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General Information about the Structure and Chemical Composition of a Biological Membrane

Tokhirov Bakhtiyor Bakhshullayevich

Bukhara State University, Associate Professor, Ph.D

Roziqova Dilbar

Bukhara State University, Biology chair of master

Abstract: Although cells are the smallest unit of an organism, they perform important functions. Due to its composition and activity of organoids, important properties specific to living organisms are realized. In particular, the study of microtubules and their structure and function requires information on the mechanism of formation and use of ATF synthesis, which is important for organisms.

Key words: Membrane, basal body, semiconducting, Epiretinal.

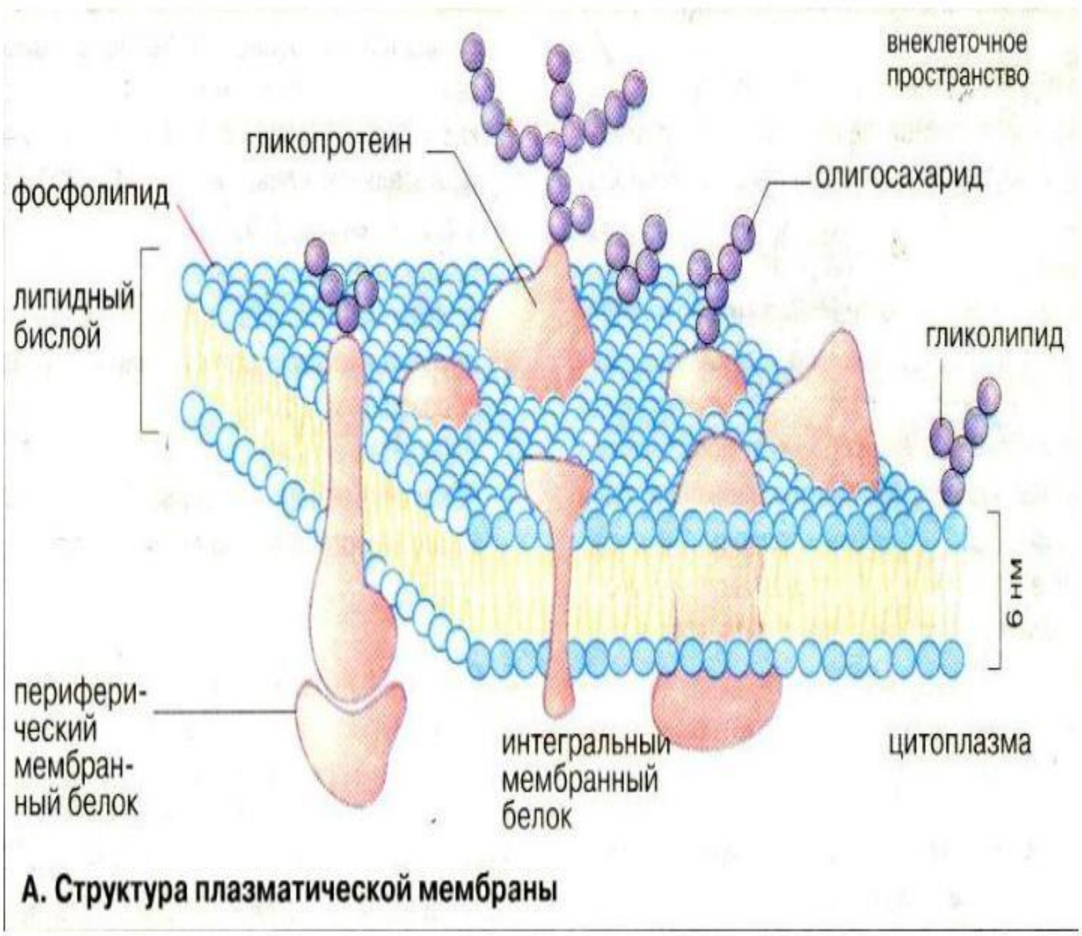
Membrane (Latin membrana - shell, curtain) - 1) in technique - a thin soft flexible plate fastened along a closed contour (perimeter). It is intended to separate two spaces or volumes of different pressures from a common space (volume), as well as to convert pressure changes into linear displacements and vice versa. There are metal (eg, foil, elinvar) and non-metallic (rubber, fabric, etc.). The membrane is an integral part of the apparatus that converts electrical or mechanical vibrations into sound vibrations and vice versa. It is a sensitive element in manometers, used as a compaction device in pumps, and in microphones, telephones, and other instruments; 2) in the theory of elasticity - a thin flexible plate fastened along the contour. The deflection is assumed to be zero. Used as a lifting element in suspension systems. It can be used as a suspended covering of the building. The membrane is assumed to be non-elongated, and its curvature is taken into account depending on the contour.[1-3]

Plasma membrane (plasmolemma, cytolemma) the cytoplasmic membrane that surrounds the cell on the outside may consist of the biological membrane itself. However, most often, the cell is surrounded by a cell (cytoplasm) shell, which is made up of three intricate parts: the outer, middle, and inner parts. [4-6]

The outer layer of the cytoplasmic shell is called the glycocalyx and is composed of proteins and carbohydrates. It appears as a continuous structure under an electron microscope. As the outer layer of the glycocalyx, it plays an important role in the cell's communication with the external environment. The glycocalyx zone differs in different cells. Some cells are rich in enzymes that break down glycocalyxes, while glycoproteins that make up glycocalyx in other cells are immunological. Plasma membranes are chemically composed of fats, proteins, carbohydrates, and very few other organic compounds. According to the fluid mosaic model, the main part of the plasma membrane consists of a phospholipid double layer. The inward part of this layer is hydrophobic (water-insoluble) and the outer part is hydrophilic (water-soluble). Protein molecules float in the phospholipid layer. On the surface of the phospholipid layer are glycoproteins formed from complex organic compounds. They are part of the receptors. The plasma membrane acts as a barrier, transport, control and catalytic functions.

The basal membrane is the intercellular basement or boundary membrane that defines the covering and connective tissue in most invertebrates and vertebrates, as well as in humans. The basement membrane consists of a porous substance and fibers located in it. It acts as a barrier and elastic support for the absorption and diffusion of substances. Like some organs, it is selective. In chronic inflammation, malignant tumors, and other diseases, the basal membrane penetrates the connective tissue beneath the epithelium. [7-9]

What causes the epiretinal membrane? The epithelial membrane develops as a result of cellular changes that occur between the macula and the clear vitreous gel, which is normally present in the back of the eye. Normal biological cells formed from the retina and other tissues inside the eye turn into a vitreous gel and eventually settle on the surface of the macula. These cells can begin to multiply on the "membrane". In most cases, this membrane becomes very soft and does not significantly affect the macula or human vision. In other cases, however, the membrane gradually becomes noticeable, resulting in discomfort in the retina, leading to blurring of the eye and or a damaged eye.



Epiretinal membrane treatment Epiretinal membranes can be treated with vitrectomy. However, not all epiretinal membranes require treatment. If the epiretinal membrane is soft and has little effect on vision, or surgery is not necessary. The epiretinal membrane cannot be treated surgically.

Outcomes of Epiretinal Membrane Surgery Many patients significantly improve their vision after surgery, but this can occur gradually over several months. The amount of visual improvement varies from person to person and depends on many factors, including the severity and chronic condition of the epiretinal membrane, the level of preoperative vision, and the presence of any other ocular abnormalities.[10-12]

Risks and Complications of Vitrectomy Surgery Any surgical procedure carries a risk of complications, and epiretinal membrane surgery is no exception. Postoperative infection (endophthalmitis) can be very serious and can lead to blindness of the affected eye. Many infections can be effectively treated if detected at an early stage. Endophthalmitis is rare and occurs in approximately 1 in 1,000 cases. In addition, retinal detachment is another complication that can lead to blindness if left untreated. Retinal detachments occur in 1 to 2 out of 100 cases after epiretinal membrane surgery.

Finally, the development of cataracts is the third consideration. Cataract occurs when the lens in the eye is cloudy. This usually occurs with aging, but is accelerated by vitrectomy surgery. This is not a concern if the patient has had cataract surgery before the vitrectomy. Other risks of surgery include bleeding, loss of vision, double vision, scarring, drooping eyelids, and analgesic complications. Your surgeon will discuss the risks and benefits of surgery with you.

We can't even ignore the fact that there is something called a fake membrane. In medicine, it is alluded to what is distinguished by the presence of a membrane that is in contact with the outside and is responsible for covering damaged tissue for a variety of reasons.

Diseases such as Alport syndrome and Knobloch syndrome are associated with mutations in genes encoding the collagen chains of the basement membrane, so the study of their structure and properties has been gaining popularity over the years.

The complexity of the basal membrane cannot be assessed by electron microscopy because this method does not allow the separation of different basal membranes. However, more accurate description techniques are needed to study it, such as scanning microscopy. [13-15]

Properties

The basal membrane is a leaf-like dense, amorphous structure. With a thickness of 50 to 100 nm, this transmission is detected by electron microscopy. A study of its structure reveals that it has similar properties to a cell matrix, but differs in terms of density and cellular associations.

Depending on the organ and tissue, there are differences in the composition and structure of the basement membrane, so it is thought that each tissue has a specific microenvironment bounded by it.

The specificity of each basement membrane may depend on its molecular composition, and it is believed that biochemical and molecular variability provide specificity for each tissue.

Epithelial cells, endothelial cells, and many mesenchymal cells form the basement membranes. Most of the plasticity of these cells has this structure. In addition, these organs appear to support the cells involved in the mucous membrane.

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