TEST 2

Modules 3 & 4

1. What is the largest organ in the human body? The skin

2. How does the skin regulate body temperature? Around 3 million temperature controller "tubes" called sweat glands contract and squeeze out droplets of sweat onto the skin and then the sweat evaporates and cools the body.

3. What are the factors that determine skin color? Skin color is due to **melanin**, a pigment produced in the epidermis to protect us from the sun's potentially cancer-causing ultraviolet (UV) rays. Dark-skinned people produce more numerous and deeper-colored melanin particles.

Fair skin is an adaptation found in people from northern latitudes where solar rays are relatively weak.

Define these terms:

Integumentary system - made up of the skin, hair, nails, and glands
Skin - largest organ of the body
Receptors - receive information from the outside environment
Epidermis - thin, outer layer of the skin
Dermis - inner, thick layer of the skin
Subcutaneous - deepest layer of the skin
Mitosis - reproduction of somatic cells
Keratin - a protein that makes up hair and nails
Melanin - produced by melanocytes/determines skin color
Sebum - a lubricant that also kills bacteria
Sebaceous Glands - secrete sebum
Hair - provides protection/includes eyelashes/keeps particles out of respiratory tract
Sweat glands - produces sweat, which prevents bacteria from growing/evaporation of sweat cools off the body/releases waste

4. Describe four functions of the skin. Stops water from escaping the body, keeps dangerous chemicals or bacteria from entering the body, helps keep the body from overheating, stretches to maintain coverage

5. Describe the role of collagen in the skin. Collagen gives skin it's strength. Each fiber of collagen is stronger than a steel wire of the same size.

3. How many dead skin cells are lost by the skin each day? 10 billion

4. Name two adverse effects of sunlight on the skin. Pigment cells are destroyed and skin cancer

5. What is a skin graft? A skin graft is healthy skin that is taken from another part of the body and placed on the damaged skin to help the cut to heal.

6. Describe the structure of the epidermis. The Epidermis itself is made up of many layers. The basale stratum is the only layer capable of cell division 'pushing up' cells to replenish the outer layer which is constantly shedding dead cells. The Epidermis does not contain blood vessels (non-vascular). It contains the pigment **melanin** which gives skin colour and allows the skin to tan, uneven distribution of melanin causes 'freckles'.

The protein **keratin** stiffens epidermal tissue to form finger nails. Nails grow from a thin area called the '**NAIL MATRIX**', growth of nails is about 1 mm per week on average. The lUNULA is the crescent shaped area at the base of the nail, this is a lighter colour as it mixes with the matrix cells.

The epidermis.contains different types of cells, the most common are; **squamous cells** which are flat, scaly cells on the surface of the skin, **basal cells**which are round cells, and **melanocytes** which give the skin its colour. The epidermis also contains **Langerhan's cells**, these are formed in the bone marrow and then migrate to the epidermis. They work in conjunction with other cells to fight foreign bodies as part of the body's immune defense system. Granstein cells play a similar role.

- See more at: http://www.cancerindex.org/medterm/medtm5.htm#section2

7. Describe the structure of the dermis. The dermis consists of blood vessels, connective tissue, nerves, lymph vessels, glands, receptors, hair shafts. The dermis has two layers, the upper **papillary** and lower **reticular** layers. The Papillary is the upper layer of the dermis, it has ridges

and valleys causing finger prints. It contains receptors which communicate with the Central Nervous System, these include touch, pressure, hot, cold and pain receptors. These are not evenly distributed over the body, for example there are more on the lips and finger tips making them more sensitive. The reticular layer is made of dense elastic fibers (connective tissue), this houses hair follicles, nerves, and certain glands.

The dermis contains several important glands. The **sebaceous glands** located near the hair follicles secrete oil to keep skin and hair soft and moist. The **sudorferous glands** secrete sweat to regulate temperature and are located under the dermis with ducts to the surface. The **ceruminous glands** secrete wax to stop dust entering the ear

- See more at: http://www.cancerindex.org/medterm/medtm5.htm#section2

8. Describe the structure of hair. Hair grows from follicles that contain the lower shaft and root of the hair. The hair shaft projects through the dermis and epidermis and is kept soft by the sebaceous glands. Hair colour is determined by the concentration of melanin. There are tiny muscles attached to the follicles (arrector pili), when cold or frightened these tighten forming 'goose pimples'. - See more at: http://www.cancerindex.org/medterm/medtm5.htm#section2

9. Where does hair growth occur? The dermis

10. When is ultraviolet radiation most intense? In the middle of the day (Between 10am and 4pm), During the summer months, At higher altitudes, In regions of the earth closer to the equator

11. Can ultraviolet radiation travel through water? Explain why or why not. UV Radiation can penetrate through 3 feet of water.

12 .Name and describe the three types of skin cancer. **Basal Cell Carcinoma**- is the most common type of skin cancer, usually appearing on the face and ears. About 75% of all skin cancers are basal cell. This type of skin cancer is the easiest to treat and cure, as it usually does not spread to other parts of the body. However, if left untreated, basal cell carcinoma can cause considerable disfigurement and can be much more difficult to remove.

Squamous Cell Carcinoma-is the next most common type of skin cancer, appearing on sun-exposed parts of the body. It represents about 20% of all skin cancers. It is more aggressive than basal cell carcinoma and may spread (metastasize) to sites elsewhere in the body. More than 2,000 people die each year from squamous cell carcinoma.

Melanoma –is the most dangerous type of skin cancer, but the least common, representing about 5% of all skin cancer diagnoses. Unfortunately, melanoma is the most rapidly increasing cancer of all. While rates of other types of cancer have declined in recent years, rates of melanoma are still rising, doubling in the last 30 years. The dangerous thing about melanoma is that it can metastasize to other body organs if not detected and treated early. With early diagnosis and treatment, the cure rate is very high while at later stages, the cure rate drops significantly.

13. Who is at risk for skin cancer? Everyone

14. What are four genetic risk factors for skin cancer? Naturally red, blond or light brown hair color, Light eye color – blue, gray or green, Fair or light skin that burns or freckles easily, Many moles on your body (more than 100), irregular moles, or large moles, Family history – blood relatives who have had skin cancer

15. What are four behavioral risk factors for skin cancer? History of sunburns– just two severe sunburns as a child or adolescent doubles your risk of developing melanoma later in life., History of sun exposure without sun protection during outdoor work or play, History of using tanning bed.

16 How can skin cancer be prevented? Describe 5 ways.

Do not burn, generously apply sunscreen, wear protective clothing, seek shade, use extra caution even on snowy or cloudy conditions

17. Early diagnosis of skin cancer is very important. Certain changes in the skin can indicate possible melanoma. The changes are described by a tool known as the ABCDE's of Melanoma. What are the ABCDE's of melanoma?

- A – Asymmetry: one half not exactly like the other
- B – Border: irregular, scalloped, or poorly defined
- C – Color: various colors in the same mole
- D – Diameter: larger than a pencil eraser (6 mm)
- E - Evolving: any change in a mole that is worrisome

18. What is a sunscreen and how does it protect the skin? Include an explanation of SPF in your answer. Sunscreen is a chemical that, to some degree, prevents Ultraviolet Radiation from reaching the skin. While there is no sunscreen that totally eliminates UV Radiation damage, many products when used properly, can protect the skin adequately. SPF stands for sun protection factor. It is a measure of how effective the sunscreen is in absorbing UV-B Radiation. For example, let's say your unprotected skin typically burns after 10 minutes in the sun. If you use a sunscreen with an SPF of 15, it will extend the amount of time before your skin burns to 150 minutes, or two and one half hours. During this time, however, you should reapply the sunscreen to continue the protection.

In terms of percentages, a product with an SPF of 15 will block 93% of the UV-B rays; SPF 30 blocks 97%; and SPF 50 blocks 99%, so the difference in protection may not warrant the added expense of higher SPF products.

19. Are sunscreens needed on cloudy or rainy days? Explain. Yes. 40% of the sun's UV rays can penetrate on a cloudy day.

20. How does a sun tan change the skin? Are sun tans safe? A tan is the skin's reaction to exposure to UV Radiation. The pigment-producing cells in the epidermis (outer layer of the skin), called melanocytes, increase their activity in the presence of UV Radiation and cause darkening of the skin which appears in the form of freckles, tans and sunburns. This is the skin's attempt at protecting itself from further damage. A tan obtained through exposure to UV Radiation, whether from natural sunlight or the artificial light in a tanning bed, is a sign of damaged skin. When exposed to UV Radiation (natural or artificial), the skin cells are changed in ways that sometimes lead to skin cancer.

21. What is the outermost layer of your skin called? Epidermis

22. How many skin cells do you have? Every square inch has 19 million skin cells

23. What do sebaceous glands do? Secrete sebum to lubricate and waterproof skin and hair.

24.What substance makes up most of the hypodermis? fat

25. What function does sweat serve? To cool the body and rid it of toxins

26. What pigment gives skin its coloring? Melanin

27. What might happen if you produce too much sebum? You'll get acne

28. The little sacs that produce hair are called: follicles

Label the picture:

(NEED TO ADD THE SKIN DIAGRAM HERE)

Define the terms:

Osteoblast - a type of cell from which bone is formed

Osteoclast - a cell that absorbs bone

Cartilage - a tough, elastic connective tissue

Ligament - a type of connective tissue that connects bone to bone

Tendon - a type of connective tissue that connects bone to muscle

Joint - where two or more bones meet (come in contact with each other)

Fixed Joint - a joint between two bones that does not move; an example is the skull, which consists of many bones

Hinged Joint - joint that allows movement only backward and forward; examples are the fingers and toes

Ball and Socket Joint -joint that allows 360 degree movement; examples are the shoulder and hips

Five things a skeleton provides, define each.

- **Support**-provides internal framework that support tissues
- **Protection**-protects soft body organs
- **Movement**-Skeletal muscles that are attached to bones use the bones as levers to move the body.
- **Storage**-Bone is a storehouse for minerals such as calcium
- **Blood Cell Formation**-site of blood cell formation

35. What is the tough, smooth, shiny substance called that is at the end of each bone? Cartilage

-
-
- 36. What keeps our bones from scratching and bumping against each other when we move? cartilage
-
-
- 37. What are the long stretchy bands that hold our bones together? ligaments
-
-
- 38. What would happen if you didn't have bones? You would have no form
-
-
- 39.. Are bones alive? Explain. Yes, they are made of living cells.
-
-

- 40. What percentage of the creatures on earth do not have a backbone? 97%
- 41. How many bones are in your face? 14
-
- 42. How many joints do you have in your body? It is believed there are about 360 joints. However the self assessment gives the number 230.
-
- 43. What is the smallest bone in our bodies? Stirrup bone in the ear
- 44.Where in your body are over half of your bones located? The hands and feet
- 45. Where is the only joint less bone in your body? Hyoid bone in the throat
- 46. What structure is located between each vertebrae and what purpose does it serve? Disks, they keep the vertebrae from rubbing against each other and are natural shock absorbers.
- 47. How many vertebrae do humans have? 26, however the assessment lists 33.
- 48. What are the types of vertebrae? Cervical, thoracic, lumbar, sacrum, and coccyx
- 49. What connects the ribs to the sternum? cartilage
- 50. What protective function does the ribcage serve? Protects the heart and lungs
-
- 51. How does the arch in your foot help you? It is a shock absorber
- 52. What is the longest bone in your body? The femur
-
- 53. How many bones are in each of your hands? 54
- 54. What 3 bones make up your arm? Radius, ulna, and humerous
-

True or False:

The amount of bone formation and breakdown remains the same throughout your entire life. False

Young children (1-2 years old) should drink whole milk, while everyone else should have low-fat or skim milk. true

55. Which vitamin is necessary in order for calcium to be used efficiently? Vitamin D

56. On average, how much calcium should someone get daily? 1200 mg

- sentence #1: describe the disorder
- sentence #2: describe the cause of the disorder
- sentence #3: describe the treatment for the disorder

a. Osteoarthritis

Osteoarthritis occurs when the protective cartilage on the ends of your bones wears down over time. While osteoarthritis can damage any joint in your body, the disorder most commonly affects joints in your hands, neck, lower back, knees and hips. Osteoarthritis gradually worsens with time, and no cure exists. In osteoarthritis, the slick surface of the cartilage becomes rough. Eventually, if the cartilage wears down completely, you may be left with bone rubbing on bone.

Acetominaphen, Nsaids, narcotics, therapy, and shoe inserts can be used to help with the pain. More invasive treatments include cortisone shots, lubrication injections, bone realignment, and joint replacement.

b. Rheumatoid arthritis

Rheumatoid arthritis is a chronic inflammatory disorder that typically affects the small joints in your hands and feet. Unlike the wear-and-tear damage of osteoarthritis, rheumatoid arthritis affects the lining of your joints, causing a painful swelling that can eventually result in bone erosion and joint deformity. An autoimmune disorder, rheumatoid arthritis occurs when your immune system mistakenly attacks your own body's tissues. In addition to causing joint problems, rheumatoid arthritis sometimes can affect other organs of the body — such as the skin, eyes, lungs and blood vessels. Doctors aren't really sure what causes the disease. Treatments consist of Nsaids, steroids, therapy, TNF-alpha inhibitors, immunosuppressors, even total joint replacements are sometimes required. Some seek relief through joint fusion and tendon repair.

c. Rickets

Rickets is the softening and weakening of bones in children, usually because of an extreme and prolonged vitamin D deficiency. Your body needs vitamin D to absorb calcium and phosphorus from food. Rickets can occur if your child's body doesn't get enough vitamin D or if his or her body has problems using vitamin D properly. Most cases of rickets can be treated with vitamin D and calcium supplements. Follow your doctor's directions as to dosage, which may vary by the size of your child. Too much vitamin D can be dangerous. For some cases of bowlegs or spinal deformities, your doctor may suggest special bracing to position your child's body appropriately as the bones grow. More severe skeletal deformities may require surgery.

Label the skeleton:

(NEED THE SKELETON DIAGRAM HERE)