

Sea Slug's Decapitated Head Crawls Around Before Regrowing a Body

Researchers think that lopping off its own noggin could help the critter rid itself of parasites

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SMITHSONIANMAG.COM
MARCH 10, 2021

Some sea slugs decapitate themselves and regrow fresh bodies in mere weeks, reports Annie Roth for the New York Times.

The findings, published this week in the journal *Current Biology*, describe *Elysia marginata* and *Elysia atroviridis* sea slug heads detaching and crawling away from their bodies. Within hours, the researchers say these disembodied heads started munching on algae again as though nothing had happened. Per the Times, the researchers think the sea slugs' grisly strategy may be a way of ridding themselves of parasites.

Susan Milius of Science News notes that there are other examples of similarly extreme regeneration in the animal kingdom, including flatworms and sea squirts. But these creatures, according to Science News, have simpler bodies. The sea slugs are regrowing vital organs such as the heart, while flatworms and sea squirts don't have hearts to begin with.

Oddly enough, the headless bodies can also survive for a few months, their hearts still beating as they begin to rot, reports Christa Leste-Lasserre for New Scientist. But, as Sayaka Mitoh, a biologist at Nara Women's University in Japan and co-author of the paper, tells New Scientist, the decapitated bodies never sprout heads. "The head has the brain and teeth, or radula, which may be irreplaceable," she says.

In experiments, not all the sea slugs lopped off their own heads, and of those that did, about a third of them successfully regrew their bodies. Researchers also observed that the self-amputating sea slugs tended to be harboring crustacean parasites called copepods. According to New Scientist, regrowing a body from the neck down is a young slug's game, as the older slugs in the experiment didn't survive the separation.

"This may seem like a silly choice," Mitoh tells New Scientist. "But the old ones would die soon anyway, and they might stand a chance of surviving and regenerating a parasite-free body."

Per Science News, the slugs' leaf shaped bodies and green coloration may explain how their severed heads can survive on their own. Slugs in the genus *Elysia* steal the green-pigmented engines of photosynthesis from the algae they eat, earning themselves the nickname of "solar-powered sea slugs," per the Times.

The slugs can keep these hijacked bits of cellular machinery, called chloroplasts, alive for weeks or months, according to Science News. The sugars that the chloroplasts manufacture out of sunlight provide the slugs with a low cost source of sustenance. Crucially for the severed slug heads, Mitoh tells New Scientist, the creature's digestive glands are thought to be "distributed all over the body surface, including the head."



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