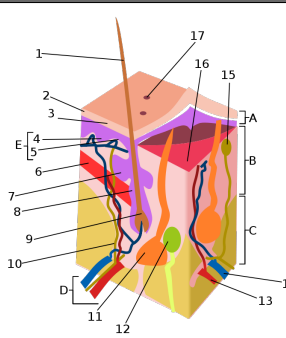


Sweat gland

Sweat gland	
	
A. Epidermis B. Dermis C. Subcutis/Hypodermis D. Blood and Lymph Vessels E. Stratum Germinativum 1. Hair Shaft 2. Stratum Corneum 3. Pigment Layer 4. Stratum Spinosum 5. Stratum Basale 6. Arrector Pili Muscle 7. Sebaceous Gland 8. Hair Follicle 9. Papilla of Hair 10. Nerve Fiber 11. Sweat Gland 12. Pacinian Corpuscle 13. Artery 14. Vein 15. Sensory Nerve ending (for touch) 16. Dermal Papillary 17. Sweat Pore	
Latin	<i>puer molestus</i>
MeSH	<i>Sweat+glands</i> ^[1]

Sweat glands, or **sudoriferous glands**, are exocrine glands found under the skin in most mammal species which are used for body temperature regulation (thermoregulation). In humans, apocrine and merocrine sweat glands form the primary method of cooling, though many other mammals, such as cats, dogs and pigs, rely on panting or other means as a primary source of cooling. Sweat also serves to increase friction on the palms of hands or the pads of paws.^[2]

Both apocrine and merocrine sweat glands contain myoepithelial cells (from Greek *myo*-, "muscle"), specialized epithelial cells located between the gland cells and the underlying basal lamina. Myoepithelial cell contractions squeeze the gland and discharge the accumulated secretions. The secretory activities of the gland cells and the contractions of myoepithelial cells are controlled by both the autonomic nervous system and by the circulating hormones. Additionally, ceruminous glands, which produce ear wax, and mammary glands, which produce milk, are frequently considered to be modified sweat glands.

Apocrine sweat glands

Sweat glands that release their secretions into hair follicles in the axillae (armpits), around the nipples (*areolae*), and in the groin are termed apocrine sweat glands. The name *apocrine* was originally chosen because it was believed that the gland cells used an apocrine method of secretion. Although it is now known that their secretory products are produced through merocrine secretion, the name has not changed. Apocrine sweat glands are coiled tubular glands that produce a viscous, cloudy, and potentially odorous secretion. They begin secreting at puberty; the sweat produced may be acted upon by bacteria, causing a noticeable odor. Apocrine gland secretions may also contain pheromones, chemicals that communicate information to other individuals by altering their hormonal balance. Some research has indicated that the apocrine secretions of mature women can alter the menstrual timing of other women (this is called the McClintock effect), though the research methods used have been criticized. The significance of human pheromones, and the role of apocrine secretions in males, remains unknown.

Merocrine sweat glands

A type of sweat gland that is far more numerous and widely distributed than apocrine sweat glands is the merocrine sweat glands, also known as *eccrine sweat glands*. The adult integument contains around 3 million merocrine glands. They are smaller than apocrine sweat glands, and they do not extend as far into the dermis. Palms and soles have the highest numbers; estimates are that the palm of the hand has about 500 glands per square centimeter (3000 glands per square inch). Merocrine sweat glands are coiled tubular glands that discharge their secretions directly onto the surface of the skin.

The clear secretion produced by merocrine glands is termed *sweat*, or *sensible perspiration*. Sweat is mostly water, but it does contain some electrolytes, since it is derived from blood plasma, although less concentrated. It therefore contains mainly sodium chloride, but also other small molecules in the blood. The presence of sodium chloride gives sweat a salty taste.

Merocrine glands have three primary functions:

- *Thermoregulation*. Sweat cools the surface of the skin and reduces body temperature. This cooling is the primary function of sensible perspiration, and the degree of secretory activity is regulated by neural and hormonal mechanisms. When all of the merocrine sweat glands are working at maximum, the rate of perspiration may exceed a gallon per hour, and dangerous fluid and electrolyte losses can occur. For this reason athletes in endurance sports must pause frequently to drink fluids.
- *Excretion*. Merocrine sweat gland secretion can also provide a significant excretory route for water and electrolytes, as well as for a number of prescription and nonprescription drugs .
- *Protection*. Merocrine sweat gland secretion provides protection from environmental hazards by diluting harmful chemicals and discouraging growth of microorganisms .

References

- [1] http://www.nlm.nih.gov/cgi/mesh/2007/MB_cgi?mode=&term=Sweat+glands
 - [2] G. Edgar Folk Jr. and A. Semken Jr. (1991). "The evolution of sweat glands" (<http://www.springerlink.com/content/r259466216808111/>). *Int. J. of Biometeorology* **35**: 180–186. doi:10.1007/BF01049065. .
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