

THE INTEGUMENTARY SYSTEM

Dr. Firas Albaaj

The skin and its accessory organs are called the integumentary system. The skin is a vital organ serving as a protective barrier that responds to internal and external stimuli and contributes to the maintenance of homeostasis.

Specialized tissues or accessory organs are **hair**, **nails**, **sebaceous** and **sweat glands**, and **mammary glands**.

Skin layers components

The skin composed of two main layers: **epidermis** and **dermis**.

Epidermis: epidermis is the skin's outer layer. It contains no blood vessels and receives its nourishment from the dermis.

Dermis: The deeper layer of skin that lies below it. the dermis is attached through subcutaneous tissue to underlying structures such as muscle and bone.

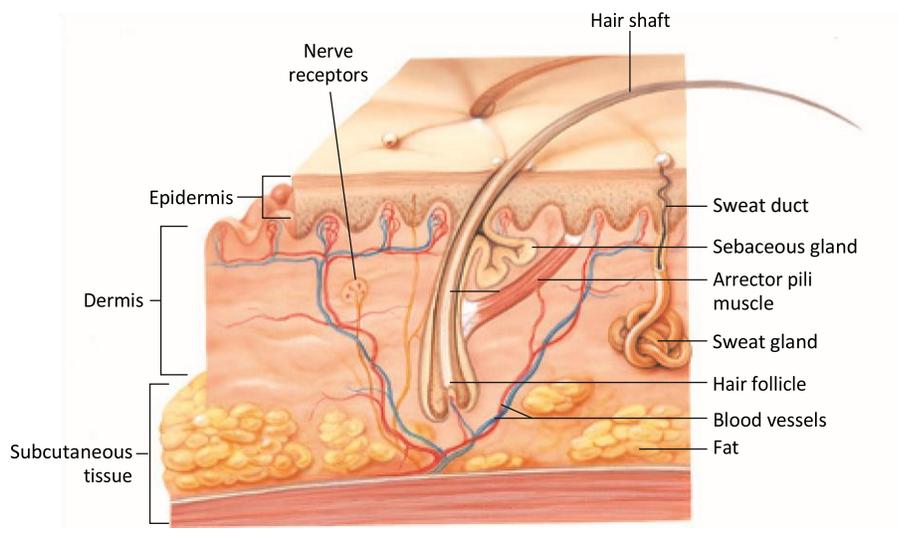


TABLE 1: Parts of the Skin

Part	Pronunciation	Definition
skin	skin	the outer covering of the body
epidermis (cuticle)	ep'-i-der-mis (k <u>u</u> ti-kul)	the outermost, nonvascular layer of the skin

dermis	<u>der</u> -mis	layer of the skin deep in the epidermis, consisting of a dense bed of vascular connective tissue and containing the nerves of terminal organs or sensation, the hair roots, and sebaceous and sweat glands
hair, nails	hare, nales	appendages of the skin
subcutaneous	sub'-ku- <u>ta</u> -ne-us	beneath the skin, containing adipose tissue, connective tissue, blood vessels, and nerves
breasts	brests	mammary glands: in female mammals, the breast contains milk-secreting elements for nourishing the young
squamous epithelium	<u>skway</u> -mus ep-ih <u>thee</u> -lee-um	a layer of flattened plate-like cells that cover internal and external body surfaces
stratum basale	<u>strat</u> -um <u>bay</u> -sil	in this layer of skin, new cells are formed and push older cells to the outermost surface of the skin
stratum corneum	<u>strat</u> -um <u>cor</u> -nee-um	outermost layer of skin where dead cells are converted to keratin, which flakes away

FUNCTIONS OF THE SKIN

TABLE 2 Functions of the Skin		
Function	Pronunciation	Definition
protection	pro- <u>tek</u> -shun	from microorganisms, injuries, and excessive exposure to ultraviolet rays of the sun
sensory organ (receptor)	<u>sen</u> -so-re (re- <u>ceptor</u>)	for the body to feel pain, cold, heat, touch, and pressure
temperature regulator	<u>tem</u> -per-ah-tur <u>reg</u> -u-la'tor	insulation against heat and cold
metabolism	me- <u>tab</u> -o-lizm	in the presence of sunlight, synthesize vitamin D from a precursor molecule found in the skin
waste elimination	wast e-lim-i- <u>nashun</u>	eliminate body wastes in the form of perspiration

SKIN GROWTHS

TABLE 3 Skin Growths

Growth	Pronunciation	Definition
Carcinoma	kahr-suh- <u>noh</u> -muh	a malignant new growth made up of epithelial cells
Keratosis	ker'-ah- <u>to</u> -sis	any horny growth such as a wart
malignant melanoma	ma- <u>lig</u> -nant mel-a- <u>no</u> -ma	cancerous tumor of melanin-forming cells of the skin
Growth	Pronunciation	Definition
nevus (plural: nevi)	<u>ne</u> -vus	a mole or growth, e.g., birthmark
verruca (plural: verrucae)	ve- <u>roo</u> -kah	a wart caused by viruses



(A)



(B)

FIGURE 1 Common skin cancers caused by excessive sun exposure. **(A)** Cancer arising from keratinocytes (basal cell carcinoma). **(B)** Cancer arising from melanocytes (malignant melanoma).

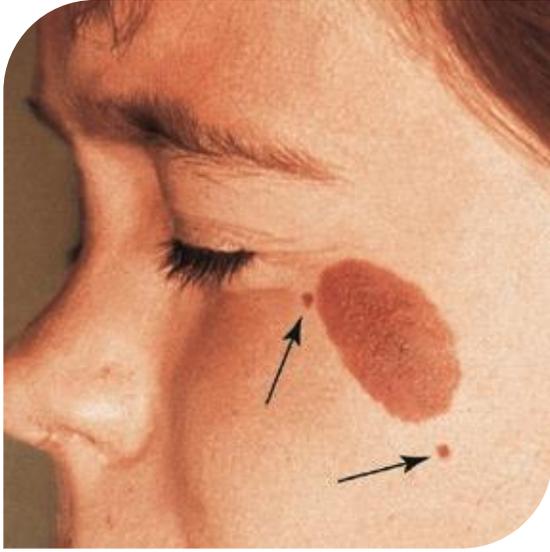


Figure 2 Benign nevi of skin

BIOLOGIC AGENTS AND SKIN INFECTION

Skin infections are caused by viruses, bacteria, fungi, and parasites.

TABLE 4 Biologic Agents and Skin Infection

Infection	Pronunciation	Definition
Bacteria		
acne vulgaris	<u>ak</u> -ne vul- <u>ga</u> -ris	develops when skin pores become clogged. Bacteria in the clogged pore causes inflammation and the formation of a cyst
carbuncle, furuncle	<u>kar</u> -bung-k'-l <u>fu</u> -rung-k'-l	furuncles (boils) are painful, pus-filled bumps that form under the skin when staphylococcal bacteria infect hair follicles
cellulitis	sel'-u- <u>li</u> -tis	inflammation of the skin and subcutaneous tissue caused by streptococcal or staphylococcal bacteria
impetigo	im-pe- <u>ti</u> -go	a streptococcal or staphylococcal skin infection marked by vesicles or bullae that become pustular, rupture, and form yellow crusts, especially around the mouth and nose
Virus		
herpes	<u>her</u> -pez	inflammatory skin disease caused by a herpes virus; acute symptoms are small blisters that appear in clusters

herpes genitalis	<u>her</u> -pez jen´-i-tal-is	herpes infection (HSV-2) of the genitals; may harm an infant if the mother is infected at the time of delivery
herpes ophthalmicus	<u>her</u> -pez oph-thal-micus	severe herpes zoster involving the ophthalmic nerve (eye)
herpes simplex virus (HSV)	<u>her</u> -pez <u>sim</u> -plex	herpes infection (HSV-1) on the borders of the lips or nares (cold sores)
herpes zoster (shingles)	<u>her</u> -pez <u>zos</u> -ter	painful rash on one side of the body caused by varicella zoster virus
verruca (wart)	ve- <u>ru</u> -kah	growth of the outer layer of the skin (the epidermis) caused by the human papillomavirus (HPV) and transmitted by human contact.

Fungus

tinea (ringworm)	<u>tin</u> -e-ah	called ringworm because of the circular shape of the rash (shaped like a ring); a name applied to many different superficial fungal infections of different parts of the body
------------------	------------------	---

Parasites

pediculosis	pe-dik´-u- <u>lo</u> -sis	body infestation with lice, usually of the scalp and pubic area; lice suck blood from humans causing itching and infection secondary to scratching
scabies	<u>ska</u> -bez	caused by a mite, a small parasite that burrows under the skin; symptoms are an itchy rash

ALLERGY AND THE SKIN

TABLE 5 Allergy and the Skin

Term	Pronunciation	Definition
allergic contact dermatitis	a- <u>ler</u> -gic contact der-ma- <u>ti</u> -tis	itchy, blistering rash after contact with, e.g., latex gloves or jewelry containing nickel
neurodermatitis	nu´-ro-der´-mah- <u>ti</u> -tis	skin condition that begins with itching related to emotional causes or psychological factors

SKIN DISORDERS FROM SYSTEMIC DISEASES

TABLE 11-6 Skin Disorders from Systemic Diseases

Disease	Pronunciation	Definition
Psoriasis	so- <u>ri</u> -ah-sis	a chronic, hereditary, recurrent dermatosis marked by discrete vivid red macules, papules or plaques covered with silvery laminated scales
rubeola (measles)	ru- <u>be</u> -o-la	symptoms are fever, runny nose, cough, red eyes, and sore throat, followed by a rash that spreads over the body. The disease is very contagious and is spread through air from coughing and sneezing
syphilis	<u>sif</u> -i-lis	a sexually transmitted bacterial disease; early skin symptoms are ulcers on the genital area, followed by white patchy skin
systemic lupus erythematosus (SLE)	si- <u>stem</u> -ik <u>loo</u> -pus er-i'- <u>the</u> -ma- to-sus	autoimmune disease that can affect all organs; common symptom is a rash that forms a butterfly pattern over the bridge of the nose and cheeks
varicella (chickenpox)	var'-i- <u>sel</u> -ah	a very contagious disease caused by the varicella-zoster virus (VZV); symptoms are blister-like rash, itching, fatigue, and fever

TERMS USED IN THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE SKIN

TABLE 7 Terms Used in the Diagnosis and Treatment of Diseases of the Skin

Term	Pronunciation	Definition
<i>History and Physical Exam</i>		
albinism	<u>al</u> -bi-nizm	no body pigment; white skin and hair
alopecia	al'-o- <u>pe</u> -she-ah	baldness; hereditary or caused by chemotherapy
bullae (plural: -ae)	<u>bul</u> -ah	large blisters, as in burns
burn	bern	thermal injury to tissues

cicatrix	<u>sik</u> -ah-triks	a scar
cyst	sist	a closed epithelium-lined cavity or sac, normal or abnormal, usually containing liquid or semisolid material
ecchymosis	ek'-i- <u>mo</u> -sis	bruise, caused by bleeding under the skin
erosion	e- <u>ro</u> -shun	eating or gnawing away, e.g., an early ulcer
eruption	e- <u>rup</u> -shun	breaking out; a rash

TABLE 7 (continued)

Term	Pronunciation	Definition
erythema	er'-i- <u>the</u> -mah	redness of the skin
exfoliation	eks-fo'-le- <u>a</u> -shun	skin falling off in scales or layers
fissure	<u>fish</u> -er	a narrow slit on the skin surface, e.g., anal fissure, athlete's foot lesion
gangrene	<u>gang</u> -gren	necrotic or dead tissue
hemangioma	he-man-gi- <u>o</u> -ma	network of small blood-filled capillaries near the surface of the skin forming a reddish or purplish birthmark
hirsutism	<u>her</u> -soot-ism	abnormal hairiness on the body and face, especially in women
keloid	<u>ke</u> -loid	a sharply elevated, progressively enlarging scar that does not fade with time
laceration	las'-e- <u>ra</u> -shun	cut; tearing; a torn wound
lesion	<u>le</u> -zhun	any pathologic or traumatic discontinuity of tissue
macule	<u>mak</u> -ul	a spot or thickening, e.g., freckle, flat mole. Area is not raised above the surface
nodule	<u>nod</u> -ul	a small node that is solid and can be detected by touch; a rounded prominence, e.g., a boss
papulae	<u>pap</u> -u-le	a small, circumscribed, solid elevated lesion of the skin, e.g., wart, acne, mole
petechia	pay- <u>tee</u> -kee-ee	small pinpoint hemorrhages of the skin, red or purple in color

plaque	plak	any patch or flat area; used to describe the silvery scales of psoriasis
pruritus	proo-ri-tus	itching
pustule	pus-tul	a small, elevated, pus-containing lesion of the skin
scales, crusts	scalz, krusts	an outer layer formed by drying of a bodily exudate or secretion; flaking type of lesion, e.g., psoriasis, fungus
ulcer	ul-cer	Local destruction of tissue from sloughing of necrotic inflammatory tissue,
Term	Pronunciation	Definition
urticaria (hives)	er'-ti-ka-re-ah	transient elevated patches (wheals); an allergic response
vesicle	ves-i-k'-l	a small blister containing liquid
vitiligo	vit'-i-lj-go	loss of pigment; white, patchy areas
xanthoderma	zan-thoh-der-mah	yellow coloration of the skin, e.g., from jaundice
xeroderma	zee-roh-der-mah	rough and dry skin, a clinical and chronic condition especially in a cold climate

Diagnostic Tools: Skin Tests

allergy skin test	al-er-jee skin test	used to determine an allergy to food items, pollen, or animal dander; a small drop of a suspected allergen is placed on the skin, which is then scratched; a rash or itching indicates an allergic response
enzyme-linked immunosorbent assay (ELISA or EIA)	en-zahym linked im-mu-no-sor-bent a-sey	blood test to measure the presence and amount of allergen-specific antibodies

Surgery for the Diagnosis and Treatment of Skin Disorders

biopsy	bi-op-se	removal of skin or tissue from the body for examination; used to make a diagnosis
cautery	kaw-ter-e	tissue destruction by electricity
debridement	da-bred-ment	removal of contaminated or devitalized tissue from a traumatic or infected lesion

dermabrasion	der-mah- <u>bra</u> -shun	the surface of the epidermis of the skin is removed by abrasion, typically to remove scarring or sun-damaged skin
dermatome	<u>der</u> -mah-tom	an instrument for cutting thin skin slices for grafting
electrodesiccation	e-lek'-tro-des'-i- <u>ka</u> shun	destruction of tissue by dehydration with high-frequency electric current
escharotomy	es-kah- <u>rot</u> -omy	removal of burn scar tissue
graft	graft	a piece of donor skin transplanted to replace skin damaged by burns, pressure ulcers, infection, or trauma



FIGURE 3 Gangrene of right foot as a result of arterial obstruction.