



PALEONTOLOGY

The Puzzle of Earth's Past

From uncovering new fossils to developing emerging technologies that deepen our understanding of the past, the story of paleontology is one of exploration and collaboration across centuries. Efforts to piece together Earth's history have been fueled by curiosity and a shared pursuit of knowledge, each discovery building upon the last. Along this journey, American innovation has helped identify new frontiers in natural history, paving the way for new ways of seeing and studying our planet's past.

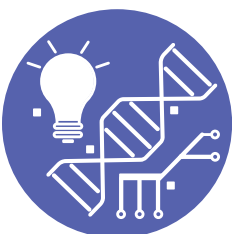
The explorers in this section are grouped into three connected categories:



**Breaking Ground
on Discovery**



**Imagining
Earth's past**



**Emerging Technologies,
New Understandings**



195. Caspar Wistar (1799)

Caspar Wistar was America’s leading expert on human anatomy, but he also specialized in paleontology. While working as a doctor, he stayed involved in early American paleontology by assisting Charles Peale with the assembly of mastodon bones and Thomas Jefferson with his study of giant sloth bones. Wistar’s analysis of these sloth bones was the first study in vertebrate paleontology completed by an American.



196. Charles Willson Peale (1801)

Charles Willson Peale was one of the forefathers of North American natural history and scientific fossil study. He organized the first paleontological expedition in United States history, excavating mammoth bones in upstate New York. Together with Thomas Jefferson, Peale studied Ice Age megafauna, displaying them in his Philadelphia museum to show North America’s unique history.



197. Thomas Jefferson (1804)

Thomas Jefferson is also known by some as “the Father of American Paleontology.” Jefferson had an interest in fossils, collecting and studying the fossils that had been given to him by friends. In 1804, he was credited as discovering the Megalonyx, a member of the sloth family. In 1822, the extinct animal was given the scientific name *Megalonyx jeffersonii*. Jefferson even asked Lewis and Clark to search for living mammoths on their expedition to the American West, eventually confirming their extinct status. Through his expeditions and collaborative studies with Charles Willson Peale, Jefferson established paleontology as a scientific field in the United States.



198. Ferdinand Vandever Hayden (1854)

199. Fielding Bradford Meek (1854)

Ferdinand Vandever Hayden and Fielding Bradford Meek discovered the first dinosaur fossil in America on an 1854 trip to the upper Missouri Basin. While the two published many papers on their discovery together, Meek eventually went on to do his own research. Meek’s publications addressed Cretaceous fossils from Nebraska, and he has several organisms named after him, such as the ammonite *Meekoceras*.



200. William Parker Foulke (1858)

William Parker Foulke discovered the first near-complete dinosaur fossil found in North America, a specimen of *Hadrosaurus foulkii*, or “Foulke’s big lizard.” The fossil, nicknamed “Haddy,” was presented to the Academy of Natural Sciences in December 1858, where it remains on display for the public.



201. Joseph Leidy, M.D. (1869)

Dr. Joseph Leidy, known as the founder of American vertebrate paleontology, studied fossil deposits in the western United States. Leidy’s research showed that horses had lived in North America before going extinct and being reintroduced by the Spanish. He also proved the prehistoric presence of the lion, tiger, camel, and rhinoceros in the western United States. In 1869, he published *On the Extinct Mammalia of Dakota and Nebraska*, later described as possibly the most important paleontological work produced in the United States.



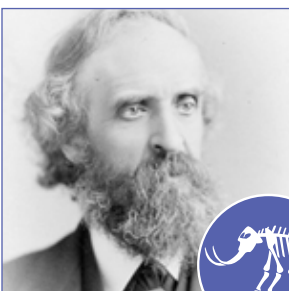
202. Albert Smith Bickmore (1869)

Albert Smith Bickmore was an American naturalist, museum curator, and the founder of the American Museum of Natural History. At the American Museum of Natural History, he worked to expand educational offerings and lectures, making natural history and paleontology more accessible to the public.



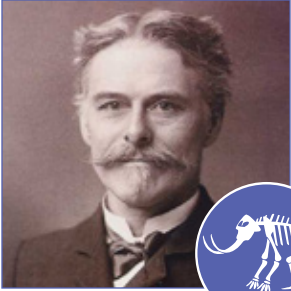
203. Eliza Cecilia Beaux (1875)

Cecilia Beaux was an artist and scientific illustrator that created lithographs of fossils for Edward Drinker Cope’s publications. While her name only appears one page of illustrations in his book, she is believed to have contributed much more, as most of the illustrations in his books are not credited to an artist.



204. William Denton (1875)

William Denton was the first person to scientifically identify that one of the fossils found at California’s La Brea Tar Pits was from a “species of *Machairodus*,” or a saber-toothed cat. His discovery led to more protections and paleontology research for the La Brea Tar Pits and a greater scientific understanding of Ice Age ecosystems.



205. Edward Drinker Cope (1879)

Edward Drinker Cope was known in his time for his rivalry with Othniel Charles Marsh in the “Bone Wars,” a vicious competition over fossils and paleontological fame. Cope discovered about thousand species of extinct vertebrates in the United States and his sketches served as the base for many of the paintings created by paleo-artist Charles Robert Knight.



206. Othniel Charles Marsh (1879)

Othniel Charles Marsh was a pivotal figure in making paleontology a respected scientific discipline, as well as his fierce rivalry with Edward Drinker Cope during the “Bone Wars.” Marsh organized and led several expeditions to the western United States in search of new fossils. His competitive tendencies with Cope often caused him to misidentify fossils. Despite this, it was Marsh who first described the iconic dinosaurs Stegosaurus and Triceratops.



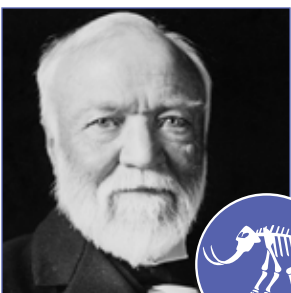
207. Charles Robert Knight (1897)

Charles Robert Knight’s paintings helped many people visualize what prehistoric animals and environments may have looked like at the same time as paleontology was becoming very popular in the United States. Knight’s paintings and sculptures can be found in many natural history institutions across the United States.



208. William Warren Orcutt (1901)

William Warren Orcutt’s was a geologist whose fossil discoveries highlighted the great value of the fossil beds in the La Brea Tar Pits. He is credited with bringing the site to the attention of the Department of Paleontology at the University of California. As of 2026, an estimated 4 million fossils have been found in the La Brea Tar Pits, providing paleontologists with a 50,000-year timeline of life in the region.



209. Andrew Carnegie (1901)

Andrew Carnegie funded many paleontological expeditions in the western United States to find fossils for the Carnegie Museum of Natural History. One of these expeditions resulted in the 1899 discovery of the dinosaur *Diplodocus carnegii*, later nicknamed “Dippy.”



210. Barnum Brown (1902)

Barnum Brown was a paleontologist and became an assistant curator at the American Museum of Natural History in 1897. During an expedition to the Hell Creek Formation in Montana in 1902, he discovered and excavated the first *Tyrannosaurus rex* fossil.



211. Annie Montague Alexander (1903)

Annie Montague Alexander organized, funded, and participated in many paleontological expeditions in the United States and around the world. In 1903, she discovered a new lizard-like marine reptile from the Triassic period during an expedition in California. This reptile was named *Thalattosaurus alexandrae*. Alexander was the driving force behind the creation of the Museum of Vertebrate Paleontology at the University of California, Berkeley and contributed over 20,000 fossil specimens to the institution.



212. Elmer Samuel Riggs (1903)

Elmer Samuel Riggs was a paleontologist for the Field Columbian Museum of Chicago (now called the Field Museum of Natural History), tasked with procuring dinosaur fossils for their collection. Riggs designed a pneumatic chisel for use in fossil preparation, an early predecessor to the air scribes used today. Riggs was also the first person to describe and name the *Brachiosaurus*.



213. Bertram Borden Boltwood, Ph.D. (1907)

Dr. Bertram Borden Boltwood was inspired by physicist Ernest Rutherford's work on radioactive decay, and in 1907 he invented uranium-lead dating. This dating method uses the ratio of lead and uranium in rocks to estimate their age. Boltwood's work was not readily accepted because he estimated Earth's age at 2.2 billion years, far older than any previous estimates—but much younger than our best estimate today of 4.54 billion years.



214. Arthur Holmes (1911)

Arthur Holmes continued to work with the uranium-lead dating techniques invented by Bertram Boltwood, eventually publishing the first radiometric-based geological timescale that assigned ages to the Paleozoic and Mesozoic periods. This geological timescale was used to develop a basic timeline for dinosaur evolution.

Credit: Chemical Heritage Foundation



215. Johanna Gabrielle Otilie “Tilly” Edinger, Ph.D. (1921)

Dr. Johanna Gabrielle Otilie “Tilly” Edinger founded the field of paleoneurology. While studying an extinct reptile, she discovered that casts of fossil braincases could be used to study the brains of extinct animals. Later in her career, Tilly studied abnormal bone growths found in some modern and fossilized fish species. These abnormal growths were later named “Tilly bones” after her. In 1963, she became the first woman president of the Society of Vertebrate Paleontology.



216. Winifred Goldring (1923)

Winifred Goldring, a trailblazer in Devonian paleontology, studied the Gilboa fossil forest in New York state and helped save many of its fossils during dam construction in the region. She identified and described over 150 species of crinoid (a marine invertebrate related to sea urchins) in her research. Goldring also served as New York’s first woman State Paleontologist, president of the Paleontological Society, and vice president of the Geological Society of America.

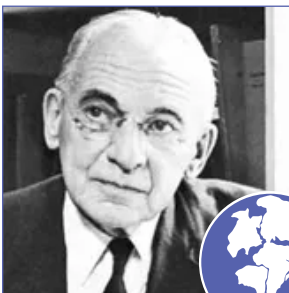


217. Esther Applin (1925)

218. Alva Ellisor (1925)

219. Hedwig Kniker (1925)

Esther Applin, Alva Ellisor, and Hedwig Kniker published a 1925 paper on forams, a type of single-celled organism. The paper shared their discovery that foram microfossils could be used to determine the age of rock samples collected during oil exploration. Their discovery made it easier to search for fossil fuels and to determine the ages of fossils found in layers of sedimentary rock.



220. Alfred Sherwood Romer, Ph.D. (1933)

Dr. Alfred Sherwood Romer’s research focused on comparing the anatomy and phylogenetics of different vertebrates to determine their relationships and learn about the evolution of various extinct species. Romer also wrote the textbook Vertebrate Paleontology, which classified all the known genera of vertebrates at the time of the book’s publication.



221. Margaret Matthew Colbert (1942)

Margaret Matthew Colbert was a scientific illustrator commissioned to paint murals depicting prehistoric ecosystems at several museums across the United States. These murals inspired many, including Michael Crichton, the author of Jurassic Park. In 1942, Colbert designed the logo for the Society of Vertebrate Paleontology.



Credit: American Museum of Natural History Library

222. George Gaylord Simpson, Ph.D. (1944)

Dr. George Gaylord Simpson is considered one of the most influential paleontologists of the twentieth century. Over the course of his life, Simpson published over 700 scientific papers and volumes, in which he supported the theory of evolution and described the intercontinental migrations of prehistoric animals.



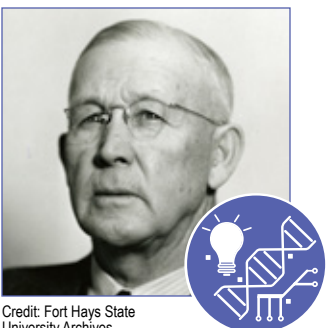
223. Edwin Harris Colbert, Ph.D. (1947)

Dr. Edwin Harris Colbert was the curator for the American Museum of Natural History, published over 400 papers, and wrote several educational books, some of which are still used today. On one expedition to Antarctica, Colbert found the fossils of three early mammal relatives, one of which could not swim. This discovery suggested Antarctica was once connected to other land masses, supporting the theory of continental drift.



224. Willard Libby, Ph.D. (1949)

Dr. Willard Libby was a physical chemist who revolutionized the paleontological field when he developed radiocarbon dating. Unlike uranium-lead dating, which is used to determine the age of the rocks around fossils, radiocarbon dating is used to determine the age of organic materials.



Credit: Fort Hays State University Archives

225. George Fryer Sternberg (1952)

George Fryer Sternberg discovered a unique fossil while on an expedition in Kansas. This fossil showed a Xiphactinus audax with a virtually complete Gillicus arcuatus in its gut cavity. This fossil is commonly called the “fish-within-a-fish” fossil and is a rare example of a fossil that tells a story.



226. John Ostrom, Ph.D. (1964)

In 1964 paleontologist Dr. John Ostrom discovered a new dinosaur in Montana in, which he named Deinonychus. As he studied it, he realized that its skeletal structure had some characteristics similar to bird skeletons and implied that the dinosaur had endothermic (warm-blooded) behaviors. These discoveries supported the theory that dinosaurs are ancestors to birds.



227. Donald Johanson, Ph.D. (1974)

Dr. Donald Johanson discovered the partial skeleton of an early hominid in Ethiopia, which he named “Lucy.” Lucy is dated to be over 3 million years old. The fossils showed that hominids became bipedal (walked upright) before they evolved large brains.



228. Mary Dawson, Ph.D. (1975)

Dr. Mary Dawson discovered prehistoric mammals during a trip to the Arctic. These fossils supported the hypothesis that a land bridge used to be present in the area, connecting North America to Europe. They also indicated that the Arctic was much warmer in the past than it was in 1975.

Credit: Society of Vertebrate Paleontology



229. Robert Thomas Bakker, Ph.D. (1975)

Dr. Robert Thomas Bakker was an undergraduate student when he was examining a fossil at Yale and noticed that the legs did not look like they were placed correctly. After studying the anatomy of different reptiles, amphibians, and birds, Bakker concluded that dinosaurs were evolutionarily closer to birds than reptiles.



230. Anita Harris, Ph.D. (1977)

Dr. Anita Harris noticed that conodonts (tiny, tooth-like fossils from an extinct group of eel-like organisms), were different colors based on the type of rock where they were found. As she studied the conodonts, she realized that the color of the conodonts could be used to determine the temperature rocks reached during their formation.



Rendering of *Maiasaura*



231. Robert Makela (1978)

Robert Makela and his crew discovered the first nest of baby dinosaurs found in the Western hemisphere on an expedition in Montana. They named the dinosaur species *Maiasaura*, meaning “good mother lizard,” and found evidence that the species cared for its young like birds.



232. Luis Alvarez, Ph.D. (1980)

233. Walter Alvarez, Ph.D. (1980)

Dr. Luis Alvarez and his son, Dr. Walter Alvarez, co-authored a paper that proposed the theory that the extinction of the non-avian dinosaurs was caused by a massive asteroid impact. This theory was called the Alvarez Hypothesis. It remains the leading theory about the cause of this mass extinction event.

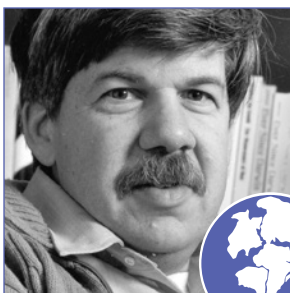


Dromidia bedetteae



234. Barbara Bedette (1980)

Barbara Bedette organized the Museum of Natural History’s vast collection and created a reference file of index cards for over 30,000 Cenozoic mollusks. This painstaking organization has helped thousands of scientists complete their research and field work. Two fossils were named in her honor: a crab, *Dromidia bedetteae*, and a mollusk, *Bathrotomaria bedetteae*.



Credit: Harvard University



235. Stephen Jay Gould, Ph.D. (1982)

Dr. Stephen Jay Gould’s theory of punctuated equilibrium proposed that evolution happened in quick bursts followed by long periods of little change. He also theorized that some traits were used by organisms for more than just their original purpose. For example, a species may have evolved feathers for insulation, but the feathers could also later be used for flight.



236. Kary Mullis, Ph.D. (1983)

Dr. Kary Mullis is the inventor of the polymerase chain reaction (PCR) technique that allows scientists to amplify tiny quantities of DNA. While PCR is used in healthcare, it also made the field of ancient DNA possible, enabling molecular paleontology.



237. David Malcolm Raup, Ph.D. (1984)

Dr. David Malcolm Raup and his colleague Dr. Jack Sepkoski, suggested that the extinction of the dinosaurs was part of a 26-million-year cycle of mass extinctions as shown in the marine fossil record. The pair also recognized five time periods with elevated extinction rates, introducing the concept of the “Big Five” mass extinctions in Earth’s history.



238. Alan Cyril Walker, Ph.D. (1984)

Dr. Alan Cyril Walker was a key American anthropologist whose detailed analysis of a 1.5-million-year-old *Homo erectus* skeleton provided detailed descriptions of the anatomy, growth, and behavior of the species.



239. Jacques Gauthier, Ph.D. (1986)

Dr. Jacques Gauthier made cladistics the standard for dinosaur classification, grouping dinosaurs based on the number of physical characteristics they share. Using cladistics became the standard approach in paleontology for determining how closely two organisms are related.



240. Rebecca Cann, Ph.D. (1987)

Dr. Rebecca Cann proposed that all living humans trace their maternal ancestry to one woman who lived in Africa less than 200,000 years ago, based on mitochondrial DNA comparisons. She came to this conclusion because mitochondrial DNA is passed from mother to offspring in most animals.



241. F. James Rohlf, Ph.D. (1990)

Dr. F. James Rohlf created the “TPS” software suite that helped make paleontological measurements more efficient. His research interests were in morphometrics, or the quantitative analysis of an organism’s size and shape.



242. Daniel C. Fisher, Ph.D. (1991)

Dr. Daniel C. Fisher developed and popularized methods for extracting hormones and other chemical traces from the material found in the center of mammalian teeth, which is called dentin. In some cases, like in woolly mammoth tusks, dentin grows in rings. By studying the chemical makeup of these layers, Fisher has learned that mammoths had similar hormonal cycles to modern elephants and would likely have exhibited similar behavior.



243. Timothy Rowe, Ph.D. (1998)

Paleontologist Dr. Timothy Rowe pioneered the use of X-ray computed tomography, an advanced type of CT scan, for the high-resolution study of fossils. This technology allows for non-destructive, 3D visualizations and reconstructions of internal anatomy, including braincases, inner ear structures, and teeth.



244. Kevin Padian, Ph.D. (2001)

Paleontologist Dr. Kevin Padian used microscopic structures in bones to show that dinosaurs were endothermic (warm-blooded) and had rapid growth rates.



Credit: Roger Winstead, N.C. State University

245. Mary Higby Schweitzer, Ph.D. (2005)

Dr. Mary Higby Schweitzer found that some soft tissues could be preserved inside of fossils when she discovered blood vessels inside the bones of a 68-million-year-old *Tyrannosaurus rex*. She is currently a professor in the Department of Biological Studies at North Carolina State University and a research curator of paleontology at the North Carolina Museum of Natural Science.



Credit: Julie Florio

246. Benjamin M. Eagle (2007)

Benjamin M. Eagle is a fossil preparator and collector for the Standing Rock Sioux Tribe, the first tribe in the United States to enact its own formal paleontology code (Title 38). This code helps the tribe keep ownership of the fossils found on reservation land and creates a legal framework to prevent looting and unauthorized commercialization.



247. Richard Prum, Ph.D. (2009)

Dr. Richard Prum is an ornithologist who developed the method of using Scanning Electron Microscopy to identify and analyze fossilized melanosomes (cellular structures that contain pigment) in fossilized feathers, skin, and nails. This method allows scientists to identify the color and patterns of extinct organisms, including dinosaurs.



248. John Scannella, Ph.D. (2010)

Dr. John Scannella, the current John R. Horner curator of paleontology at the Museum of the Rockies, proposed that the horned dinosaur *Torosaurus* is just a fully mature *Triceratops*. He has also published research about how *Triceratops* evolved over a 2-million-year period.



249. Eran Elhaik, Ph.D. (2011)

Dr. Eran Elhaik developed advanced computational and statistical tools for analyzing highly fragmented and degraded ancient DNA to pinpoint where and when it originated, advancing paleogenomics.



250. Pedro M. Monarrez, Ph.D. (2021)

Dr. Pedro M. Monarrez has found evidence that mass extinctions and recoveries from these extinction events cause a different long-term evolutionary pattern than observed during periods of time where there is no recent extinction event. He also co-authored a foundational review on the history of racism and colonialism in Western paleontology, advocating for systemic change.

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