

## THE WORLD OF SALPS

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**Abstract:** The salps are small, pelagic, gelatinous invertebrates. They belong to the order Salpida. They could be found in warm seas. Notably, salps are especially common in the Southern Hemisphere. Their bodies are transparent, barrel-shaped, and girdled by muscle bands, and they are open at each end. They move by the way that muscle contractions rapidly expel jets of water from the body and move the animals forward. They are filter feeders, and they consume microscopic planktonic plants and animals. Their life cycle is very complex, with alternating asexual and sexual phases. In the latter phase, long chains of salps individuals are formed. Interestingly, many salps are luminescent.

**Keywords:** Marine animals; Sea species; Salpidae; Pelagic

### 1. Introduction

Salps are semi-transparent, barrel-shaped marine animals that move through the water by contracting bands of muscle that surround the body [1]. Despite looking somewhat like a jellyfish and often mixed with jellyfish, salps are a member of the Tunicata, a group of animals that are also known as sea squirts [2]. They are taxonomically closer to humans compared to jellyfish [3]. Salps are related to all the animals with backbones. Larval salps have a notochord running down their back, a rigid, flexible rod that provides an attachment point for muscles and protects the central nerve cord [4]. Salps feed by filtering algae and plankton and propel themselves using an incredibly efficient jet propulsion system, one of the most efficient examples of jet propulsion in the animal kingdom [5].

## 2. Identification

A salp (plural salps, also known as “sea grape”) or salpa (plural salpae or salpas) is a barrel-shaped, planktonic tunicate. Its domain is Eukaryota, the kingdom is Animalia, the phylum is Chordata, the subphylum is Tunicata, the class is Thaliacea, the order is Salpida, and the family is Salpidae [6]. Salp moves by contracting, thereby pumping water through its gelatinous body. This sea animal is one of the most efficient examples of jet propulsion in the animal kingdom [7]. Salp habitats are offshore marine environments [8]. The appearance of the salp is shown in Figure 1.



**Figure 1.** The picture of the salp <sup>1</sup>

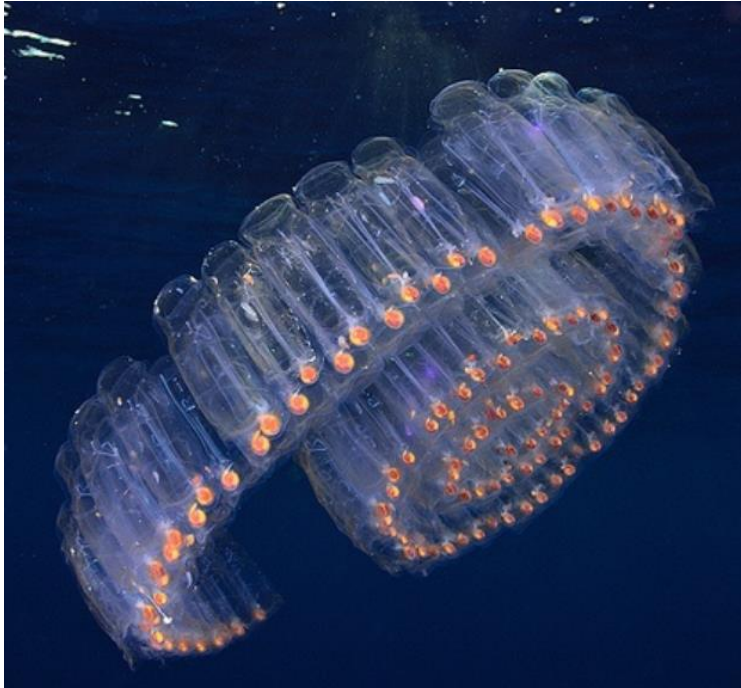
Salps are common in equatorial, temperate, and sometimes in cold seas. The Southern Ocean has the most abundant concentrations of salps. *Tunicates* (salps and a closely related class of larvaceans) are the second most abundant class of zooplankton (the first being copepods) [9]. Salps are eating everything that they trap in their feeding net. They are non-selective filter feeders. Their primary food is phytoplankton. However, the mesh of their feeding net is efficient even for catching a variety of different sizes of particles, from bacteria to even larvae [10].

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<sup>1</sup> Figure is original work of Toronto Star, available at Pinterest. Please consider supporting this author by visiting the following link <https://www.pinterest.com/pin/167477679865972803/>

### 3. Life cycle

Salps have a very complex life cycle, with a mandatory change of the generations. Both parts of the life cycle happen in the sea - they look quite different during these parts of the life cycle. Still, both are primarily tubular, gelatinous, transparent animals that are usually between 1 cm and 10 cm long [11]. The solitary life history stage, also named the oozoid, is a single barrel-shaped animal that reproduces asexually to form a chain of tens to hundreds of individuals (Figure 2), which are released from the parents at small sizes [12].



**Figure 2.** The picture of the chain of salps <sup>2</sup>

Making the salpa chain is the 'aggregate' part of the life cycle. Individuals in aggregate are also known as blastozoites [13]. They remain bound together during feeding and swimming, and each individual grows in size. In the chain, each blastozooid reproduces sexually (blastozooids are successive hermaphrodites [14], which first mature as females and are fertilized by the male gametes produced by older chains). After reproduction, with the growth, the oozoid embryo is attached to the body wall of a parent. The growing oozoids eventually break free from the parental blastozooids [15] and then continue to grow and feed as a solitary asexual stage, completing the life cycle of the salp [16]. The alternation of generations allows rapid generation times. Both solitary individuals and aggregate chains are feeding and living in the sea. When phytoplankton are abundant, this rapid reproduction leads to relatively short-lived blooms of salps [17], which eventually filter out most of the

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<sup>2</sup> Figure is original work of Davichin, available at Pinterest. Please consider supporting this author by visiting the following link <https://www.pinterest.com/pin/279645458106513111/>

phytoplankton. When there is no longer enough food available to sustain the enormous population of salps, the bloom ends. Sometimes, mushroom corals are known to feed on salps during blooms [18].

Salps grow so fast that they can grow to maturity in 48 hours. They are thought to be the fastest-growing multicellular animal on Earth [19], increasing their body length by up to 10 % per hour. Because of this, the salps are essential for cycling nutrients through the different zones of the ocean. As they move down and up through the ocean, excreting and eating, they spread nutrients downwards to other ocean communities [20]. Salps are part of the tunicate family, also known as sea squirts. They are not harmful to humans. However, they are predators of everything that they trap in their feeding net [21].

#### 4. Conclusions

Salps are a type of gelatinous zooplankton. That means that jellyfish (like jellyfish) do not have complex parts. Their bodies are mostly water. However, salps are very different from jellyfish. Salps are basically a bag of water with a stomach. They feed primarily on algae and other tiny organisms in the ocean. They are sometimes referred to as the ocean's vacuum cleaners, and they are one of the most common and essential animals on Earth. We do not know everything about them because they are challenging to collect and study. By diving, we can capture them alive and well for experiments and measurements that will help us understand how they live and how they relate to other sea creatures around Antarctica and the world.

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