



Histologia e citologia básica da pele

Fabrizio Grandi

Méd. Vet. (FMVZ, USP)

Residência em Anatomia Patológica (FMVZ, UNESP, Campus Botucatu)
Mestre e Doutor em Patologia (Faculdade de Medicina da UNESP, Campus Botucatu)

Ex-diretor Científico - Associação Brasileira de Patologia Veterinária (ABPV)

CEO Vetschool São Paulo e Dermacare Vet

Telepathology consultant - EUA, Rússia e Europa

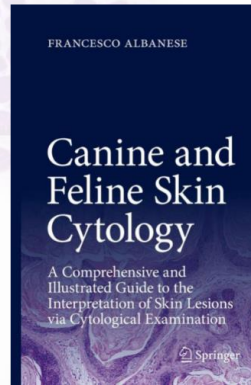
www.patologiadrgrandi.com.br

fgrandivet@gmail.com

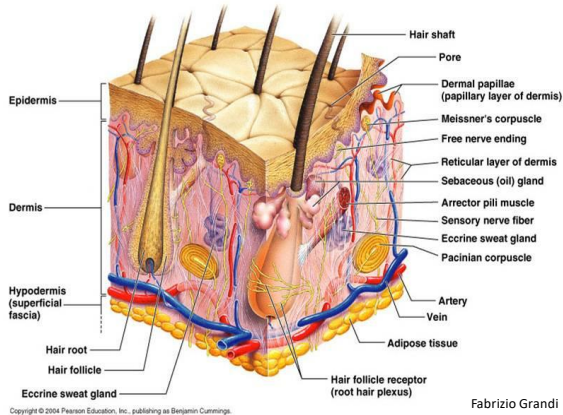
www.patologiadrgrandi.com.br

@fgrandi83

Fabrizio Grandi



Fabrizio Grandi

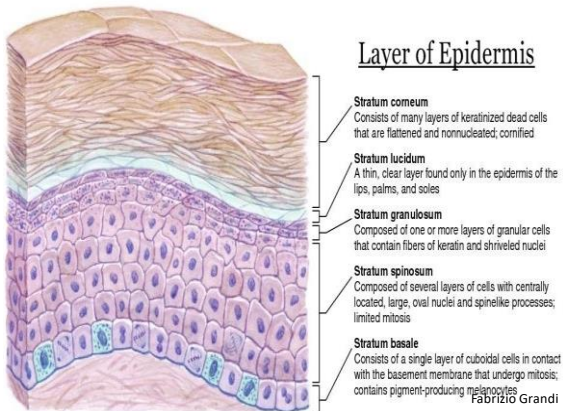


Fabrizio Grandi

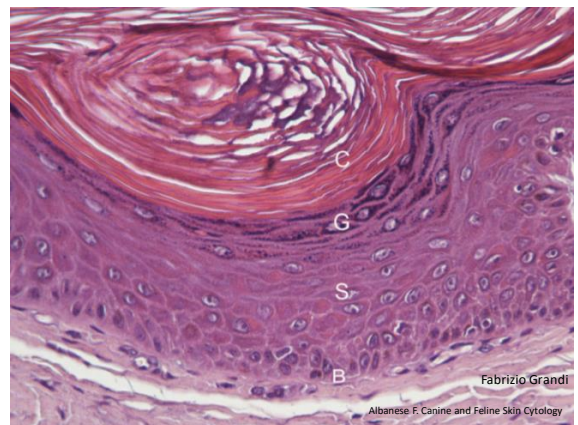
Conceitos básicos

- Epitélio glandular e não glandular
 - Simples, estratificado e pseudo-estratificado
 - Pavimentoso, cubóide, colunar (prismático), transicional
- Epiderme
 - Queratinócitos
 - Não-queratinócitos

Fabrizio Grandi



Fabrizio Grandi



Fabrizio Grandi

Albanese F. Canine and Feline Skin Cytology

Epiderme

- Coxim, plano nasal, bolsa escrotal
 - Cristas epidérmicas
 - Espessura
- Demais áreas hirsutas

Fabrizio Grandi

Epiderme

- *Stratum corneum/stratum disjunctum*
 - Estrato externo ou descamativo
 - Queratinócitos anucleados, pavimentosos e queratinizados

Fabrizio Grandi

Epiderme

- *Stratum corneum/stratum disjunctum*
 - Funções
 - Barreira impermeável
 - Integridade mecânica
 - Hidratação
 - Proteção UV
 - Defesa antimicrobiana
 - Sinalização por citocinas

Fabrizio Grandi

Skin construction

First layer of skin - stratum corneum

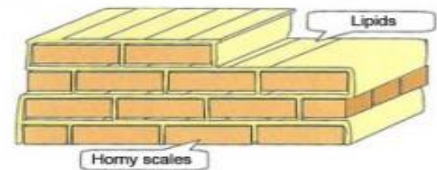


Fig. 1 Model of the horny layer of "bricks and cement"

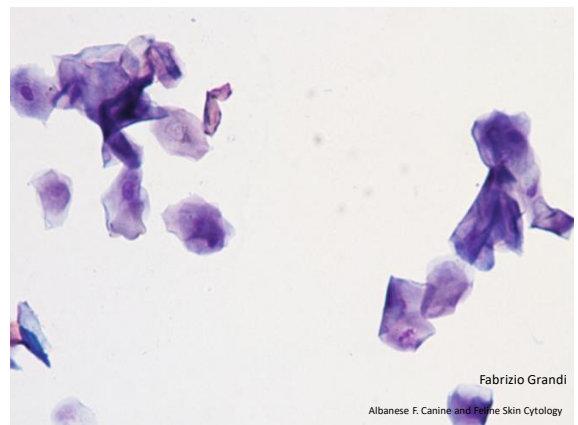
Fonte: internet

Fabrizio Grandi

Epiderme

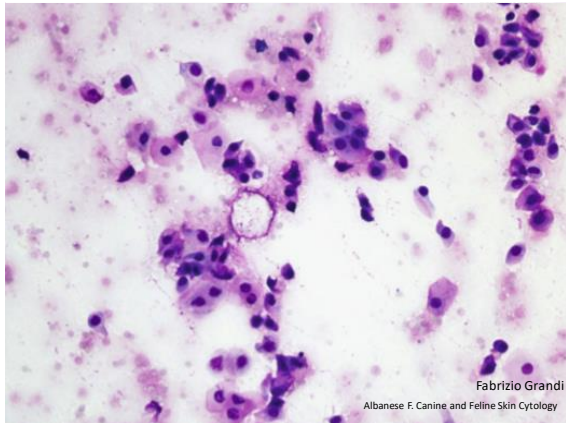
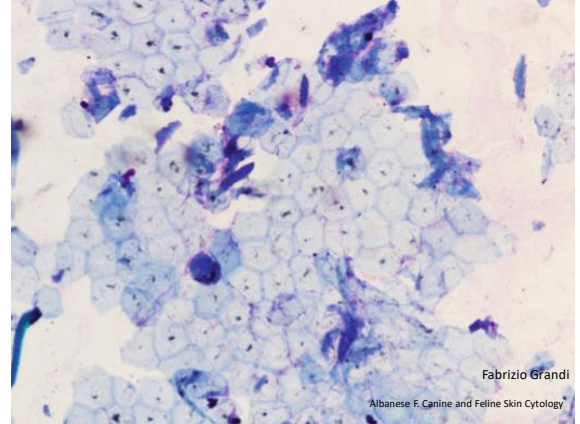
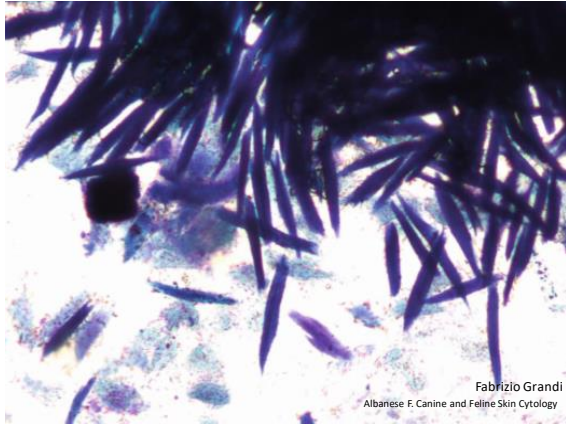
- *Stratum corneum/stratum disjunctum*
 - Citomorfologia normal
 - Distúrbios inflamatórios inespecíficos
 - Distúrbios de queratinização
 - Seborréia
 - Paraqueratoses idiopáticas

Fabrizio Grandi



Fabrizio Grandi

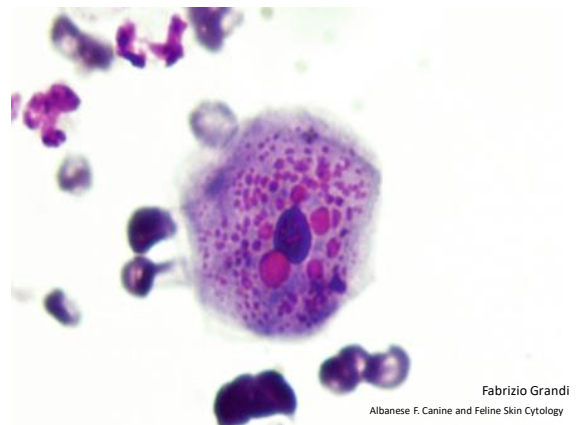
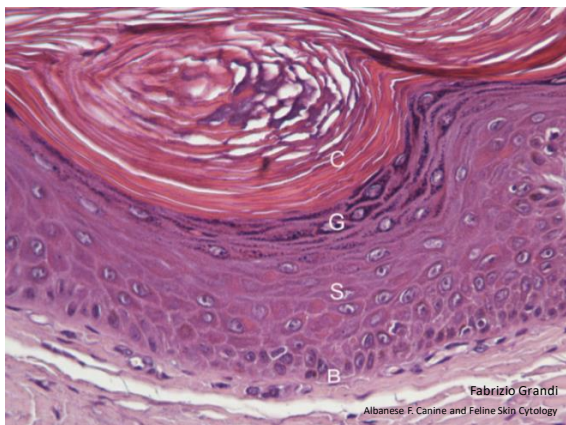
Albanese F. Canine and Fine Skin Cytology



Epiderme

- *Stratum granulosum*
 - 2 tipos de grânulos
 - Grânulos lamelares (queratinossomos ou corpúsculos de Odland)
 - Ricos em lipídeos e ceramidas
 - Grânulos cerato-hialínicos ou agregados insolúveis
 - Precusores da filagrina (pró-filagrina)
 - Proteína responsável pela organização e adesão dos filamentos de queratina

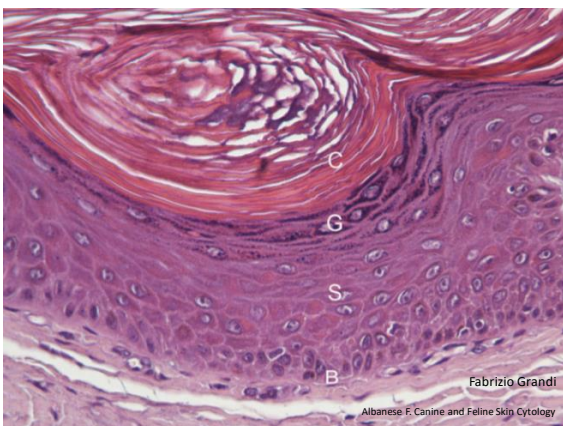
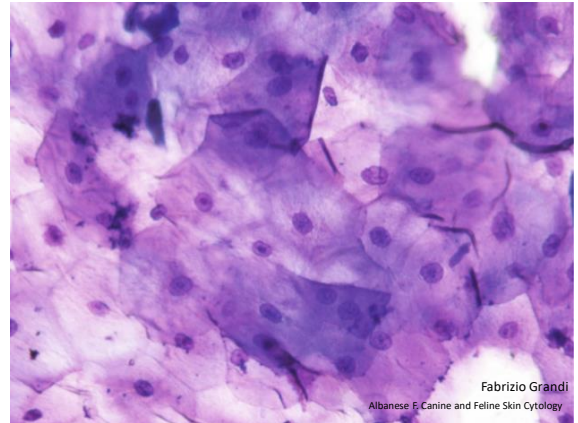
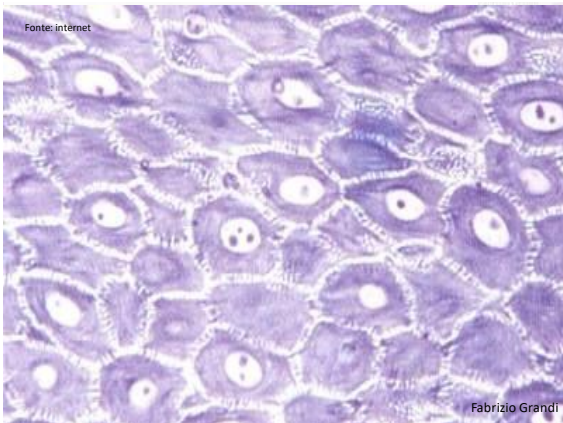
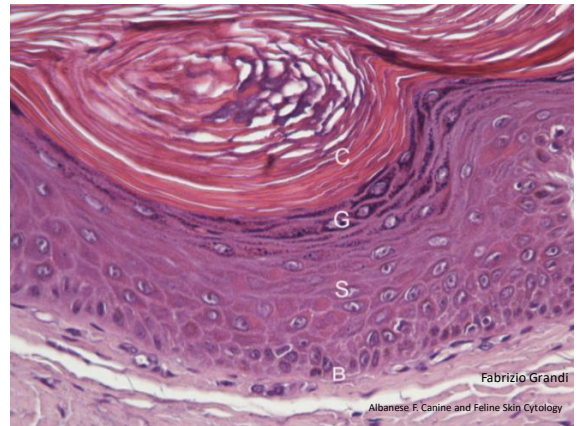
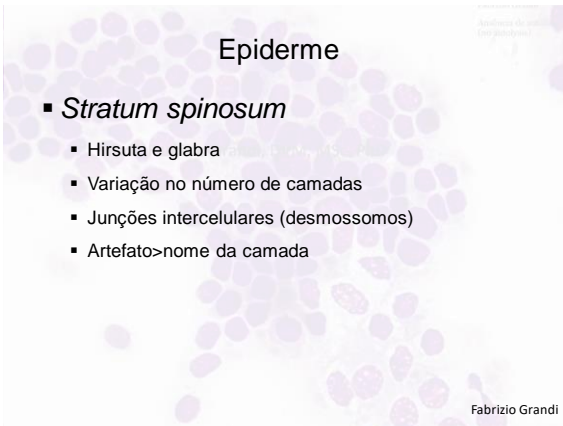
Fabrizio Grandi



Epiderme

▪ *Stratum spinosum*

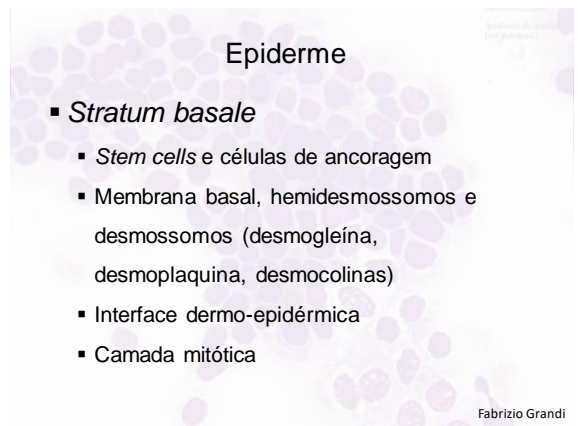
- Hirsuta e glabra
- Variação no número de camadas
- Junções intercelulares (desmossomos)
- Artefato > nome da camada

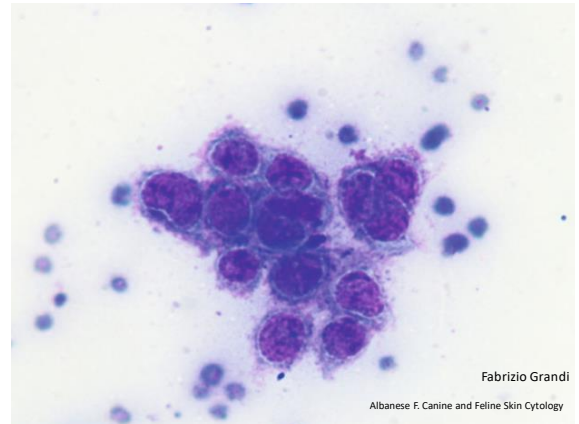
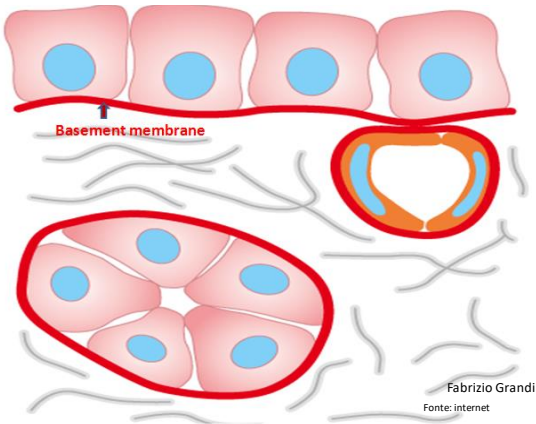


Epiderme

▪ *Stratum basale*

- *Stem cells* e células de ancoragem
- Membrana basal, hemidesmossomos e desmossomos (desmogleína, desmoplaquina, desmocollinas)
- Interface dermo-epidérmica
- Camada mitótica





Epiderme

- Frequência relativa dos queratinócitos
 - Corneócitos > granuloso > espinhoso > basal.

Fabrizio Grandi

Epiderme

- Melanócitos
 - *Stratum basale*
 - Forma e tamanho variados, de acordo com densidade local
 - 5% das células epidérmicas
 - Melanina
 - Cor (pigmentação constitutiva e facultativa)
 - Proteção aos raios ultra-violeta (UV)
 - Eumelanina e feomelanina (alto enxofre)

Fabrizio Grandi

Hyper-pigmented

Melanocyte is over-active, Producing excess melanin

The diagram shows a cross-section of the skin with an "Over-active Melanocyte" in the dermis. It is producing a large amount of "Excess Melanin" that is being transported to the epidermis. Labels include "Epidermis", "Dermis", "Squamous cells", "Blood vessels", and "Excess Melanin".

Melblok®

Melanocyte became normal, Producing natural levels of melanin. Treated cells are young and healthy

The diagram shows the same skin cross-section after treatment. The melanocyte is now "Normalized" and produces "Normal Melanin". Labels include "Epidermis", "Dermis", "Squamous cells", "Blood vessels", and "Normalized Melanocyte".

Fabrizio Grandi

Epiderme

- Células de Langerhans
 - *Stratum spinosum*
 - 3-8% das células epidérmicas
 - Células apresentadoras de antígeno (APC)
 - Imunofenótipo específico
 - Histiocitomas
 - Histiocitose cutânea de células de Langerhans

Fabrizio Grandi

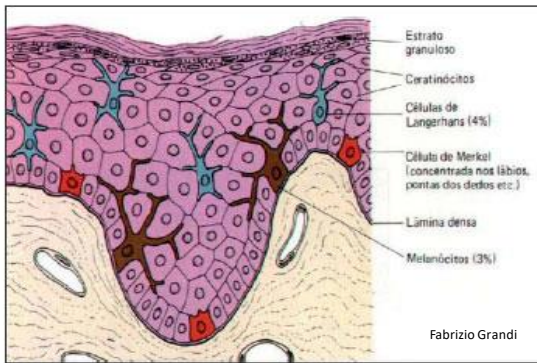
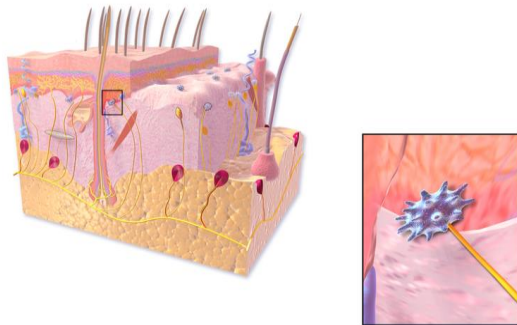


Figure 1: Arrangement of melanocytes on the epidermis and their inter-relation with keratinocytes
 Fonte: internet

Epiderme

- Células de Merkel
 - *Stratum basale*
 - Coxim tilotríquico e folículo piloso
 - Mecanorreceptores
- Funções
 - Controle da sudorese
 - Controle do fluxo sanguíneo
 - Coordenação da proliferação de queratinócitos
 - Controle do ciclo folicular

Fabrizio Grandi



Merkel Cell (Tactile Disc)

Fabrizio Grandi

Fonte: internet

Anexos cutâneos

- Definição
- Importante parte do *work-up* diagnóstico

Fabrizio Grandi

Anexos cutâneos

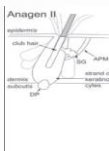
Veterinary Dermatology

DOI: 10.1111/1365-3164.12111

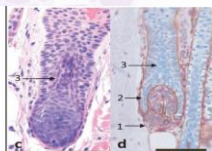
The canine hair cycle – a guide for the assessment of morphological and immunohistochemical criteria

Tabitha Müntener*, Marcus G. Doherr†, Franco Gussettii, Maja M. Suter* and Monika M. Welle*

Accepted 10 January 2011



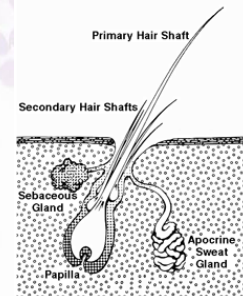
1. DP at border dermis/subcutis
 2. Matrix cells partially enclose the DP
 3. Matrix cells above DP begin to differentiate towards hair shaft and IRS
- C: H&E
 d: IHC Laminin and Vimentin



Fabrizio Grandi

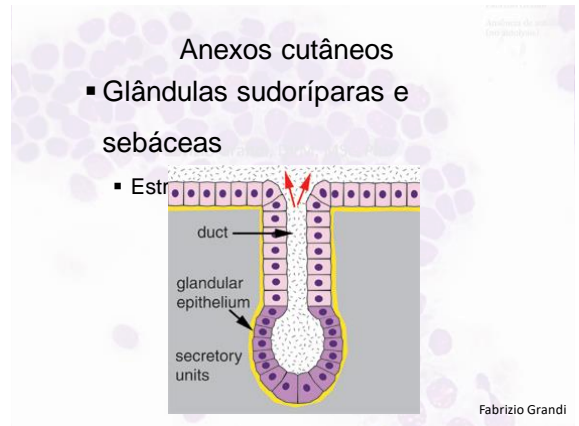
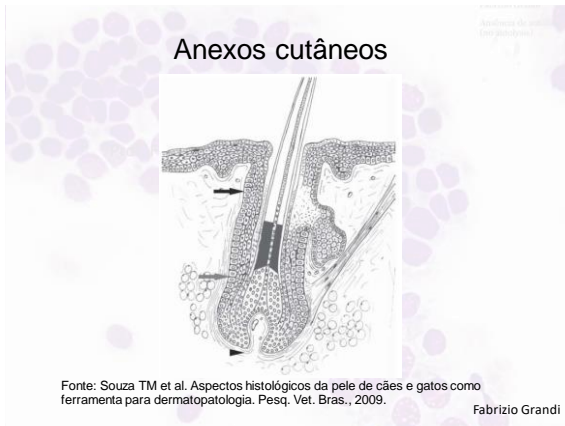
Anexos cutâneos

Canine Skin and Hair



Fabrizio Grandi

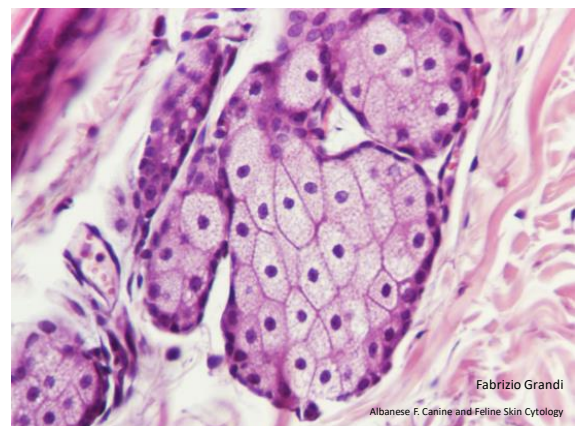
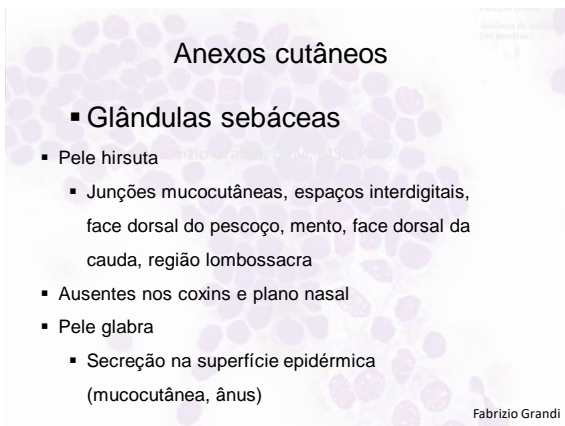
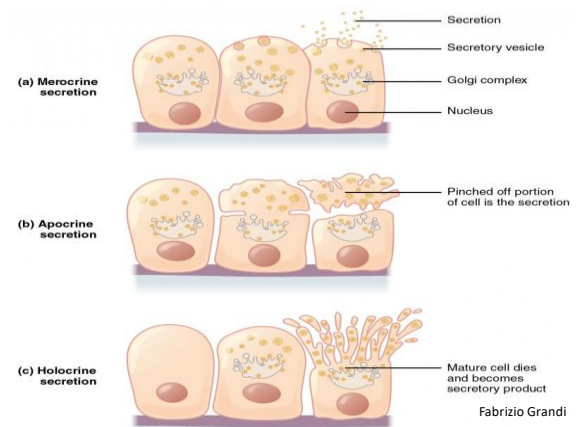
Fonte: internet

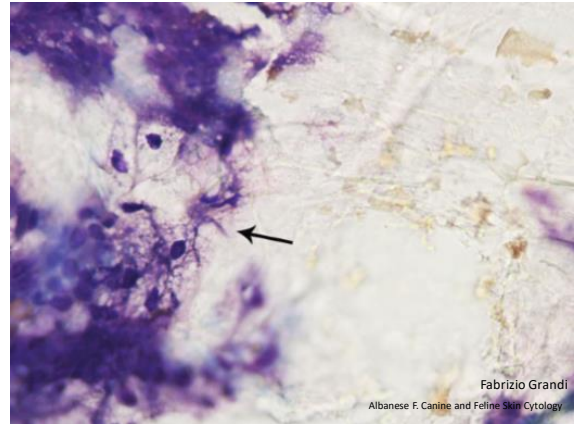
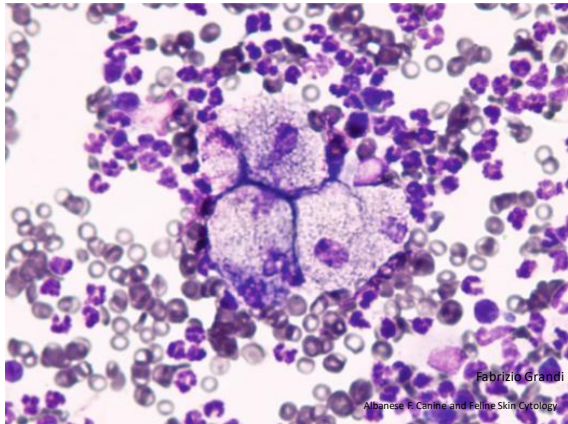


	simple (duct portion does not branch)	compound (duct portion branches)
tubular structure	<p>(coiled)</p>	<p>(branched)</p>
alveolar structure		<p>(branched)</p>

Labels: duct cells, secretory cells

Fabrizio Grandi

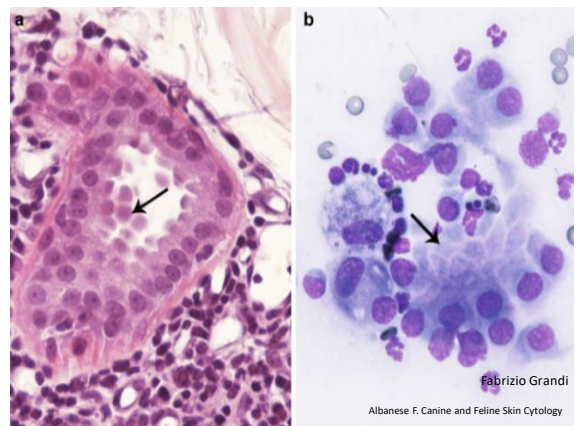
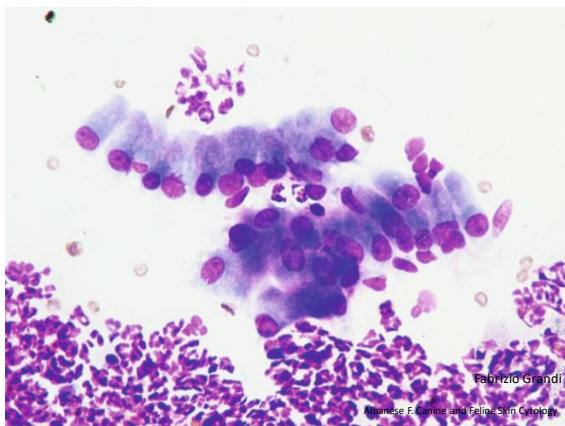
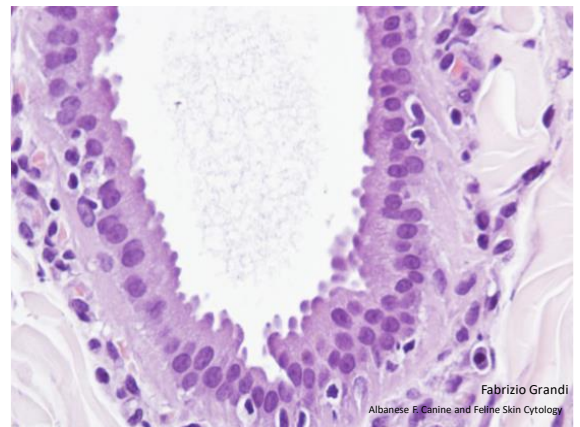




Anexos cutâneos

- Glândulas sudoríparas
- Apócrinas
- Écrinas

Fabrizio Grandi



Anexos cutâneos

- Glândulas modificadas
- Glândulas dos sacos anais
- Glândulas hepatóides

Fabrizio Grandi

Derme

- Cório (tecido conjuntivo denso ou frouxo)
 - Papilar ou superficial
 - Profundo ou reticular
- Matriz extracelular
 - Glicosaminoglicanos, proteoglicanos, fibronectina, tenascina, mucina (Shar Pei)
 - Altamente hidrofílicos

Fabrizio Grandi

Derme

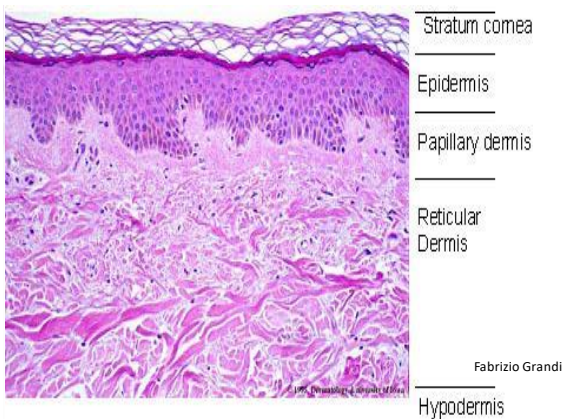
- Elementos celulares dérmicos
 - Fibroblastos
 - Linfócitos
 - Plasmócitos
 - Mastócitos
 - Macrófagos
 - Pericitos

Fabrizio Grandi

Derme

- Fibras dérmicas
 - Colágeno
 - 75-90% da matriz extracelular
 - Tipo I (87%)
 - Tipo III (10%)
 - Tipo V (3%)
 - Derme superficial x profunda
 - Elastina
 - Menor quantidade
 - Dermatoses actínicas

Fabrizio Grandi



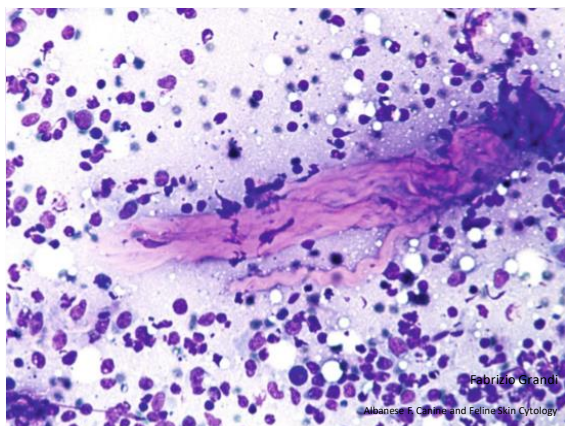
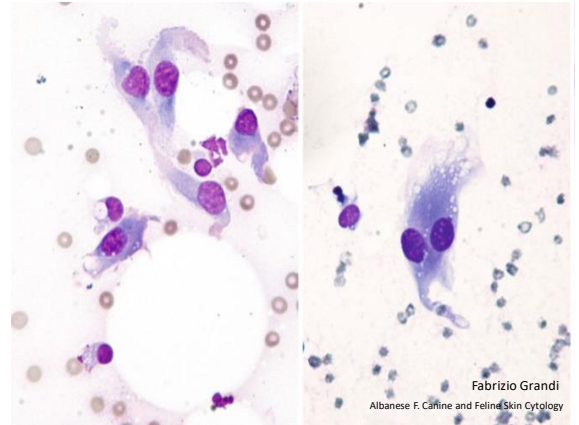
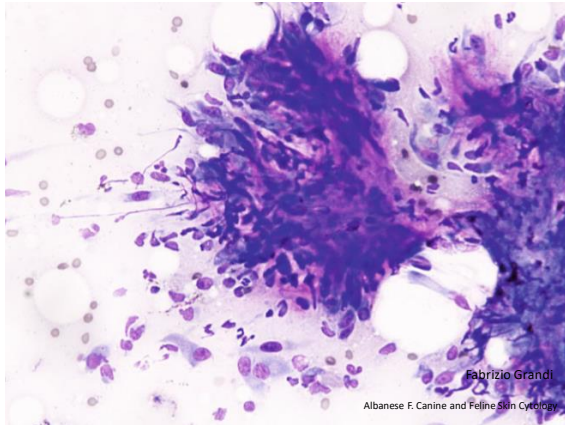
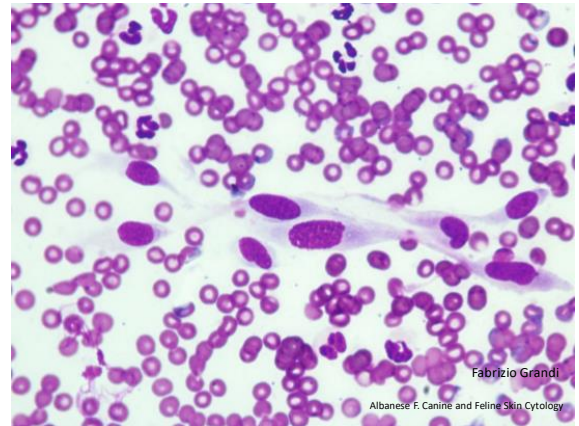
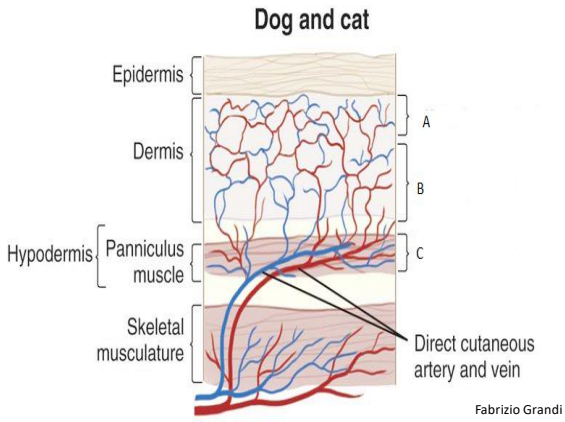
Fabrizio Grandi

Hypodermis

Derme

- Vascularização
 - 3 plexos intercomunicantes
 - Subpapilar superficial (derme superficial e epiderme)
 - Subpapilar profundo (derme superficial e profunda)
 - Venoso profundo (derme profunda-subcutâneo)

Fabrizio Grandi



Hipoderme

- Panículo adiposo
 - Adipócitos
 - Plexo vascular
 - Estroma

Labels in diagram:
 Connecting fibres
 Fat reserves
 Hypodermis Fat cell layer
 Fabrizio Grandi

