

Ch. 5

Integumentary

System

Layers of Skin

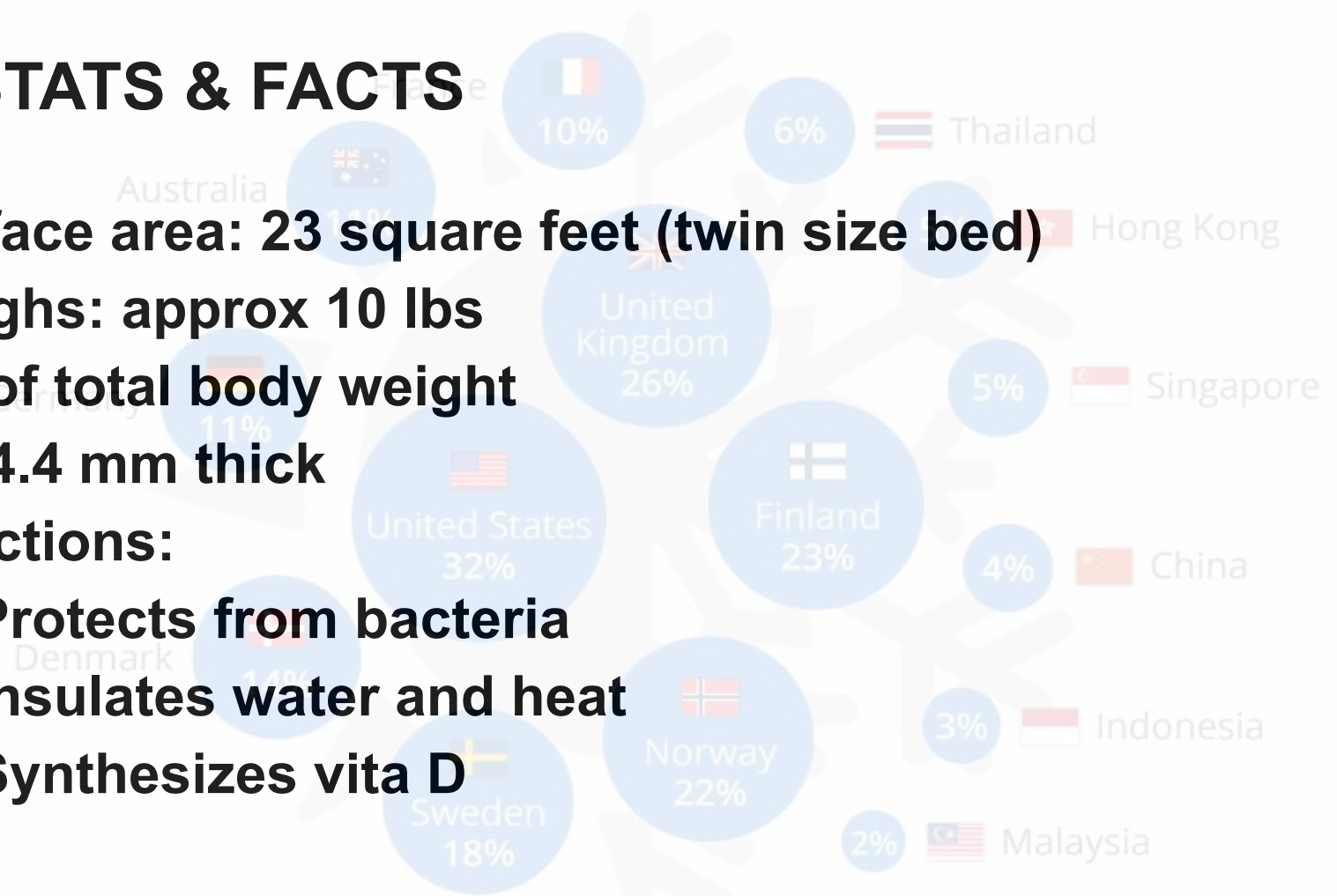
Appendages of the Skin

Homeostatic Imbalances



Skin STATS & FACTS

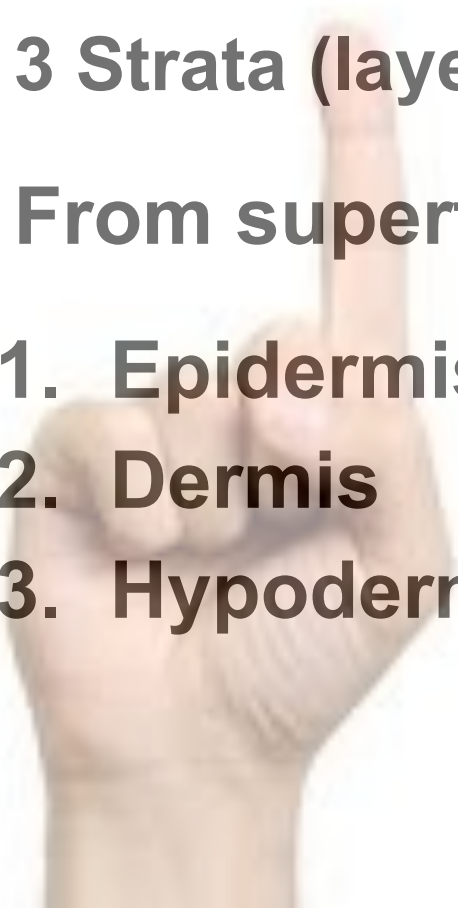
- **Surface area: 23 square feet (twin size bed)**
- **Weights: approx 10 lbs**
- **7% of total body weight**
- **1.5-4.4 mm thick**
- **Functions:**
 - **Protects from bacteria**
 - **Insulates water and heat**
 - **Synthesizes vita D**



3 Strata (layers) of the Skin

From superficial to deep:

- 1. Epidermis**
- 2. Dermis**
- 3. Hypodermis**



1st layer: Epidermis has 5 strata from superficial to deep, pg. 151:

Stratum Corneum

St. Lucidum

St. Granulosum

St. Spinosum

St. Basale



Basale

New Keratinocytes are going under mitosis

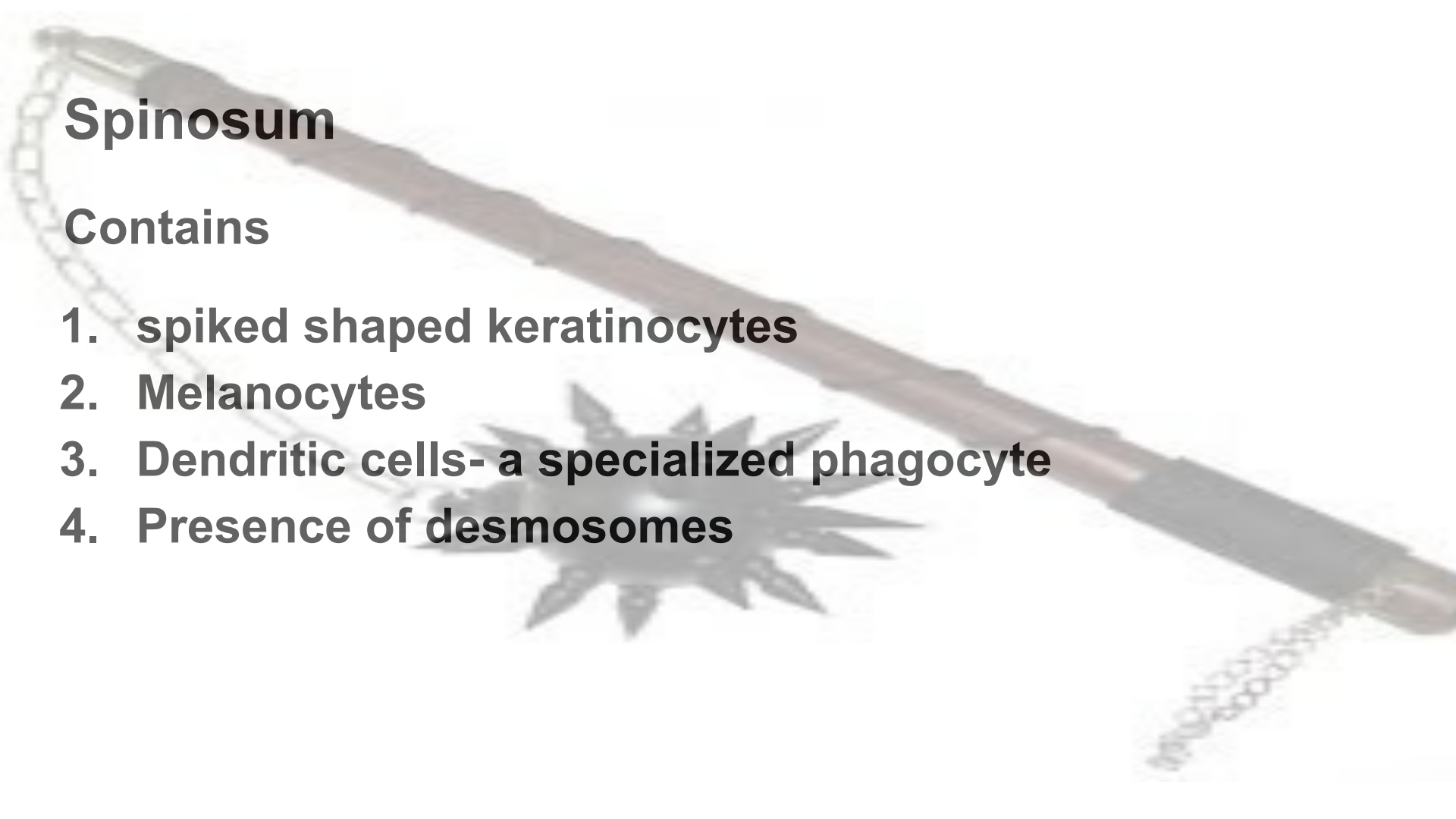
Dendritic cells aka Langerhans cells similar to phagocytes

Tactile cells aka Merkel are sensory receptors for touch

Spinosum

Contains

- 1. spiked shaped keratinocytes**
- 2. Melanocytes**
- 3. Dendritic cells- a specialized phagocyte**
- 4. Presence of desmosomes**



Granulosum

- **KERATINOCYTES** form fibrous protein to waterproof skin
- **Dead skin (anucleated)**



Lucidum

- 2nd stratum
- Known as the 'clear' layer

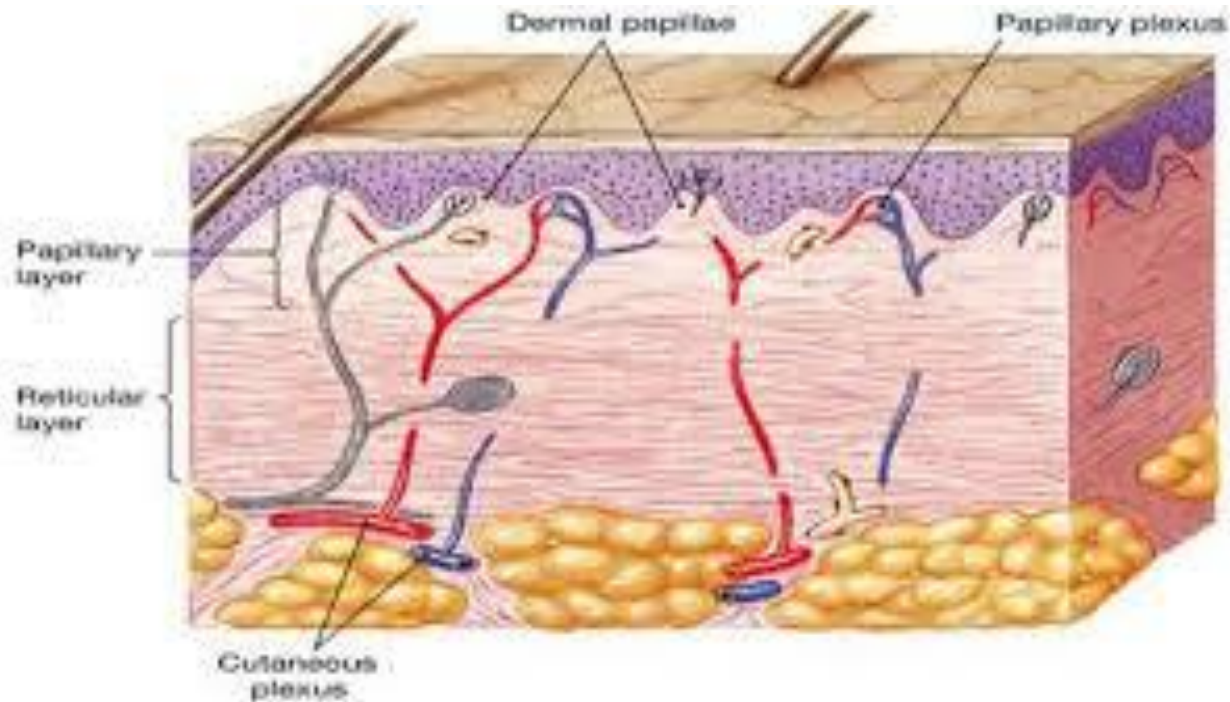
Corneum

Protects the integument



2nd layer: The Dermis

Made up of 2 strata: Papillary and Reticular



Papillary

Includes the phagocytes, tactile cells and sweat pores

Made of areolar connective tissue

FRICTION RIDGES, a type of skin marking, allow for more traction and create the fingerprints- sweat allows them to mark surfaces

Reticular

80% is irregular dense fibrous connective tissue

Collagen fibers are deep to the epidermis forming CLEAVAGE/TENSION lines. Surgeons use these guidelines and incise parallel to a speedy recovery.

FLEXTURE LINES- are dermal folds near joints/palms, fingers/toes

3rd Stratum: Hypodermis

Stores fat- this layer thickens as a person gains weight

Females: breast & thighs Males: 'beer belly'

Anchors the skin to muscles

The fatty layer absorbs shock

Insulates to retain heat



Skin Color, pp 154-155

3 pigments:

- A. Melanin- yellow- tan-brown- black; only pigment made in the body; found in epidermis. Known as a natural sunscreen**
- B. Carotene- yellow-orange from plants**
- C. Hemoglobin- pinkish red; capillaries circulate in dermal layer that shows up on the transparent epidermis**

Appendages of the Skin- Accessory Structures

Nail

Sweat gland

Oil gland

Hair



SWEAT GLANDS: 3,000,000 found all over the body

Eccline: forehead, palms, and soles of feet; made up of water, vitaC, antibodies and metabolic waste; pH of 4-6.

Apocrine: armpit (**a**xillary) and genital/anus (**a**nogenital) areas. Larger than eccrine and found in the dermis & hypodermis stratum. Contains sweat, fatty acids and proteins- milky or yellowish color; **Ceruminous** glands are a modified apocrine gland containing a waxy secretion+sebum

Mammary glands secrete milk

Hair aka Pili....PROTECT!

EX: Eyelashes and nose hairs prevent foreign invaders, hair on the head protects from sun.

Type of Hair	Description
Vellus	Body hair (peach fuzz) is soft, thin
Terminal Hair, eyebrow, nose hair, face/chest, arm pit and genital area	Coarse hair; Dead keratinocytes for durability and not split as easily. Shape of shaft determines texture. Melanin gives color (blonde, brown, red, black)

Nails



- **Practical instrument made of hard keratin**
- **Physical feature can seek for further diagnosis**
 - **Yellow: respiratory or thyroid gland disorder**
 - **thick/yellow: fungal infection**
 - **Concave: possible iron deficiency**
 - **Horizontal lines: malnutrition**

ABCDE Rule- recognize MELANOMA (cancer of melanocytes)

	Word	Description
A	Asymmetry	Unmatching sides
B	Border Irregularity	Indentations
C	Color	Combinations of color in one mole: blue,red,brown, tan
D	Diameter	Larger than eraser attached to pencil
E	Elevation	Raised

How Burns Affect the Body



Life-threatening: when the loss of body fluids contain proteins and electrolytes, results in dehydration and electrolyte imbalance. **Renal shutdown and circulatory shock.**

Treatment: **IV** replaces lost fluids