals, and he has many technical publications on microscopic phenomena in such journals as American Laboratory, Southern California Academy of Sciences Bulletin, Parasitology Research, Microscopy and Microanalysis, Microscopy Today and Acta Histochemica, among others. His career in teaching at educational institutions includes Master's College Azusa Pacific University and California State University Northridge.

According to papers filed with the Superior Court of Los Angeles County, when Mark Armitage interviewed for an opening at CSUN for a "regular" "part-time" microscopist in 2009 he told the panel that he had published materials supportive of creationism. William Krohmer, Manager of Technical Services and Safety, who would be Armitage's direct supervisor, was on the panel. The panel hired Armitage despite his creationist writings because of his exceptional qualifications. The position was Electron Microscopy Technician in the Department of Biology, working two ten-hour days per week. He was "permanent part-time" and was allowed to enroll in the full benefits package of the university.

He ran the Microscopy Imaging Facility with its three electron microscopes, personally training students and faculty on their proper use. He was often praised for his work and accomplishments. The Biology Department bought a new confocal microscope that used high-powered lasers for imaging and was computer-driven. Armitage supervised the installation of the new microscope. He was assigned to be the only instructor on it, with responsibility for control and supervision of the instrument.

In February 2012, he was asked to teach a full graduate course in Biological Imaging for the Biology Department. In March 2012, Dr. Steven B. Oppenheimer sent an email to staff saying that the two days per week that Armitage was working needed to be expanded in order to facilitate the growing demands of the microscopy lab.

In June 2012, Dr. Ernest Kwok was made chairman of the committee overseeing the microscopy lab, and became Armitage's new supervisor.

In the summer of 2012, Armitage responded to an invitation to participate in a search for dinosaur fossils in Glendive, Montana in the famous Hell Creek formation. He found the brow-horn of a triceratops; it was not petrified. Studying the horn at the CSUN lab, he discovered soft tissue in the supposedly 65-million-year-old (or more) fossil.

While teaching students how to use microscopes in the lab that he directed at CSUN, Armitage engaged them in brief socratic dialogue about the possible age of the horn. One of Dr. Kwok's students was stunned by the discovery and implications of soft tissue in the triceratops horn, and told Dr. Kwok about it.

On June 12, 2012, Dr. Kwok stormed into Armitage's lab and shouted, "We are not going to tolerate your religion in this department!", and chastised Armitage's "creationist" projects, referring to the triceratops horn. Armitage reported this to the Biology Department chair, Dr. Randy Cohen, and to the manager of technical services for the Biology Department, William Krohmer. They both played down the event and told Armitage to forget it.

Praise for Armitage's work continued from distinguished members of the Biology Department. In November 2012, a photo of the soft tissue in the triceratops horn was published on the cover of American Laboratory magazine. The former chair of the Biology Department, Dr. Oppenheimer, wrote a ringing endorsement of Armitage in a letter of recommendation.

On February 12, 2013, the journal Acta Histochemica published a paper by Armitage describing the discovery of soft tissue in the triceratops horn. Acta Histochemica is a peer-reviewed journal of structural biochemistry of cells and tissue that welcomes advanced microscopical imaging; it has been publishing since 1954. The current editor of Acta Histochemica is a biology professor at CSUN who was a colleague of Armitage, the esteemed Dr. Steven B. Oppenheimer.

On the day the paper was published, Dr. Kwok called a secret meeting of the committee overseeing the microscopy lab. Armitage had served on the committee for three years, but he was not invited. The committee decided to terminate Armitage.

On February 19, 2013, William Krohmer told Armitage that there was a "witch hunt" being mounted against him, and advised him to resign. When he refused to resign, Krohmer told him he would be terminated. Armitage was fired on February 27, 2013. He was told that his job had only been a "temporary appointment".

In July 2016, Los Angeles Superior Court Judge Dalila Lyons tentatively denied CSUN's request for a summary judgement, finding sufficient evidence of religious discrimination to warrant a trial. The University began to arrange a settlement, realizing they might not succeed in a jury trial. So in early October 2016 Armitage won a settlement of almost $400,000 from CSUN; it was designated to replace his retirement fund, which he can use when he eventually retires. The university claimed it settled to avoid a long, costly legal battle, and admits no wrongdoing.

There is a sidenote to this story. Hugh Miller, head of the Paleochronology group, obtained a bone sample from the triceratops horn Mark Armitage discovered. The sample was sent to the Center for Applied Isotope Studies at the University of Georgia in 2012 to test for Carbon-14. The bulk bone was dated by them to 33,570 years before present:

UGAMS #	Sample ID	Material	C, %	N, %	^{14}C age, years BP	pMC	δ^{13}C, ‰
11752	P-T-4bh	bulk bone	1.81	0.05	33570±120	1.53±0.02	-17.1

The University of Georgia
Center for Applied Isotope Studies

RADIOCARBON ANALYSIS REPORT

August 14, 2012

Hugo Miller
1215 Bryson Rd.
Columbus, OH 43224-2009

Dear Mr. Miller

Enclosed please find the results of carbon content analyses for the sample received by our laboratory on July 5, 2012.

UGAMS #	Sample ID	Material	C, %	N, %	^{14}C age, years BP	pMC	δ^{13}C, ‰
11752	P-T-4bh	bulk bone	1.81	0.05	33570±120	1.53±0.02	-17.1
11752a		bioapatite			41010±220	0.61±0.02	-4.3

The bone was cleaned and washed, using ultrasonic bath. After cleaning, the dried bone was gently crushed to small fragments.
The crushed bone was treated with diluted 1N acetic acid to remove surface absorbed and secondary carbonates. Periodic evacuation insured that evolved carbon dioxide was removed from the interior of the sample fragments, and that fresh acid was allowed to reach even the interior micro-surfaces.
The crushed bone was treated with 1N HCl at 4°C for 24 hours. The residue was filtered, rinsed with deionized water and under slightly acid condition (pH=3) heated at 80°C for 6 hours to dissolve collagen and leave humic substances in the precipitate. The sample has got no collagen.

Sincerely,

Dr.Alexander Cherkinsky

More censorship by "scientists"

On the webpage http://www.bible.ca/tracks/tracks-acambaro.htm Dr. Dennis Swift describes the discovery of ceramic figurines near Acambaro, Mexico (selections quoted, with grammatical corrections):

Waldemar Julsrud, a German hardware merchant in Acambaro, Mexico, was riding his horse on the lower slope of El Toro Mountain on a sunny morning in July 1944. Suddenly he spotted some partially exposed hewn stones and a ceramic object half buried in the dirt.

He dismounted and dug out of the ground the hewn stones as well as a few ceramic pieces. Julsrud, who was archaeologically astute, immediately realized that these ceramic pieces were unlike anything that he had seen.

He was familiar with Tarascan, Aztec, Toltec, Mayan, Chupicuaro, Inca and pre-Incan Indian civilizations. The objects he held in his hand were distinctively different than any other known Indian culture.

In 1923, Julsrud and Padre Fray Jose Marie Martinez had discovered the Chupicuaro culture at a site just eight miles away (near Chupicuaro). When a few ceramic fragments were found there, Julsrud hired diggers to excavate. This discovery brought world wide attention from archaeologists who at first mistakenly defined them as Tarascan, but later they were correctly identified as a whole New

Indian culture - the Chupicuaro. The Chupicuaro civilization flourished from about 500 BC to 200 AD, roughly a thousand years before the Middle Post-classic Tarascan.

Julsrud at age sixty-nine was on the brink of making a discovery that may prove to be the greatest archaeological discovery ever made. He hired a Mexican farmer, Odilon Tinajero, to dig in the area where the ceramic figurines were found and bring him any other similar objects. Soon Tinajero had a wheelbarrow full of ceramic pottery that had been excavated on El Toro Mountain.

Charles Hapgood notes that "Julsrud was a shrewd businessman and he now made a deal with Tinajero that is very important for our story. He told Tinajero that he would pay him one peso (worth about 12 cents) for each complete piece he brought in." Tinajero was very careful with the excavation process so as not to break the pieces, and the broken ones were cemented together before being brought to Julsrud.

Among the thousands of artifacts excavated were items that turned Julsrud's mansion into "the museum that scared scientists." Sculpted in various colors of clay were figurines of dinosaurs, various races of people such as Eskimos, Asians, Africans, bearded Caucasians, Mongols, and Polynesians, plus objects that had cultural connections with the Egyptians, Sumerians and others.

The objects were made of clay and stone, varying in size from a few inches long to statues three feet high, and dinosaur objects four to five feet long. In the collection, that now numbered over 20,000 objects, not one could be found to be a duplicate of another. Each of the clay pieces had been individually made, without molds, skillfully sculptured, and carefully decorated. Several hundred of the figurines were scientifically identified as representing many species of dinosaurs, including duck billed Trachodon, Gorgosaurus, horned Monoclonius, Ornitholestes, Titanosaurus, Triceratops, Stegosaurus Paleococincus, Diplodocus, Podokosaurus, Struthiomimos, Plesiosaur, Maiasaura, Rhamphorynchus, Iguanodon, Brachiosaurus, Pteranodon, Dimetrodon, Ichtyornis, Tyrannosaurus Rex, Rhynococephalia and other unknown or as yet unidentified dinosaur species.

These remarkable dinosaur figurines threaten orthodox concepts and time scales in many fields of study. Dr. Ivan T. Sanderson was amazed in 1955 to find that there was an accurate representation of the American dinosaur Brachiosaurus, which was almost totally unknown to the general public at that time. Sanderson wrote about the figurine in the Julsrud collection. "This figurine is a very fine, jet-black, polished-looking ware. It is about a foot tall. The point is it is an absolutely perfect representation of Brachiosaurus, known only from East Africa and North America. There are a number of outlines of the skeletons in the standard literature but only one fleshed out reconstruction that I have ever seen. This is exactly like it."

Eventually over 33,000 ceramic figurines were found near El Toro as well as Chivo Mountain on the other side of Acambaro.

In 1972, Arthur Young submitted two of the figurines to Dr. Froelich Rainey, the director of the Pennsylvania Museum for Thermoluminescent Dating. The Masca lab had obtained thermoluminescent dates of up to 2,700 B.C. In a letter dated September 13, 1972, addressed to Mr. Young, Dr Rainey said:

"*...Now after we have had years of experimentation both here and at the lab at Oxford, we have no doubt about the dependability of the thermoluminescent method. We may have errors of up to 5-10% in absolute dating, but we are no longer concerned about unexpected bugs that might put the whole system in doubt. I should also point out, that we were so concerned about the extraordinarily ancient dates of these figures, that Mark Han in our lab made an average of 18 runs on each one of the four samples. Hence, there is a very substantial bit of research in these particular pieces... All in all the lab stands on these dates for the Julsrud material, whatever that means in terms of archeological dating in Mexico, or in terms of 'fakes verse's authentic' pieces.*"

But when the lab at the University of Pennsylvania found out that dinosaurs were part of the collection, they retracted their thermoluminescent dates. They asserted that the ceramics gave off regenerated light signals and could be no more than 30 years old.

A thermoluminescent technician admitted that no other ceramics existed, in his experience, that produced regenerated light signals, and no other thermoluminescent dating of ceramics had ever been done by utilization of a regenerated light signal. In short, the excuse was a hocus pocus, laboratory trick to avoid the obvious conclusion that dinosaurs and man lived together.

John Tierney determined to expose the University of Pennsylvania's shenanigans by testing with standard procedures. Tierney had two fragments of Julsrud-type ceramics excavated at El Toro Mountain in Acambaro, and in 1956, in Julsrud's presence, Tierney submitted these pieces to Dr. Victor J. Bortolet, Director of Research of Daybreak Nucleari Archaeometrics Laboratory Services, for dating. Dr. Bortulot determined the pieces' upper limit age to be 2,000 years old, thus, invalidating the Masca report which claimed the objects were made thirty to one hundred years ago.

John Tierney took a half dozen samples of Julsrud ceramics of different clay composition to a team of experts at Ohio State University. They consisted of Dr. J.O. Everhart (Chairman of the Department of Ceramic Engineering), Dr. Earle R. Caley (among the world's most respected archaeological chemists), and Dr. Ernest G. Ehlers (mineralogist in the geology department at Ohio State University). The team reported that they could not believe the artifacts were made in modern times, nor could they believe they were made by some amateur who tried to perpetuate a fraud. Upon my notifying them that they had authenticated Julsrud artifacts, they lapsed into a profound and apparently permanent silence.

In 1997, B.C. Video released the program "Jurassic Art", which contained an Acambaro segment that was originally supposed to have been part of NBC's television special, "The Mysterious Origins of Man." The program featured Neil Steede, President of the Early Sites Research Society West and Mexican Epigraphic Society, attempting to debunk the collection, claiming it was of recent manufacture. Toward the end of the program, it is revealed that he sent two samples of Julsrud-type ceramics (a human figure and a dinosaur figure) to an independent Carbon-14 laboratory. Startling results came back. The human figure was dated at 4,000 years BP (Before Present) and the dinosaur figure at 1,500 years BP. Steede tap danced around the implications, embarrassingly embracing the human

figurine as credible, while waltzing past the dinosaur figurine, claiming the laboratory test must not have given a true reading. In reality, the dinosaur figurine created too much tension for orthodox science and Steede had to find an out. The solution was simple. He discarded the dinosaur date.

The Japanese company Nissi sponsored a television crew to go to Acambaro and produce a program for Japanese T.V. regarding the Acambaro figurines. The program entitled "Did the Ancients See Dinosaurs?" was aired on February 2, 1997 in Japan. There is a stunning moment in the program as the Japanese narrator is looking over an animal figurine, and he holds it up next to his Japanese book on dinosaurs. Amazingly, the Julsrud dinosaur figurine matches the color drawing of an Amargasaurus cazaui in the Japanese dinosaur book. The narrator quickly picks up another dinosaur figure and thumbs through the dinosaur book. This figure is very similar to the Saurolophus osborni as drawn in the Japanese dinosaur book. The narrator ponders the perplexing problem that ancient people about 4,500 years ago must have seen dinosaurs because they could not have known what they looked like by merely seeing their skeletons in the ground. The narrator points out that when modern man, such as Sir Richard Owen, found dinosaur skeletons, the first life-sized models of Megalosaurus, Iguanodon and Hylaeosaurus made from them were ridiculously inaccurate.

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