Fossil found in Germany shows starfish relative engaged in clonal fragmentation 150 million years ago

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Credit: Günter Schweigert
A team of paleontologists from Germany and Austria reports that a brittle star fossil found in Germany shows evidence of clonal fragmentation (fissiparity) 150 million years ago. Their paper is published in the journal *Proceedings of the Royal Society B: Biological Sciences*.

In 2018, a team of excavators with State Museum of Natural History Stuttgart uncovered a brittle star fossil in a limestone deposit at a dig site in Germany. It was in excellent condition—minute details of its anatomy could be easily seen. It has since been named *Ophiactis hex*.

For this new study, the research team examined the fossil and found that the starfish relative lived approximately 150 million years ago, during the late Jurassic. They also discovered that it was in the process of regenerating three of its arms when it died.

Brittle stars are echinoderms, marine invertebrates that also include sea cucumbers, sea urchins and starfish. Prior research has shown that many species of brittle stars are capable of reproducing by splitting off parts of their body, both of which then regenerate, resulting in two distinct clonal creatures, a process known as clonal fragmentation.

The researchers note that although many studies have been done on clonal fragmentation, very little has been done on its evolutionary history in brittle stars.
The work was based mostly on luck—the ancient brittle star was found during a random dig. But finding it was important, they note, because it shows that the evolutionary history of clonal fragmentation in brittle stars goes back at least 150 million years.

The research team determined that the creature had been in the middle of regenerating arms because the three new ones were much thinner and clearly less mature than the other three as evidenced by the difference in the growth of sharp spines.

They also note that it is the first such fossil evidence of its kind ever
found. Brittle stars are known to live in dense colonies, suggesting that more specimens may be found at the same dig site.


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