

1 - Merkel disc

for light touch and sensing an object texture  
expanded nerve endings associated with  
merkel cell

2- Free nerve endings

In papillary dermis

Temperature, pain, itching, tactile sensation

3- Root hair plexuses

Surround the bases of hair follicles in  
reticular dermis

Detect movements of hair

## Unencapsulated nerve receptors

## Encapsulated receptors

Pacinian corpuscles

> Encapsulated

> Found deep in reticular dermis and  
hypodermis

> Coarse touch, pressure (sustained  
touch) and vibrations

Meissner corpuscles:

Encapsulated

In the dermal papilla

Light touch

Are numerous in fingertips,  
palms and soles

> Decline in number

Ruffin corpuscles:

> Encapsulated

Stretch (tension) and  
twisting (torque)

Hair matrix

Contains the proliferating cells  
that generate the hair and the  
internal root sheath  
Located just above the dermal  
papilla

> Melanocytes located in the  
matrix produce hair color.

Hairs are elongated keratinized  
structures that form within  
epidermal invaginations (hair follicles)

Types of hair:

1 - Lanugo: fetal hair

2- Down hair: light colored hair of child

3- Terminal (adult) hair: thicker,  
darker hair that begins to grow at puberty

Hair shaft: The part of a hair  
extending beyond the skin surface (visible part)

Hair root: The part of hair below the skin  
surface (embedded part)

Hair follicle is a tube of  
stratified squamous  
epithelium, invaginated into  
the dermis

INNER ROOT SHEATH

Disintegrates at the level of  
the sebaceous gland

OUTER ROOT SHEATH

> Is continuous with the  
epidermis

> It does not take part in  
hair formation

Surrounded by a glassy  
basement membrane

> Basement membrane is  
surrounded by a connective  
tissue sheath.

## Sebaceous glands

- > secrete an oily or waxy matter, called sebum, to lubricate and waterproof the skin and hair
- > Secrete by holocrine mode of secretion

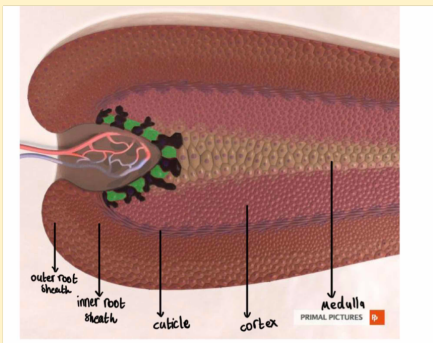
A comedo is a clogged hair follicle (pore) in the skin.  
Keratin combines with oil to block the follicle

Arrector pili muscles are small muscles extend from hair follicles to the dermal papilla  
Contraction of these muscles causes the hairs to stand on end (goose bumps)  
Innervated by the autonomic nervous system (sympathetic)

Medulla: large vacuolated and moderately keratinized cells

Cortex: heavily keratinized and densely packed cells

Cuticle: thin layer heavily keratinized squamous cells covering the cortex



Anagen(active growth phase)-->Catagen(transition phase)-->Telogen(resting phase)-->Anagen again

## Sweat glands

### Eccrine sweat gland

Merocrine secretion

Empty directly onto skin surface

Location: most all over body (esp. abundant on palms & soles:

Clear, watery secretion (99% H<sub>2</sub>O; rest NaCl + some waste

### Apocrine sweat gland

Empty into hair follicle

Location: armpits, groin, nipples

Viscous, cloudy secretion -> good nutrient source for bacteria (odor !!)

Secretion may contain Pheromones

Secretion begins at puberty and is stimulated during emotional distress

# Nails

Hard plates of keratin on the dorsal surface of each distal phalanx

Lack of pigment makes them colorless

## Nail parts

1. Free edge: the part you cut
2. Body: pink part
3. Lunula: white semicircle
4. Eponychium: proximal nail fold (cuticle)
5. Hyponychium: under the free edge where dirt accumulates
6. Nail bed: directly under the pink part
7. Nail matrix: growth

