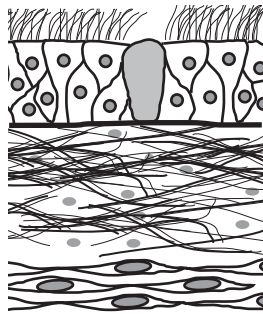


Membranes

A short review of the
Morphology and Function
of
Serous and Mucous Membranes



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Membrane Overview

Epithelia lines lumens and surface structures and as such are in direct contact with lumen contents or whatever is outside of the structure. As such, it is the epithelia that will be of primary importance in handling or maintaining these contents and frequently has substantial nutritional and oxygen needs. Epithelia are always avascular. Therefore, epithelia will be united to an underlying vascular connective tissue that is deep to it by a basement membrane. In short, the epithelia is utterly dependent upon this support of the underlying vascular connective tissue and it is this union that makes a membrane. Membrane plus its supportive vascular tissue makes a membrane.

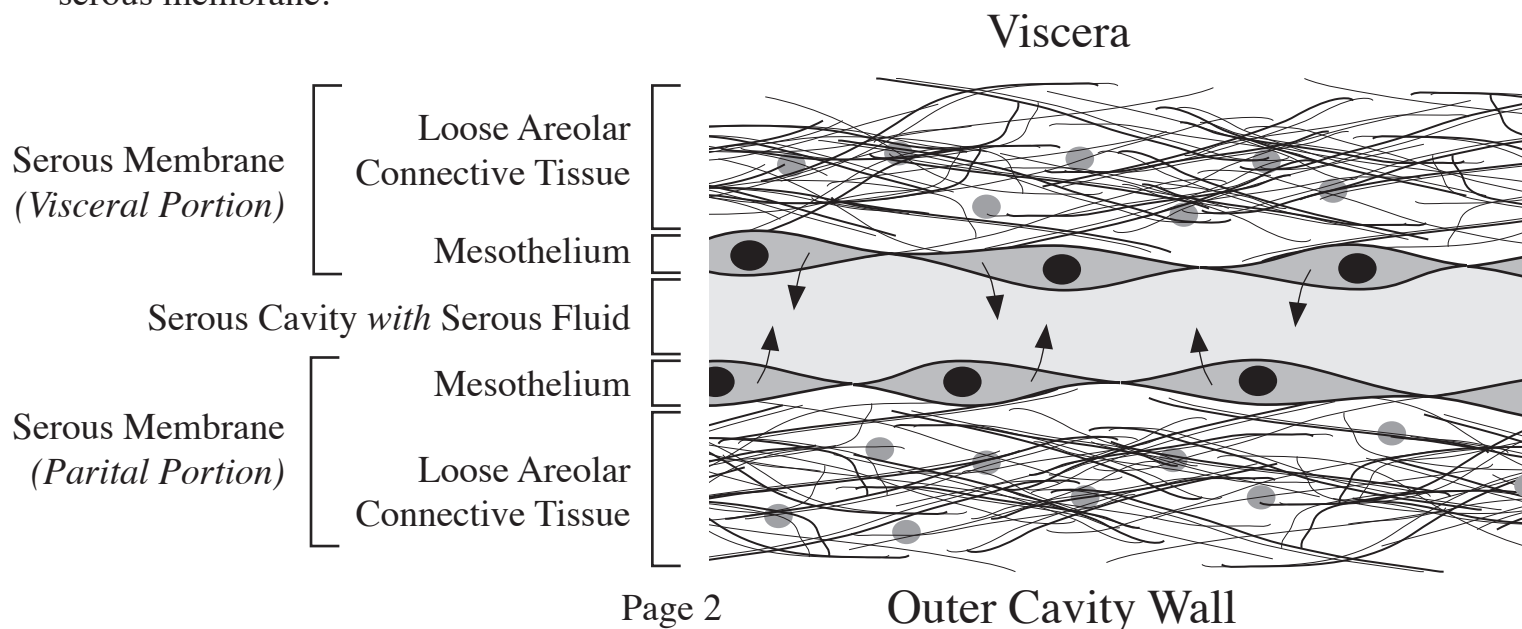


There are four basic membrane types, only two are reviewed here, the serous membrane and the mucous membrane. (Synovial membranes and cutaneous membranes will be considered later in the course).

Serous Membranes

A serous membrane consists of Mesothelium (simple squamous epithelia that lines an internal cavity) and a supportive Loose Aerolar Connective Tissue. The Mesothelium functions in the secretion of a serous fluid that lubricates adjacent membranes so that they can slide with near frictionless ease. The serous membrane that is associated with viscera is the visceral portion, and the serous membrane associated with the outer cavity wall is the parietal portion.

The pericardial cavity, the pleural cavity, and the peritoneal cavity are all lined with a serous membrane.

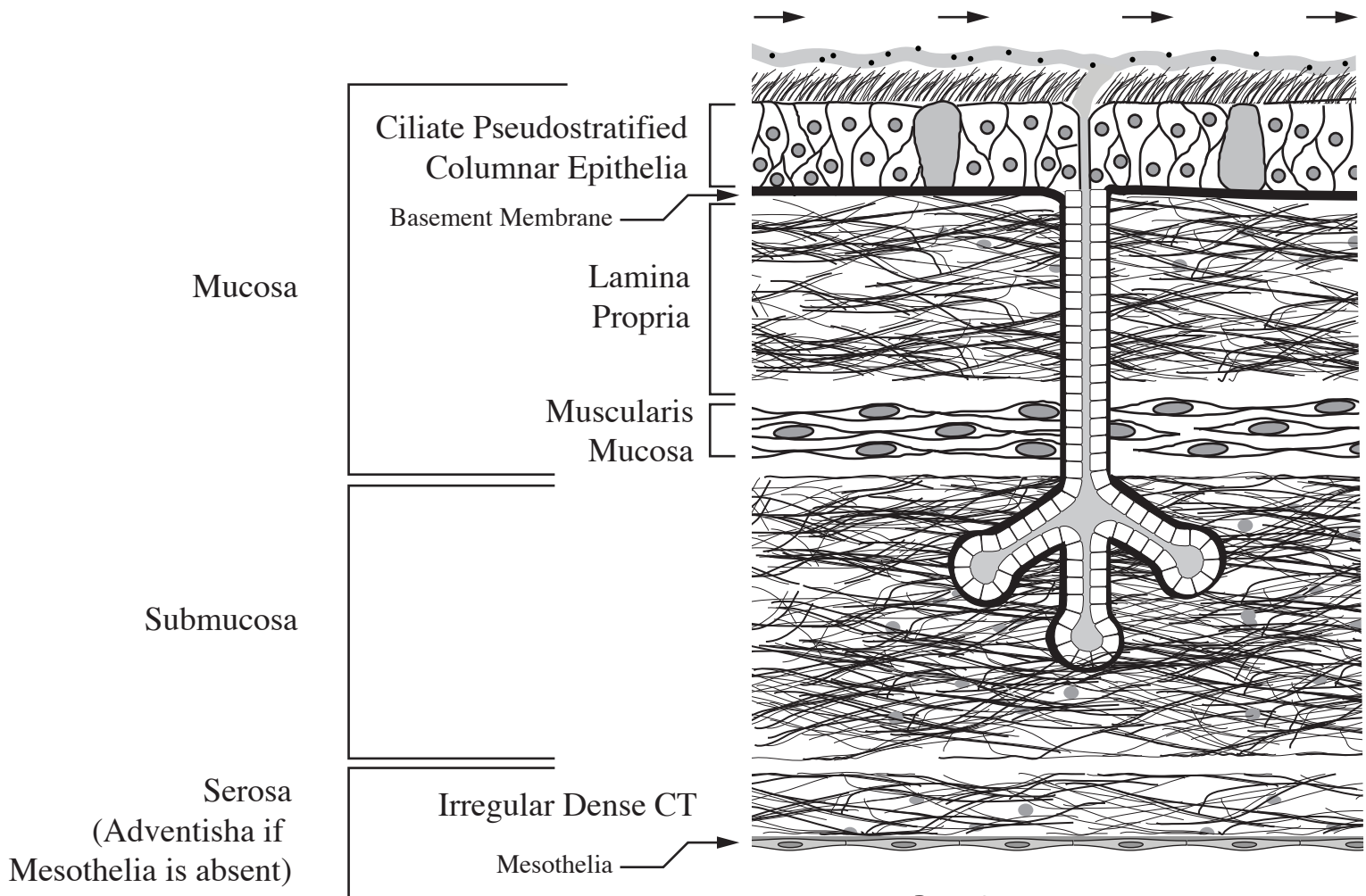


Mucous Membranes

Mucous membranes, like serous membranes, consist of epithelia united by a basement membrane to supportive connective tissue. The Epithelia may be of several epithelial types. Functional differences will vary depending upon the epithelia used, and the manner in which the mucous is used. In the stomach, the mucous protects the epithelial from caustic HCl; in the respiratory tract, mucous will trap airborne particles for removal; in the female reproductive tract, mucous will carry the egg through the uterine tubes. Wherever mucous membrane is found, the mucous will have a function unique to the particular organ that it is associated with. Also, Mucous always moves, it is never stationary

The most common epithelia found will be of a columnar type, but notable exceptions exist. In the esophagus and oral cavity, the stratified squamous epithelium is seen. In the urinary bladder, the transitional epithelium is found. In the digestive tract, simple columnar epithelia. All of these are associated with mucous membrane.

The mucous membrane depicted below resembles that found in the respiratory tree. Here, the epithelial tissue is a ciliated pseudostratified columnar epithelium with goblet cells dispersed throughout. As the quantity of mucous produced by the goblet cells is inadequate, auxiliary glands provide additional secretions to cover the lumen surface.

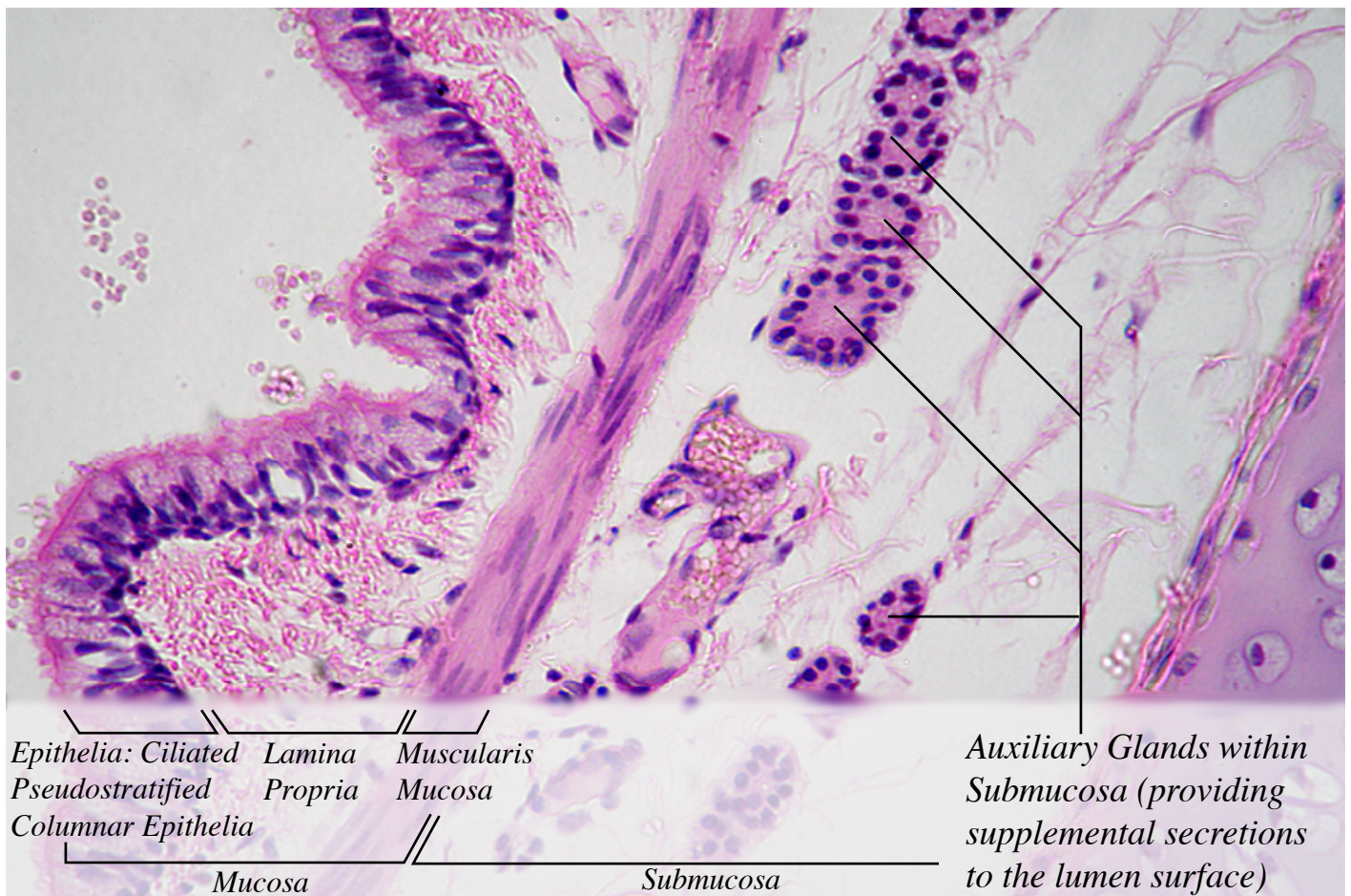


Some mucous membranes also have a layer of smooth muscle called the muscularis mucosa within the mucosa. This layer is important for lumen size adjustments and can be found in the mucosa, just deep to the lamina propria.

Attaching the mucosa to structures deep to it is the Submucosa. This layer normally consists of Irregular Dense Connective Tissue, but may also be Loose Areolar Connective Tissue. Within this layer, larger blood vessels and nerves may be found.

The epithelia are attached to a supportive layer called the Lamina Propria. The lamina propria consists of usually Loose areolar connective tissue but may consist of irregular Dense Connective Tissue. This layer contains vasculature and various cell types that support the epithelia.

Mucous Membrane



Lastly, and not shown in the above image, may be an encapsulating layer of Irregular Dense connective tissue. If an organ is so encapsulated, one of two terms will apply to it depending upon if the organ needs to glide within its space. If it does, this layer is called the Serosa and will have a serous membrane attached to the Dense Connective Tissue. If the organ does not need to move freely, the Dense Connective Tissue layer will be called the Adventitia.