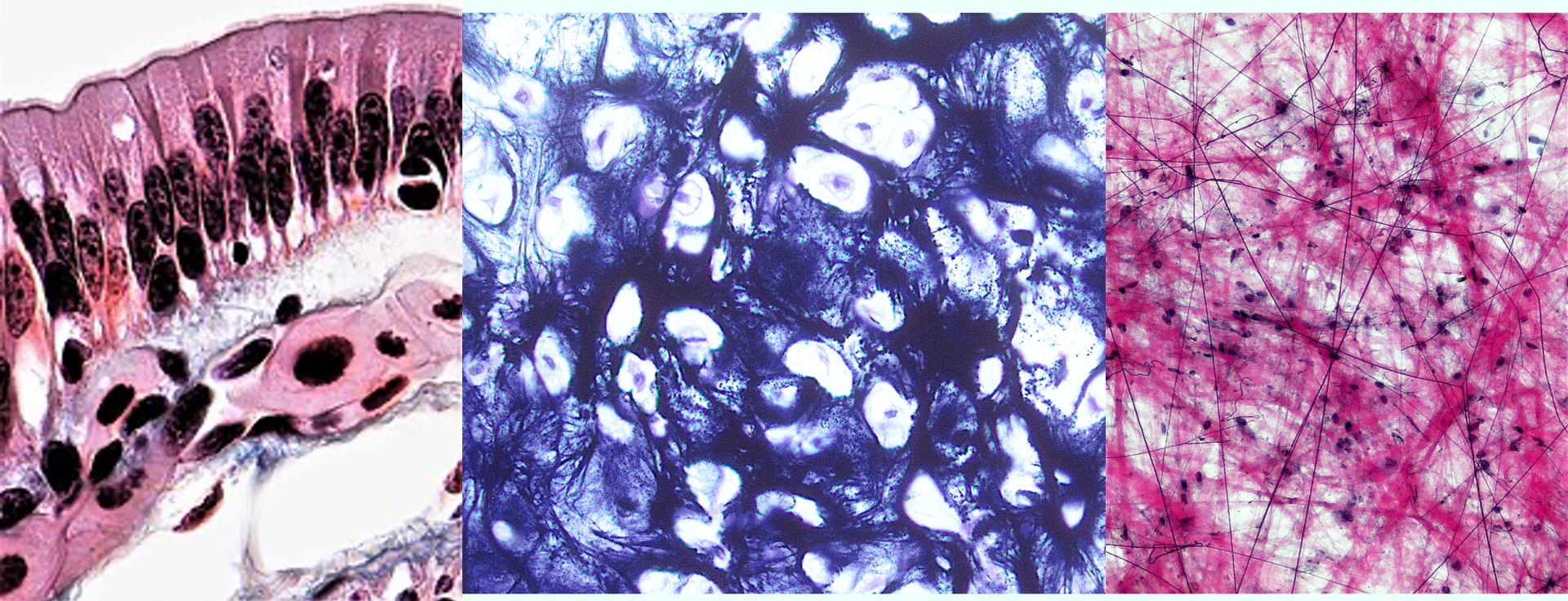


CELL REVIEW AND TISSUES

Anatomy Unit



12 day unit
Includes print and digital



CELLS *and* TISSUES

Topics include:



Cell Review

- Organelles + Structures



Cell Processes Review:

- Cell Transport & Cell Division



Cell Differentiation



Tissues and Histology

- Epithelium; Connective Tissue; Muscle; Nerve
- Fibers, extracellular matrix

II. BUILD AN ORGAN Use the tissue choice board to cut and paste tissues into the appropriate boxes in order to build each organ.

What makes a HEART?

Build a LUNG

Tissues of the SKIN

Teacher Guide Name: _____ Date: _____

Human Body Tissue Types

Epithelial Tissue

Connective Tissue

Muscle

Nerve

Histology is the study of the microanatomy of cells and tissues as seen through a microscope.

Visit the following website: <https://www.biologyonline.com/EM-Atlas/EM-Atlas.html>

Instructions: For each type of tissue, be sure that "color" is selected on the right-hand menu. Using your colored pencils, sketch the tissue in the space below. Use the text on the right-hand menu to help you answer questions. If needed, if you lose the entire picture, use the drop down menu in the upper right hand corner and select "enter micrograph".

Phonetic: Epithelium - i - kal - i - um

a. What type of epithelium is mesothelium?

b. Where can mesothelium be found in the body?

c. What can be found below the mesothelium layer?

d. How many cells thick is the mesothelium?

Chapter 2: Epithelium - II. Select "interlobular ducts"

a. What type of epithelium are interlobular ducts?

b. Where can interlobular ducts be found in the body? Ducts serve as tunnels for substances to travel. How does food follow function?

c. What is the basal lamina? (basal lamina is another name for basement membrane)

d. How many cells thick is an interlobular duct?



Scope and Sequence to compare the first two anatomy units (to see where the topics land):

Anatomy and Physiology Scope and Sequence				biology roots
Unit and Subtopics	Objectives	Suggested Pacing	Notable Assignments	Materials
Unit 1: Intro to Anatomy (Basics) - Levels of Organization - Introduce the body systems, organs and functions - Review characteristics of life including homeostasis - Anatomical Planes, Positions, and Regions	To review levels of organizations and characteristics of life including homeostasis; To introduce anatomical terms including positions, regions and planes that students will apply throughout the course; to learn body cavities and basic membranes	9 days	Body Regions Puzzle Banana Dissection Autopsy Homeostasis Stations	Colored pencils Banana Scalpel Tray Mini flashlights Pennies or Paperclips Containers Timers
Unit 2: Cells and Tissues - Review Cell Structures - Review Cell Division (why cells divide) - Review Cell Transport Osmosis and Diffusion - Types of Tissue I Histology -Epithelial -Connective -Muscle -Nerve - Fibers – Collagen, Elastin	To review basic cell structures (cilia; cell membrane, etc.) and organelles; To review basic cell processes such as transport in order to prepare students for a year of anatomy and physiology; To learn the different types of tissues and their functions within the body	12 days	MELAS Case Study Mr. Hindcyte's Cellular Adventure Build an Organ Review: HeLa and Newt Development Tissues Graphic Organizer Ehlers-Danlos Case Study Modeling Tissues Histology Web Quest	Colored pencils Pipe cleaners or twizzlers Electrical cord Rope or twine Puffy paint Wooden popsicle stick Cotton balls or pom poms Bubble wrap or foam Play dough or Model Magic

CELLS AND TISSUES 50 MINUTES

DAY/DATE	STUDENT ACTIVITY	LEARNING TARGET
1 _____	Part I of notes (cell review) Cells Graphic Organizer (homework if not finished) Computers or devices needed next class	Cell Review
2 _____	Exploring Cells MELAS Case Study (homework if not finished) Computers or devices needed next class	Cell Review (organelles)
3 _____	Cell Processes Review (Cell Transport and Cell Division) Diffusion Across the Respiratory Membrane (homework if not finished) Computers or devices needed next class	Cell Review (processes)
4 _____	Mr. Hindcyte (give 25–30 minutes to complete; students should work in partners) BEGIN Part 1: Specialized Cells of From Cells to Organisms (time will be given next class to finish)	To link how cells/ organelles /process are related to tissues and their function.
5 _____	Finish Cells to Organisms Part II of notes (tissues)– if more time is needed to finish next class no problem	To introduce the different types of tissues that make up the body
6 _____	Finish notes if needed Open note quiz: tissues Tissues Graphic Organizer Heads up: Quiz coming up	To outline and categorize tissue types
7 _____	Types of Epithelial Tissue  Human Body Tissues ('loose' color code)– it is encouraged for students to color the body and extracellular matrix in colors of their choice. You may encourage students to color last).	To organize epithelial tissue by function; To visualize how tissues make up different parts of the body and further explore their function
8 _____	Modeling Tissue Types Tissue Table: Where are they, what do they do? (homework if not finished)	To apply what we have learned about the structure of tissues and create models
9 _____	Quiz for understanding Begin Histology Web Quest Note: if you have access to histology slides, see the template in the 'extras' folders if you would rather use microscopes. Homework: Case Study: Ehlers Danlos	To investigate histology
10 _____	Finish Histology Web Quest Begin Study Guide	Review
11 _____	Study Guide	Review

50 minute pacing guide

CELLS AND TISSUES 90 MINUTES

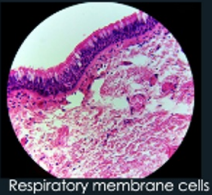
DAY/DATE	STUDENT ACTIVITY	LEARNING TARGET
1 _____	Part I of notes (cell review) Cells Graphic Organizer Exploring Cells Computers or devices needed next class	Cell Review
2 _____	MELAS Case Study (work in partners) Cell Processes Review (Cell Transport and Cell Division) Diffusion Across the Respiratory Membrane Computers or devices needed next class	Cell Review (organelles and processes)
3 _____	Mr. Hindcyte (give 25–30 minutes to complete; students should work in partners) Specialized Cells of From Cells to Organisms	To link how cells/ organelles /process are related to tissues and their function.
4 _____	Part II of notes (tissues)– Open note quiz: tissues Tissues Graphic Organizer Types of Epithelial Tissue	To introduce the different types of tissues that make up the body
5 _____	 Human Body Tissues ('loose' color code)– it is encouraged for students to color the body and extracellular matrix in colors of their choice. You may encourage students to save coloring for last). Tissue Table: Where are they, what do they do? Computers or devices needed next class	To outline and categorize tissue types found in the body
6 _____	Quiz for understanding Modeling Tissue Types (give ~40 minutes) Begin Histology Web Quest Note: if you have access to histology slides, see the template in the 'extras' folders if you would rather use microscopes. Homework: Case Study: Ehlers Danlos	To learn how structures such as collagen support tissues; to investigate histology
7 _____	Finish Histology Web Quest Study Guide (homework if not finished) Review quiz if time, if not, next class before test.	Review
8 _____	Test and move on to next topic	

90 minute pacing guide

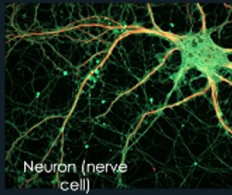
A pacing guide with learning targets is provided to guide you with lesson planning throughout the entire unit.
Includes both 50 and 90 minute blocks.

Editable PowerPoint Presentation

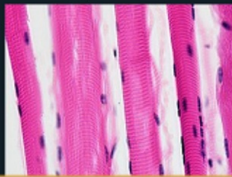
Form Follows Function different cells = different structure



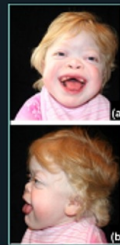
Respiratory membrane cells



Neuron (nerve cell)



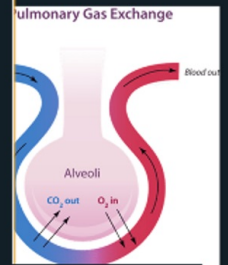
Faulty Lysosomes



Lysosomal storage inherited condition where digestive enzymes are missing or defective, leading to the formation of lysosomes that leads to a buildup of waste products in the body. This causes "coarse" facial features (cells become enlarged and bones become deformed). Waste buildup in skeletal deformities in muscle cells =

Diffusion

Substances diffuse from high concentrations to low concentrations



Cilia

Cilia are hair-like structures found in the body:

- Respiratory tract (sweep debris such as dirt or pollen from sinuses, airways, lungs to be swallowed or coughed out)
- Reproductive tracts (in fallopian tubes cilia sweep the egg towards the uterus)

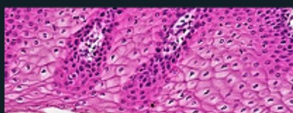
Other types of cilia can act as "antenna" to detect certain chemicals or pick up signals

If the structure of cilia were compromised, how would the body be affected?



(Stratified) Squamous Epithelium

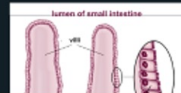
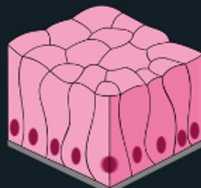
- Stratified = multiple layers
- Ideal for protection against friction (found in skin, mouth, throat, esophagus)



Skin

Columnar Epithelium

Columnar = rectangular cells (tall; elongated)

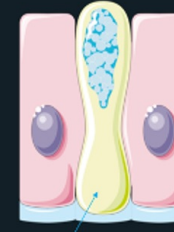


Simple columnar (single layer)

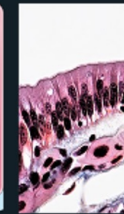
Absorbs + secretes- found in the digestive system (stomach, intestines)
- Ex: **absorbs** nutrients; **secretes** digestive enzymes
- Can be ciliated; some have **goblet cells** (produce mucus)

-some cells have fingerlike projections on their surface called **microvilli** to increase surface area

Columnar Epithelium



Goblet cells embedded in the epithelium help produce mucus – mucus is needed for protection and lubrication of the tissues.



Cilia are most commonly found on columnar epithelium- particularly the respiratory tract!

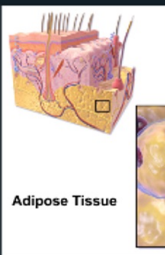


ciliated

Loose Connective Tissue

Adipose = specialized type of loose connective tissue that contains fat cells

- acts as a protective cushion
- Insulates to help the body retain heat
- Stores energy



Adipose Tissue

Fat is found throughout the body-
• **Subcutaneous fat** = under the skin
• **Visceral fat** = around organs
• **Yellow bone marrow**

Cartilage Connective Tissue

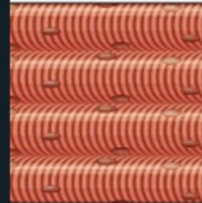
Hyaline cartilage – provides flexibility (flexible for movement for breathing, etc.):

- Most abundant type: found in trachea (windpipe); bronchi
- reduces friction in joints; provides flexibility at the ends of bones

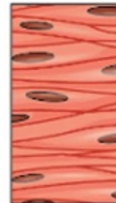


Muscle Tissue

Designed for movement



Skeletal muscle- designed for voluntary movement

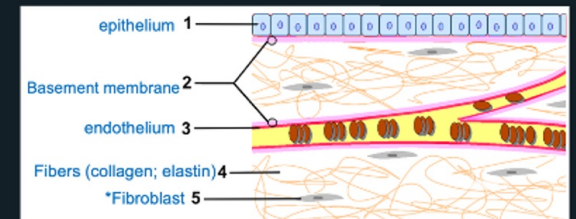


Smooth muscle- involuntary movement (stomach, blood vessels)

Extracellular Matrix

Non-living material within a tissue made of proteins, water, and sugars (outside/between the cells)- forms a gel like substance called "ground substance"

- Provides structural support and a place where chemical reactions can occur.
- Most abundant in connective tissue.
- The ECM associated with epithelium is called basement membrane.



*Fibroblasts are specialized cells that make fibers such as collagen and elastin.

60 slides: covers cell organelles, cell structures, cell transport, a little cell division, ALL THE TISSUES, basement membrane, extracellular matrix

The PowerPoint comes with 2 types of student notes to choose from: 2-column or fill in the blank

NOTES: Cell Review

Main Ideas

Cytoplasm
Fluid area outside the nucleus encased in the membrane

Cell Membrane
(aka phospholipid bilayer)- the cell membrane plays a critical role in cell function

ORGANELLES

- Nucleus**
- Endoplasmic Reticulum**
Connected to the nucleus; serves as a transport system
- Golgi apparatus**
Packages proteins in vesicles

Details

NOTES: Part 2 TISSUES

Name: _____

Cells -->

GENERAL TYPES OF TISSUES

- Epithelial Tissue**
- Contains glandular tissue (such as _____)
- Connects to _____

Different types of epithelium

	Simple	Stratified
Squamous		
Cuboidal		
Columnar		
		Pseudostratified

Endothelium – a specific type of simple squamous epithelium found in the circulatory system-

Simple Cuboidal

Stratified Cuboidal

Simple cuboidal is found mainly in kidney tubules, gland ducts, the thyroid gland, and on the surface of the ovaries – anywhere there is secretion

Simple Columnar

Pseudostratified Columnar

Stratified

some cells can have fingerlike projections on their surface called _____

Part One: Cell Review

Fill in the blank

they vary in structure, size and function!

Cell Division

required for growth, repair, and reproduction.

types of cell division in humans:

- mitosis (ex: skin cells, blood cells)
- meiosis (occurs in sex cells for creating sperm cells and egg cells)

Form Follows Function

different cells = different structure

Cell Differentiation

All cells start off the SAME _____; they into specific types by deactivating certain _____

Cell Transport

Movement of substances across the cell membrane- critical for homeostasis:

- osmosis
- Cell communication (_____)
- balance

Cells need oxygen and nutrients, and to expel waste. Cells transport these substances

Cytoplasm

- The cytoplasm is _____ includes cytosol (fluid) and all the organelles.
- Most of the body's metabolic reactions occur in the cytoplasm of the cell

Diffusion

Diffusion- natural process: _____

Example) Carbon dioxide waste in the _____ diffuses across the alveolar membrane to the _____

Loose Connective Tissue

Adipose = specialized type of loose connective tissue that contains _____ cells

- acts as a _____
- insulates to help the body _____
- stores _____
- Fat is found throughout the body- Subcutaneous fat = under the skin
- Visceral fat = around organs
- Yellow bone marrow

Connective Tissue

provides _____ rich connective tissue that to bind structures throughout the body

- Regular Dense = _____
- Irregular Dense = dermis layer of the _____; fibrous support around organs such as livers and kidneys
- Elastic Dense = arterial walls; parts of the _____

Cartilage Connective Tissue

Cartilage is a _____, yet _____ supporting connective tissue made of (mature cartilage cells) and fibers such as _____

- Helps _____ and _____ certain organs.
- Three general types:

Cartilage Connective Tissue

_____ most flexible type of cartilage found in the external ear and epiglottis.

_____ strong tissue that _____ found between vertebra and within the knee joint.

Osseous Connective Tissue

_____ very strong! Bones are used primarily as framework _____ and protection of organs.

- Mineral = _____ (hardens bones)
- Collagen offers _____

Open note quiz also included!

CELL REVIEW WORKSHEETS

Name: _____ Date: _____

ANIMAL CELLS

Contain a _____

Which stores genetic info called _____

Which is wrapped in the nuclear membrane and also contains the _____

Which codes for proteins that are built on _____

Which is primarily responsible for producing energy for the cell

As well as other organelles

That are suspended in _____

Name: _____

Cell Review: Organelles

Part I: Explore an Animal Cell <https://askabiologist.asu.edu/cell-viewer-game/play.html> *Choose explore.

A cell is a single unit of life that contains many organelles. The organelles work together to function, similar to your body systems working together to breathe, move, digest, etc. The model contains an animal cell with organelles. Discover the ones listed below by writing a description/function and creating a sketch of each:

Organelle	Description/Function (summarized)	Sketch
Ribosomes	Most ribosomes are attached to the rough endoplasmic reticulum (ER); ribosomes use a form of DNA instructions.	
Nucleus		

Name: _____ Date: _____

CASE STUDY: MELAS

Each part of the cell has a specialized role. The organelles and other cell parts rely on proteins that build their structure, or enzymes that help them to function. If these proteins are altered due to a mutation (change in structure), the organelle may not be able to function properly.

Case Study: Murilo

Background: Murilo is an eleven year old boy, born a full-term and healthy baby with no complications. Though he was born at a healthy weight, Murilo is currently measuring at a 40th percentile for height, meaning he is on the short side, and he has developed memory problems and difficulty completing tasks. His father scheduled a doctor's appointment because Murilo was

The muscle tissue sample is stained with a dye; if the muscle cells appear abnormal in what is known as "red ragged fibers" (or RRF), this indicates that there are diseased organelles not functioning properly. The MELAS mutation causes abnormal or faulty structure, which leads to abnormal or faulty functions.

biopsy revealed red ragged fibers.

Cell Organelle Review: Graphic Organizer, Online Exploration, & Case Study

Name: _____ Date: _____

Cells to assist during cell division such as _____ and _____

Where proteins are packaged into _____

And if they contain digestive enzymes, can be used as _____

Word Bank: nucleolus, lysosomes, mitosis, nucleus, energy, centrioles, cytoplasm, ribosomes, vesicles, Golgi, meiosis, DNA

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Name: _____

Cell Review: Organelles

Part I: Explore an Animal Cell <https://askabiologist.asu.edu/cell-viewer-game/play.html> *Choose explore.

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Organelle	Description/Function (summarized)	Sketch
Mitochondrion	Mitochondria are the cell's powerhouses. These organelles package the _____ of _____ into _____ molecules. Every type of cell has a different amount of mitochondria.	
Cell Membrane		
Smooth Endoplasmic Reticulum	Smooth ER has _____ in the cell. The smooth ER also helps to process or detoxify harmful substances found in the cell. *Lipids include steroids, fats, and cholesterol	

Name: _____ Date: _____

CASE STUDY: MELAS

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biopsy revealed red ragged fibers.

Cell Processes Review: Cell Division and Cell Transport (including online explorations)

Name: _____ Date: _____

Cell Processes Review: Cell Division

Part I: Alpine Newt Development <https://www.youtube.com/watch?v=SEcivdIRBE>

Watch the video of the newt developing from a single cell.

The salamander starts off as a single _____.

What do you see happening at the beginning of the video?

At first, all cells start off the same. Over time, cells begin to differentiate into specific types of how you can see this in the video.

Explain how cell division is essential for life:

Name: _____

Cell Processes Review: Cell Transport

Part I: Visit this online cell membrane model <https://control.phlearningmedia.org/WGBH/conv19/d4/02-int-membraneweb/index.html>

For each substance listed, click on it within the panel, watch the animation, and explain how it moves across the membrane. Examples: oxygen, glucose, water, etc.

Substance	How it moves across the membrane
Water	
Enzymes	

Name: _____ Date: _____

Diffusion of Gases Across the Respiratory Membrane

The respiratory membrane of the lungs is located in the alveoli, small sacs that fill up with air when you breathe in air. Approximately 300 million alveoli are in your two lungs. The average diameter of each alveolus is approximately 0.25 mm, which is extremely small! The walls of the alveoli sacs are very thin. The walls are designed to be thin so that substances, like oxygen, can pass through them. Surrounding each alveolus is a network of capillaries. Capillaries are the smallest blood vessels in the body. They are only one cell thick.

4. The picture above represents a capillary outside alveoli. Review the picture. Which two gases are diffused across the respiratory membrane? _____

5. Define diffusion: _____

The factors that influence the rate of gas diffusion across the respiratory membrane include: the thickness of the membrane, the surface area of the membrane, and the difference in concentration of the oxygen between the two sides of the membrane.

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MODELING TISSUES

Using the materials your teacher has provided, assign each one to each type of tissue listed on pages 1 and 2.

MODELING TISSUES

MUSCLE TISSUE (skeletal)



preview

NERVE TISSUE



CONNECTIVE TISSUE

BLOOD



preview

DENSE



preview

LOOSE



preview

CARTILAGE



preview

BONE



preview

Students love this! Easy way to visualize all the different tissues using household materials (muscle; nerve; connective tissue: blood, dense, loose, cartilage; and most types of epithelium!

EPITHELIAL TISSUE

In the space below, use the clay or play dough to create a model of each type of epithelium. Offer a brief description of its function under the model.

SIMPLE CUBOIDAL



Describe its function:

Absorption + secretion

SIMPLE COLUMNAR



Describe its function:

Absorption + secretion - digestive system

STRATIFIED SQUAMOUS

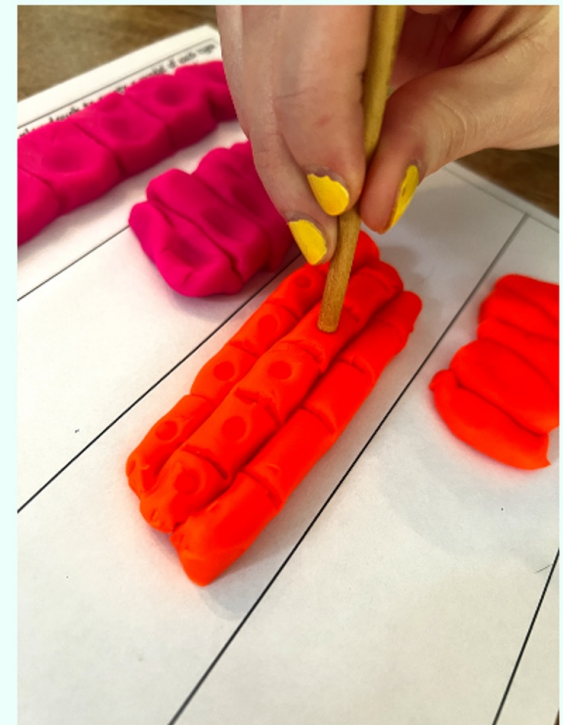


Describe its function:

One other your choice:

Pseudostratified columnar

Describe its function:

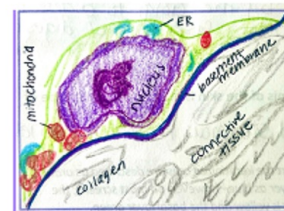


Histology Online Exploration

(alternative sheet also offered for in-class microscopes instead)

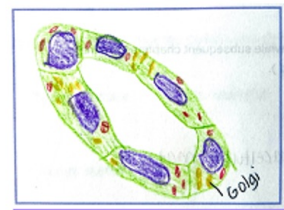
Instructions: For each type of tissue, be sure that "color" is selected. Use your colored pencils, sketch the tissue in the space below. Use the text to help you answer questions if needed. If you lose the entire picture, use the upper right hand corner and select "entire micrograph".

Chapter 2: Epithelium – I. select "mesothelium"



Label the nucleus; mitochondria; endoplasmic reticulum; connective tissue and basement membrane (basal lamina)

Chapter 2: Epithelium- II. Select "interlobular ducts"

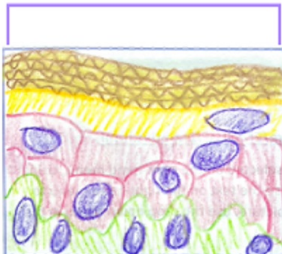


Label the Golgi

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Chapter 2: Epithelium- IV. Select "thin skin"



the specialized connective tissues (cartilage , bone , and blood).

V. Collagen (protein fibers)

-What are collagen fibers? (not connective tissue but part of)

Describe each type of collagen fiber by listing where it can be found

Type I:

Type II:

Type III:

Type IV: forms the _____ (basement membrane)

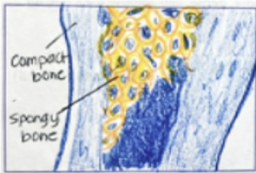
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What is the function of the enzymes; it also explains why it is

The lining of the digestive tract is made of simple cuboidal epithelium; it also explains why it is

Fibrocartilage:

b. Examine the images of cartilage! No need to draw them.



c. Describe the 3 critical functions of bone tissue as well as its structure:

d. In the box, sketch the spongy bone and compact bone found in the image of the tibia.

Chapter 6: Nerve tissue
Part IX: Nervous System and Neurons

- a. The CNS is made of
- b. The PNS is made of
- c. What is a neuron?
- d. View an image of a neuron. Notice the projections from the cell body.
 - What is the function of the dendrites?
 - What is the function of the axon?

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Case Study: Ehlers-Danlos Syndrome to explore the importance of collagen as a supportive fiber in many tissues

Name: _____ Date: _____

CASE STUDY: EHLERS-DANLOS SYNDROME

Case Study - Jack

Background: Jack is a sophomore in high school, 15 years old, 5'5" and 109 pounds. He was referred by his pediatrician to physical therapy for **hypermobility (extra flexible joints)** and **joint pain**. Jack's mother also reported that he has a history of **joint dislocations** and **joint instability**.

Diagnosis: Given Jack's symptoms and tests, his doctors diagnose Jack with a disorder called Ehlers-Danlos syndrome: a condition where collagen is weakened due to a genetic mutation.

Collagen fibers are found in the extracellular matrix (ECM) of most tissues and give tissues their strength. For example, cartilage is made of chondrocytes (cartilage cells), collagen fibers give them shape and tensile strength.

1. Complete the table below

Jack's symptoms (make a list of all his symptoms to consider)	Ideas as to what part(s) of the body could be affected?

The doctor suspects that the patient might have Ehlers-Danlos Syndrome: a group of genetic disorders that affect the body's connective tissue, making it weaker than normal. This leads to symptoms such as hypermobile joints, fragile or stretchy skin, and a tendency to bruise or injure easily. Although it varies in severity, it often causes chronic pain and joint instability over time.

2. Beighton test measures hypermobility (also called "double jointing")

3. Normal collagen fibrils

4. Collagen fibrils found in Ehlers-Danlos

5. In the table below, come up with an explanation why each symptom occurs based on the diagnosis.

Jack's Symptoms	How it relates to dysfunctional collagen found in E.D.S.
Hypermobility	5.
Hyperelasticity	6.
Easily torn skin	7.
Joint pain	8.

9. Provide an explanation as to why loose bodies are common in joints of those with EDS (see MRI):

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Name: _____ Date: _____

Cell Review & Tissues Study Guide

Part I: Cell Process Review

1. What is diffusion? Give an example of diffusion in the body.
2. The diffusion of water is called _____.
3. If water moves **into** cells from the external environment- does that mean **MORE** or **LESS** water was outside the cell than inside?
4. If a cell is submerged in saltwater, what type of cell environment does that create? How does water movement affect the cell?



5. Which cell division is essential to life?

scribble cilia:

What are goblet cells?

scribble microvilli:



Part III: Connective Tissue

True or False ("T" for true; "F" for false. If false, cross out and rewrite a portion of the sentence to make it true).

- Connective tissue is the least abundant tissue in the body.
- Connective tissue contains a large amount of extracellular matrix.

General Function/Description

mod

Type of muscle depicted below:



2.



3.

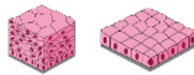
on of muscle tissue?

muscle tissue that does not have striations? _____

Study Guide: Cell Review & Tissues

True or False ("T" for true; "F" for false. If false, cross out and rewrite a portion of the sentence to make it true).

1. Epithelial tissue is loosely scattered.
2. Epithelial tissue is avascular
3. Contains glandular tissue
4. Covers all surfaces of the body



Matching: Match each description with the type of epithelium.

- | | |
|------------------------|--|
| a. Simple squamous | 5. Often ciliated; found in upper respiratory tract (secretes mucus) |
| b. Stratified squamous | 6. Offers protection against friction and abrasion. |
| c. Simple cuboidal | 7. Absorbs nutrients and secretes enzymes in the digestive tract. |
| d. Simple columnar | 8. Protects glandular ducts |
| e. Pseudostratified | 9. Very thin and flat, ideal for diffusion. |

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Where is each type of dense connective tissue found in the body?

- Regular:
- Irregular:
- Elastic:

ilage

For each type of cartilage, include its function AND where it can be found in the body:

yaline:

lastic:

ibrocartilage:

ous Tissue

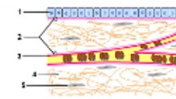
What role do calcium and collagen play in bone's structure?

12. Of all the connective tissues, which one is **avascular**? _____

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substance and protein fibers.

e -



circle one) [living | nonliving]

the ECM, such as fibroblasts. What do fibroblasts do?

astin are particularly important (be sure to include the function of

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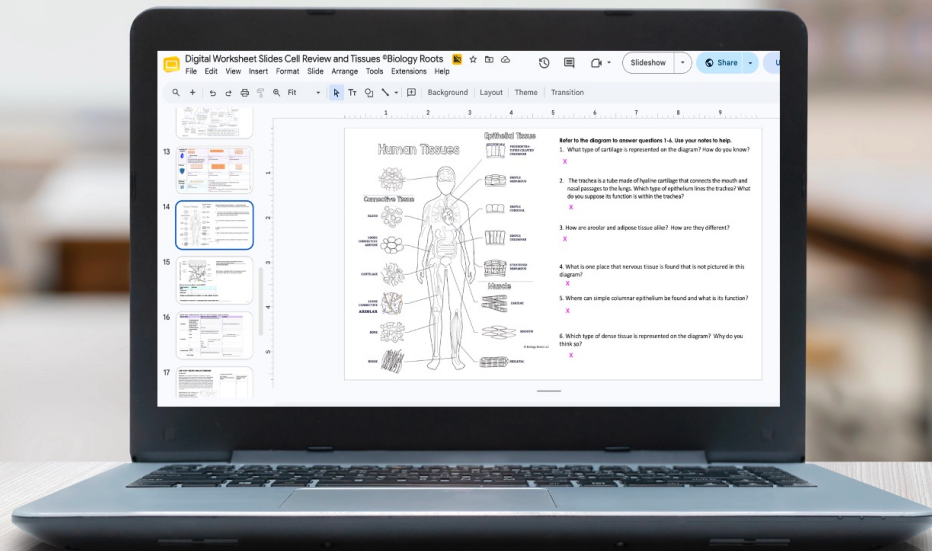
Not pictured: TEST (Includes both an honors version and a college prep version to choose from)

Digital options available

The screenshot shows a Google Slides presentation titled "Digital Worksheet Slides Cell Review and Tissues" by Biology Roots. The interface includes a menu bar (File, Edit, View, Insert, Format, Slide, Arrange, Tools, Extensions, Help) and a toolbar with various editing tools. The main slide area is divided into two columns. The left column, titled "Part III: Osmosis online animation:", contains a video player and text defining diffusion and osmosis. The right column, titled "Part IV: Real Life Applications", contains text about blood vessel osmosis and a diagram of a blood vessel with a capillary wall. A green label "Cell Review" is overlaid on the bottom right of the slide.

The screenshot shows a Google Slides presentation titled "Cell Review and Tissues" by Biology Roots. The interface includes a menu bar (File, Edit, View, Insert, Format, Slide, Arrange, Tools, Extensions, Help) and a toolbar. The main slide area features a large diagram of a human body with various tissues labeled: Nervous tissue, Epithelial tissue, Connective tissue, and Muscle tissue. A green label "Teacher PowerPoint" is overlaid on the bottom right of the slide.

Most items are available on Google Slides



Features in a Nutshell:

Digital versions are hosted on Google Slides.

Most items are editable

Differentiated Tests

Pacing Guides outline your daily agenda!

Still not sure if you need this resource?

This unit is for any teacher who is looking for a fully prepared anatomy unit from start to finish, with fun, fresh activities to keep your students engaged! The integumentary unit is COMPLETE and can be used as is –or, if you already have an existing unit, this can absolutely be used to supplement, support, or freshen up. Every piece has been thoughtfully curated and mapped out for your anatomy classroom to give you the most successful (and fun) year of anatomy yet!

Questions? Reach out to me at vanessa@biology-roots.com

-Vanessa