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**Mini Review**

# THE UNIQUE CHARACTERISTICS OF UROCHORDATA: THE TUNICATES OF THE OCEAN

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## INTRODUCTION

Urochordata, also known as tunicates or sea squirts, are a group of marine invertebrates that belong to the phylum Chordata. They are important members of the marine community and play a vital role in the ocean's food chain. Tunicates are characterized by a tough, sac-like body structure, which is often covered by a test or tunic. The tunic provides protection from predators and environmental stressors such as temperature changes, currents and waves. The body of a tunicate is divided into two regions: the atrial region and the oral region. The atrial region is the larger of the two and contains the branchial sac, which functions in respiration and filtration of food. The oral region contains the pharynx, which is used for feeding and excretion.

Tunicates are found in a variety of marine environments, including rocky shores, coral reefs, and the deep sea [1]. They are most commonly attached to hard surfaces such as rocks or shells, but some species are free-swimming. Some species of tunicates are solitary, while others form colonies or clusters. The size of a tunicate varies greatly among species, with some species being only a few millimeters in length, while others can reach up to several centimeters. The feeding habits of tunicates vary among species. Some species feed on phytoplankton, while others feed on zooplankton. A few species of tunicates are filter feeders and feed on suspended particles in the water column. The pharynx of a tunicate is lined with cilia, which help to create a current of water that brings food into the animal's mouth. The cilia also help to move food particles into the digestive system [2].

One of the most unique features of tunicates is their life cycle. Tunicates have a complex life cycle that includes both a solitary adult stage and a larval stage. During the larval stage, the tunicate resembles a tadpole and has a notochord, which is a flexible rod that runs the length of the body and provides support. The notochord is a characteristic of all chordates and is one of the defining features of the phylum. As the tunicate develops, it loses its notochord and transforms into a solitary adult stage [3]. During this stage, the tunicate begins to produce a tunic and becomes a filter feeder. The solitary adult stage can last for several years, and the tunicate will reproduce during this time. For one, they are considered to be one of the closest relatives of vertebrates, and their unique life cycle provides insights into the evolution of chordates. Additionally, tunicates are an important source of biomedically relevant compounds, including anti-tumor and anti-inflammatory compounds.Tunicates are also of great economic importance. They are cultured for human consumption in some parts of the world, and some species of tunicates are used in the production of bioactive compounds for use in the pharmaceutical and cosmetic industries.

Tunicates are a unique group of marine invertebrates with a number of important biological characteristics. Some species of tunicates are capable of producing chemicals that are toxic to other marine organisms, which provides them with a degree of protection from predators. Other species of tunicates produce chemicals that are useful for defense against disease or for regulating growth and reproduction [4]. The tunic that covers the body of a tunicate is made up of a complex mixture of compounds, including cellulose, glycosaminoglycans, and proteins. The exact composition of the tunic varies among species and is determined by a combination of genetic and environmental factors. Tunicates also have an unusual system of reproduction. Most species of tunicates are hermaphroditic, meaning that they have both male and female reproductive organs. However, some species of tunicates reproduce sexually, with separate male and female individuals. In either case, the reproductive system of a tunicate is highly specialized and allows for the production of large numbers of gametes, or reproductive cells [5]. The life cycle of a tunicate is also unique, with the solitary adult stage serving as a filter feeder, while the larval stage is capable of swimming and locating new habitats. This allows tunicates to disperse and colonize new areas, which is important for the survival and success of the species.

Tunicates are found in all of the world's oceans and play important roles in the marine food chain. Some species of tunicates are primary producers, meaning that they photosynthesize and provide energy to other organisms in the food chain. Other species of tunicates are herbivores or carnivores, feeding on phytoplankton or zooplankton, respectively. In conclusion, tunicates are a diverse group of marine invertebrates that play important roles in the ocean's food chain and provide valuable insights into the evolution of chordates. They are also of great economic importance and are utilized for human consumption and the production of biomedically relevant compounds. Further study of tunicates will likely lead to a greater understanding of these fascinating animals and the role they play in the marine environment.

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## REFERENCES

1. Dunlop, M.J., Clemons, C., Reiner, R., Sabo, R., Agarwal, U.P., Bissessur, R., and Acharya, B., 2020. Towards the scalable isolation of cellulose nanocrystals from tunicates. *Sci. Rep*., 10: 1-13.
2. Sutherland, K.R., and Thompson, A.W., 2022. Pelagic tunicate grazing on marine microbes revealed by integrative approaches. *Limnol. Oceanogr*., 67: 102-121.
3. Rinehart, K.L., 2000. Antitumor compounds from tunicates. *Med. Res. Rev*., 20: 1-27.
4. Rinkevich, B., 1999. Cell cultures from marine invertebrates: obstacles, new approaches and recent improvements. *J. Biotechnol*., 70: 133-153.
5. Tessler, M., Gaffney, J.P., Oliveira, A.G., Guarnaccia, A., Dobi, K.C., Gujarati, N.A., and Gruber, D.F., 2020. A putative chordate luciferase from a cosmopolitan tunicate indicates convergent bioluminescence evolution across phyla. *Sci. Rep*., 10: 1-11.