

1. Mark your confusion.
2. Show evidence of a close reading.
3. Write a 1+ page reflection.

## Scientists Accidentally Discover Sea Cucumber with ‘Tissue Immortality’

Source: Jacopo Prisco, CNN.com, May 28, 2026

What does it mean to be alive? A new study on an astonishing sea creature suggests the answer may be more complicated than it seems.

Some amputated fragments of *Psolus fabricii* — a type of sea cucumber native to the North Atlantic Ocean — puzzled researchers when they noticed that the severed parts did not simply decay and die but instead appeared to grow.

To find out more, the researchers humanely excised additional fragments from the feet, main body and tentacles of the marine animals and ran a number of lab experiments in untreated seawater. Indeed, the fragments refused to die. The various parts unexpectedly healed themselves and even managed to absorb nutrients despite lacking a mouth.

“This is the first case of tissue immortality in natural conditions,” said Sara Jobson, lead author of a study describing the finding that published Wednesday in the journal *Science Advances*. “These sea cucumbers are known for their high-regenerative capacity, so when they lose a tentacle or a tube foot they’re able to regrow it very well, but nobody’s ever looked at what happens to the tissues that are torn off, because we just assumed that they would die.”

The severed tissues, however, didn’t develop into whole new individuals — a process that can occur under certain conditions in some species of sea cucumber — bringing up some philosophical questions. “We lovingly call these tissue explants ‘our zombies,’ because they seem to ride the line between dead and alive,” said Jobson, a doctoral student of ocean sciences at Memorial University in Newfoundland and Labrador.

“They’re not regrowing into a whole new organism — as far as we can tell, they seem to be their own entity that’s maintaining cellular function, but not a reproducing individual. Why would these small tissue chunks maintain the ability to heal and survive without any reproductive purpose? What’s the evolutionary driver that allows that to happen?”

Many animals are able to amputate tissue voluntarily and regrow it, most famously lizards that sacrifice their tails to escape predators. But the lost tail itself doesn’t do anything, Jobson noted. To draw a parallel with the sea cucumber, it’s as if a lizard tail healed itself and then wiggled around in the woods, gaining its own nutrients and surviving for years.

What’s even more surprising is that the severed tissue has been going strong for more than three years. “As far as we can tell, there weren’t any signs of death, degradation or necrosis,” Jobson added, referring to cell death. “It seemed to be able to go on forever. We just had to cut ourselves off at some point and put the study out there.”

In the long term, such work could help researchers better understand regeneration, wound healing, tissue maintenance and aging, said Veronica Hinman, director of the Whitney Laboratory for Marine Bioscience at the University of Florida, via email. She did not participate in the study. “I think the bigger finding, though, is that this work tests assumptions about what it means to be ‘alive’ and how this depends on the whole organism, rather than on the local self-organizing properties of tissues themselves.”

### Immortal sea cucumbers?

The discovery that prompted the study was accidental, according to Jobson. “We work right on the coast, and we’re able to keep live animals in our lab,” she said. When a sea creature is needed for research, it’s usually pulled from its tank, she added, but some of the animals strongly attach themselves to their rock habitat or the aquarium itself. In this case, when a researcher removed the sea cucumber, some of its tube feet were left behind and stuck to the glass. This is normal, as the animal can detach them in the wild when under duress or attack from a predator and easily regrow them.

“We noticed that they were still there after a couple of days, and then weeks, and then months, and they were still stuck on,” Jobson said. “They were healing, and they even grew a little bit. They were surviving in their natural environment.”

The body parts also thrived without being in a sterile environment but in natural seawater, which is “incredibly unclean,” as Jobson put it, and teeming with bacteria and microorganisms. The fragments absorbed amino acids, which naturally occur in the sea cucumber’s habitat, without the need for a mouth or gut. The tissues not only kept producing cells and showed signs of an active immune system but continued to move and respond to being poked, even after months of being detached.

If the sea cucumber tissues were confirmed to be immortal, they would have applications in medical research and cell biology, Jobson said. The cells could potentially replace or supplant HeLa cells, a naturally occurring immortal line of human cells originally taken from Henrietta Lacks, a patient with cervical cancer, in 1951. These cells can grow indefinitely in a lab but require highly controlled, sterile conditions. Moreover, scientists took the cells without the patient’s consent, raising serious ethical questions.

Researchers have long earmarked cells from invertebrates such as sea cucumbers, Jobson added, as holding potential for research that would benefit mammals and humans, and they don’t have the same ethical constraints as human cells around being able to use them.

The sea cucumber tissue could also be useful for ocean health research, by testing rising temperatures or pathogens in seawater. The cells’ ability to heal and survive without external help suggests that something is keeping them healthy and clean. There would be interest, Jobson said, in identifying exactly which processes or chemicals the cells are using.

The next step would be to examine the DNA structure of the cells to see whether they are aging after replicating, Jobson added. “That would confirm whether or not they are truly immortal,” she said.

### **An ‘entirely novel’ process**

Echinoderms, the group that includes sea cucumbers, starfish and sea urchins, have remarkable regenerative abilities known to scientists for a long time, according to Noé Wambreuse, a postdoctoral research fellow at England’s University of Southampton, who studies these animals but was not involved with the paper.

“Sea cucumbers can expel their digestive organs as a defence mechanism to distract predators, and some species can also reproduce asexually through fission, a process in which a single individual splits into two parts that each regenerate into a complete cloned organism,” Wambreuse wrote in an email. “However, while regeneration itself is not new in these animals, what this study demonstrates — something that could be described as ‘tissue immortality’ — is entirely novel.”

This discovery is important because it could provide a promising new model for tissue biology research, notably with potential applications in studies of tissue repair and aging. “Ultimately, such ‘immortal tissues’ could help uncover fundamental mechanisms of tissue behavior and dynamics that are shared across animals, including humans,” he added.

What makes the study compelling is that biologists usually think of tissues as dependent parts of a larger organism, according to the University of Florida’s Hinman. “A liver survives because the body maintains blood flow, immune protection, nutrients, signaling molecules, waste removal, and structural organization,” Hinman said. “Once tissue is removed from the body, it normally deteriorates quickly.”

These sea cucumber tissues seem to violate some of those assumptions. “They are not becoming whole organisms, but they are not simply dying tissue either,” she said. “Instead, they appear to shift into a simplified but self-maintaining state. This seems to imply that some tissues may contain enough internal organization to sustain themselves far longer than we realized.”

### **Possible Response Questions**

- What are your thoughts about the possibility of tissue immortality? Explain.
- Did something in the article surprise you? Discuss.
- Pick a word/line/passage from the article and respond to it.
- Discuss a “move” made by the writer in this piece that you think is good/interesting. Explain.