Life is organized in the following levels: Chemical Level, Cellular Level, Tissue Level, Organ Level, Organ System Level, and finally, Organism. We now move on to the Organ System Level and start our exploration of the Integumentary System. This system contains the body's largest organ, the skin. It also includes the hair and nails.

Objectives:
1. Students will be able to identify the layers of the skin.
2. Students will be able to identify the functions of selected structures within the skin.

MODEL 1:

1. Looking at Model 1, list the three layers that comprise the skin.

2. What other recognizable features of this model do you observe? Try to list 3.

3. Given your observations, what functions do you believe skin serves?
4. For each of the functions below, list the skin structure associated.

   a. Secretion of sweat:______________________________
   b. Secretion of Oil:________________________________
   c. Protect/cushion/insulate the skin:_______________________________
   d. Bring oxygenated blood/remove deoxygenated blood:_____________________________
   e. Allow for sensations to be delivered to the brain:_________________________________
   f. Causes hair to stand up:________________________________
   g. Gives the skin its color:___________________________________

5. Go back to Model 1 and label 3-4 structures on the skin diagram that you now know.

6. Make your own simplified diagram of the skin below. Label the 3 primary layers of skin and include 5 other skin structures, labeled.
The epidermis of the skin has 5 specialized layers. In this model, you will observe the structure and function of these layers. Keratinocytes are cells that produce keratin, a waterproofing protein. Langerhans cells are specialized cells that recognize and fight off foreign invaders.

**Model 3:**

7. List the 5 layers of the epidermis from the most superficial layer to the deepest.

8. List the layer(s) of the epidermis that are associated with each word or phrase below:
   a. Waterproofing:
   b. High Mitotic Rate:
   c. Found in thicker skin:
   d. Protect from chemical/mechanical stress:
   e. Fight off pathogens:

9. Label the layers on the diagram to the right.
Model 4:

These are microscopic images of human skin.

10. In pictures a and b above, what are the arrows pointing to? What layer of the epidermis does this come from?

11. Choose one image from above and label the stratum corneum, stratum basale and stratum spinosum layers of the epidermis.

12. Choose another picture from above and label the epidermis and the dermis layers of the skin.

13. What observations can you make when comparing images c and d? Where on the body might skin from image C be found? Image D?