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Peculiarities in the Structure, Reproduction and Development of the Lancet

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Abstract: This article describes the specific characteristics of lancets in their structure, lifestyle, blood circulation, breathing, digestion, separation, reproductive systems and important signs in ther development process.

Keywords: Lancet, epidermis, muscle, chord, nerve, palpation, cilia, endostyle, thyroid gland, larynx, atrial, hollow segment.

Lancets are distributed in tropical and temperate seas, including the Black Sea. The lancet is a typical chordate animal with a snake-like body that is compressed laterally. Its length is 5-8 cm. On the back side, there is an odd dorsal fin, and a wide caudal fin on the tail. At the front end of the body there is a pre-mouth opening surrounded by tentacles pointing downwards. In the lower part of the body, there is a metapleural fold located on both sides. These folds join each other around the atrial opening. Like all chordates, the skin of a lancelet consists of two parts, the outer epidermis and the inner dermis. But the epidermis of the lancet is different in that it is single-layered. Chin skin is made of sticky tissue. It is formed from muscle segments - myomeres - located in rows along the entire body. Myomeres are separated from each other by connective tissue myosepta. The muscles are located in the form of a long strip along the body on both sides. The lancetnik moves very simply: it swims by tilting its body to one side or the other.

The skeleton is mainly composed of chordae. Chorda is located throughout the body. A connective tissue membrane surrounds the chord and the neural tube located above it. The central nervous system has a simple structure; it has the shape of a flute and is located on the chorda. The anterior part of the neural tube is expanded, and this part resembles the ventricle of the brain of vertebrates. Hesse's cells are located along the surface of the nerve tube. These are light-sensing cells. Back and abdominal nerves come out of the nerve tube in pairs. The dorsal and ventral nerves of lancets are not interconnected. Sense organs are very simple. Light effects are received by Hesse's cells. Pre-oral palps perform the function of sensation. The digestive and respiratory organs are much simpler. The intestinal tube starts from the pre-mouth opening surrounded by tentacles. At its base is the mouth, which opens into the larynx. There are channels with ciliated epithelium along the top and bottom of the larynx. Food particles that enter the larynx with the movement of the cilia of the lower canal or endostyle, first go forward, and then go to the intestine with the upper canal of the larynx. In vertebrates, the endostyle becomes the thyroid gland of the endocrine glands. The intestinal canal continues from the pharynx to the anus. The stomach is not formed. A liver tumor homologous to the liver of vertebrates emerges from the anterior part of the intestinal canal. The larynx is large and its wall has several oblique cracks. These cracks do not open directly to the outside but open to the atrial cavity. The atrial cavity is formed in the middle part of the abdomen in the embryo by the joining of two lateral skin folds. Water enters the atrial cavity from the larynx through the atrial fissures, and from there it is expelled from the abdominal side of the body through the atriopore.

The circulatory system is closed like that of all chordates. But blood moves through the circulatory system. The main blood vessels are the abdominal and posterior aortas. Blood saturated with carbon dioxide flows forward through the abdominal aorta to the capillaries of the injury. Blood gives off carbon dioxide to water in wounds, gets saturated with oxygen and goes to the back aorta. From this

vein, blood is distributed throughout the body through smaller veins. Blood saturated with carbon dioxide in the tissues flows into the abdominal aorta. A lancet has no heart. Due to the contraction of the wall of large vessels, blood flows in the veins. The excretory system consists of numerous (90) pairs of nephridia located on the larynx. They open into the pre-jabra cavity through several openings (nephrostoma). In general, the nephridia of lancelets are very similar to the nephridia of ringworms. The nervous system consists of a nerve tube that is located on the chord and runs along the body. Many nerves spread from the nerve tube to internal organs and the surface of the body. Sense organs are weakly developed. Light-sensing cells located evenly along the nerve tube under the skin perform the function of vision. Nerve cells located on the surface of the skin sense chemical and mechanical effects. Reproductive organs consist of several gonads located in the type of segments. The ovaries of females and the sperm of males are located in the Jabra cracks of the body cavity. Germ cells enter the atrial cavity, where they are expelled through the atriopore.

The embryonic development of the lancet was first studied by the Russian scientist A.O. Kovalevsky, and it is first of all interesting because the development of the lancet is a simplified scheme of the embryonic development of other chordates. Fertilization of the lancet is external, and this process occurs under water, usually in the evening. Fertilized egg cell (zygote) is quite small (diameter 0.1 mm) and divides completely and evenly due to the lack of yolk.

The larval period lasts 3 months. The larva initially swims in water. Then it goes under the water. Oral clefts of the larva are asymmetric in the first period, there are few clefts, and there is no atrial cavity. Later, the mouth and wounds take their place, the number of wound cracks increases, the atrial cavity and metapleural folds are formed, and the larva turns into a lancet. Thus, lancets do not have any connections between reproductive and reproductive organs, as in invertebrates. Lancetnik is distributed mainly in the temperate and warm seas of the Atlantic, Pacific and Indian oceans. They also live in the Black and Japanese seas. Lancets feel good when the water temperature is 17-30 C and salinity is 20-30%. It mainly feeds on diatom plants and sometimes zooplankton. Lancetniks breed in late May and early August. In some parts of the coast of Southeast Asia, lancelets are used as food. Lancets are similar to vertebrates in their anatomical structure.

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