EDITORIAL

Three potential biomarkers regulate nervous system

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Along with connective tissue, muscle tissue, and nervous tissue, epithelium is one of the four basic types of animal tissue. It is a protective layer of cells that really is thin and continuous. The outer surfaces of organs and blood arteries throughout the body, as well as the inner surfaces of cavities in many internal organs, were covered by epithelial tissues.

Squamous, columnar, and cuboidal epithelial cells are the three types. These can be organized as simple epithelium in a single layer of cells, either squamous, columnar, or cuboidal, or stratified (layered) or compound epithelium in layers of two or more cells deep, either squamous, columnar, or cuboidal. Depending on the position of the nuclei in some tissues, a layer of columnar cells may appear to be stratified. Pseudostratified tissue is the word for this tissue type. Epithelial cells make each gland. Secretion, selective absorption, protection, transcellular transport, and sensing all are functions of epithelial cells. Since epithelial layers lack blood vessels, they must depend on substance diffusion through the basement membrane from the underlying connective tissue. In epithelial tissues, cell contacts are very numerous.

The number of layers of epithelial tissues, and the shape and form of the cells, are used to categorize them. Squamous, cuboidal, and columnar are the three main shapes associated with epithelial cells. Squamous epithelium cells are larger than they are tall (flat and scale-like). The lining of the mouth, esophagus, blood vessels, and the alveoli of the lungs are all example of this. Cuboidal epithelium has cells that really are roughly the same size and width (cube shaped). The cells in columnar epithelium are taller than they are wide (column-shaped). Ciliated columnar epithelium and glandular columnar epithelium are two kinds of columnar epithelium.

Epithelium is done by simple epithelium, that is only one cell thick (unilayered), stratified epithelium, which is two or more cells thick, or multilayered epithelium, that also involves stratified squamous epithelium, stratified cuboidal epithelium, and stratified columnar epithelium, and both types of layering can be made up of any cell shape. When taller simple columnar epithelial cells are seen in cross section, they can be confused with stratified epithelia since several nuclei appear at different heights. Pseudostratified columnar epithelium is the term coined to this kind of epithelium.

The basement membrane, which acts as a structure for epithelium to expand and regenerate after damages, stands on epithelial tissue. Epithelial tissue has a nerve supply but no blood supply, thus it must depend on substances transferred from the underlying tissue's blood vessels for maintenance. The basement membrane acts as selectively permeable barriers, allowing just certain substances to flow through the epithelium.

In epithelial tissues, cell junctions are very common. They were protein complexes that provide contact between neighboring cells, between a cell and the extracellular matrix, or they build up the epithelia's paracellular barrier and control paracellular transport.

Cell junctions are the centers in which the plasma membrane and tissue cells join interact. Tight junctions, adherens junctions, desmosomes, hemi-desmosomes, and gap junctions are the five types of cell junctions. Tight junctions are involved in the synthesis of several trans-membrane enzymes on the plasma membrane's outermost layer. Adherens junctions are a plaque (a protein layer on the inner of the plasma membrane) that links the microfilaments of both cells. Desmosomes attach to the cytoskeleton's microfilaments that are made up of keratin protein. On a slice, hemi-desmosomes resemble desmosomes. Instead of cadherin, they are made up of integrin (a transmembrane protein). They are responsible for linking the epithelial cell to the basement membrane. Gap junctions are made up of proteins called connexins which connect the cytoplasm of two cells.

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