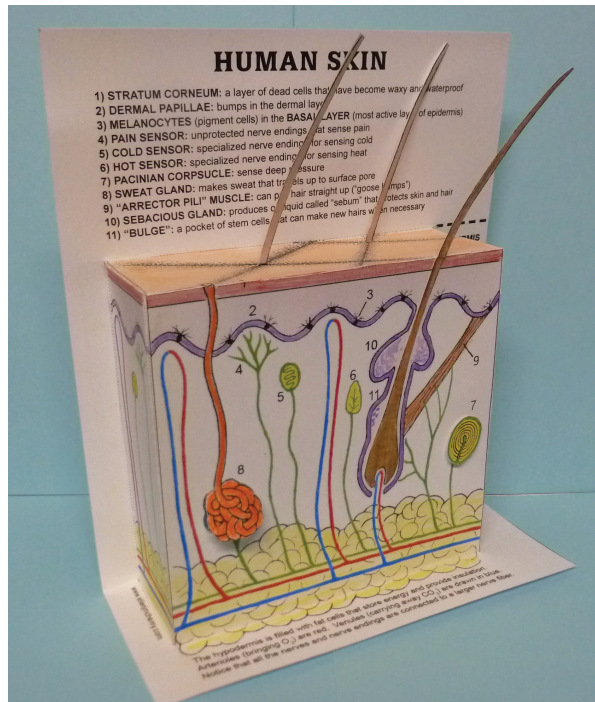


# CUT-AND-ASSEMBLE PAPER SKIN MODEL



## Background information:

This activity assumes that you have been studying skin and are familiar with its basic structures. If you need a quick refresher on it, try these short videos on YouTube.

“Understanding Your Skin” posted by Anew skin laser (about 3 minutes)

“Layer of Skin” posted by uyenle117 (a teacher discussing a 3D model) (about 3 minutes)

“11-06-26 skin model 04.wmv” posted by Ren Hartung (also discussion of a 3D model)

NOTE: This model does not show all the cells of the epidermis, only the melanocytes. You can draw in all the little cells if you would like to. Also, there would be immune cells, fibroblasts and strings of collagen and elastin all through the dermis, but these have been omitted for the sake of simplification. You may add them if you wish.

## You will need:

- copies of the pattern page printed onto card stock (choose color, or black and white if you want to add your own color)
- scissors
- white glue or good quality glue stick (I always advise against “school glue.”)
- colored pencils if you want to color the black and white version yourself, or add skin and hair color to the color version

NOTE: You could also use watercolor paint to color the top of the skin.

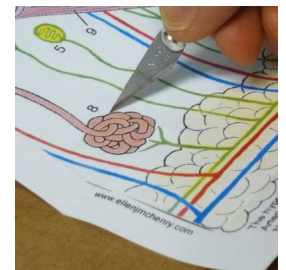
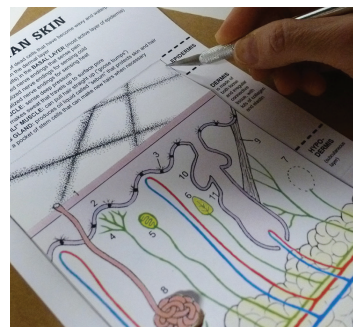
## Assembly:

1) Do all your coloring before you start assembly. Even if you decide to use the colored pattern, you can still add your own colors for skin, hair, or darken the pre-printed colors. Also, on the colored version, you can add some texture to the inside of the sebaceous gland and a few stem cells inside the “bulge.”

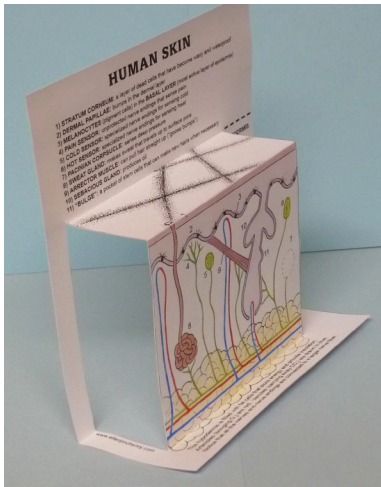
NOTE: Make arterioles red, venules blue, and fat cells yellow, but other than that you can use whatever colors you want for the various parts. If you are coloring it yourself, you do not have to use the colors shown here in the picture.

2) Use an X-Acto knife to cut along the solid lines along the vertical edges of the rectangle.

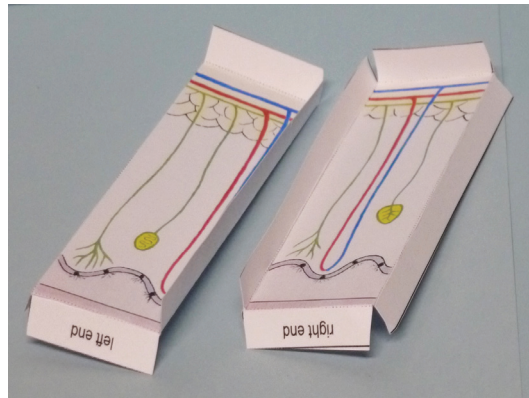
3) If you would like the sweat gland to stand out from the background a bit (optional), use the X-Acto knife to cut around the gland, while carefully NOT cutting through the tube part (where it goes up).



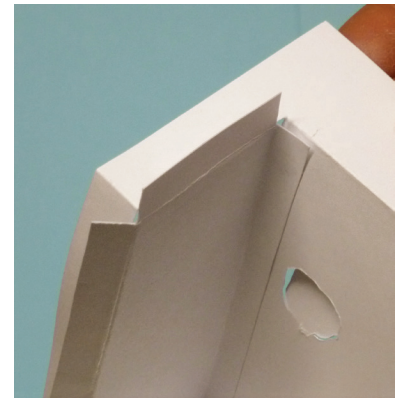
- 4) Use the X-Acto knife to very gently score along the horizontal dotted lines. This will make nice, crisp folds very easily.
- 5) Fold along dotted lines to that the rectangle pops out.
- 6) Score along the fold lines on the end pieces. Two of the fold will go one way, and two will go the other way. If you get it wrong, don't worry you can adjust the fold when you realize which way it should go.
- 7) Glue ends into place so that flaps are not visible. See picture for visual of this.



5

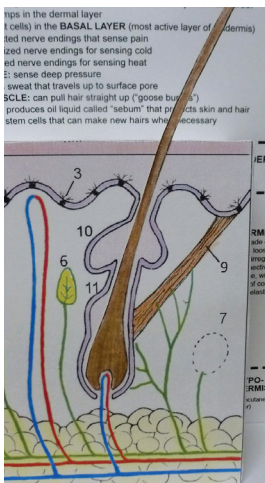


6 666



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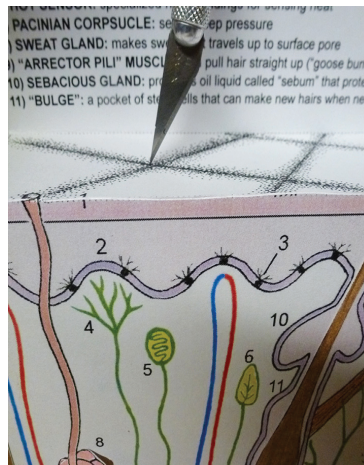
- 8) Glue hair into place.
- 9) Glue Pacinian corpuscle into place. NOTE: If you would like it to stand out from the page a bit, to give some added dimensional quality, cut a few small squares from your card stock scrap, and glue them back to back on top of that area, then glue the corpuscles to the top, on top do those squares. This will make the oval stand out from the background a bit.
- 10) If you would like to add the additional hairs (optional) you can cut very small slits with the X-Acto and slide the hairs down in. Put a small amount of glue on the bottom of each hair and secure to underside of top.
- 11) If you cut around the sweat gland, pull it out a bit so it stands out from the background.



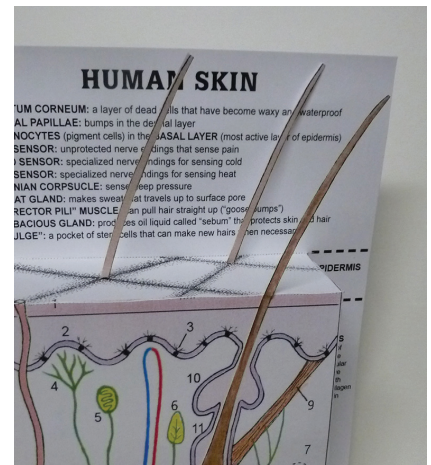
8



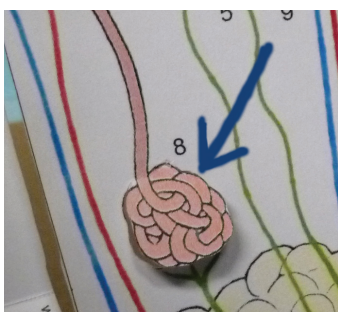
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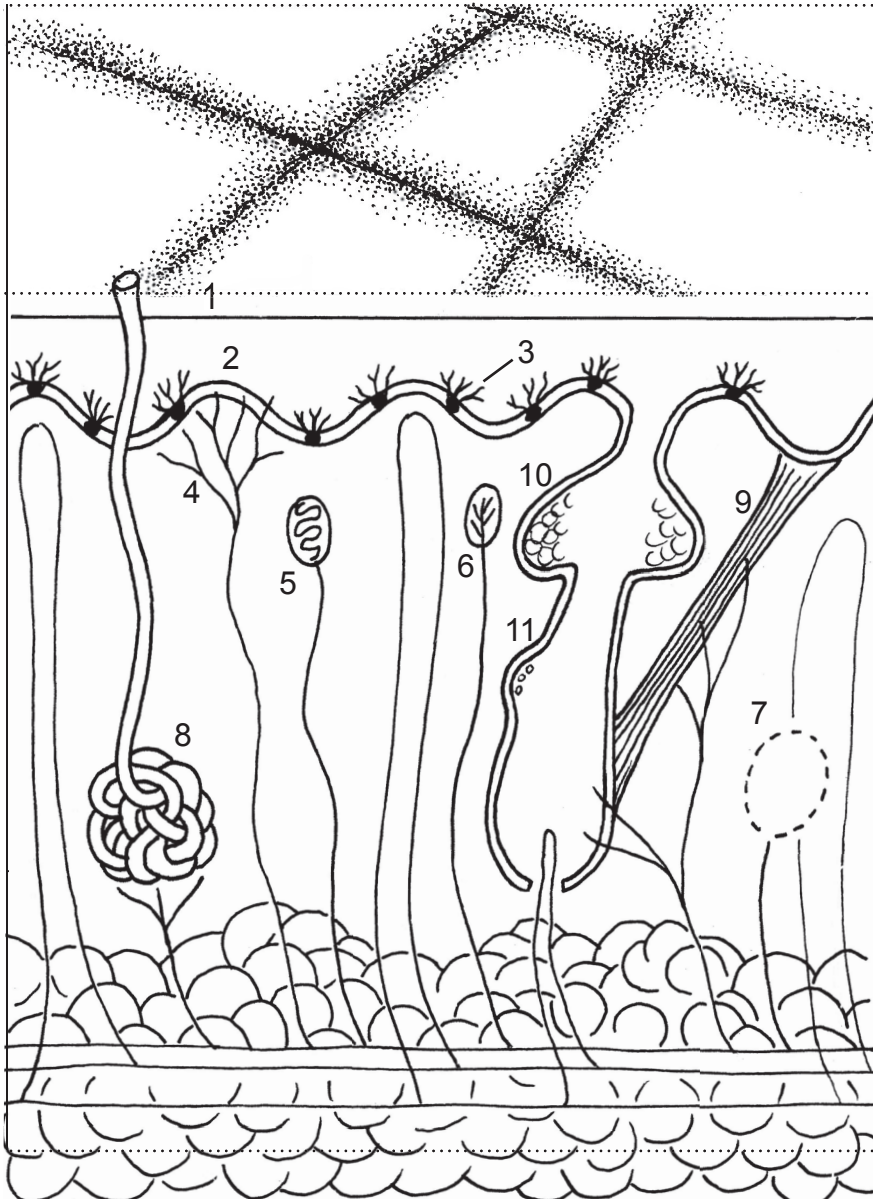


11



# HUMAN SKIN

- 1) **STRATUM CORNEUM:** a layer of dead cells that have become waxy and waterproof
- 2) **DERMAL PAPILLAE:** bumps in the dermal layer
- 3) **MELANOCYTES** (pigment cells) in the **BASAL LAYER** (most active layer of epidermis)
- 4) **PAIN SENSOR:** unprotected nerve endings that sense pain
- 5) **COLD SENSOR:** specialized nerve endings for sensing cold
- 6) **HOT SENSOR:** specialized nerve endings for sensing heat
- 7) **PACINIAN CORPUSCLE:** sense deep pressure
- 8) **SWEAT GLAND:** makes sweat that travels up to surface pore
- 9) **“ARRECTOR PILI” MUSCLE:** can pull hair straight up (“goose bumps”)
- 10) **SEBACIOUS GLAND:** produces oil liquid called “sebum” that protects skin and hair
- 11) **“BULGE”:** a pocket of stem cells that can make new hairs when necessary



**EPIDERMIS**

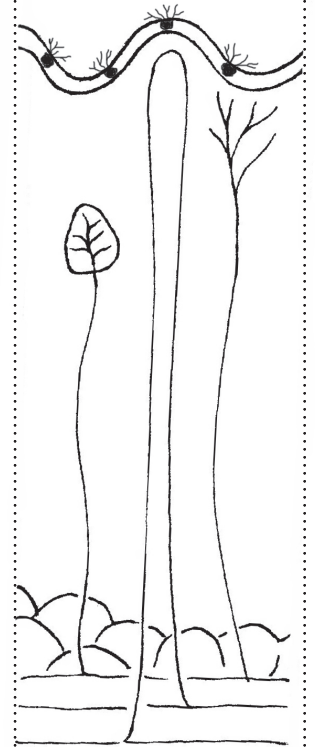
**DERMIS**

is made of both loose and irregular connective tissue, with lots of collagen and elastin

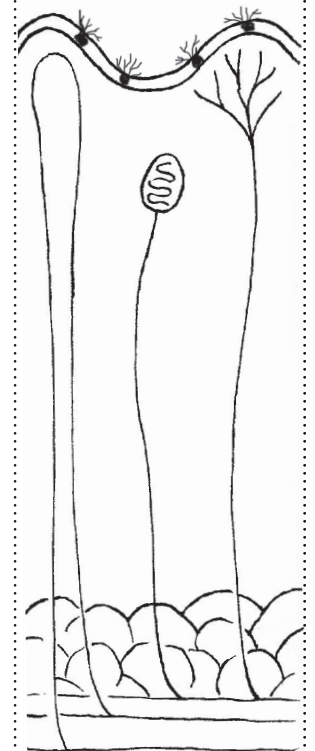
**HYPODERMIS**

(subcutaneous layer)

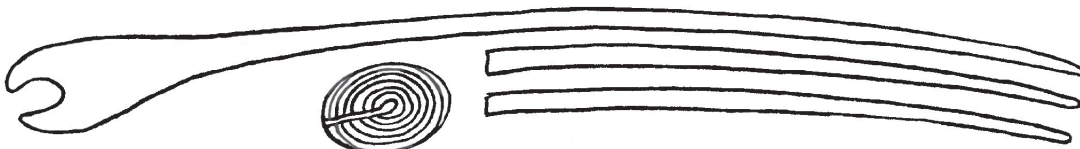
right end



left end



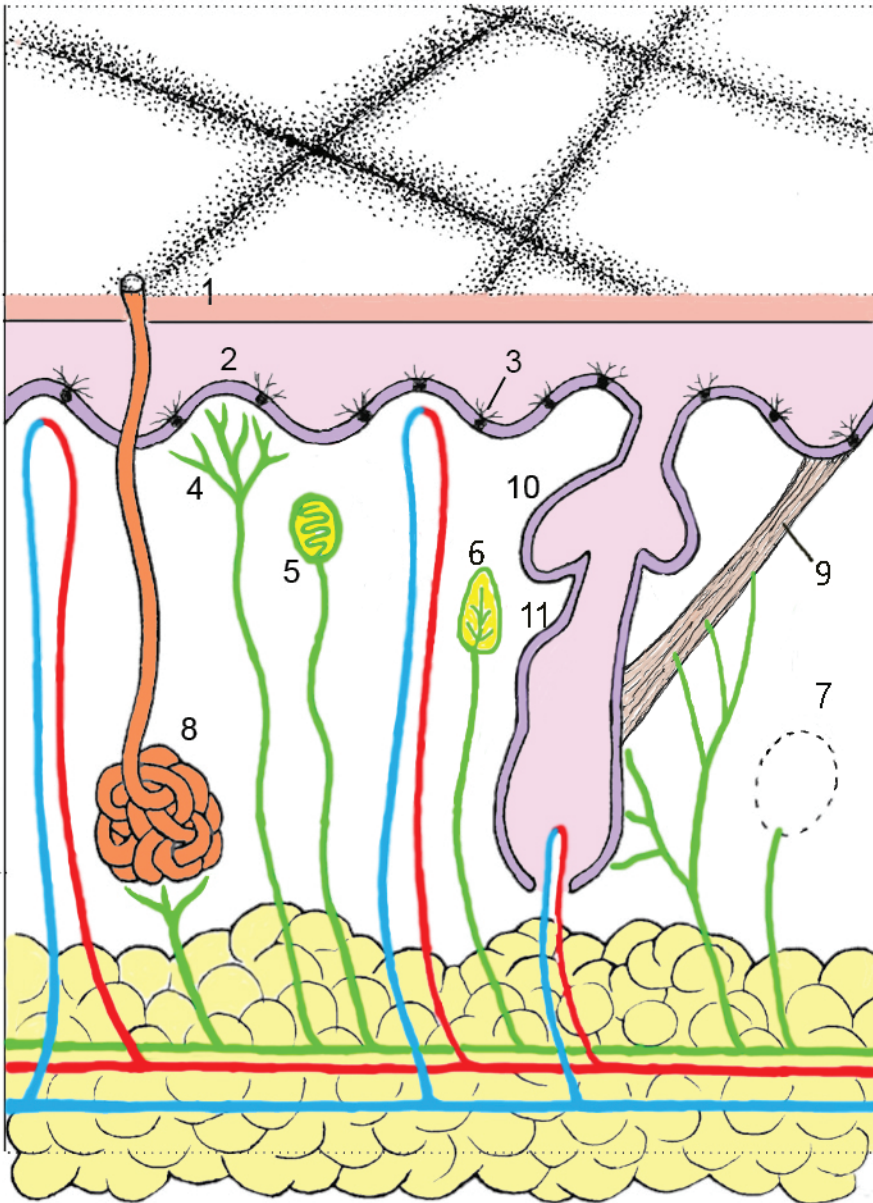
The hypodermis is filled with fat cells that store energy and provide insulation. Arterioles (bringing O<sub>2</sub>) are red. Venules (carrying away CO<sub>2</sub>) are drawn in blue. Notice that all the nerves and nerve endings are connected to a larger nerve fiber.



CUT ON SOLID LINES, FOLD ON DOTTED LINES  
(But do not fold large dashed lines indicating dermis/epidermis.)

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EPIDERMIS

DERMIS

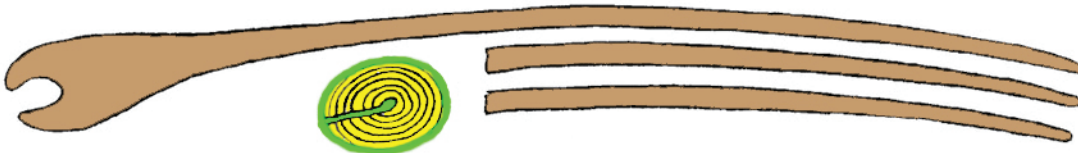
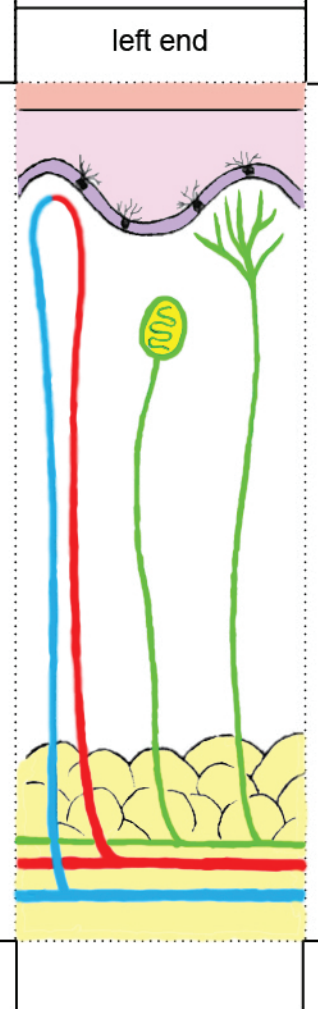
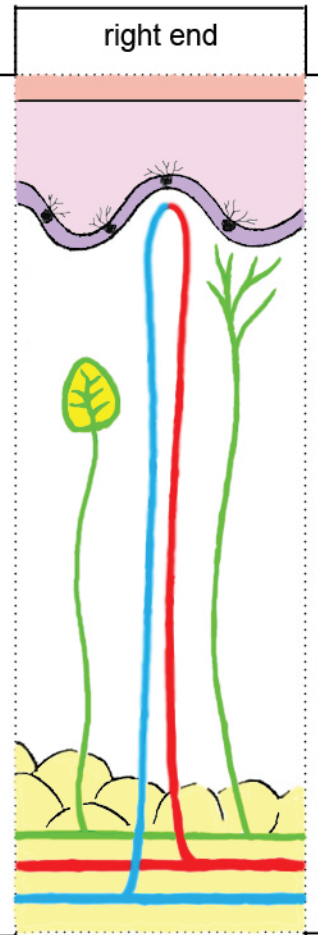
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DERMIS

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www.ellenjmchenry.com

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