

HS-EHS-3 Integumentary System



Integumentary System Unit Pacing Guide

	Day	Intro	Instruct	Assess	Homework
Integumentary System Anatomy	1	Students add to prefix/suffix flashcards: <ul style="list-style-type: none"> derm-, epi-, hypo-, kerat- 	<ul style="list-style-type: none"> Integ. System PPT- Section 1 & Section 2 Cornell Notes (Epidermis, Dermis & Hypodermis) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	
Integumentary Disease & Injury	2	Prefix/suffix flashcards: <ul style="list-style-type: none"> melan- 	<ul style="list-style-type: none"> Sun & Your Skin Lab Materials: UV beads, zipper sandwich bags, sunscreen of various strengths, permanent markers, cookie sheets or trays (optional), computers	<ul style="list-style-type: none"> Informal discussion and questions Informal questioning during lab activity Graded lab questions 	Honors: Digging Deeper: Moles & Skin Cancer
Integumentary System Anatomy	3	Prefix/suffix flashcards: <ul style="list-style-type: none"> pil-, seb-, sudor-, ungu- 	<ul style="list-style-type: none"> Integ. System PPT- Section 3 & 4 Cornell Notes (Skin Glands, Hair & Nails) 	<ul style="list-style-type: none"> Cornell Notes summaries Informal discussion and questions 	
Integumentary Disease & Injury	4	Prefix/suffix flashcards: <ul style="list-style-type: none"> papill- 	<ul style="list-style-type: none"> Fingerprint Investigation Materials: pencils, scrap paper, clear tape, protractors, calculators <ul style="list-style-type: none"> Burn Homeostasis 	<ul style="list-style-type: none"> Informal discussion and questions Informal questioning during lab activity Informal check of Homeostasis answers Graded lab questions 	Honors: Data Analysis- Burns
	5	Review prefix/suffix flashcards	<ul style="list-style-type: none"> Integumentary System Disease Slide Integumentary System Diagram Anatomy of a Human Nail Diagram 	<ul style="list-style-type: none"> Informal observation of student progress Informal diagram check for accuracy 	

Coincide with State Standards document in Unit Planning Folder

***Bold items** must be photocopied.



This icon is found on the top right corner of Honors pages for easy identification.

50 min classes

Integumentary System Unit Pacing Guide

	Day	Intro	Instruct	Assess	Homework
Review	6	<ul style="list-style-type: none"> Review prefix/suffix flashcards 	<ul style="list-style-type: none"> Task Card Review 	<ul style="list-style-type: none"> Informal discussion and questions 	<u>All:</u> Study for Test
	7	<ul style="list-style-type: none"> Review prefix/suffix flashcards 	<ul style="list-style-type: none"> Discuss answers from Task Card Review Digging Deeper: Evaluating A Beauty Claim 	<ul style="list-style-type: none"> Informal assessment of student understanding during task card review Informal check of Digging Deeper assignment 	<u>All:</u> Study for Test
Assess	8	Review notes for test	<ul style="list-style-type: none"> Take Unit Test 	<ul style="list-style-type: none"> Summative grade from unit test 	



3.3, 3.4, 3.5

Surface Area

Determine the TBSA using the Rule of Nines

- 30 year old male with 1st degree burns to the front of both arms. adult
 $4.5 + 4.5 = 9\%$
- 18 year old female with 2nd degree burns to chest and front of both arms. adult
 $9 + 4.5 + 4.5 = 18\%$
- 3 month old female with 1st degree burns to both buttocks and the inferior posterior of both legs.
 $2.5 + 2.5 + 7 + 7 = 19.7\%$
- 45 year old male with 2nd degree burns to the anterior left arm and 3rd degree burns to the anterior right leg.
 $4.5 + 9 = 13.5\%$
- 2 month old male with 1st degree burns to the abdomen and anterior of infant both arms.
 $9 + 4.5 + 4.5 = 18\%$
- 3 week old male with 1st and 2nd degree burns to the anterior and posterior infant of both legs.
 $7 + 7 + 7 + 7 = 28\%$
- 25 year old male: 2nd degree burns to the face, chest, abdomen, and anterior of both arms.
 $4.5 + 9 + 9 + 4.5 + 4.5 = 31.5\%$
- 48 year old male with 3rd degree burns to anterior of both legs, 2nd degree burns to the abdomen and groin.
 $9 + 9 + 9 + 1 = 28\%$
- 3 week old female with 1st and 2nd degree burns to the chest, abdomen, infant back, and posterior head.
 $9 + 9 + 13 + 9 = 40\%$
- 26 year old female with 1st and 2nd degree burns to the posterior body. adult
 $4.5 + 9 + 9 + 4.5 + 4.5 + 9 = 40.5\%$
add 9% for back

Simple Squamous

Found in blood vessels + lung tissue

Pink-nucleus
Light blue-cell
Dark Blue-Basement membrane

3.1

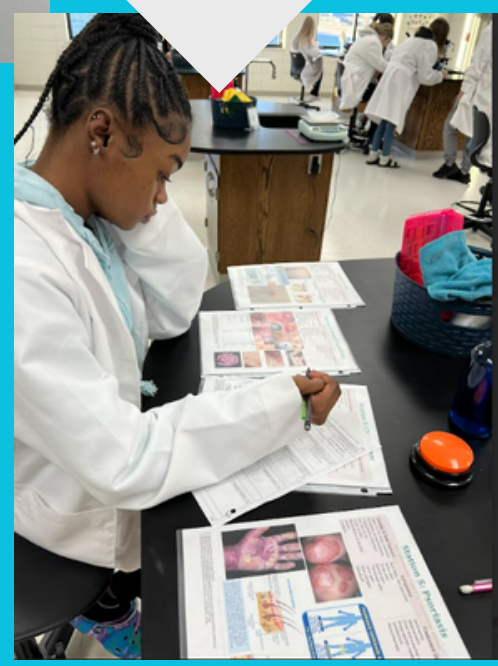
male health

Simple Squamous Epithelium

nuclei = blue
basal surface = white
basement membrane = green

* Found in blood vessels + lung tissue!

3.3, 3.6



3.1, 3.2, 3.4

81 Digging Deeper: Tissue Repair & Scars

Tissue repair is required any time skin or another organ is injured. The goal of tissue repair is to prevent further damage to the body and to restore tissue strength and function. The ability to fully restore the tissue is dependent on the type of tissue that has been damaged and the severity of the injury.

The process of tissue repair involves three major events: inflammation, proliferation, and regeneration.

- Inflammation**-blood vessels become more permeable, allowing immune cells to enter the wounded area and bringing clotting proteins to heal any broken blood vessels. (This will be discussed in more detail in the lymphatic system).
- Proliferation**-Granulation tissue begins to grow. This delicate pink tissue is filled with new capillaries and fibroblasts. These help to restore nutrients to the area and form the collagen fibers that eventually pull the wound closed.
- Regeneration**-The surface epithelium is restored. Depending on the severity of the wound, the scar will either be invisible or remain as a white line.

Because of its high concentration of fibrous material, scar tissue is strong but does not have the same function or flexibility as the original damaged tissue. Deep and ragged wounds are the most likely to form scar tissue rather than fully regenerate.

Discussion Questions:

- Why would immune cells be an important part of tissue repair?
it enters the wounded area bringing clotting proteins to heal any broken blood vessels. This prevents from you bleeding to much.
- Why might it be particularly harmful to have scar tissue in the heart?
since it is not flexible & is strong, when your heart is moving it might tip again from the scar tissue not moving.
- A strange experiment can help to show the differences between scar tissue and normal skin tissue. If you were to throw flour on the man in the photo, the flour would stick to the man's chest everywhere but on his scar. Give a possible explanation for this. YOUR body produces oils so when you throw something fine on someone it will stick, however when you have scar tissue, the tissue might not release any oils for it to stick on.

Integumentary System Test

Multiple Choice: Select the best answer for each question below.

- Which of the following is NOT a function of skin?
 - a. sensation
 - b. excretion of waste
 - c. production of vitamins
 - d. secretion of hormones
- Which of the following is the correct order deep?
 - a. hypodermis, epidermis, dermis
 - b. epidermis, dermis, hypodermis
 - c. stratum lucidum, stratum granulosum, stratum corneum
 - d. stratum corneum, stratum granulosum, stratum lucidum
- Which of the following epidermal layers is in the palms of your hands?
 - a. stratum lucidum
 - b. stratum granulosum
 - c. stratum corneum
 - d. stratum basale
- Which of the following epidermal layers is involved in activities?
 - a. stratum lucidum
 - b. stratum granulosum
 - c. stratum corneum
 - d. stratum basale
- Your fingerprints are caused by
 - a. a build-up of melanin.
 - b. layers of keratin filaments.
 - c. layer of dermal papillae.
 - d. blood vessels near your skin.
- The pigment produced by your skin that protects against UV radiation is
 - a. melanin.
 - b. keratin.
 - c. Vitamin D.
 - d. collagen.
- The arrangement of _____ in the dermis
 - a. melanin.
 - b. keratin.
 - c. Vitamin D.
 - d. collagen.

- The dermis is composed of 2 layers: the _____ layer, which is made of _____ of loose connective tissue and the _____ layer, which is made of _____ densely-packed fibrous tissue.
 - a. cleavage, papillary
 - b. papillary, reticular
 - c. cleavage, subcutaneous
 - d. subcutaneous, reticular
- The sudoriferous glands found primarily in the armpits and _____ are responsible for body odor are known as
 - a. apocrine glands.
 - b. eccrine glands.
- At which location is hair formed?
 - a. hair follicle
 - b. hair cuticle
 - c. hair shaft
 - d. hair root
- The glands that secrete their products into the hair follicle are
 - a. apocrine glands.
 - b. papillary glands.
- Which of the following characterizes eccrine glands?
 - a. They are both made of keratin.
 - b. They both protect our skin.
 - c. They both originate at a hair follicle.
 - d. They both have structure.
- Which of the following is NOT visible?
 - a. nail matrix
 - b. lunula
 - c. nail bed
 - d. nail plate
- Which letter is marking the epidermis?

Matching: Match the description to the correct structure.

- | | |
|---|---------------------------------------|
| F | 1) found between dermis and epidermis |
| C | 2) produce melanin |
| E | 3) site of basal cell carcinoma |
| G | 4) dilate to regulate temperature |
| B | 5) numerous on scalp & face |
| D | 6) also known as subcutaneous layer |
| A | 7) produce dermcidin |

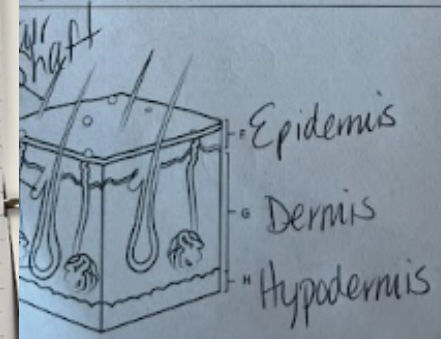
Terms: Based on the prefixes and suffixes you've learned, answer the following questions:

- An **ungulate** is a category of animal. What body structure would you expect these animals to have?

Nails
Cells have surface extensions known as **pili**. What would you expect these to look like?

Hairs
Label a - h in the diagrams below.

Word Bank		
Hair shaft	Sudoriferous gland	Sebaceous gland
Hypodermis	Epidermis	Dermal papillae



Epidermis
protection from water, air, infection, chemicals, UV radiation
Sensation such as pressure, heat, cold & pain
Temperature regulation - body can be heated or cooled by sweat and blood flow near surface
Excretion of waste through sweat
production of Vitamin D
The epidermis is the top layer of skin. It is composed of stratified squamous epithelial tissue.
Stratum corneum - layer of dead cells 20-30 thick
Thick, keratinized cells protect the deep layers.
Stratum lucidum (clear layer) thin layer, only found in cell thick skin of the palms & feet.
Stratum granulosum - cells here begin to flatten & dehydrate, water proof skin
Stratum spinosum - "spiny layer" named for the irregular shape of cells, several cells thick, contains pre-keratin
Stratum basale - constantly dividing & pushing up cells into the next layer.
Melanocytes are spindle-shaped epithelial cells found in the bottom 2 layers of the epidermis.
Melanocytes produce a pigment called melanin, which is absorbed by the nearby epidermal cells.
How do melanocytes differ in dark-skinned and light-skinned people?
darker skinned people have the same amount of melanin as light skinned people.
Melanin protects the skin against harmful UV rays.
When UV radiation mutates a skin cell's DNA, the cells begin to divide uncontrollably. This is called **skin cancer**.
Types of skin cancer:
• Melanoma - uncontrolled division of melanocytes
• Basal cell carcinoma - uncontrolled division of cell in the stratum granulosum
• Squamous cell carcinoma - uncontrolled division of cells in the stratum spinosum
The skin has several functions, but primarily protects the body. The epidermis is the top layer of the skin and it grows from the stratum basale. Melanocytes produce melanin, protecting the skin from UV radiation.

HS-EHS-3.1,
3.2, 3.3, 3.4,
3.5, 3.6