

Small Animal Dermatology

Structure of the skin

Largest single organ in the body

- Provides an enclosing barrier against the loss of water, electrolytes and macromolecules
- Acts as a mechanical protection against the environment
- Nerve sensors allow the perception of heat and cold, pressure, pain and itch
- Responsible for temperature regulation and storage of vitamins, electrolytes, water, fat, carbohydrates and protein
- Involved in the production of Vitamin D

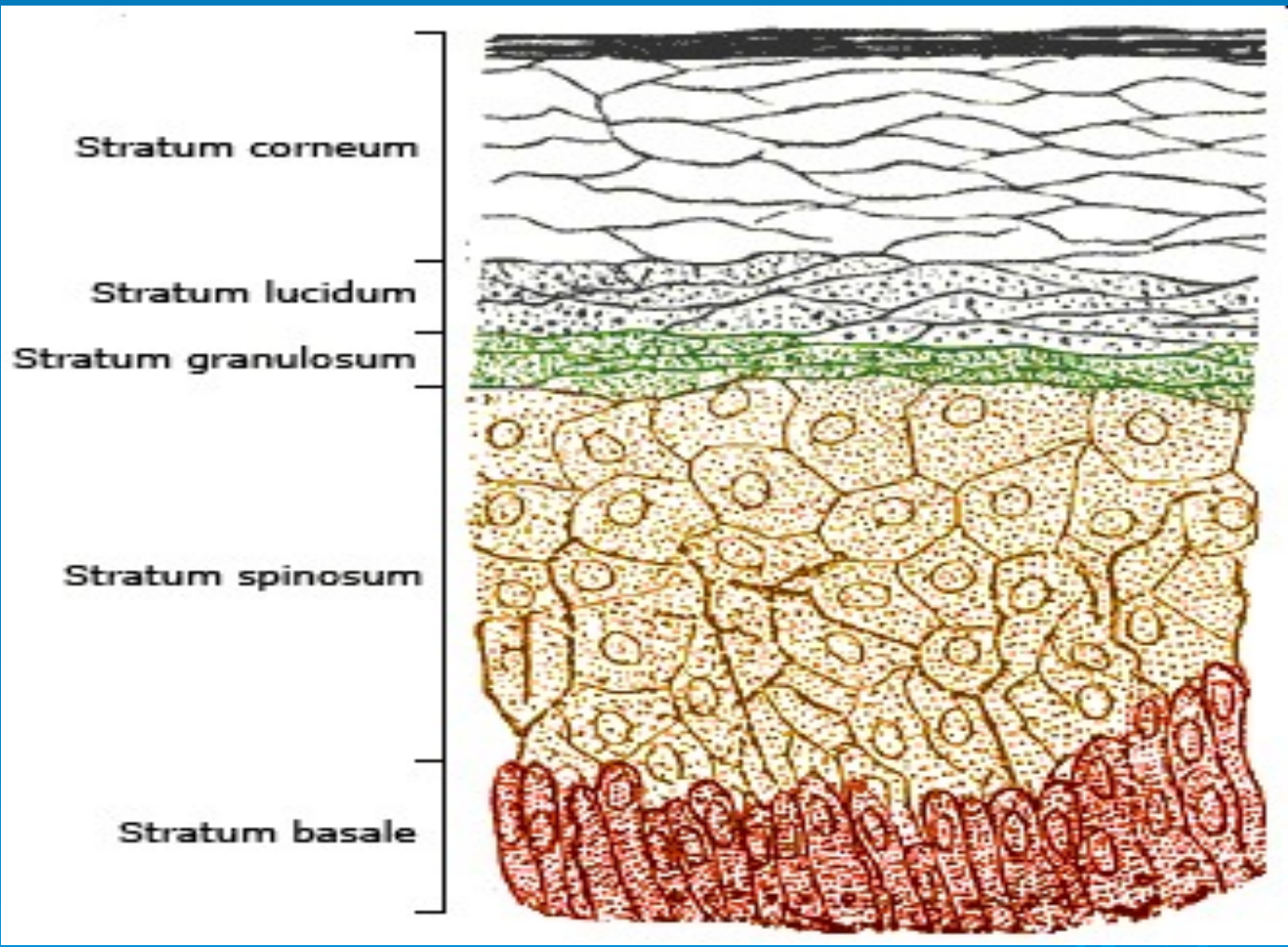
Epidermis

Most superficial layer of the skin and is composed of keratinocytes (85), Langerhans cells (5-8%) and melanocytes (5%)

Layers of the epidermis:

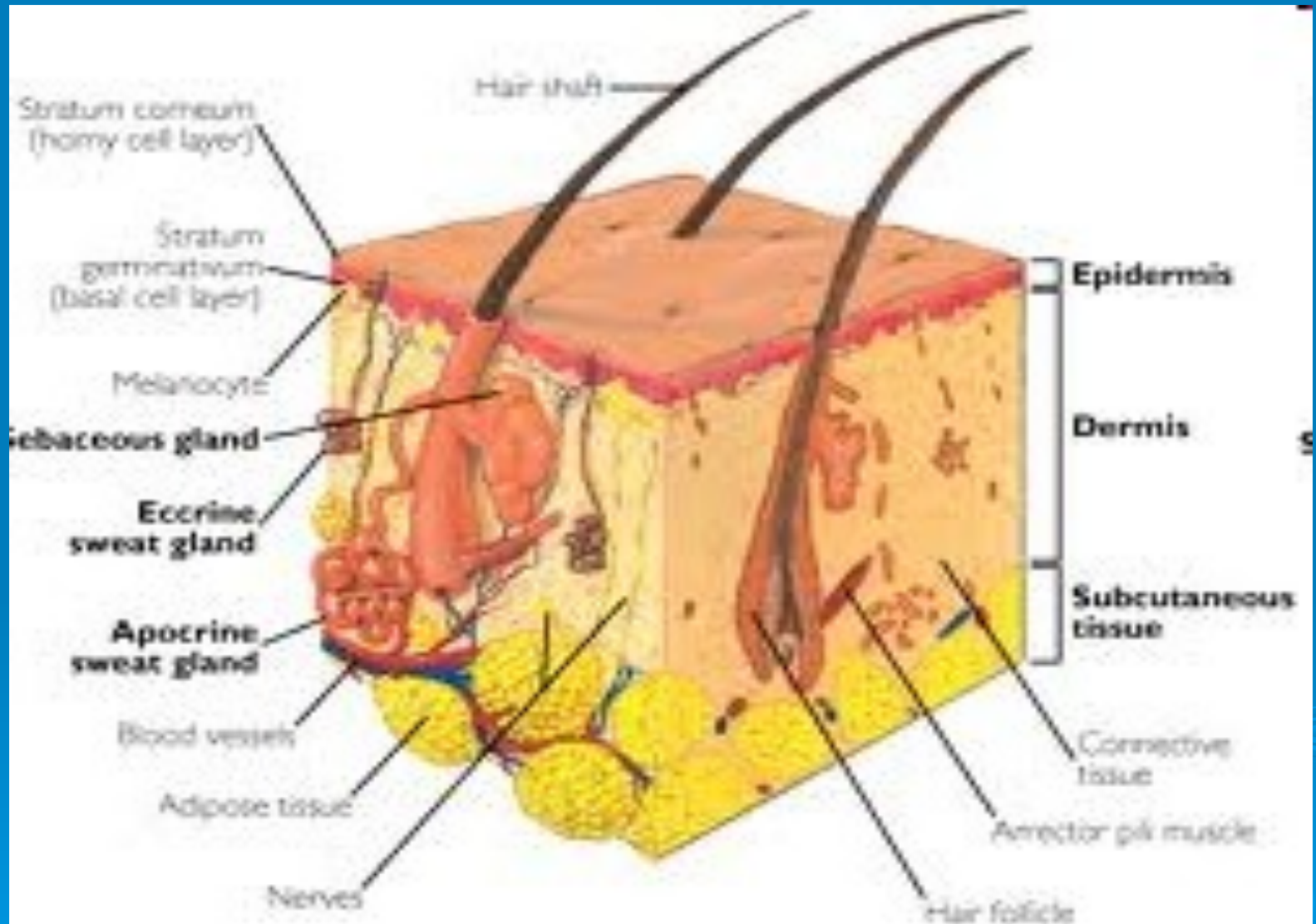
1. Stratum corneum
2. Stratum lucidum
3. Stratum granulosum
4. Stratum spinosum
5. Stratum basale

The basement membrane separates the epidermis from the dermis



Dermis

- Consists of fibres (collagenous, reticular and elastin), ground substance, cells and epidermal appendages
- The epidermal appendages include hair follicles, arrector pili muscles, sebaceous glands, sweat glands, blood vessels, lymphatics and nerves



Approach to the dermatological case

- Signalment
- Presenting complaint
- History
 - Focused and generalised – of animal
 - environment/travel/boarding
 - Previous therapy very important
- Physical examination

Dermatological examination

- Examine entire body
- Mucous membranes
- Observe the animal (while in the waiting room and in the examination room)
- General assessment of the coat
 - Distribution of the lesions
 - Dry or greasy coat
 - Colour texture
- Skin assessment
 - Thorough examination of skin
 - Check skin quality (atrophic/inelastic – hyperadrenocorticism, hyperelastic – Ehlers-Danlos syndrome)
 - Skin colour
 - Primary or secondary dermatological lesions
 - Evaluate any areas of alopecia (hair fell out or nibbled short)

Dermatological examination

➤ Skin assessment

- Thorough examination of skin
- Check skin quality (atrophic/inelastic – hyperadrenocorticism, hyperelastic – Ehlers-Danlos syndrome)
- Check skin temperature by touch
- Skin colour
- Primary or secondary dermatological lesions
- Evaluate any areas of alopecia (hair fell out or nibbled short)

Dermatological examination

➤ Hair assessment

- Does hair epilate easily (hormonal aetiology?)
- Unusual look to the hair (follicular casts)

Then develop a list of differentials and any further diagnostic tests to be performed

Diagnostic tests

Initial diagnostic tests

- Wet paper test – red streaks
- Coat brushings – Cheyletiella, lice
- Acetate tape impression smears of the coat – eggs, lice
- Acetate tape impression smears of the skin – can stain with e.g. Diff-Quik, to look for bacteria, yeast e.g. Malassezia etc
- Skin scraping
 - Deep – can mount in either 10% potassium hydroxide or liquid paraffin.
scabies (ear tips)
 - Superficial – Cheyletiella
- Hair plucking/trichography – to help analyse hair (trauma)?, pigment changes (e.g. in colour mutant alopecia), follicular casts (e.g. sebaceous adenitis), follicular dystrophy, organisms (*Demodex* esp from feet), fungal. Can also analyse the bulbs looking for hairs in telogen phase (endocrinopathies). Can pluck hairs for dermatophyte culture.

Demodex canis



Cheyletiella



Ringworm – *Tricophyton mentagrophytes*



Diagnostic tests

- Impression smears – of lesions, esp ulcerated neoplastic masses
- Microscopic examination of pustular contents (bacterial infection – degenerate neutrophils and bacteria. With immunological diseases may see acanthocytes and non-degenerate leukocytes)
- Fine needle aspirates (FNA)
- Examination of ear wax

Otodectes cynotis



Further diagnostic tests

- Bacterial culture and sensitivity
- Fungal/yeast culture
- Tissue culture – biopsy sample for deeper lesions – can do bacterial and fungal
- Biopsy – in cases of:
 - Suspected neoplasms
 - Ulcerative/vesicular/bullous lesions
 - Skin disease unresponsive to rational therapy
 - Unusual or serious skin disease, esp when the animal is systemically unwell
 - To make a diagnosis in a disease where expensive or potentially dangerous drugs are to be used

Further diagnostic tests

- Allergy testing
- Trial therapy
- General tests such as CBC, serum biochemistry, endocrine screen, dynamic endocrine function tests, radiography, etc

Biopsy punch



Intradermal skin testing

