

The Benjamin Button Jellyfish

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Abstract: As called immortal jellyfish species, the Benjamin Button of the deep, which can age backward and silently fall into the world's oceans, swarm by swarm. Unlike Benjamin Button, this jellyfish can transform from an adult into a baby, but it can do it repeatedly. This immortal jellyfish (*Turritopsis dohrnii*) was discovered in the Mediterranean Sea in 1883. Its unique ability was discovered in the 1990s. It regularly reverts into a sexually immature stage after reproduction and when injured or starved. The only way it can die is to be eaten, removed from the water, or infected.

Keywords: Sea creatures; Immortal Jellyfish; *Turritopsis dohrnii*

1. Introduction

The concept of immortality fascinates everyone and stands unattainable for humans and every living organism. Still, some rare species have mastered the ability to stay alive. Indeed, the most interesting case is the immortal jellyfish, a sea creature capable of repeatedly reverting into a juvenile state, e.g., think of the interesting case of Benjamin Button in a loop. *Turritopsis dohrnii* (Fig. 1) goes through a two-part life cycle. One is that it lives on the seabed during the asexual phase, where its main role is to stay alive in times of



food lackage. The second part is reproduction when the conditions are right. Although many species of jellyfish have some ability to reverse aging and return to the larval stage, most lose this ability when they reach sexual maturity. Not so for *Turritopsis dohrnii* [1].

Figure 1. The appearance of the Benjamin Button Jellyfish ¹

¹ Figure is original work of Tyna_Janoch, available at Pixabay. Please consider supporting this author by visiting the following link <https://pixabay.com/photos/jellyfish-sea-jellies-sea-water-17704801/>

2. General information

The scientific name of the jellyfish is the 'Hydroyazan Turritopsis Dohrnii'. The immortal jellyfish, also known as the Benjamin Button jellyfish, is one of the few known animals that can regenerate and live forever and the only jellyfish species with an indefinite lifespan. It was discovered in 1883 in the Mediterranean Sea [2,3] and near Japan. After that, it was distributed worldwide, featuring tropical and temperate waters with free lift in long-distance cargo ships' ballast water. Its usual habitat is warm water, but also it has been spotted in colder areas [3,4]. These jellyfish are Carnivorous animals as they feed on prey like fish eggs, plankton, small mollusks, brine shrimp, etc. They are hunted by the Predators such as larger jellyfish, sea anemones, tuna, sharks, swordfish, sea turtles and penguins, etc. The Benjamin Button jellyfish is about 4.5 millimeters wide and tall (around the size of an adult's pinky fingernail). The population is still unknown [5].

3. What does the jellyfish do to live forever?

The process through which the immortal jellyfish's cells revert from old age to a younger state is known as transdifferentiation. It allows this specie not only to develop into adulthood and then revert into a polyp state but also for sells within their body that are damaged or ill to become healthy again. The jellyfish lives forever by reversing its life cycle and becoming a newborn, which is what it does to make it possible. The life cycle of the majority of jellyfish species is similar. They have eggs and sperm, which are released to be fertilized, and then a free-swimming larval is formed. The larva will move until it finds a hard surface to establish itself. Then it starts to mature and grow. Larvae mature into polyps, then bud off and mature into young jellyfish. This process can continue unless a predator kills or hurts the jellyfish [6,7].

4. What happens to the jellyfish when it dies, or can it even die?

When the medusa, the immortal jellyfish, dies, it sinks into the ocean and decays. Amazingly, its cells reaggregate, not into a new medusa, but into polyps, and new jellyfish emerge from these polyps. The jellyfish can not die from old age, so that it can live forever. This gets more impressive considering these sea creatures have been floating through the oceans long before the dinosaurs went extinct, it is biologically possible for a single immortal jellyfish to have been alive for this entire time [8].

5. Conclusions

A species of jellyfish, *Turritopsis dohrnii*, is one animal known to have a remarkable ability to be immortal. It was discovered in the 1880s in the Mediterranean Sea and specified as a uniquely enduring organism. This jelly is an extraordinary survivor. It is also an increasingly aggressive invader. Also, researchers have identified this immortal jellyfish as an excellent hitchhiker. Researchers have also documented genetically identical *Turritopsis dohrnii* individuals distributed across the world's oceans, raising an intriguing question about the nature of mortality: if all of an organism's cells are replaced, is that still the same individual? The genes are the same, and that might be enough in biology to declare immortality.

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