

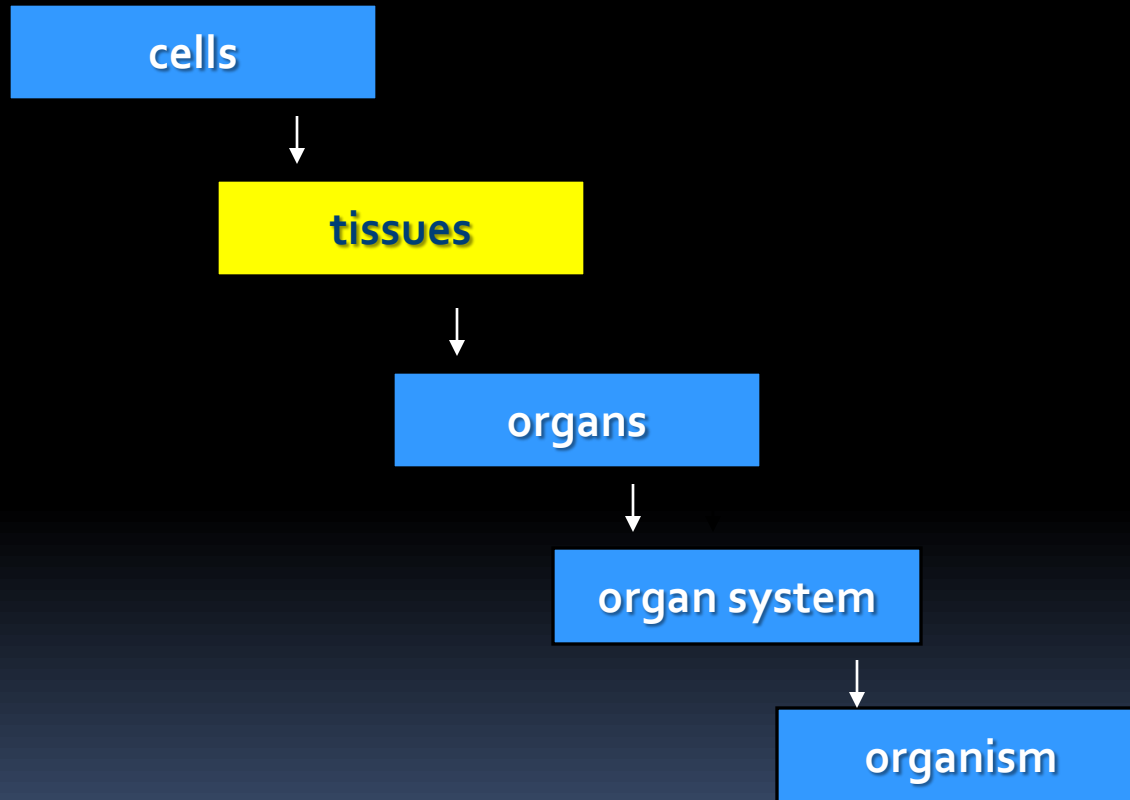


HISTOLOGY (A STUDY OF THE HUMAN TISSUES)

PART 1: EPITHELIUM



The Organization of Life



Differentiation = Specialization

- No cell can perform all functions necessary for life; cells differentiate, group together into tissues performing similar functions
- Microscopic study of 4 tissue types; unites form and function
 - Form = shape, appearance, location. (macro)
 - Function = how it performs it's tasks on a cellular or microscopic level. (micro)

Location and Description

A. Location/Description

1. Location

a. surface of skin

b. digestive, respiratory, urinary,
reproductive tracts

c. chest cavity (vessels and heart)

d. brain, eye, ear

Location and Description

A. Location/Description

■ 2. Description

- a. always has free surface and attached surface (basement membrane)
- b. exposed to external environment or passageway
- c. no blood vessels; nutrients obtained through diffusion/absorption
- d. mitotic rates may be very high

The Functions of Epithelium

1. Covers and protects every exposed surface from abrasion, dehydration, destruction
2. Controls substances that enter/leave the body
3. Detects changes in environment; communicates with nervous system (5 senses)
4. Secretes substances (glands)

Epithelium Classification

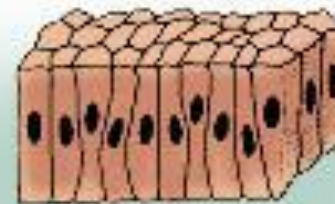
Types of Epithelium



Simple squamous

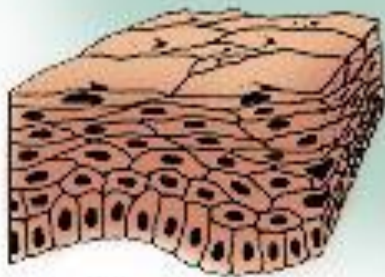


Simple cuboidal



Simple columnar

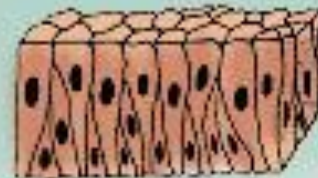
Transitional



Stratified squamous



Stratified cuboidal



Pseudostratified columnar



Epithelium Classification

*Squamous Tissue

1. Squamous - thin, flat, irregular shape

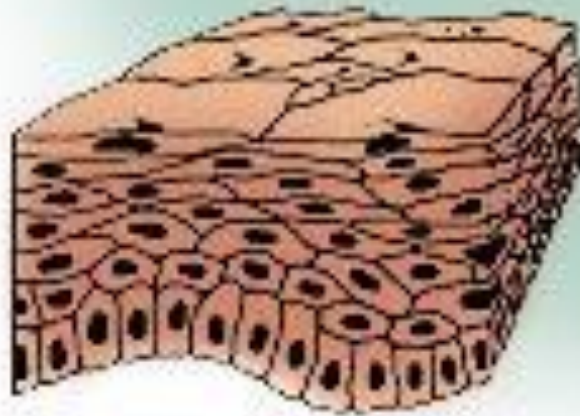
a. simple - most delicate; absorption in alveoli in lungs and blood vessels

b. stratified - protection from physical/chemical attack; very abraded areas (mouth, anus, surface of skin)

Squamous Tissue = “Squashed”




Simple squamous



Stratified squamous



Drawing

- Students, please draw the next slide onto the left side of your ISN notebook. (p. 18)
- 

Simple vs. Stratified Tissue

Simple

Single Layered Tissue



Communication / Gateway
for Tissue



Regulates Transport, Diffusion
and Secretion of Materials



Delicate Tissue

Stratified

Multi Layered Tissue



Protects against Friction or
Injury



Barrier to Water, Disease, &
Toxins.



Lower Layers Regenerate
Upper Layers

Epithelium Classification

*Cuboidal Tissue

2. Cuboidal – hexagonal/square shape; nucleus located in middle of cell.

a. simple – secretion or absorption;
kidneys, salivary glands

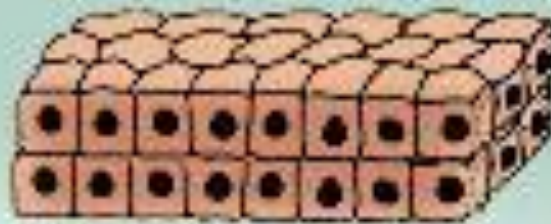
b. stratified – rare; sweat and
mammary glands

c. transitional – tolerates stretching;
located in bladder

Cuboidal Tissue = “Cubed”



Simple cuboidal



Stratified cuboidal

Epithelium Classification

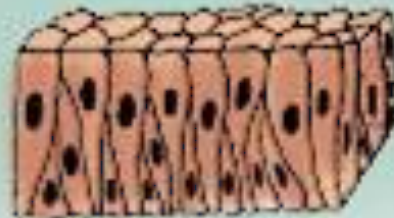
*Columnar Tissue

3. Columnar – column shaped; nuclei near basement membrane
 - a. Simple – secretion or absorption; stomach, small/large intestines
 - b. Stratified – rare; provides protection; salivary glands, anus, mammary ducts
 - c. Pseudostratified – nuclei located at different heights; always possess cilia; respiratory tract

Pseudostratified Tissue = “False Stratified”



Simple columnar



Pseudostratified columnar

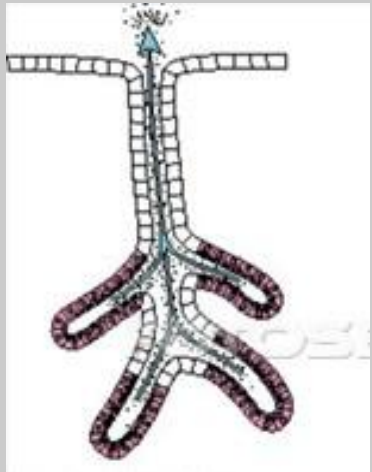
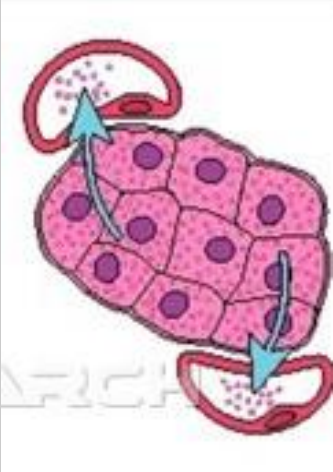
Epithelium Classification

*Glands

1. endocrine – secrete substances into surrounding; “ductless”; hormones
2. exocrine – secrete substances through a duct; mucus, sweat, oil

Exocrine vs. Endocrine

Students: draw this chart on the page that your notes are attached to.

Exocrine Gland	Endocrine Gland
	
Secretes substances onto a surface.	Secretes substances into the blood
Contains a Duct (=Ducted)	No Duct (=Ductless)
EX: sweat glands, mammary glands, salivary glands	EX: pituitary, thyroid, adrenal