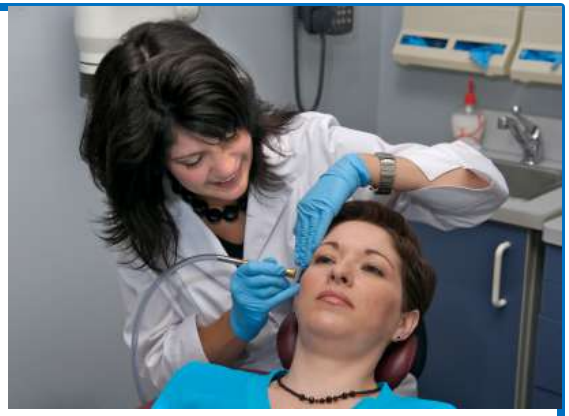
Today in Human Anatomy…

Week #6 (8/29-9/2)
Warm Up – Monday 8/29
- Bead Lab Set Up

Anatomy Fun Fact:



The field of medicine that involves the Int. Sys. is *dermatology*. A dermatologist is a physician who cares for the diseases of the skin, hair & nails & performs procedures to improve the skin, remove discomforts & disfigurements, such as varicose veins.

Agenda:
1. Data Collection for Bead Lab
2. Whiteboard Meetings for Bead Lab

Pick up:
- Nothing

Have out:
- UV Bead Lab Pre-lab set-up paper

Homework:
1. Integumentary System Quiz #1 – **TOMORROW!!**
2. Int. Sys. Research Project – **Friday 9/2/2016**
3. UV Bead Lab Abstract due **Tuesday 9/6 (no school Monday 9/5)**

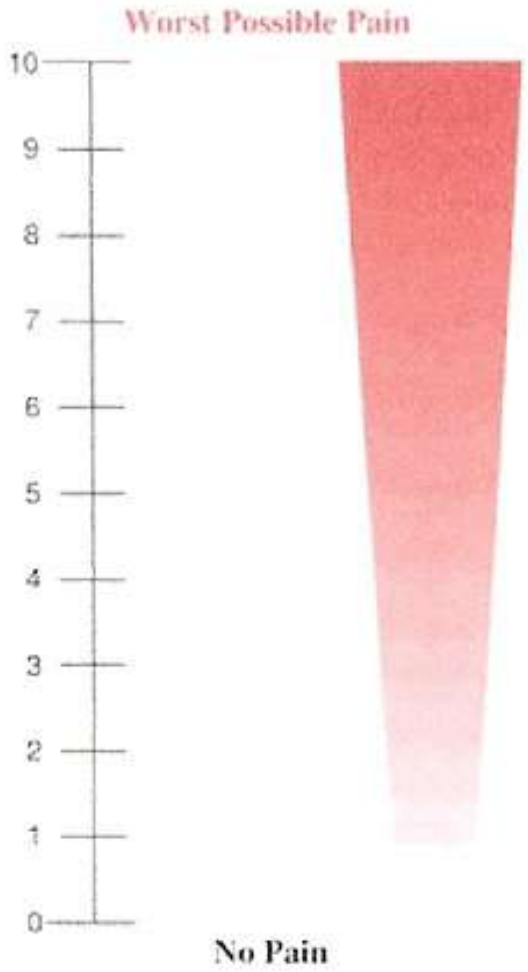
Bead Lab

- **Pre-lab Set-up:**
  - Variables:
    - What are your **DIFFERENT VARIABLE LEVELS** (IV)?
    - **How MANY beads** will you NEED to perform your test?
  - **Experiment/Test**:
    - Procedures for test
      - **BE SPECIFIC!!!**
    - Who is responsible for doing what during testing?
      - Recorder? Materials person? Clean-up? Photographer?
    - We will ONLY spend 10 mins. collecting data OUTSIDE!
      - Collect data **every minute**!
  - **Prediction**: ***What do you think will happen to each bead?***
    - What should OR shouldn't happen if the SPF is working correctly to protect against UV?

Bead Lab

- **Pre-lab Set-up:**
  - It will be your job to develop…
    - a **DATA TABLE** in which to put your data &
    - a **NUMERIC SCALE** to determine your results
      - Hint: think pH scale & color-coding)
      - **Physically color & label your NUMERIC SCALE**

- When finished, raise your hand & I will ***STAMP*** your Bead Lab Pre-lab assignment!



Bead Lab

Take your phones for picture-taking!

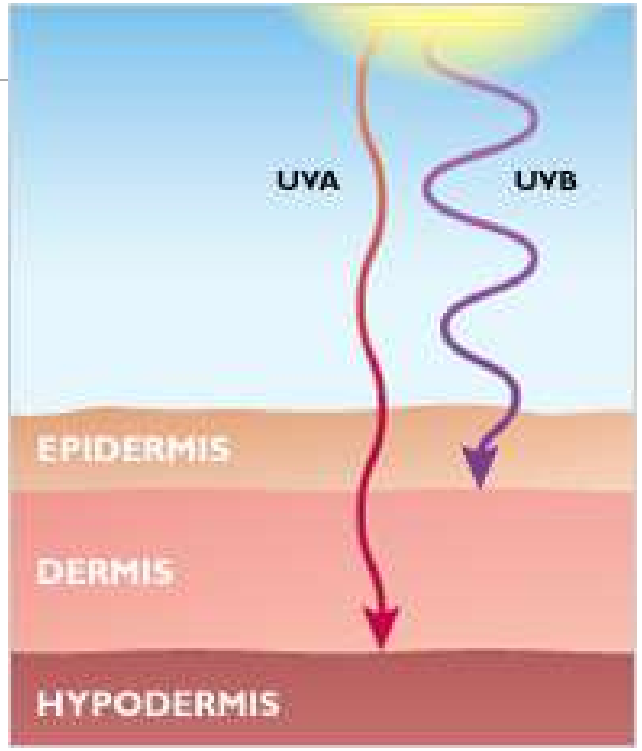
BEFORE WE ...

- Cover your beads with the plastic bowl as you set up for as long as possible *(until I say "Time Begins")*
- Take wit... om ...
- Recorde... -up ... grapher?
- Document your Data & consider the Numeric Scale you developed.
- ...

Bead Lab

- **Whiteboard Meeting**
  - Now share with the class your:
    - **What Sun Protection Variable did your group investigate?**
    - **Prediction & whether it was Supported or Not Supported by your results**
    - **What possible errors or factors could have skewed your results?**
    - **Conclusion(s)** about efficiency of your sun protection factor.
      - **As a "dermatologist," you are an educated consumer of sun protection factors & the Integumentary System. Therefore, based on the results of your test, what advice would you give your "patients" about your factor?**

Bead Lab



- **LAB ABSTRACT**:
  - **Title Page**:
    - Title & picture of lab, Name, Date & Period
  - **Data & Observations**:
    - **Qualitative**:
      - Pictures of Bead Changes (correct labels)
    - **Quantitative**:
      - Data Table including Bead Change info
      - Numeric Color Scale for data interpretation

DUE: Tuesday 9/6

Bead Lab

- **LAB ABSTRACT**:
  - **Conclusions & Applications**:
    - Write out your prediction. Was it supported or refuted? Explain using your results.
    - What did you find out about UV radiation based on the results (color change) of your beads?
    - What does SPF mean? What do the numbers after SPF mean?
    - Do your results comply with what is understood about UV radiation? If not, what sources of error may you have had in your experiment?
    - If you were to retest, describe how you would change your test or allow for more accurate results.
    - Describe how the Integumentary System (& the cells within) are affected by UV radiation?
    - Describe how the Integumentary System (& the cells within) provide a natural defense against UV?
    - What profession/field can best use data collected about how the Integumentary System is affected by UV? Explain. Use examples & give details.

Today in Human Anatomy…

Week #6 (8/29-9/2)
Warm Up – Tuesday, 8/30:
- A Sticky Situation

Anatomy Fun Fact:
The Effects of Aging
National Geographic - Effects of Aging Simulation

Agenda:
1.Integumentary Quiz #1
2.*The Cholesterol also Rises* article Annotations

Have out:
- Skin foldable

Pick up:
- A sticky note
- *The Cholesterol also Rises* article & assignment

Homework:
1. Int. Sys. Research Project – Fri, 9/2
2. UV Bead Lab Abstract (2I) – Tues, 9/6
3. *The Cholesterol also Rises* article written response – Wed, 8/31 & Thurs, 9/1

A Sticky Situation

Using your **Int. Sys. PPT notes, your Latin index cards & your Skin Foldable**, write 1 Multiple Choice or Fill-in Quiz question on your STICKY NOTE.

When finished, stick it on the **SIDE DOOR** of the classroom.

Now un-stick a classmates' Quiz question from the door & **answer it**. Write your Answer on the sticky note.

Be prepared to share questions & answers!

Integumentary System Quiz #1

20 mins

Spend the **next 5 mins.** studying the information we have talked about & written in your Skin Foldable & Int. Sys. Notes…

- Questions from notes on ***Integumentary System*** before the quiz?

This is a **SOLO QUIZ!!**

You may **NOT** talk during the Quiz!

Make sure to write **YOUR NAME** on the quiz!

When finished, **QUIETLY** turn your quiz up front & then **follow the directions** on the screen regarding *The Cholesterol also Rises* article!

"The Cholesterol Also Rises"

- **Read & annotate** the article for homework
- We will be writing a prompt over this reading Wednesday/Thursday during class
- Prompt Instructions will be given in class on the block day!

Writing Prompt DUE IN CLASS Wed, 9/2 & Thurs, 9/3

Today in Human Anatomy…

Week #6 (8/29-9/2)
Warm Up – Wed, 8/31 & Thurs, 9/1:
- The Cholesterol Rises Reading

Anatomy Fun Fact:
The average human being sweats ~278 gallons each year, enough to fill up the gas tank of 3 mid-size SUVs. Maybe sweat should be the next alternative fuel!

Agenda:
1. The Cholesterol also Rises written response
2. Appendages of the Skin Lecture

Pick up:
- Int. Sys. Building the Framework wkst
- 4 same colors as yesterday + 1 more

Have out:
- Appendages PPT notes
- Appendages diagram
- A piece of paper

Homework:
1. Int. Sys. Research Project – Fri, 9/2
2. UV Bead Lab Abstract (2I) – Tues, 9/6
3. *The Cholesterol also Rises* article written response – Wed, 8/30 & Thurs, 9/1

"The Cholesterol Also Rises"

Read & annotate the article.

Use your background knowledge & information/examples from the article to write a ***2-paragraph*** short answer response to this prompt:

- ***There are various levels of organization within the human body, from microscopic to macroscopic. Using anatomical language & learned terms, describe & discuss at least one way that the chemical level of organization affects higher, more complex levels.***

DUE IN CLASS Wed, 9/2 & Thurs, 9/3

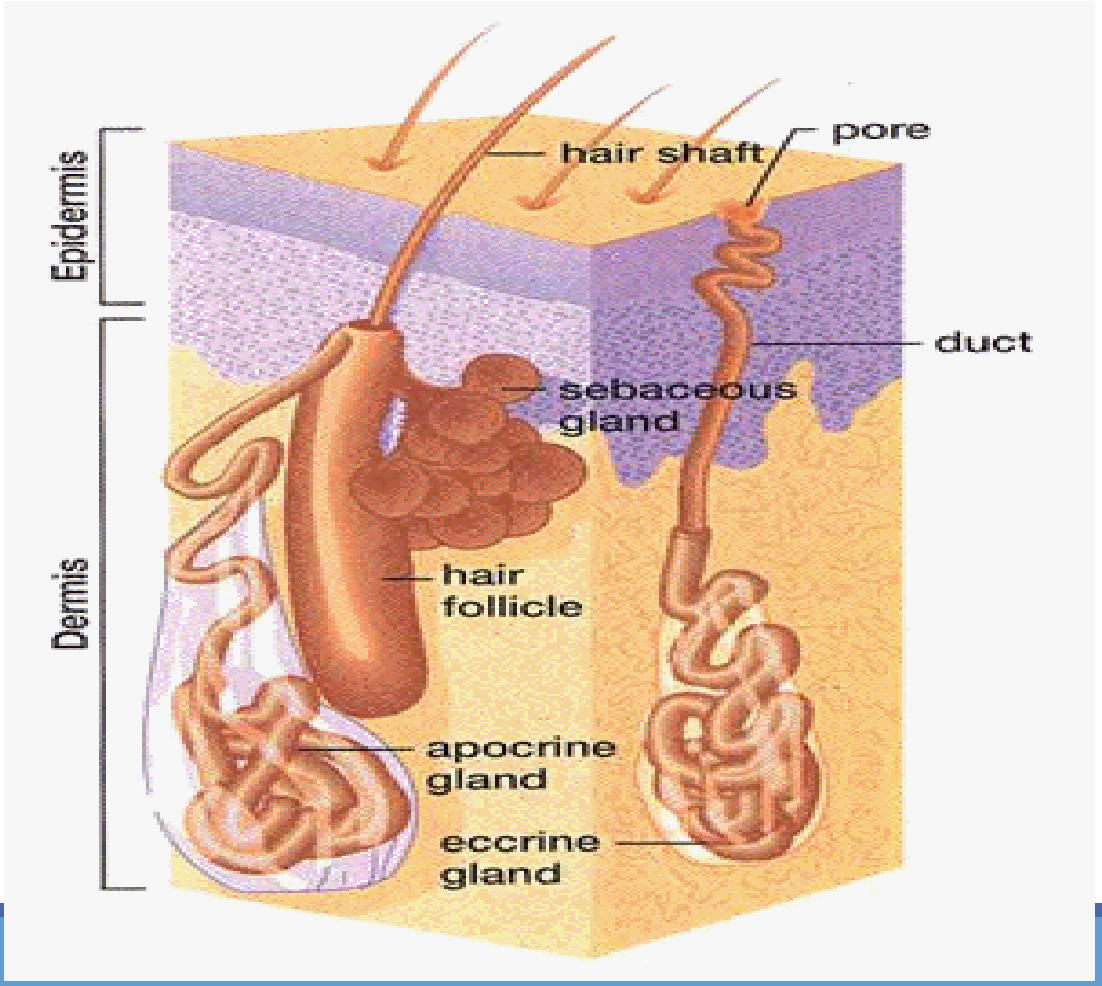
Appendages of the Skin

Sweat (sudoriferous) glands

Sebaceous (oil) glands

Hair

Nails

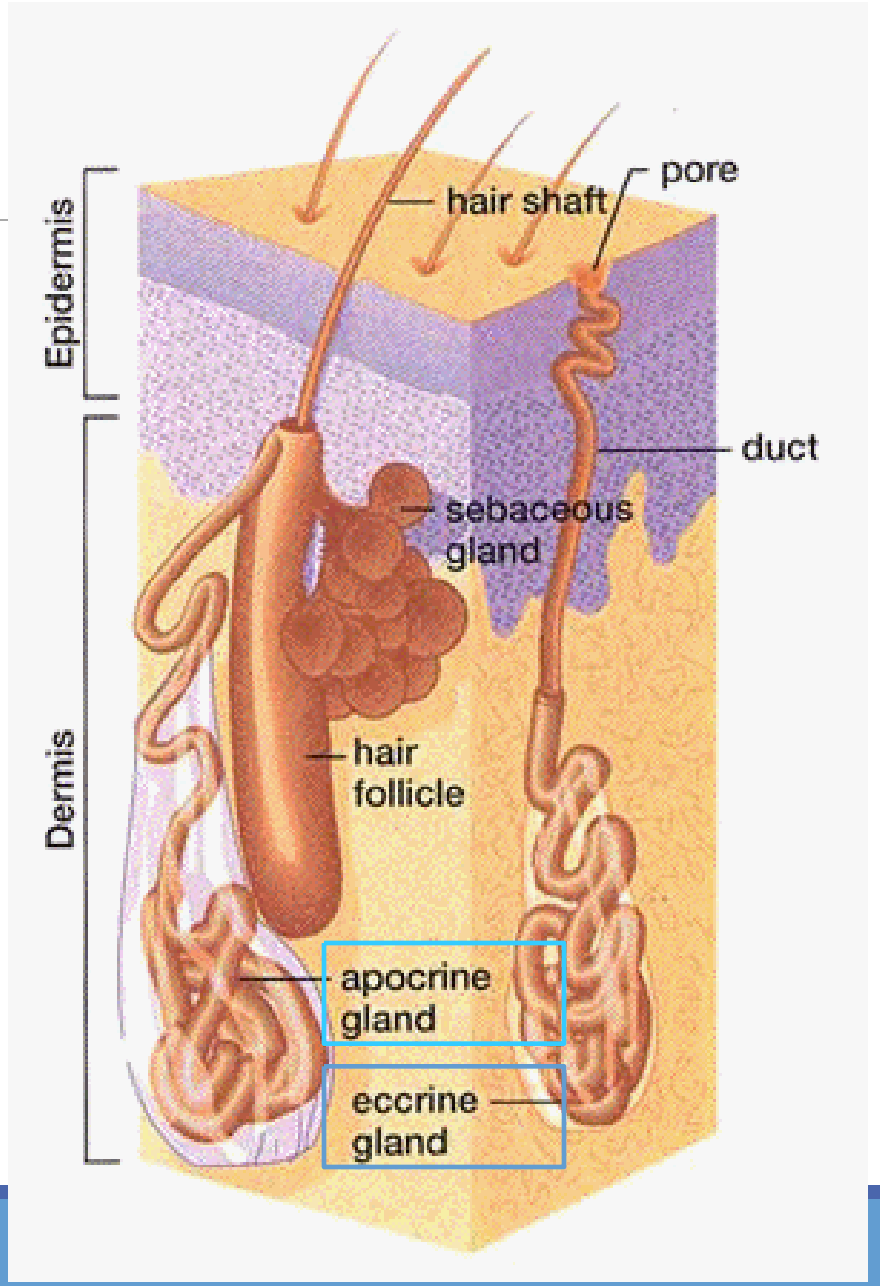


You'll need 4 different colored pencils!

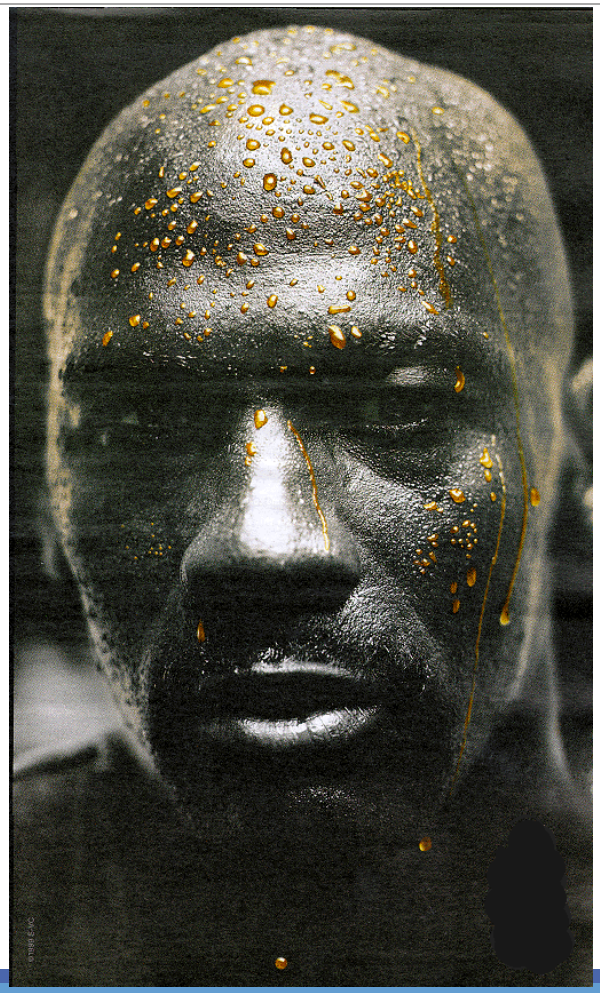
Sweat (sudoriferous) Glands

- Exist all over skin except nipples & part of external genitalia (*more than 2.5 million/person*)
- 2 types:
  - ***Eccrine*** & ***apocrine***

Color-code & label the diagram on the back of your wkst!



What is Sweat?



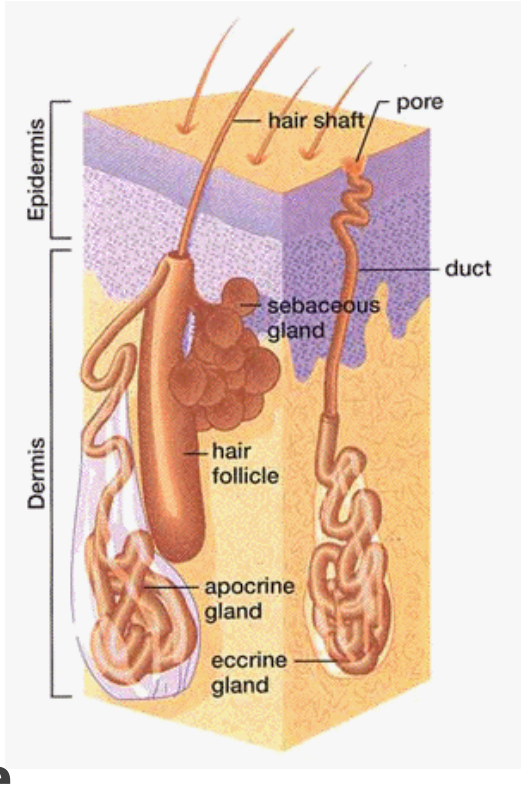
What is sweat?

- 99% water, with some salts, vitamin C, antibodies, traces of urea, uric acid, ammonia
- Also contains lactic acid, which is the chemical that attracts mosquitoes
- Normally of pH 4-6
  - *Basic, acidic or neutral?*

What's the Difference?

Eccrine Sweat Glands

- MUCH MORE NUMEROUS
- MOST ABUNDANT ON PALMS, SOLES & FOREHEAD
- STRUCTURALLY SIMPLE:
  - **Coiled tubular gland**
  - **Secretory part lies coiled in dermis**
  - **Duct opens in pore at skin's surface**



Apocrine Sweat Glands

MOST COMMON IN ARMPIT & ANOGENITAL REGIONS

LARGER THAN ECCRINE GLANDS

DUCTS EMPTY INTO HAIR FOLLICLES

APOCRINE SWEAT HAS SAME COMPOSITION AS NORMAL SWEAT, HOWEVER IT HAS FATTY ACIDS & PROTEINS WHICH MAKES IT MORE VISCOUS

Odorless, however, when decomposed by bacteria on skin a "Body Odor" is

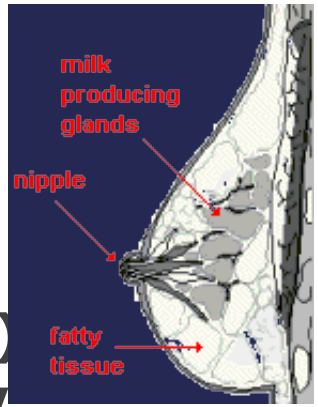
What about…???

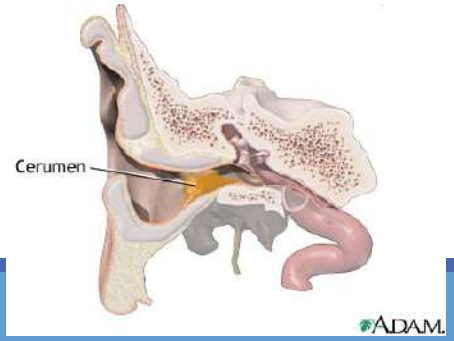
Ceruminous Glands

MODIFIED APOCRINE GLANDS FOUND IN THE LINING OF EXTERNAL EAR CANAL

SECRETE STICKY CERUMEN *(EARWAX)*

Thought to deter insects (bitter flavor) & block entry of foreign particles



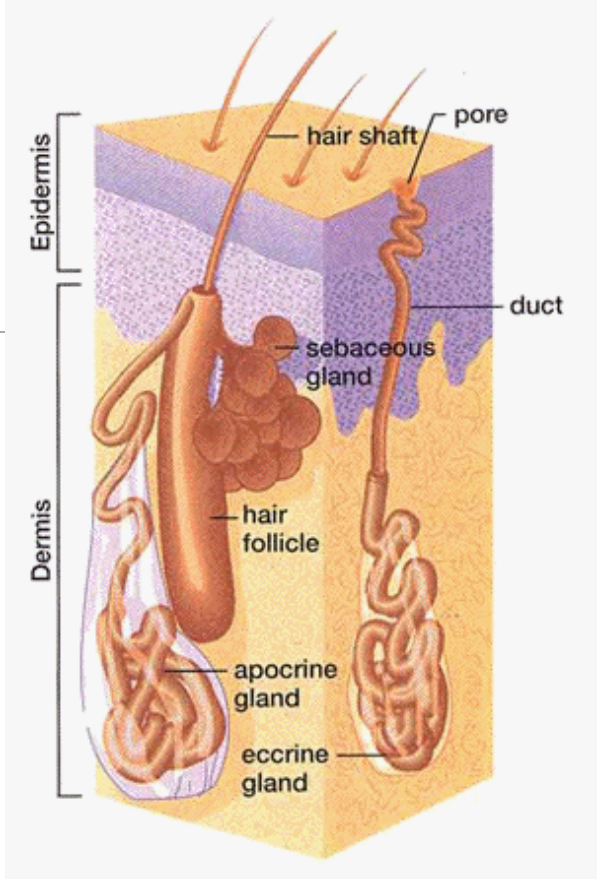


Mammary Glands

- SPECIALIZED APOCRINE SWEAT GLAND THAT SECRETES MILK
- EXIST IN BOTH MEN & WOMEN
  - **Males – little mammary tissue**
    - **Male lactation – most commonly caused by hormonal treatments given to men suffering from prostate cancer**
    - **Female hormones are used to slow production of cancerous tissue**
  - **Females – milk develops with increase of hormones when pregnant & after birth**
    - **Prolactin**
    - **Progesterone**
    - **Estrogen**

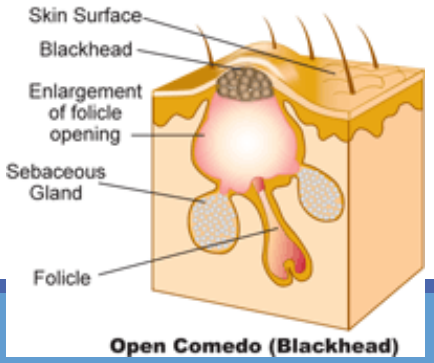
Sebaceous (Oil) Glands

- Found all over the body EXCEPT palms & soles
  - Small – body trunk & limbs
  - Large – face, neck & upper chest
- Secrete oily substance called ***sebum***
  - Softens & lubricates hair & skin = prevents brittleness
  - Slows water loss from skin
  - Sebum kills bacteria
- If a sebaceous gland duct becomes blocked accumulated sebum, a *whitehead* forms
- If this material oxidizes & dries, it turns into a



Color-code & label!

- Acne is an active inflammation of sebaceous glands accompanied by pimples (pustules) on the skin
  - Usually caused by bacterial infection (staphylococcus)



Why do we have Hair?

Main functions of our ***body hair*** = sensory reception & protection

- ***Hair on scalp*** = protect head from physical trauma, heat loss, sunlight
- ***Eyelashes*** = protect eyes
- ***Nosehair*** = filter

Random Facts about Hair:

- Hair found almost everywhere on the body
- ~100,000 hairs in human head
- **Lack hair**: lips, nipples, thick skin & parts of the internal genitalia
- Hair growth & density are determined by **nutrition** & **hormones**
- Average growth rate: 2 mm/day

One Last "Strand" of Hair Facts

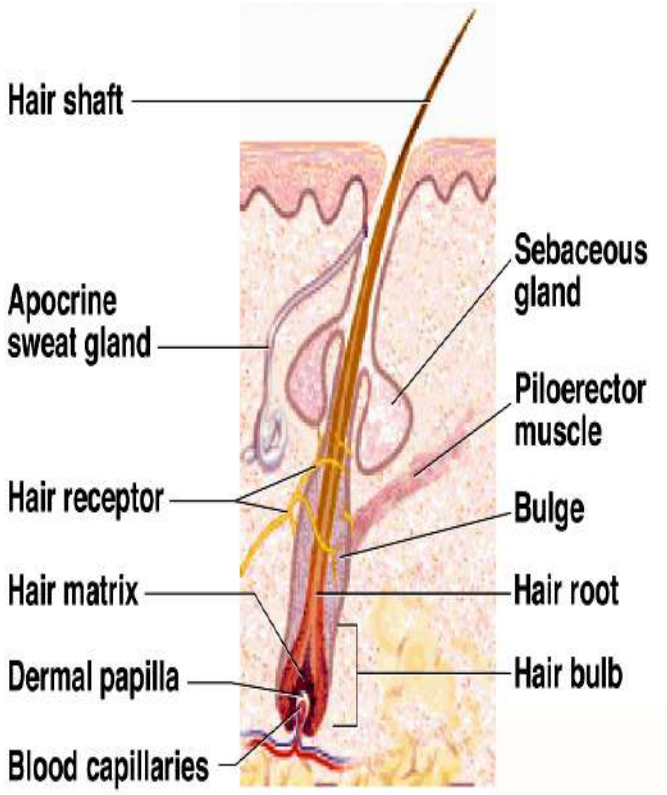
Hair grows fastest from teen years to 40s
- Hairs are no longer replaced as quickly as shed

Alopecia (*balding in both sexes*) usually begins at the anterior hairline

Male pattern baldness
- Genetically determined, sex-influenced condition
- Follicular hair cycles become so short that the hairs never emerge from the scalp before being shed

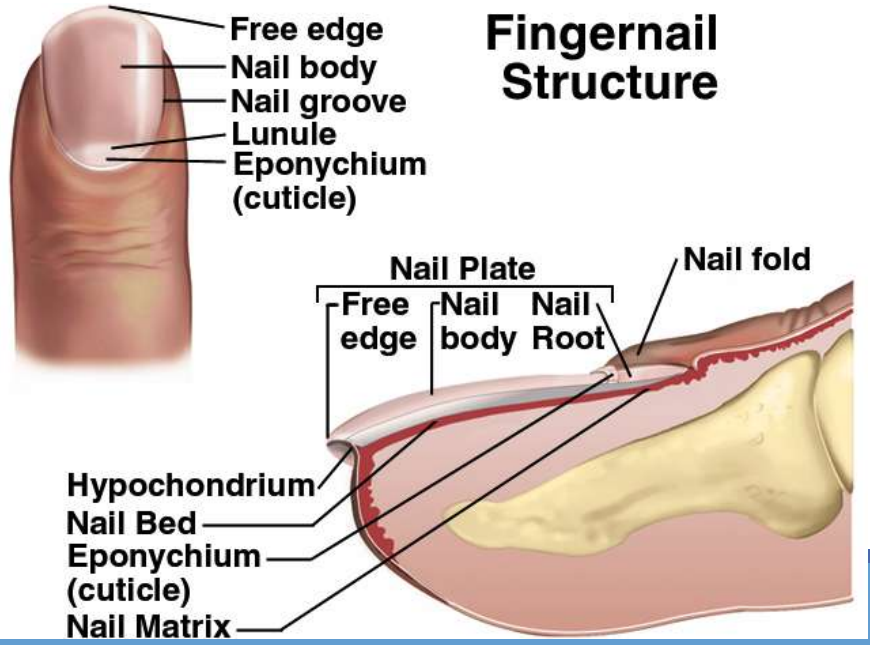
Structure of Hair

- Hairs (**pili**) – strands produced by hair consist mostly of *keratinized* cells
- **Shaft** – portion that projects from skin
  - Shape of shaft determines texture
- **Root** – portion embedded in skin
- **Cuticle** – outermost layer formed from single layer of overlapping cells
  - Subjected to most abrasion
  - Wears away at tip of hair shaft
  - Allows keratin fibrils to frizz out, creating "s
- **Arrector pili** – a muscle attached to each follicle
  - Contraction pulls follicle into upright position, producing "goose bumps"



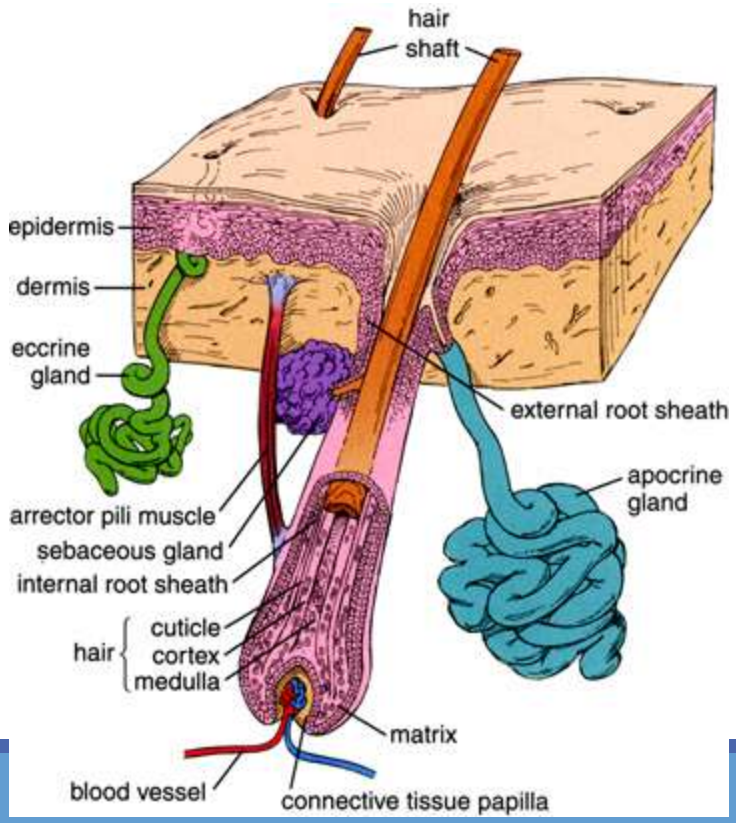
Nails

- Modification of epidermis
- Corresponds to hoofs or claws of other animals
- Clear, hard derivative of stratum corneum made of hard keratin *(like hairs)*
- Growth rate is ~1 mm/week
-
  - ***Matrix*** – only living part
    - Produces keratin of nail plate
    - Damage affects growth of nail
  - ***Cuticle*** – where nail meets skin
  - ***Nail plate*** – hard, translucent part of nail made of layers of keratin



Appendages of the Skin

- **Agree** or **Disagree**?
  - Your job is to answer the Warm-up statements **NOT** with your mouth but with the movement of your body.
    - If you **AGREE**, move to the Agree side of the room ***QUIETLY***!!!
    - If you **DISAGREE**, move to the Disagree side of the room ***QUIETLY***!!!
  - After each question, we'll discuss the Truth of the statement.



Today in Human Anatomy…

Week #6 (8/29-9/2)
Warm Up – Fri, 9/2:

Anatomy Fun Fact:

Next to bone marrow, hair is the fastest growing tissue in the human body. The longest human beard on record is 17.5 feet, held by Hans N. Langseth who was born in Norway in 1846.

Agenda:

1.Int. Sys. Research Project presentations & Walk-about

Turn in:

- Your Int. Sys. Project 5-question QUIZ

Have out:

- Int. Sys. Research Project
- Note-taking materials for walk-about

Homework:

1. UV Bead Lab Abstract (2I) – **Tues, 9/6**
2. Integumentary Latin Quiz – **Tues, 9/6**
3. Integumentary System Quiz #2- Tues 9/1

Agree or Disagree?

1. Nails are modifications of the epidermis that correspond to hoofs or claws of other animals.
2. The accumulation of carotene is least obvious in the stratum corneum, where the skin is thickest.
3. The main functions of our body hair is for sensory reception & protection.
4. Hair grows fastest between the elementary years & the 30s.
5. Collagen, found in the papillary layer of the dermis, binds with water to help hydrate the skin.
6. Sebaceous glands secrete the oily fluid called sebum, which softens and lubricates the hair & skin.
7. The epidermis of the skin is highly innervated & vascularized.
8. Both men & women have mammary glands that can secrete milk.
9. Cerumen is thought to be a deterrent to insects due to its sweet flavor & helps block the entry of foreign particles into the nose.
10. Eccrine glands are larger than apocrine glands.

Now that you KNOW why we are of different colors…

Bill Nye: Skin & Races (~25 mins)

What other factors, in addition to genetics & melanin, have played a role in making our world "so colorful"?

"The Cholesterol Also Rises"

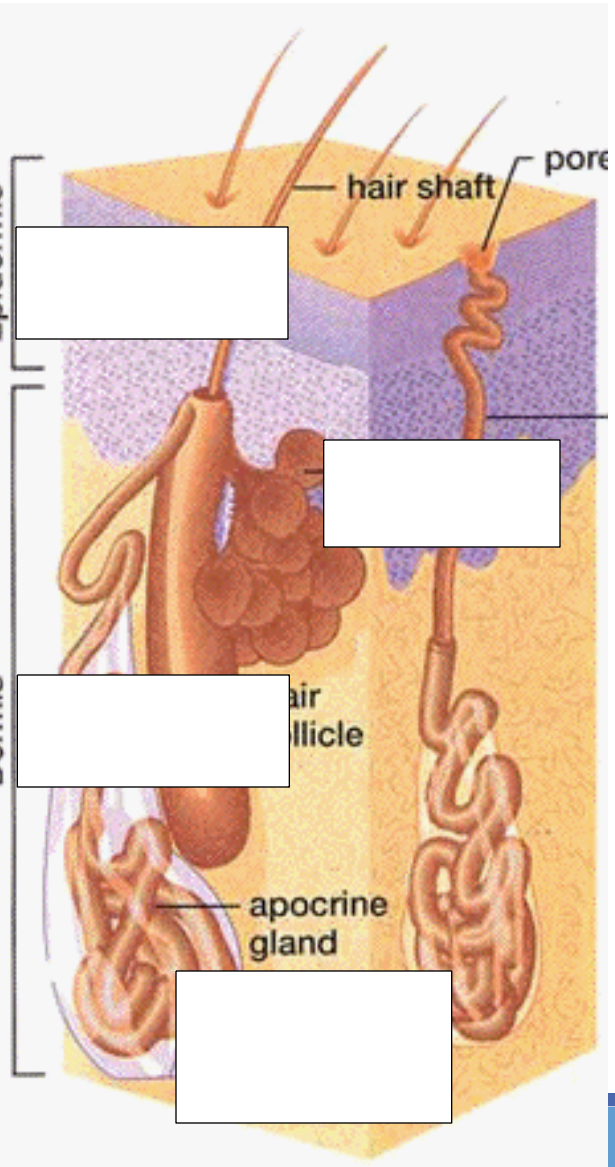
Read & annotate the article.

DUE Wed, 9/3 & Thurs, 9/4

Use your background knowledge & information/examples from the article to write a *2-paragraph* short answer response to this prompt:

- *There are various levels of organization within the human body, from microscopic to macroscopic. Using anatomical language & learned terms, describe & discuss at least one way that the chemical level of organization affects higher, more complex levels.*

Warming Up…



Label the following layers/appendages of skin.

- What is the layman term for a **sebaceous gland**?
- Describe one function of **sweat**.
- Why is **exposure to sunlight** & the **synthesis of Vitamin D** important for humans?
- Explain how "**goose bumps**" occur, using integumentary system terminology.

Int. Sys. Research Project presentations & Walk-about

DIRECTIONS for PROJECT SET-UP:

- Is your QUIZ turned in up front with NAME(S) on it?
- Take your note-taking materials, project & partner *(if you have one)* to the back lab.
- Please set up your project at a Lab Station in the back *(no more than 3 projects/station)*!
- Grab a piece of blank computer paper & make a NAME TENT for your Integumentary System Research Project TOPIC!
- Set this NAME TENT in front of your project!
- Stand NEXT TO your project at the station.

Int. Sys. Research Project presentations & Walk-about

DIRECTIONS for Walk-about:

- **Objectives of Walk-about:**
  - See & interact with others' Research Projects
  - **Investigate various conditions & pathologies** of the Integument
  - You will see Quiz questions on each topic on the Final Exam at the Semester …so take thorough notes!
- **PROCEDURES:**
  - **Discuss**, **ask questions** & **take notes** on the Research Projects **at your station**.
  - Now, each station will have a chance to **rotate** through the lab area, **discussing**, **asking questions** & **taking notes** on the Research Projects **at other stations**.

Unit 1 Exam Results

Per. 1

A-3
B-12
C-6
D-4
F-2

Per. 3

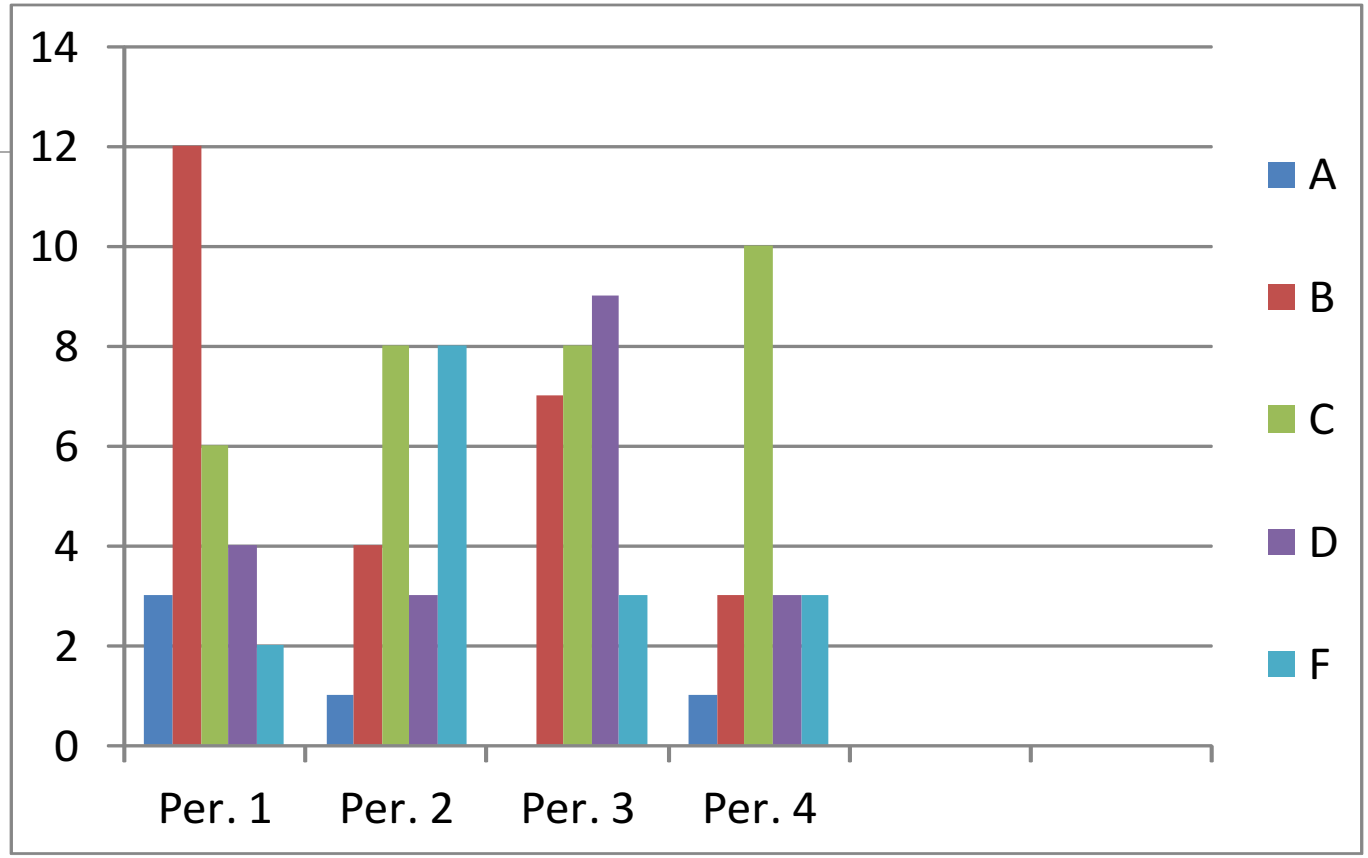
A-0
B-7
C-8
D-9
F-3

Per. 2

A-1
B-4
C-8
D-3
F-8

Per. 4

A-1
B-3
C-10
D-3
F-3



THINK ABOUT IT:

-As a teacher, what do we want to see to know that we have given a fair, challenging, yet passable exam?

-Compare your exam results to your classmates? Where do you fall?

-Compare your exam results to our other classes? Where do you fall?

-Analyze this data: What do you need to do differently or better to have more success on the next exam or in this class?

Unit 1 Exam Results

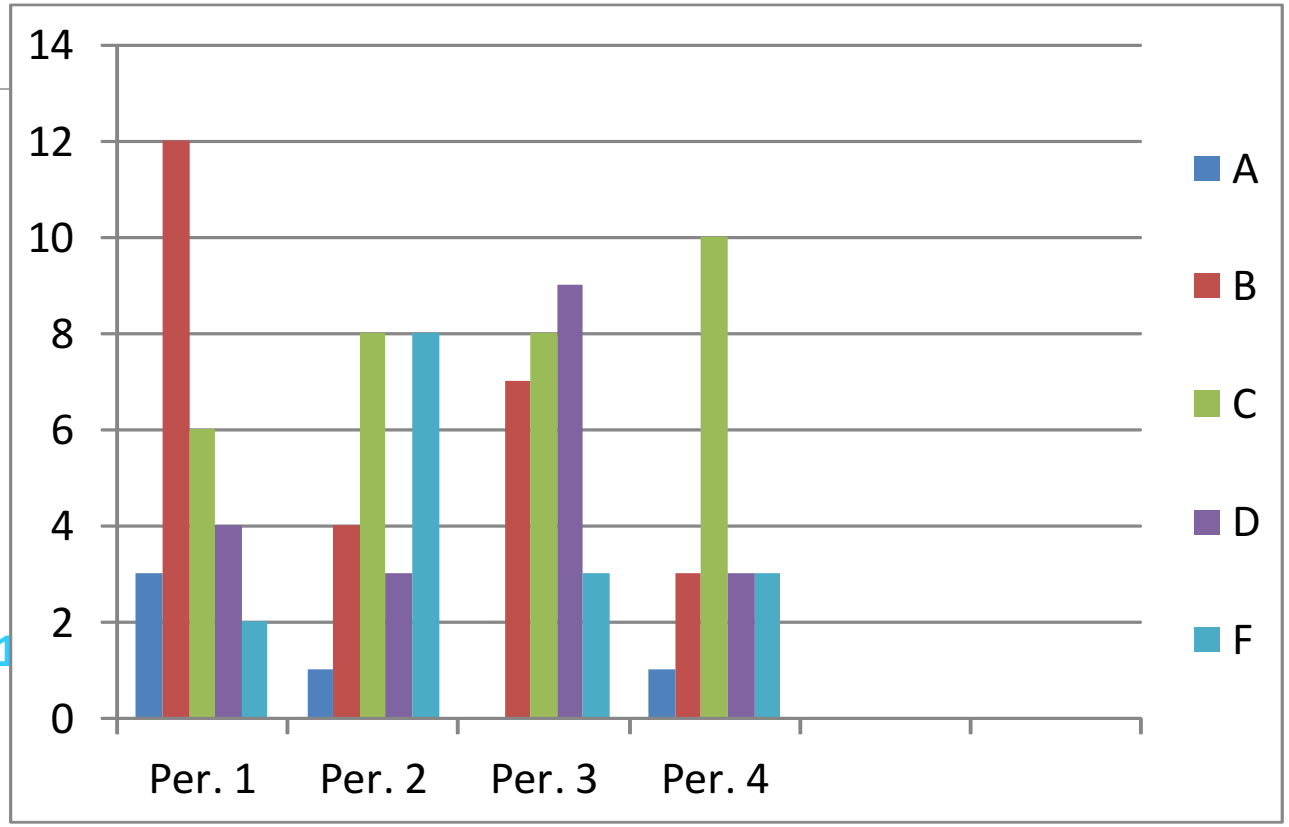
Our Thoughts:

-Are you being
education?

- **Participating**
- **Focused in lab?**
- **Asking about content?**
- **You DO NOT & follow them**

-Do you STUDY your notes &

- **You should be spending 1**



Now that you KNOW why we are of different colors…

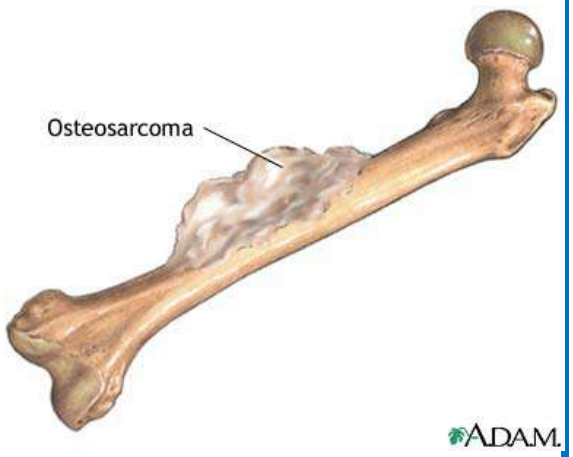
Bill Nye: Skin & Races (~25 mins)

What other factors, in addition to genetics & melanin, have played a role in making our world "so colorful"?

Today in Human Anatomy…

Week #6 (8/25-8/29)
Warm Up – Tues, 8/25:
- Brain Pop! Nails

Anatomy Fun Fact:
The term *sarcoma* comes from a Greek word meaning "fleshy growth." A sarcoma is a tumor that arises out of connective, therefore, are found in bone (osseous), cartilage, skeletal muscle, tendons, veins/arteries, nerves, skin & fatty tissues.



Agenda:
1.Finish discussing UV Bead Lab Conclusions & Lab Abstract
2.Int. Sys. Lecture: Appendages of Skin

Pick up:
- Int. Sys. PPT notes (*Appendages of Skin*)
- Skin Appendage diagram
- 3 colored pencils

Homework:
1. Int. Sys. Research Project – Fri, 8/28
2. UV Bead Lab Abstract (2I) – Mon, 8/31
3. *The Cholesterol also Rises* article written response – Wed, 9/2 & Thurs, 9/3