



## STRUCTURE, BIOLOGICAL PROPERTIES AND SIGNIFICANCE OF SEA PEARLS

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**ABSTRACT:** *This thesis examines the external structure, life processes, and adaptation mechanisms of the Pearl of the Sea. Their distribution in nature, their role and significance in nature, their origin, and their evolution are studied and analyzed.*

**KEYWORDS:** *Sea pearl, morphological structure, anatomical structure, physiological processes, history of origin, industrial importance, black pearls.*

**World:** Animals (Fauna)

**Phylum:** Metazoa

**Phylum:** Mollusca

**Class:** Bivalvia

**Order:** Ostreoida

**Family:** Pteriidae, Unio

**Species:** Sea pearl oyster (*Pinctada margaritifera*)

As is known, mollusks are very diverse on Earth. They are widespread in seas, fresh water and on land. Mollusks are considered the oldest animals. The phylum Mollusca includes about 150,000 species.[1] This phylum is divided into 2 subphyla. Amphineura and Conchifera are subphyla. The ciliated ciliates are divided into the classes of chitons and acoelacanth. Shellfish are divided into

the classes of monoplacophora, gastropods, copepods, bivalves, and cephalopods. It is known that sea pearl shells belong to the class of bivalves of the subspecies.

Class Lamellibranchia, that is, bivalves (Bivalvia). As a typical representative of this class, mussels can be cited as an example. Mussels (Unio) are widespread in freshwater lakes and rivers of Europe and North America. Sea pearl oysters (*Pinctada*) live in the Red Sea, Indian and Pacific Oceans at a depth of 5-15 m. In Japan and some other countries, pearl oysters are bred in special net bags. Freshwater pearl oysters (*Margaritifera*) are found in northern rivers.



External structure. The body is elongated, compressed on both sides, bilaterally symmetrical, and consists of body and leg sections. The head is reduced. The wedge-shaped leg protrudes from the abdomen. The bivalve shell covers the body of the mollusk on both sides. Often, both shells of the shell are the same.

As for the internal structure of mollusks, they have developed digestive, respiratory, circulatory, excretory, nervous systems, sensory organs and reproductive systems. Usually, mollusks consist of two ctenidia-type gills. The mantle cavity is located on both sides of the leg. The circulatory system is open. Through the lacunae, blood passes into

the body cavity, more precisely, into the pre-gill cavity, and then into the gill capillaries, where it is oxidized. The excretory system consists of a pair of kidney-like metanephridia.

The entire group of mollusks, including the mother-of-pearl bivalves, appeared and developed in the Paleozoic era (approximately 541 to 252 million years ago). They were widespread in the seas and fresh waters, and developed their own protective shell - the shell. The smooth and shiny inner layer of the shell is called nacre. This layer consists of fine crystals of calcium carbonate (aragonite or calcite) and organic proteins. The nacre is secreted by the mollusk's mantle tissue.



**Figure 1.**

The "origin" of the pearl is mainly due to the mollusk's self-defense mechanism: If a foreign object (for example, a grain of sand, a parasite, or even a piece of mantle tissue) gets into the soft body of the mollusk, this becomes a trigger for the mollusk. To protect itself and alleviate the discomfort,

the mollusk begins to surround this foreign object with layers of nacre secreted from the mantle tissue. Over time (from a few months to several years), the layers of nacre accumulate, forming a shiny, round, oval, or irregularly shaped



pearl[2].



**Figure 2.**

Pearl oysters or other mussels are used in two major industries: jewelry and ornamentals. Source of Gemstones in Jewelry: Pearls are the only source of both natural (very rare) and cultured (industrially grown) pearls. Today, most pearls on the world market are grown on special farms (pearl farms) in countries such as Japan, China, Australia,

Indonesia, and Polynesia. This process is called nucleation and allows for a stable harvest from the mollusks.

High Demand: Pearls are a traditional precious material sought after for making necklaces, earrings, and bracelets around the world due to their unique luster, color, and shape.[3]



**Figure 3**

They are used to make necklaces (most popular), earrings, rings, bracelets,



and brooches. When combined with rare metals such as gold or silver, they create very beautiful and expensive jewelry.

Black pearls - these Black pearls are considered one of the most beautiful and valuable stones in the world of jewelry. They are called "Tahitian pearls", but they are grown not only on the island of Tahiti, but also on other islands of French Polynesia. The main species of mollusk (shell) that produces black pearls is called *Pinctada margaritifera* (black-lipped oyster).

In conclusion, it can be said that the role of pearls in the industry is very important. Pearls are widely used as

jewelry and decoration. Currently, as a result of water pollution, habitat change, overfishing, and climate change, bivalve mollusks living in coral reefs are on the verge of extinction. According to the IUCN (International Union for Conservation of Nature), thousands of mollusk species are on the verge of extinction.[4] In nature, mollusk species are diverse, and there are many individuals of the same species, but due to the negative interaction of anthropogenic factors and natural factors, not only mollusks, but also the entire animal world are disappearing.

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