

Lezione 7 – La Cute

La Cute

**L'organo più esteso dell'organismo (16% peso corporeo)
riveste anche le mucose (organi genitali, apparato digerente,
prime vie respiratorie, palpebre,
congiuntive, orecchio e timpano)**

**Annessi cutanei: - ghiandole sudoripare e sebacee
- peli
- unghie**

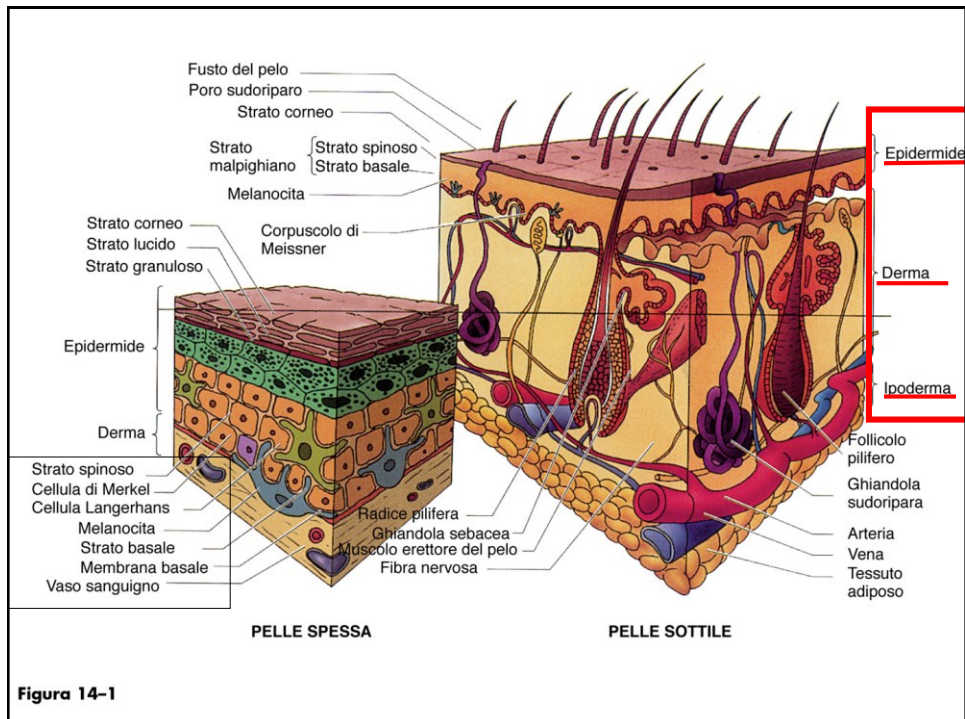
Struttura istologica:

- epidermide (epitelio squamoso pluristratificato cheratinizzato*)
- derma sottostante (connettivo fibroso irregolare°)

- Funzioni:**
- 1) protezione da traumi, infezioni e disidratazione
 - 2) regolazione temperatura corporea
 - 3) recezione sensoriale (tatto, calore, dolore)
 - 4) secrezione delle ghiandole sebacee
 - 5) assorbimento raggi UV (sintesi vit. D)

*= derivazione dall'ectoderma embrionale

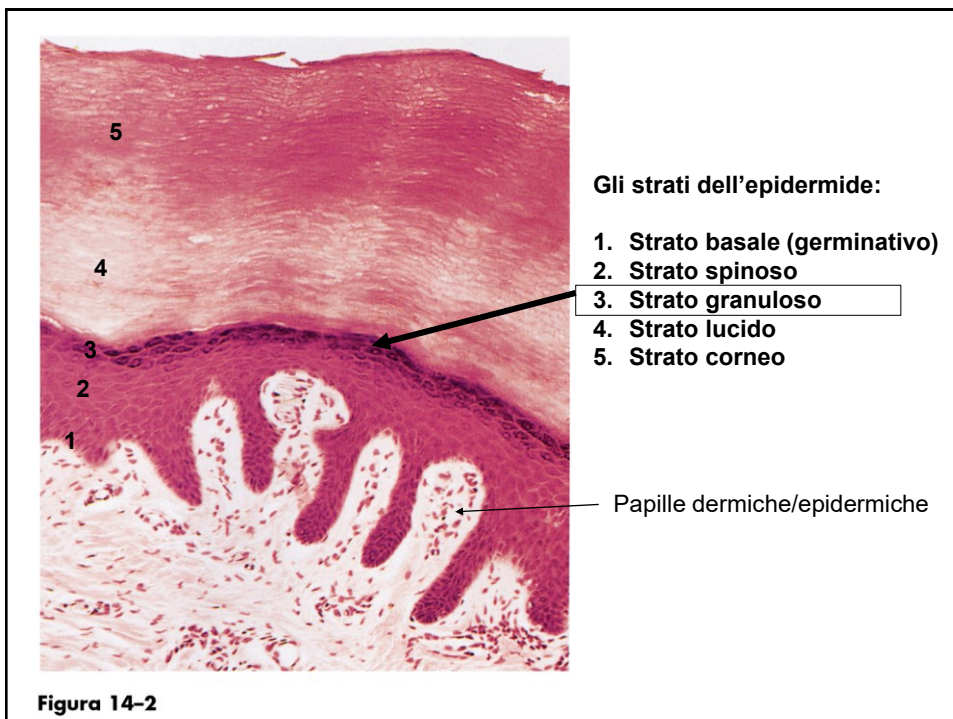
° = derivazione dal mesoderma embrionale

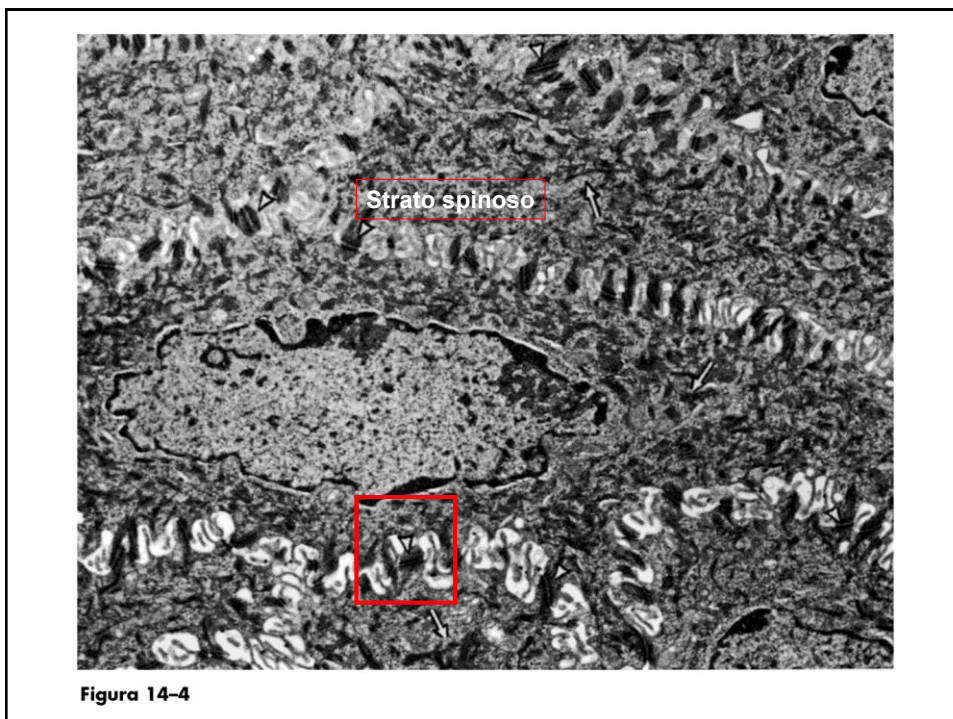
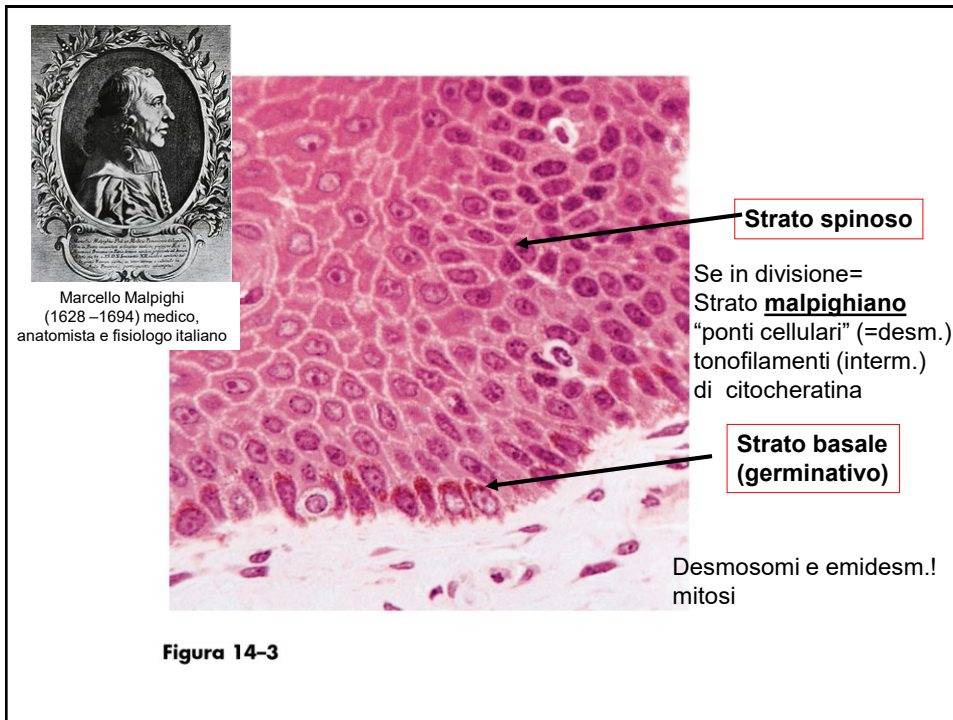


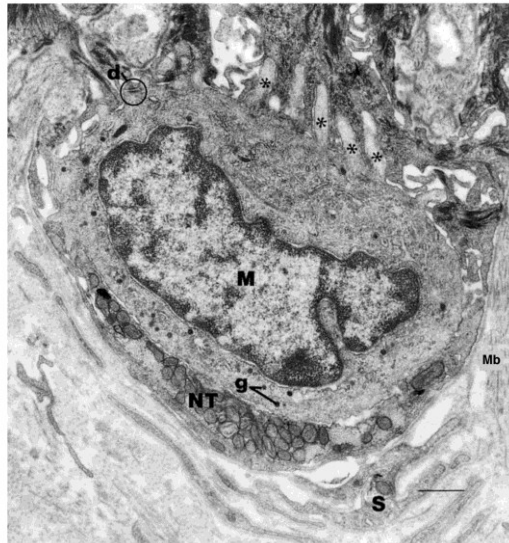
All'interno dell'epidermide si riconoscono 4 tipi di cellule:

- **Cheratinociti** (5 strati, più abbondante tipo cellulare, rinnovo continuo)
- **melanociti**
- **cellule di Langherans**
- **cellule di Merkel**

-Spessore variabile dell'epidermide 0,07-0,12 mm fino a 1,4 mm







Meccanocettori (tatto)

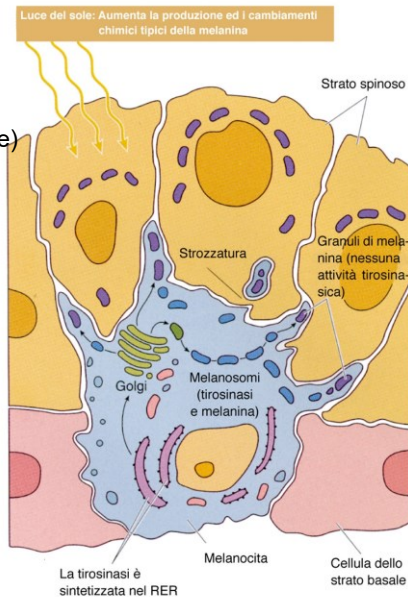
Figura 14-5

Cellula di Merkel con Nervo Terminale

Melanociti
(deriv. Cresta neurale)

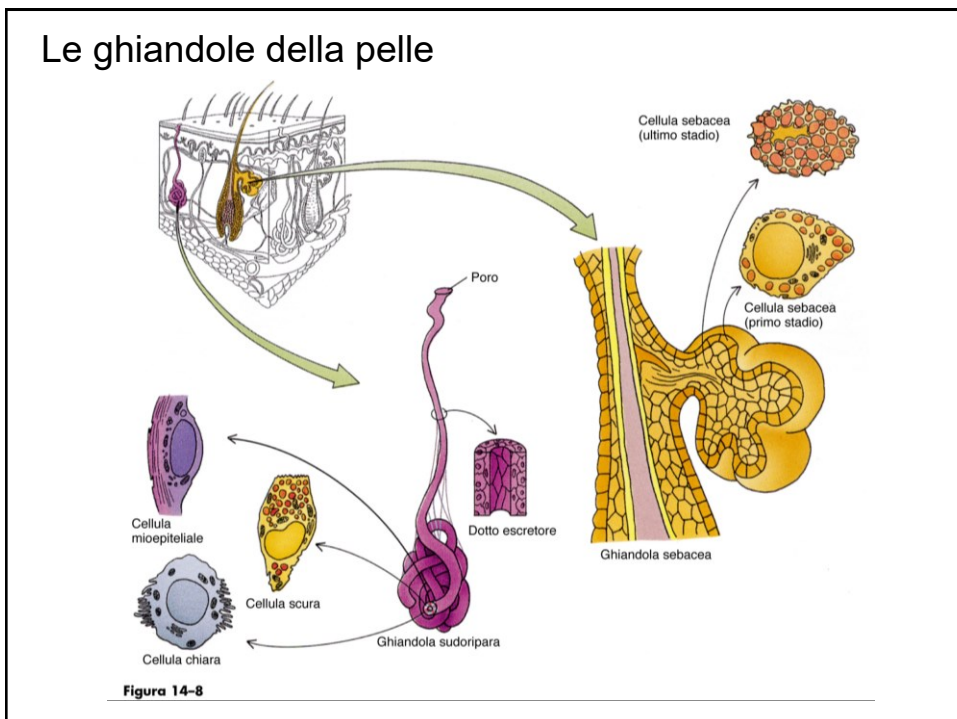
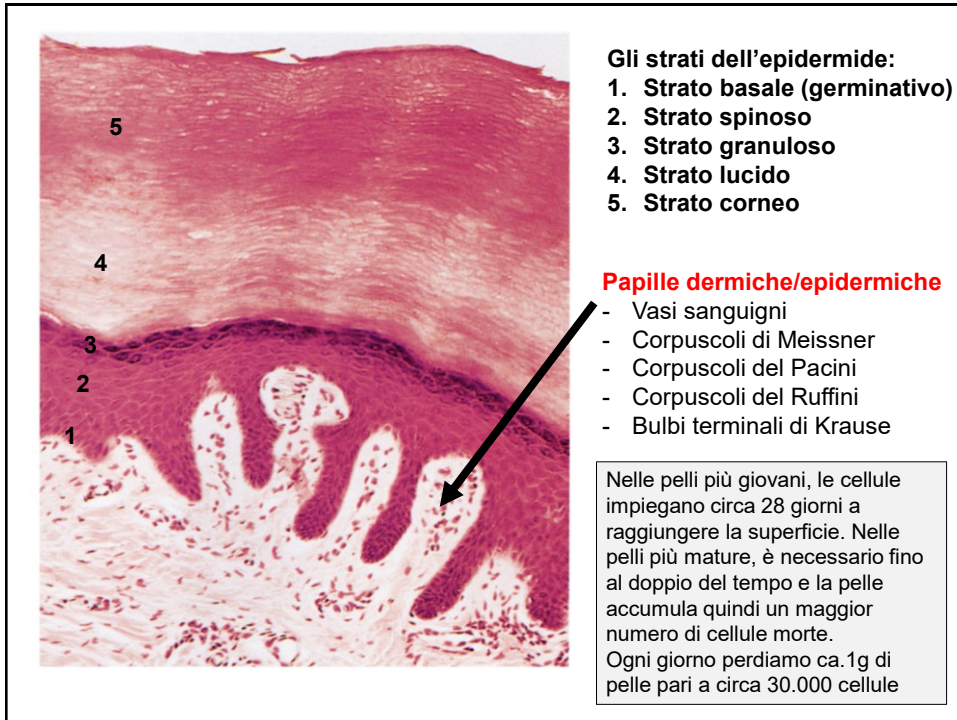
Melanina
↑
Tirosinasi-tirosina

UV



Incremento numerico
Solo dopo n. esposizioni

Figura 14-6

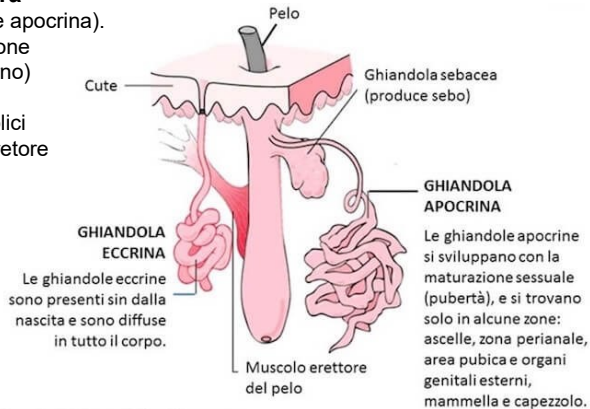


Ghiandola sudoripara

Secrezione **merocrina** (ma anche apocrina).

Organo di termoregolazione
(fino a 10lt di sudore/giorno)

Ghiandole tubulari semplici
Glomerulari con Dotto escretore
Poro sudoriparo



Il secreto, a contatto con i batteri presenti sulla cute produce un odore acro - salato tipico del sudore.

Sono ghiandole sudoripare **apocrine** modificate:

- Ghiandole mammarie
- Ghiandole ceruminose del meato acustico esterno.

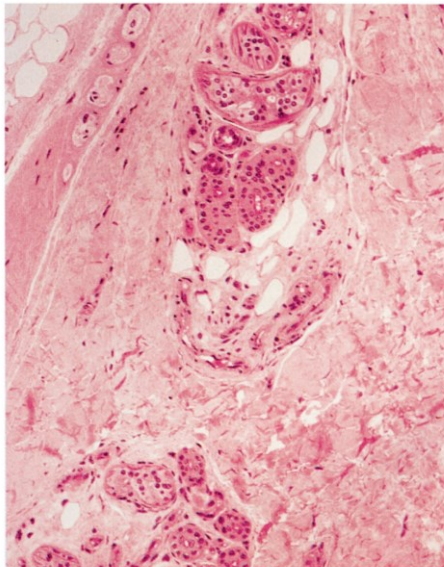


Figura 14-7

Ghiandole sudoripare

merocrine:

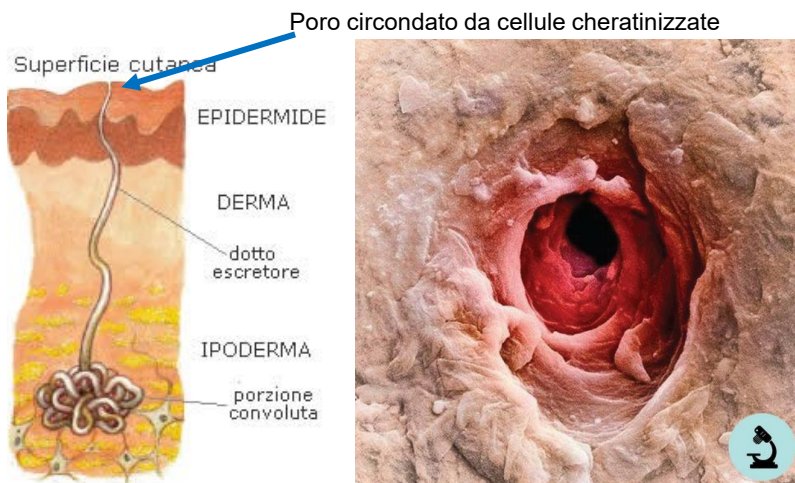
Cellule chiare = glicogeno,
secreto acquoso simile a
plasma (K^+ , Na^+ , Cl^- ,
ammoniaca e urea)

Cellule scure = secreto mucoso

Le ghiandole sudoripare possono essere idealmente divise in due distinte porzioni con diversa funzione:

- la porzione glomerulare è quella zona della ghiandola in cui avviene il passaggio di elettroliti, quali $NaCl$ e HCl in associazione ad acqua, dall'interstizio peritubulare al lume
- il dotto escretore è invece quella zona della ghiandola in cui avviene il riassorbimento degli elettroliti stessi e che funge da canale per portare in superficie il secreto.

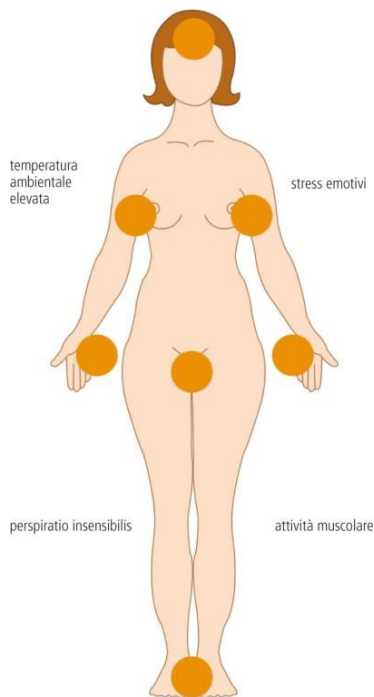
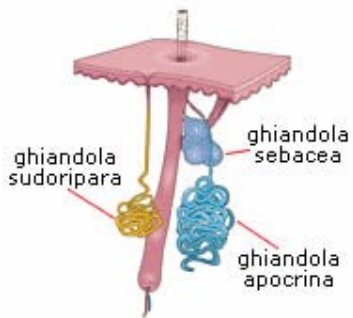
Ghiandola sudoripara



Cellule dei dotti zona basale: ricche di mitocondri, nucleo eterocromatico
 Cellule dei dotti zona luminale: nucleo irregolare, poco citoplasma, rete terminale

Ghiandole sudoripare apocrine:
 Distribuite nelle regioni ascellari,
 in prossimità dei capezzoli, nella
 regione periumbelicale e nella
 regione ano-genitale
 Ghiandole ceruminose (orecchio)
 Ghiandole di Moll (palpebre)

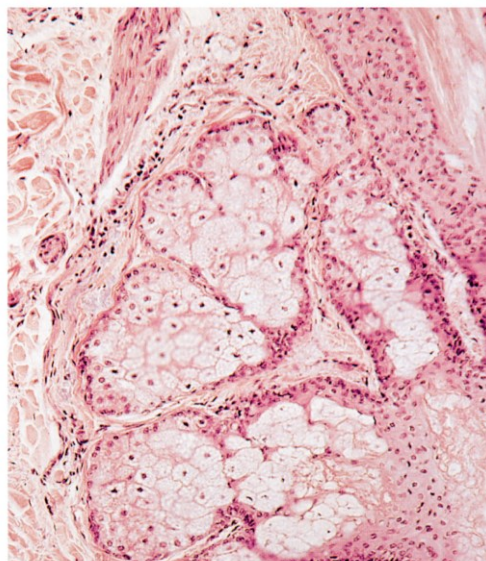
Acido-3-metil-1-2-esanoico



Sweaty T-shirt study (1995)



Wedekind, Claus, Seebeck, Thomas, Bettens, Florence, and Paepke, Alexander J. (1995). "MHC-Dependent Preferences in Humans." *Proceedings of the Royal Society of London* 260: 245-49.



Sebo= colesterolo, trigliceridi, e detriti cellule secretorie

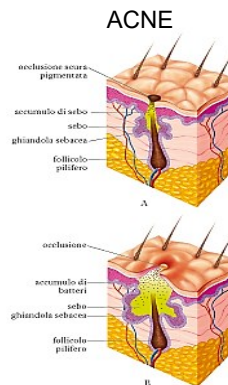
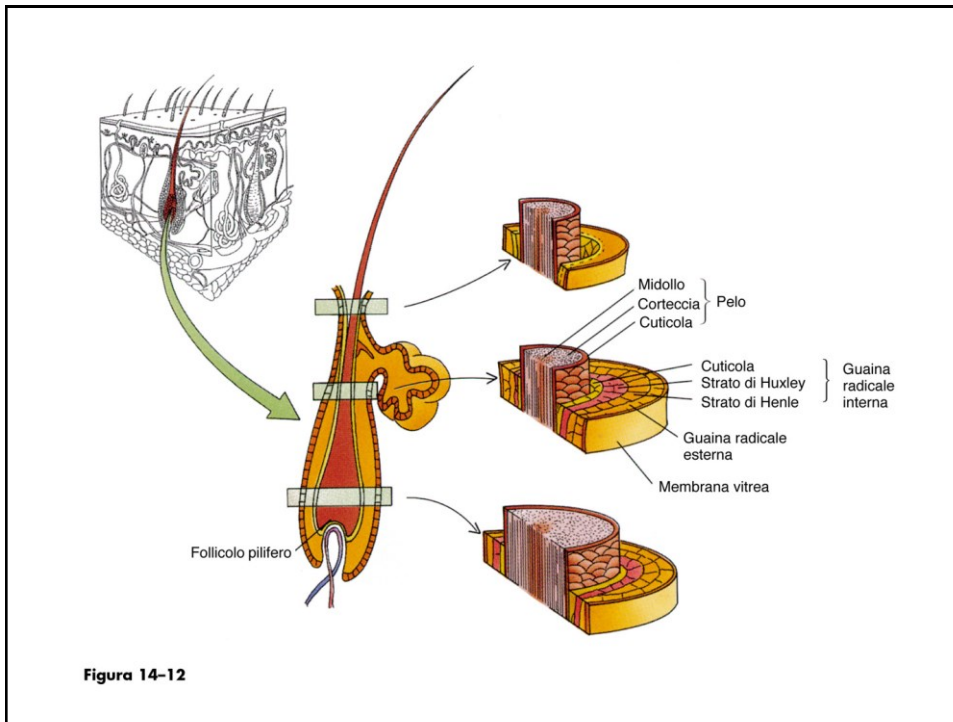


Figura 14-9

Ghiandola sebacea con muscolo erettore del pelo



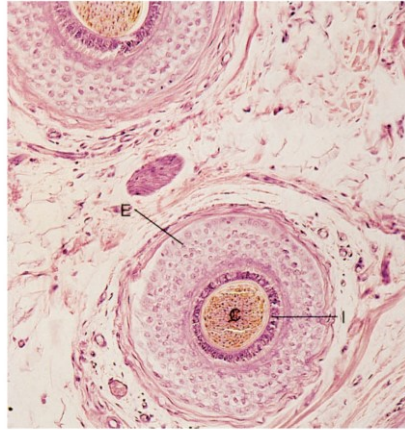


Figura 14-11

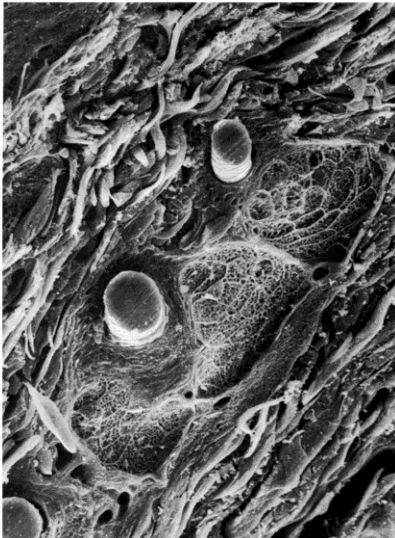


Figura 14-13

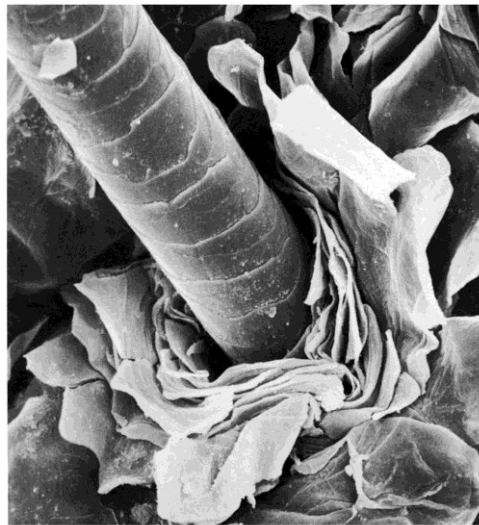
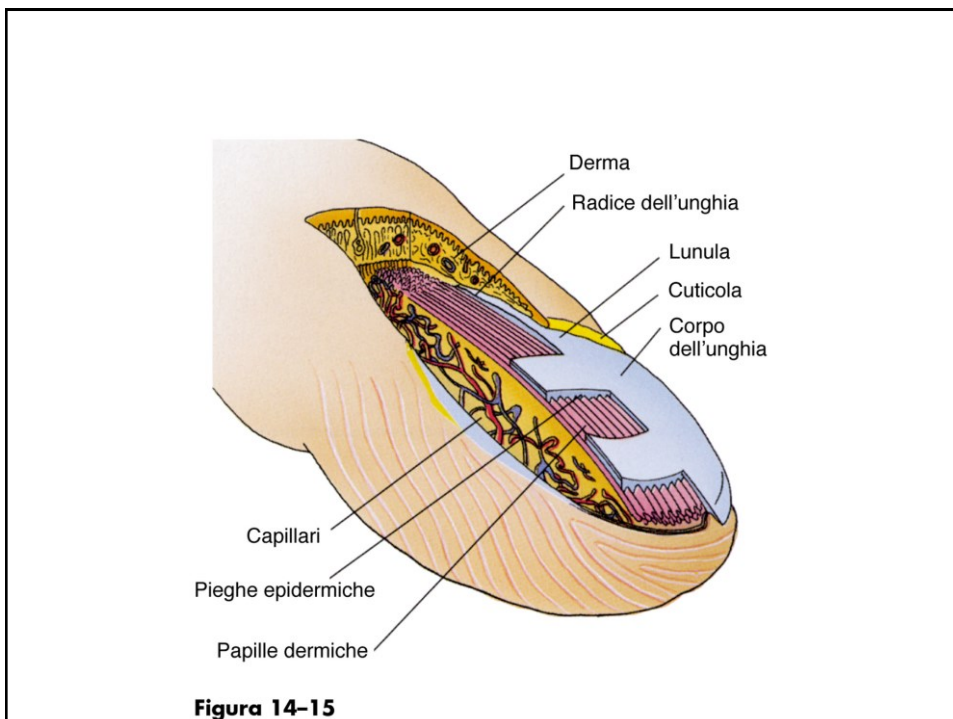
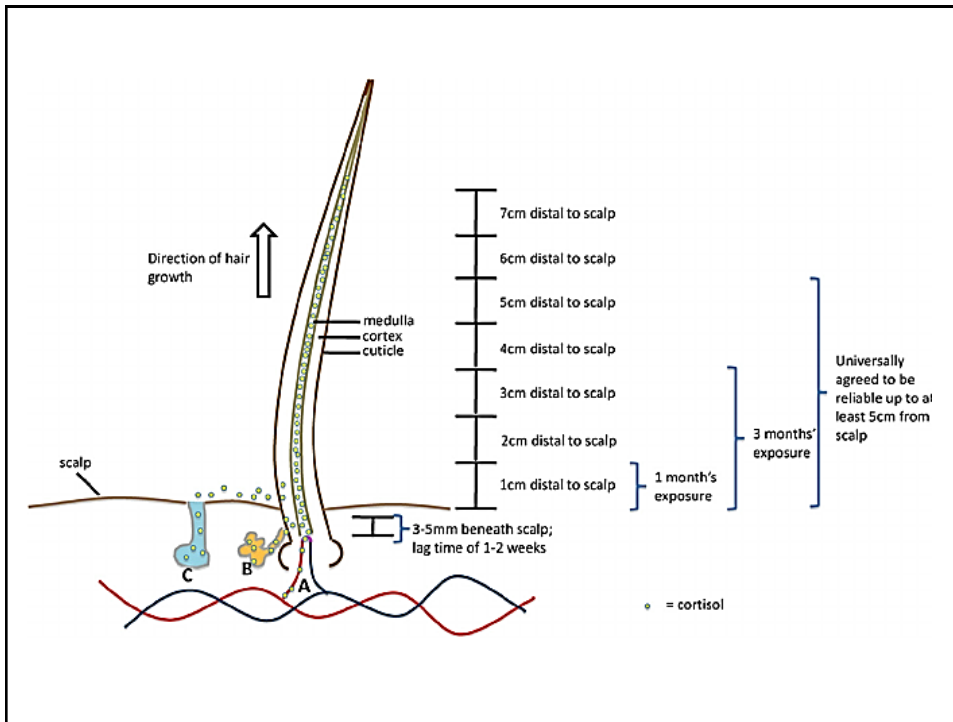


Figura 14-14

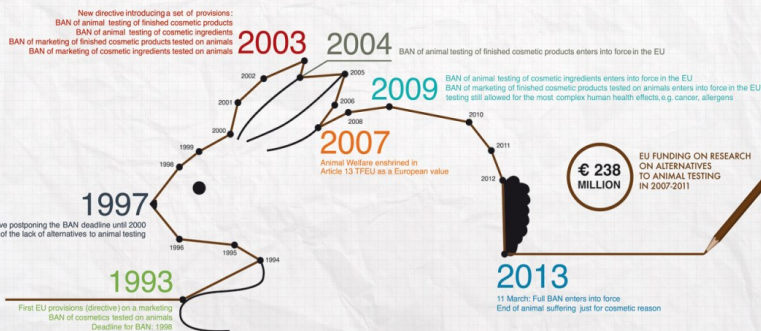


Campagne del 2012-13



Cosmetotoxicology / complete ban of animal testing in EU since 2013

**CONNECTING THE DOTS FOR ANIMALS:
HISTORY OF THE EU BAN ON ANIMAL TESTING FOR COSMETICS**



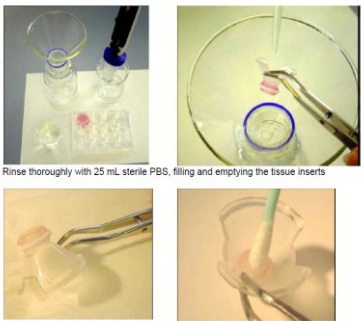
Dal documento dell'UE – COM (11.3.2013)

Ad oggi (2013) sono stati convalidati metodi sostitutivi, adottati sotto forma di linee guida dell'OCSE per i **test di irritazione e corrosione cutanea, fototossicità e assorbimento cutaneo**.

Metodi parzialmente sostitutivi, idonei a essere inclusi nelle strategie di sperimentazione, sono stati convalidati nel campo **della tossicità sistemica acuta e dell'irritazione oculare** e, per quanto riguarda quest'ultima, sono stati adottati sotto forma di linee guida dell'OCSE.

Il perfezionamento dei test di genotossicità in vitro e delle strategie di Sperimentazione già in uso contribuirà allo studio di questo endpoint

DE ECVM DATABASE SERVICE
ALM ON ALTERNATIVE METHODS TO ANIMAL EXPERIMENTATION



Rinse thoroughly with 25 mL sterile PBS, filling and emptying the tissue inserts

Remove the remaining PBS from the epidermal surface by gently wiping on absorbent paper

Sweep the surface with a cotton-bud on absorbent paper

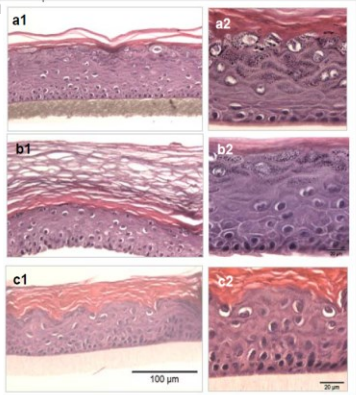


Figure 23. Representative histology images of the three reconstructed human skin models.

- 1) EpiDerm model (1-magnification 200 x, 2-magnification 600 x)
- 2) EpiSkin model (1-magnification 200 x, 2-magnification 600 x)
- 3) SkinEthic model (1-magnification 200 x, 2-magnification 600 x)

Table 19. Basic characteristics of the three reconstructed human skin models.

Reconstructed human skin model	Days of cultivation before supply	Model Size (cm ²)	Number of viable cell layers	Approximate thickness of the viable epidermis (µm)	Approximate thickness of the stratum corneum (µm)
EpiDerm	10	0.63	8-12	60-100	15-30
EpiSKIN	13	1.1	8-12	60-100	80-100
SkinEthic	17	0.5	7-10	40-60	20-40

2. Replace the EpiSKINTM-SM unit in the fresh assay medium pre-filled wells (2 mL). When all of the units have been rinsed: place the units on absorbent paper.
3. Put units into the wells of the plate containing the MTT solution (0.3 mg/mL) in 2 mL assay medium per well.
4. For the specific coloring controls, dispense 2 mL of assay medium per well. Put units into the wells of the plate.
5. Replace the lid on the plate. Incubate the treated and rinsed epidermis at 37°C, 5% CO₂, > 95% humidified atmosphere for 3 hrs (+/-15 min)

Record incubations start time in the MDS Annexes 8-10.

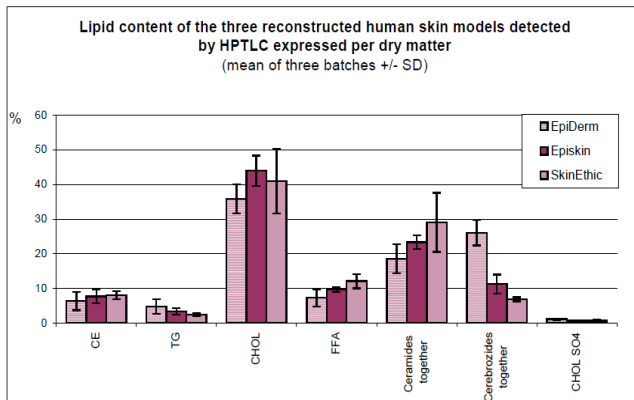


Figure 26. Lipid content of the three reconstructed human epidermal models.
 CE - cholesterol esters, TG - triglycerides, CHOL - cholesterol, FFA - free fatty acids, CER - ceramides, CEREB - cerebrozides, CHOL SO₄ - cholesterol sulphate.

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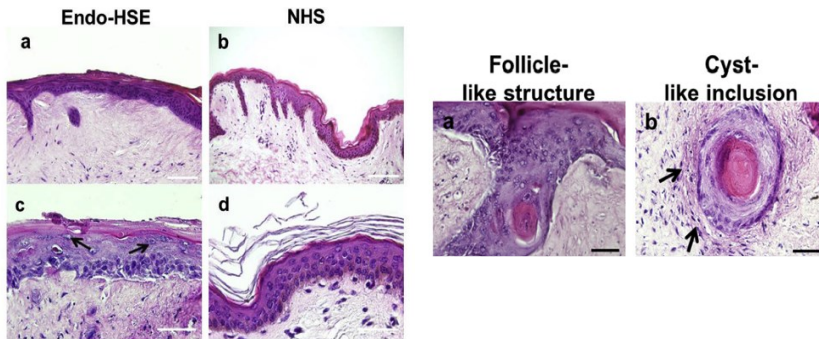
journal homepage: www.elsevier.com/locate/biomaterials

Endogenous human skin equivalent promotes *in vitro* morphogenesis of follicle-like structures



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La lunga vita delle bufale online...



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This is a bunny at a L'oreal lab. L'oreal does a lot of cruel needless animal testing. Please don't buy products made by L'oreal. The more products they sell, the more animals are tortured.
Kimberly Butler
I knew there was a reason why I didn't like loreal

Questo NON è un coniglio trattato all'Oreal, è solo un coniglio affetto da scabbia in cura presso una clinica veterinaria di Miami

http://lakehowellanimalclinic.com/about-us/behind-the-scenes-photos.html?_ga=1.135425265.1983258455.1426615488

La lunga vita delle bufale online...

Origins: In **early 2013** the above-displayed image of a suffering rabbit began to circulate online accompanied by a claim attributing the animal's visibly poor health to laboratory testing conducted by the **L'Oreal** cosmetics and beauty company. While the precise origin of the claim isn't clear, an iteration of it was posted to **Twitter** in **February 2013**, and in **April 2013** the rabbit photo and rumor circulated on **Tumblr** and was reposted to **Reddit**.

When the photograph and claim spread across several social networks including Facebook in **March 2015**, L'Oreal responded on their own **Facebook page**, explaining that their cosmetics were never tested on animals except for instances in which such tests are mandated by law:

Thanks for the opportunity to clarify. L'Oreal no longer tests any of its products or any of its ingredients on animals, anywhere in the world. Nor does L'Oreal delegate this task to others. An exception could only be made if regulatory authorities demanded it for safety or regulatory purposes. You can read more about our policy here:

<http://bit.ly/LorealAnswers>



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