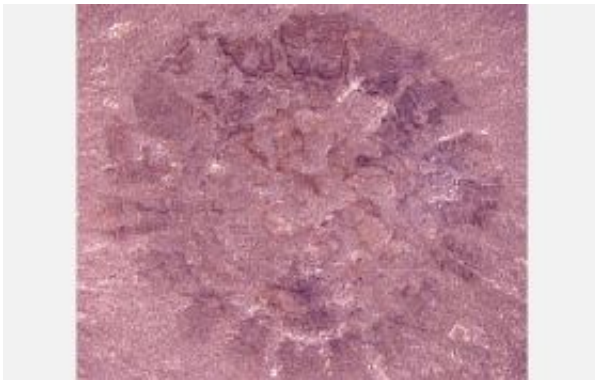


Fossil record reveals elusive jellyfish more than 500 million years old

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This jellyfish is more than 500 million years old, the oldest jellyfish in the fossil record to date. Credit: University of Kansas

Using recently discovered “fossil snapshots” found in rocks more than 500 million years old, three University of Kansas researchers have described the oldest definitive jellyfish ever found.

In a paper to be published in PLoS ONE on October 31, the researchers describe four types of cnidarian fossils preserving traits that allow them to be related to modern orders and families of jellyfish. The specimens are about 200 million years older than the oldest previously discovered jellyfish fossils.

“The fossil record is full of circular shaped blobs, some of which are jellyfish,” said Pauly Cartwright, KU assistant professor of ecology and

evolutionary biology and one of the article's authors. "That's one of the reasons the fossils we describe are so interesting, because you can see a distinct bell-shape, tentacles, muscle scars and possibly even the gonads."

The jellyfish left behind a film in fine sediment that resembles a picture of the animal. Most jellyfish do not leave such a clear impression behind because they are often preserved in coarse sand.

Cartwright, Bruce Lieberman, KU professor of geology and senior curator of invertebrate paleontology at the KU Natural History Museum, and Jonathan Hendricks, postdoctoral researcher in geology at KU, collaborated on the article. Their research will be published October 31 in PLoS ONE, an online peer-reviewed journal by the Public Library of Science. Other researchers involved in the discoveries were Susan L. Halgedahl and Richard D. Jarrard, both of the University of Utah, Salt Lake City, Utah; Antonio C. Marques, University of San Paulo, San Paulo, Brazil; and Allen G. Collins, Smithsonian Institution, Washington, D.C.

Lieberman said the jellyfish the group describes, found in Utah, offer insights into the puzzle of rapid species diversification and development that occurred during the Cambrian radiation, a time when most animal groups appear in the fossil record, beginning roughly 540 million years ago. The fossil record reveals much less about the origin and early evolution of animals such as jellyfish than it does about animals with hard shells or bones.

"The fossil record is biased against soft-bodied life forms such as jellyfish, because they leave little behind when they die," Lieberman said. "That means that we are still working to solve the evolutionary development of many soft-bodied animals."

With the discovery of the four different types of jellyfish in the

Cambrian, however, the researchers said that there is enough detail to assert that the types can be related to the modern orders and families of jellyfish. The specimens show the same complexity. That means that either the complexity of modern jellyfish developed rapidly roughly 500 million years ago, or that the group is even older and existed long before then.

Cartwright said the jellyfish described in the article are also unique because they push the known occurrence of definitive jellyfish back from 300 million to 505 million years, a huge jump, and show more detail than anything previously described that is younger.

Source: Public Library of Science

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