



جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

**College of Science, Department of biology
Zoology
Frist stage**

**By
Prof. Dr. Raad Abbas Kadhim**

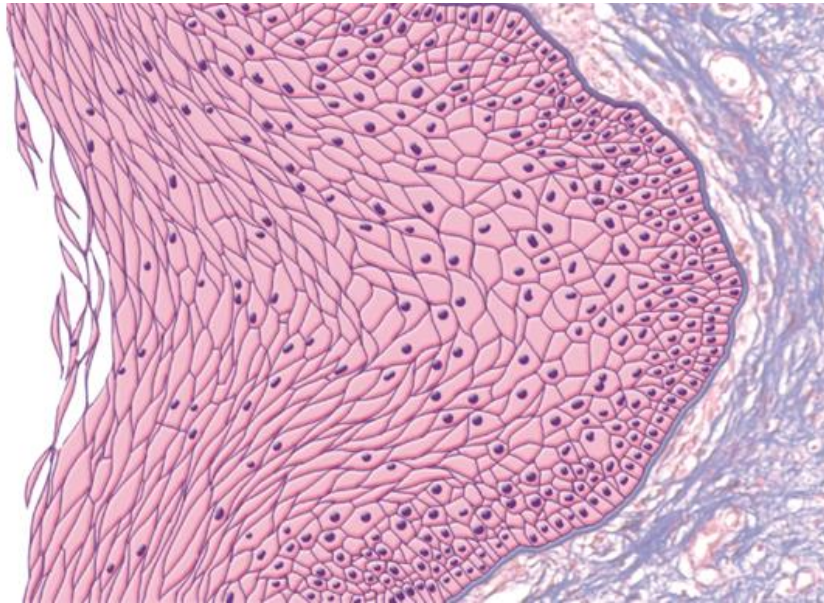
Lecture: 6

Stratified epithelium

It is multilayered, therefore found where body linings have to withstand mechanical or chemical stress. Stratified epithelia included: squamous, columnar, and cuboidal. This name according to the shape of cell in apical layer. In stratified epithelium only the base layer resting into basement layer.

Stratified squamous epithelium: are two type of stratified epithelium, keratinized and non – keratinized.

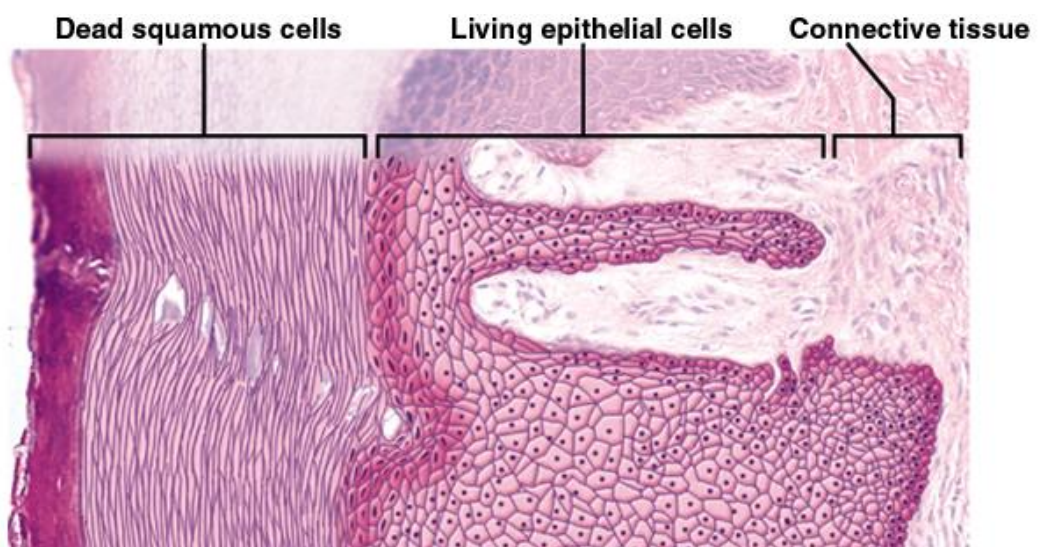
Non-keratinized surfaces must be kept moist to prevent them from drying out. Examples of non-keratinized stratified squamous epithelium include esophagus, Vagina , anal canal, , and the internal portion of the lips.



Mucosa of the vagina

Non-keratinized Stratified Squamous Epithelium tissue	
Structure	Multilayered epithelium that lacks surface layer of dead cells forming moist, slippery layer
Functions	surfaces must be kept moist to prevent them from drying out
Locations	tongue, oral mucosa, esophagus & vagina

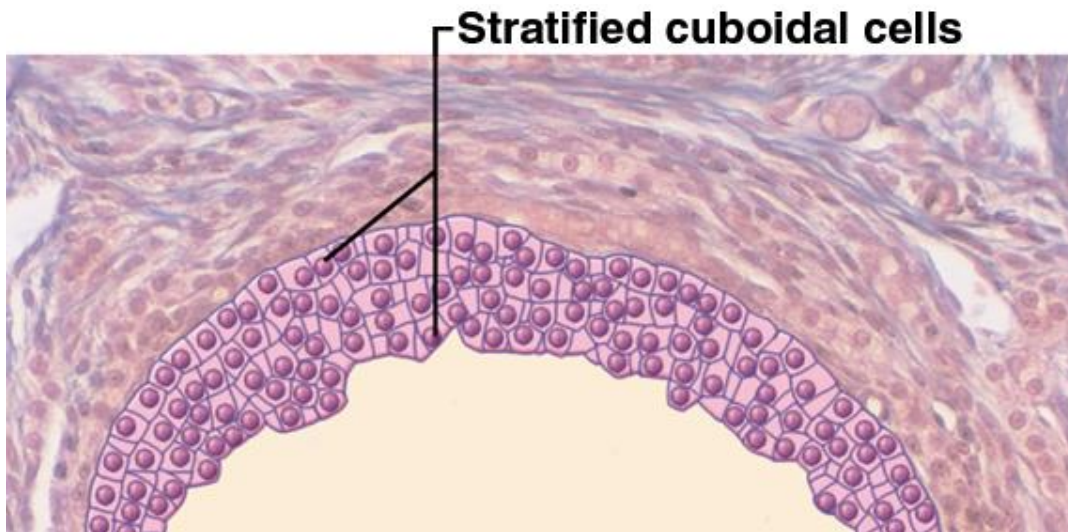
Keratinized surfaces are protected from dehydration. Examples of keratinized stratified squamous epithelium include epidermis of skin.



Skin from the sole of the foot

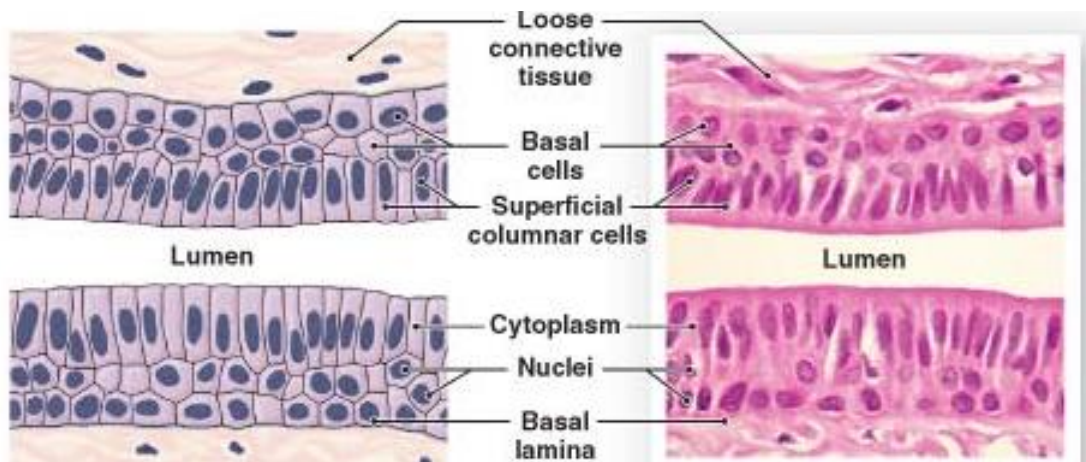
keratinized Stratified Squamous Epithelium tissue	
Structure	Layers of epithelium covered with compact, squamous cells (<u>no nuclei</u>) packed with protein keratin
Functions	Retards water loss, prevents the entrance of organisms
Locations	Forms epidermal layer of skin (esp. soles and palms)

Stratified Cuboidal Epithelium: is a type of epithelial tissue composed of multiple layers of cube-shaped cells. This type of tissue can be observed in sweat glands, mammary glands and salivary glands.



Stratified Cuboidal Epithelium tissue	
Structure	Two or more layers of cells; surface cells square or cube
Functions	Secretion and production
Locations	Sweat glands, mammary glands, salivary glands, ovarian follicles, seminiferous tubules

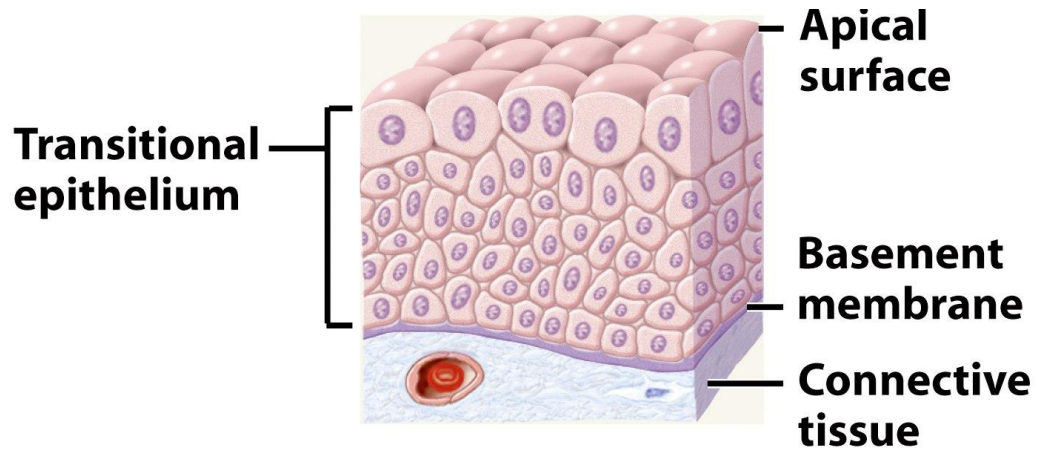
Stratified Columnar Epithelium tissue : is a rare type of epithelial tissue composed of column shaped cells arranged in multiple layers. Stratified columnar epithelia are found in parts of the pharynx, anus, the uterus, and the male urethra and vas deferens.



Salivary gland duct

Stratified Columnar Epithelium tissue	
Structure	epithelial tissue composed of column shaped cells arranged in multiple layers
Functions	Protection of underlying tissues, secretion.
Locations	Found in parts of the pharynx, anus, uterus, duct of salivary gland, and the male urethra and vas deferens.

Transitional epithelium is a type of stratified epithelium. This tissue consists of multiple layers of epithelial cells which can contract and expand in order to adapt to the degree of distension needed. Transitional epithelium lines the organs of the urinary system and is known here as **urothelium**. The bladder for example has a need for great distension.



Relaxed transitional epithelium

Transitional Epithelium tissue	
Structure	Multilayered epithelium with rounded (not flattened) surface cells
Functions	Allow stretches and distension
Locations	Urinary tract--part of kidney, ureter, urinary bladder, part of the urethra