
Animals,Biophysics,Evolution

Why seahorses have square tails

By Susan Milius 2:34pm, July 2, 2015



The long flexible tails of seahorses (dye-stained skeleton of *Hippocampus capensis* shown) are made of square segments and are one of the rare exceptions to the round tails of many other animals.

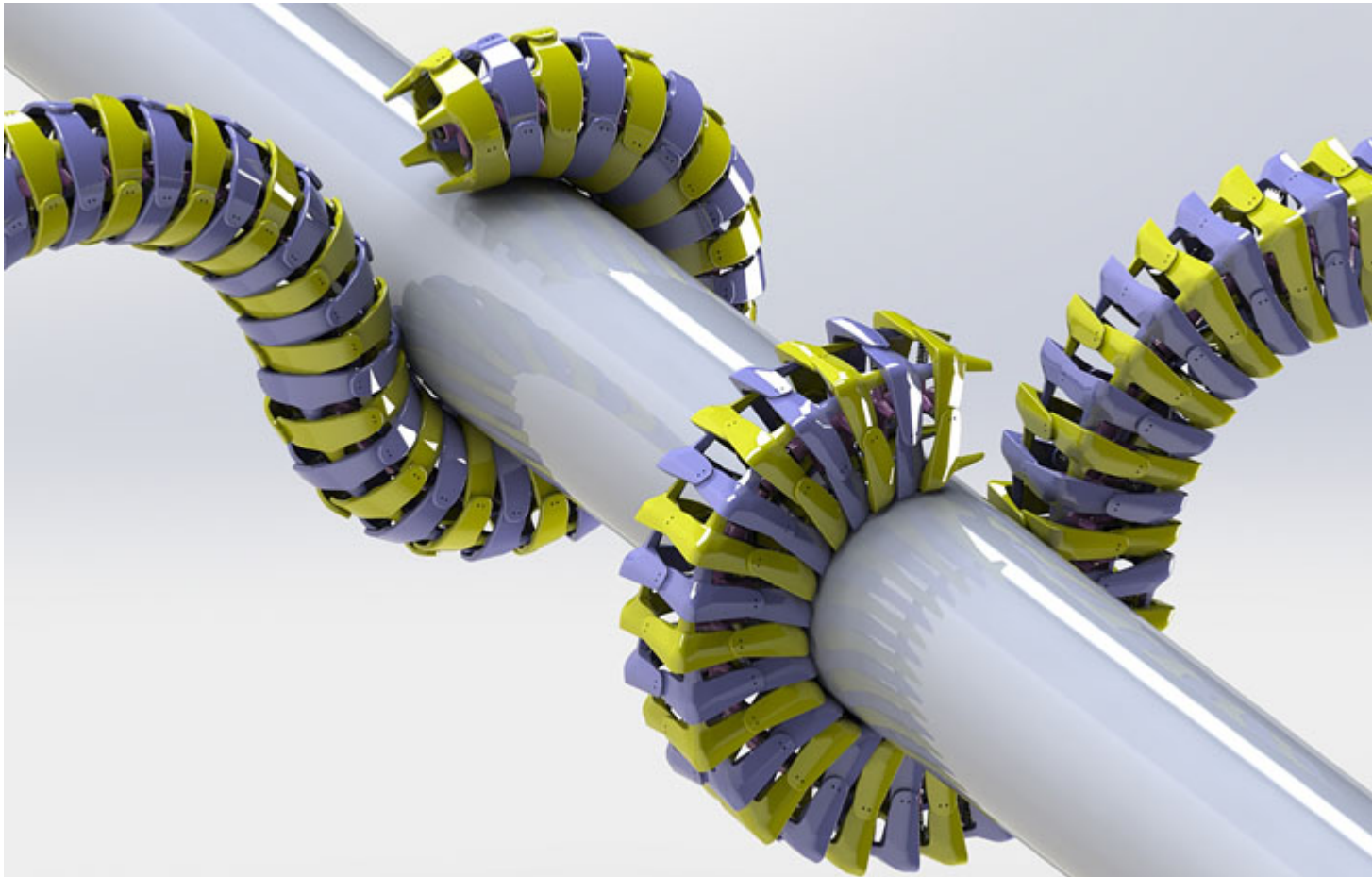
Courtesy of Dominique Adriaens, UGent

Hammering and squishing 3-D printed seahorse tail segments reveals what's so great about being square.

Angled bones hitched together in a flexible string of squares create protective cages that are four times stronger than rounded ones, researchers report July 3 in *Science*. That's the conclusion from squeezing 3-D printed seahorse tails, one made of square segments that had been scaled up and the other an engineer's best estimate of a round equivalent.

Distant seahorse ancestors had armored tails that could have benefited from such square protection.

Modern seahorse tails have gone prehensile. So there's now a grip bonus, says study coauthor Michael M. Porter, an engineer at Clemson University in South Carolina. Square segments press more surface area against a perch than round ones, giving squared tails better grip control.



In a computer-generated image, a stretch of square segments (right) roughly like a seahorse tail gets a better grip than the rounded version (left) by pressing more surface area against a perch. Real seahorse tails build each square segment from four pieces, each bent about 90 degrees.

Michael M. Porter/Clemson Univ.

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