

MIRACLE Academy

قال تعالى (يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ)

تفريغ الكوزموتكس
زميلتكم إسراء ملكاوي



لجان التفتات

Basic Science of the Skin

حتى لما نتي إنه صالاسي بعد = enhance للـ disformation نفهمه يعني

10/22/2022

Saja Hamed, Ph.D

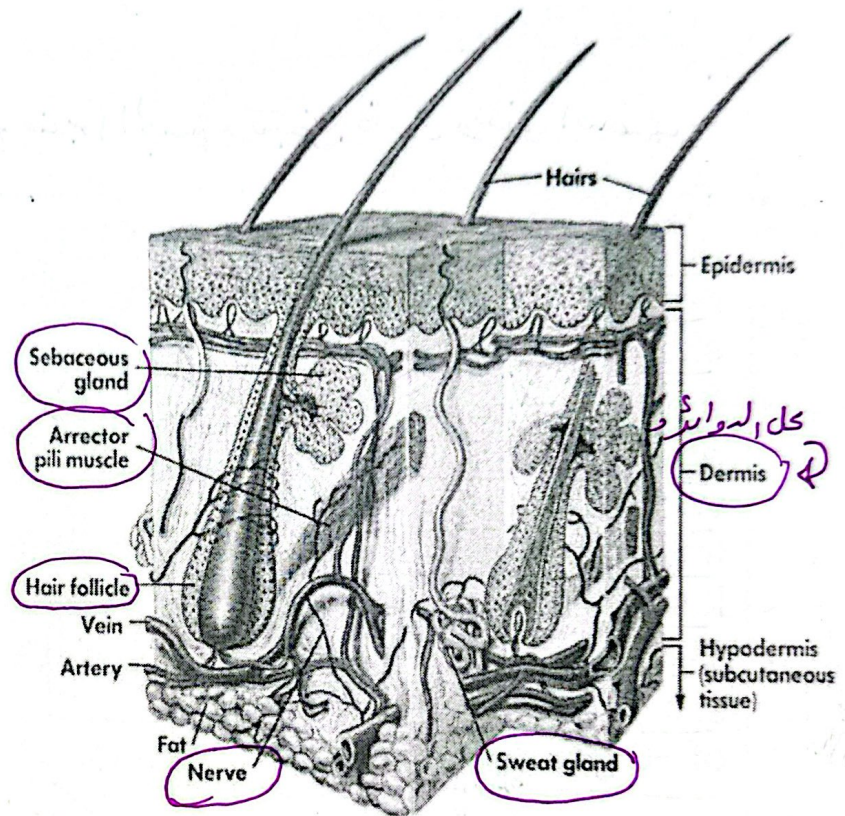
أكثر عضو في جسم الإنسان

- The skin is the largest organ of the human body (16% of total body wt.)

- The skin is composed of:

- 1 Epidermis
- 2 Dermis
- 3 Subcutaneous tissue

Fatty storage area.



10/22/2022

Saja Hamed, Ph.D

The Epidermis

SC + barrier
 • The epidermal barrier: كيف يشغل كجانب

- ① Limit passive water loss from the body
- ② Reduce the absorption of chemicals from the environment
- ③ Prevent microbial infection

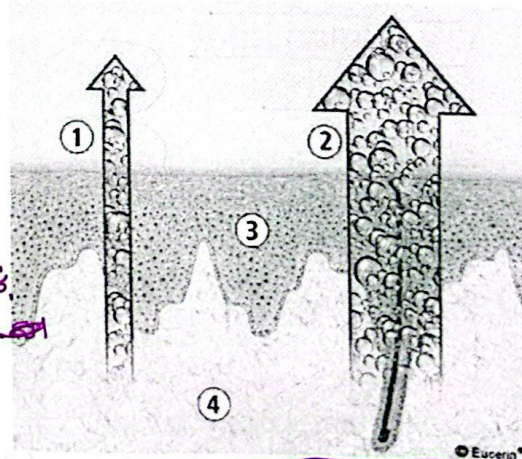
كل همل ال ٣ وظائف epidermal barrier

Saja Hamed, Ph.D

Transepidermal Water Loss

* الوضع الطبيعي المخرج تطلع منه جوا الجسم ويتبخر بالخرج وصاها اسمها

- The water produced during respiration is normally lost through the skin.
- It moves through the epidermis as water vapor, hence called transepidermal water loss (TEWL).
- TEWL varies with body site, with normal values of ~6 grams/m²/hour.



هاد الاشياء الة قيمة وعلازم يتجاوزها

10/22/2022

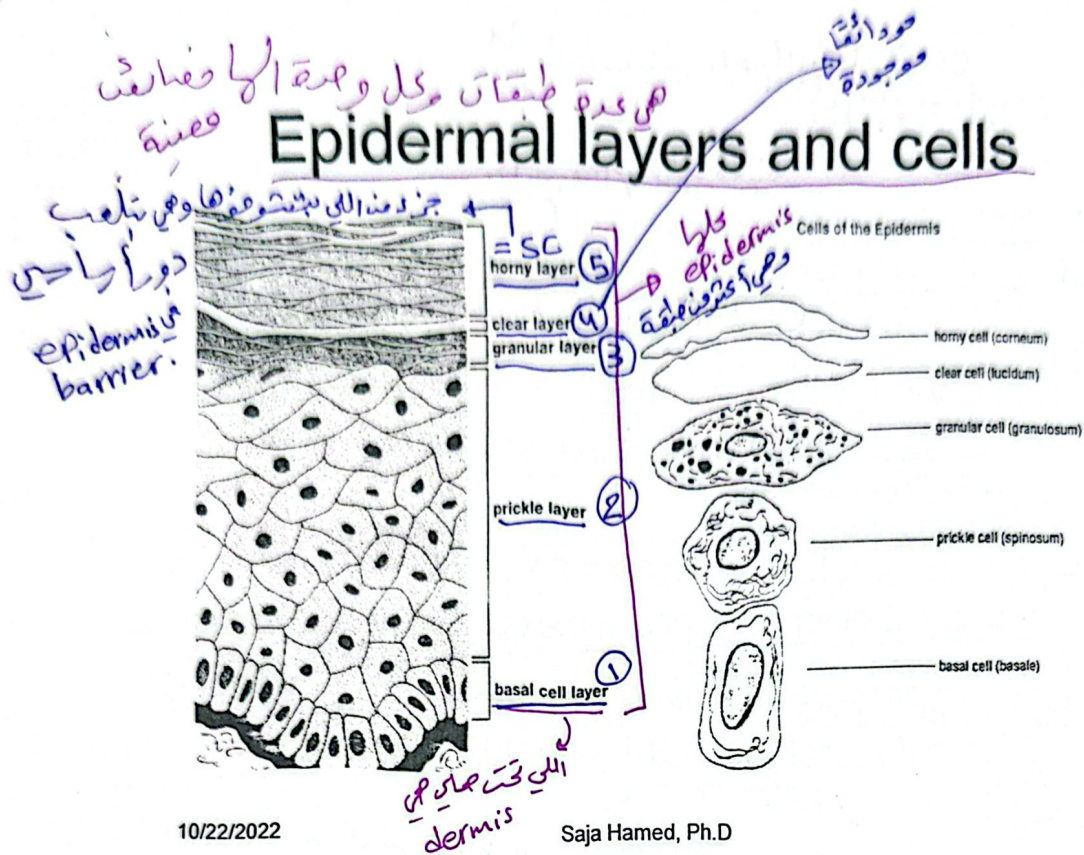
Saja Hamed, Ph.D

* و ال epidermis هي الة عامل الة قيمة وهي بسيطة جدا

* لما يصير الة الة فبزي

TEWL ويتبخر من الة المنطقة من dryness غير of skin

SC = stratum corneum



Layers of the Epidermis

English	Latin باللاتينية	Alternate أسماء أخرى
<u>Basal cell layer</u>	<u>Stratum basale</u>	<u>Stratum</u> <u>Germinativum</u> <u>Malpighian layer</u>
<u>Prickle layer</u>	<u>S. Spinosum</u>	<u>Malpighian layer</u>
<u>Granular Layer</u>	<u>S. Granulosum</u>	<u>Malpighian layer</u>
<u>Clear Layer</u>	<u>Stratum Lucidum</u>	
<u>Horny Layer</u>	<u>Stratum Corneum</u>	

10/22/2022

Saja Hamed, Ph.D

Epidermis: ^{أول طبقة تدعى عليها Topical Product (مهمة)}

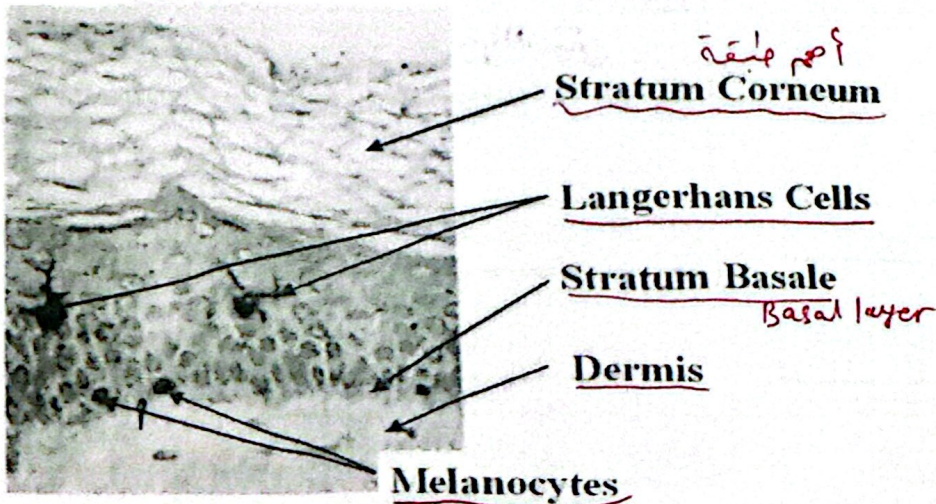
كل طبقة لها وظيفة معينة

- ① The top layer of the skin is itself divided into layers.
- ② The main barrier to water loss and entry of compounds in the skin is the SC. ^{و دخول و الخروج الكيميائيات المغلفة}
- ③ Understanding the SC is key to understanding the behavior of topical products
- The predominant cell type of the epidermis is keratinocytes → make ↓
- They make keratins; the major structural proteins of the SC
- There are 2 other cell types in the epidermis:
 1. Melanocytes
 2. Langerhans cells

10/22/2022

Saja Hamed, Ph.D

keratinocyte ^{الخلايا التي تصنع الكيراتين} epidermis ^{في} خلايا أخرى؟ في



Courtesy of SB Hoath, MD

10/22/2022

Saja Hamed, Ph.D

Epidermis

Melanocytes

- the pigment producing cells of the skin and hair
- Found in the basal layer and make pigment granules called melanosomes containing melanin
- Melanosomes are transferred to the epidermal keratinocytes
- They impart some protection to the cell nucleus from UV light and give the skin its color

التي جواته الميلانين

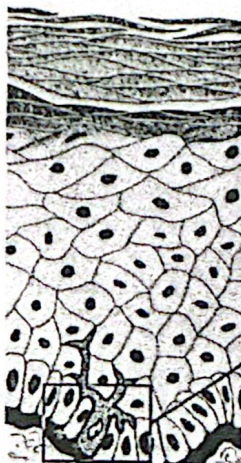
شروطية
ال
Melanosomes
Keratinocyte

10/22/2022

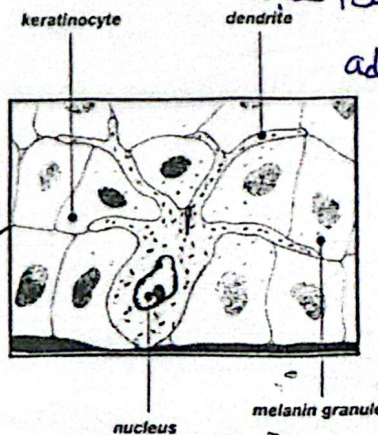
Saja Hamed, Ph.D

Melanocytes: The melanocyte is a dendritic cell that sits in the basal layer of the epidermis and transfers pigment to keratinocytes in the form of pigment granules called melanosomes.

Layers of the Epidermis



Melanocyte



melanocyte

تتفرع تحت الصفة

adjuvant

Keratinocyte

10/22/2022

الرجاء
 هذه المسؤولة عند اكتشاف Antigen الذي يدخل مع الجلد ويحدث
 يشكوها بالجلد
 ويعمل Macrophage و T ويرجع
 كل ما يشوف (المادة) في الجلد يعمل الجهاز
 (The Langerhans' Cell)

عالمهم علاقة بالجهاز المناعي
 - Dendritic immune cells

Antigen-presenting cell of the skin
 ضيلد جسمهم

Important to the immune function of the epidermis

Participate in contact allergy

والأخرى تلعب دور فيها

Layers of the Epidermis

Langerhans' Cell



Antigen ← أي مادة غريبة
 على جهاز المناعة

10/22/2022

Saja Hamed, Ph.D

Contact sensitization

- Small molecules (Haptens) penetrate and bind to proteins. نرى النيكل مثلاً
- Hapten-protein complex recognized by Langerhans cells
- Move to lymph nodes and stimulate clonal proliferation of sensitized t-cells
- T-cells return to epidermis to mount reaction

بنتج شرف
 على من يتقله
 أنت عزيز

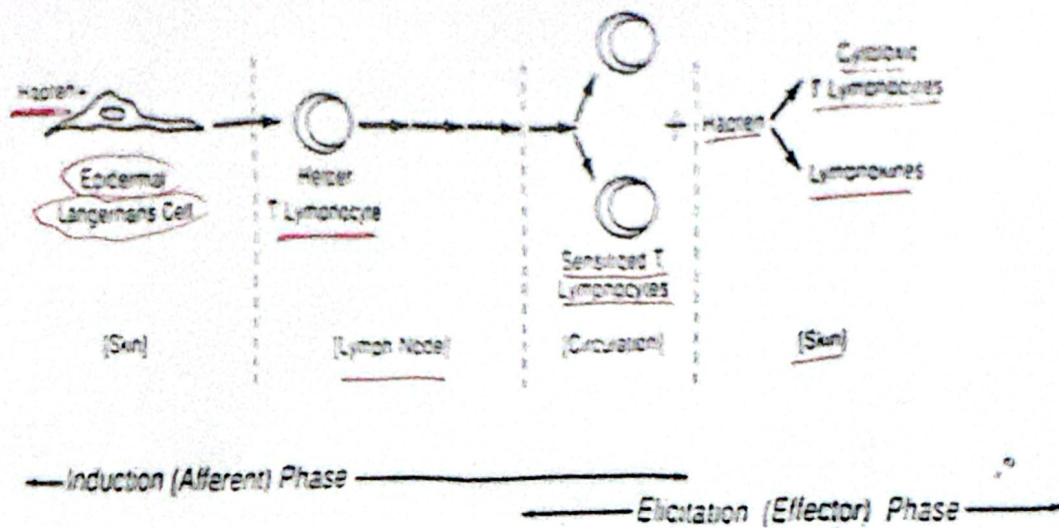
لتعمل تفاعل الجهاز

كل ما يشوف مادة الحساسية + T cells
 يصير تفاعل

10/22/2022

Saja Hamed, Ph.D

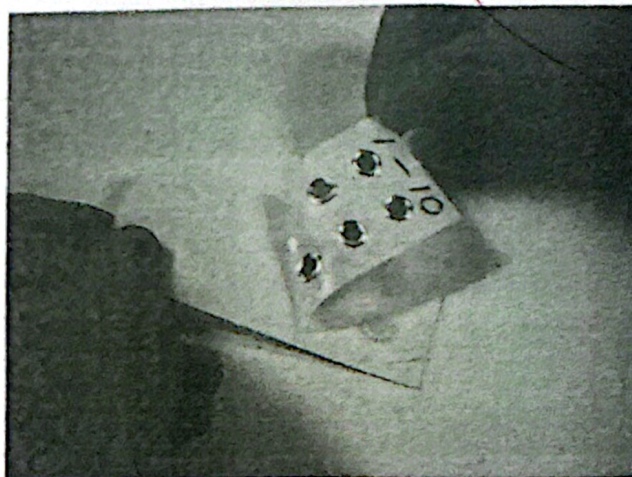
Contact sensitization



10/22/2022

Saja Hamed, Ph.D

The Finn chamber



لنرى الناحية
التي عندهم
Contact dermatitis
والحساسية يجعلوا
batch ال
Testing في حجرة

Photo from *Color text of Contact Dermatitis*, Larsen, Adams and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

Patch testing for contact allergy

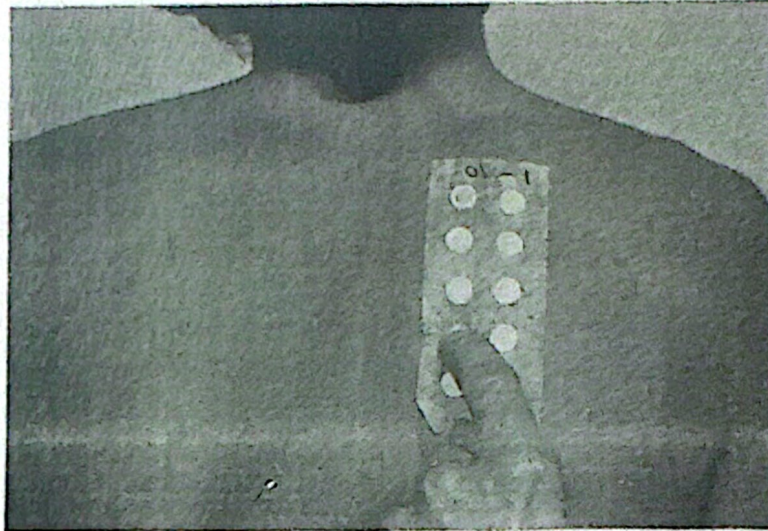


Photo from *Color text of Contact Dermatitis*, Larsen, Adams and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

A positive reaction



Photo from *Color text of Contact Dermatitis*, Larsen, Adams and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

Most reactions
to cosmetic
products are to
preservatives ①
or fragrances ②



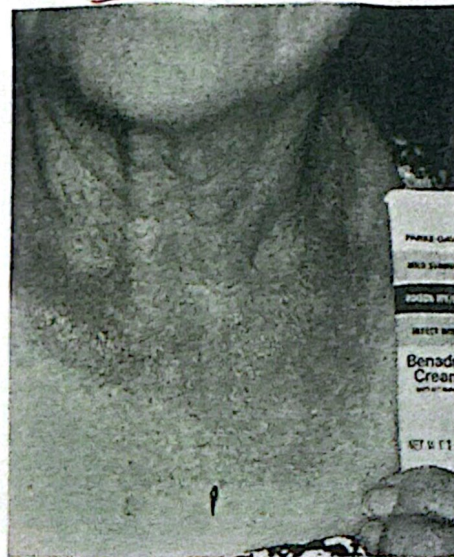
Courtesy of Alexander A. Fokan, MD
IMIDAZOLIDINYL UREA

Photo from *Color text of Contact Dermatitis*, Larsen, Adams
and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

Benadryl *Antihistamine*



Courtesy of Alexander A. Fokan, MD
DIPHENHYDRAMINE

Antihistamine

Photo from *Color text of Contact Dermatitis*, Larsen, Adams
and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

قارة للذوق و Cinnamal

Aroma
Fragrance

وقعت فيها



CINNAMIC ALDEHYDE (CINNAMAL)

Photo from *Color text of Contact Dermatitis*, Larsen, Adams and Maibach, W. B. Saunders Co. Philadelphia 1992

10/22/2022

Saja Hamed, Ph.D

Langerhan's
Cell

٢٩

⊕

من بلبل دورفي Contact
أي ظية Sensetization

الساعات النيكرو Nickel



Courtesy of Alexander A. Fliher, M.D.

NICKEL

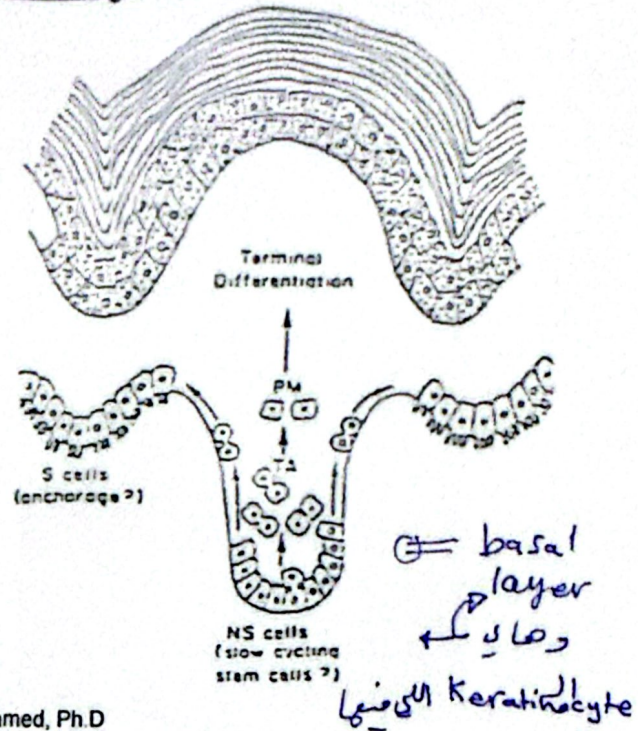
10/22/2022

Saja Hamed, Ph.D

* خلايا البشرة التي تتجدد خلايا البشرة من المعصود منجد
له تجديد خلايا البشرة
epidermis

Keratinocytes

- Keratinocytes are the cells that make up the majority of the epidermis
- produced by stem cells which reside at the base of the epidermis.
- When the stem cells divide they create "daughter cells" which slowly move to the top of the epidermis
- The process of daughter cells maturation and moving to the top is called keratinization



عملية حركة daughter cell
upper layer of epidermis
10/22/2022

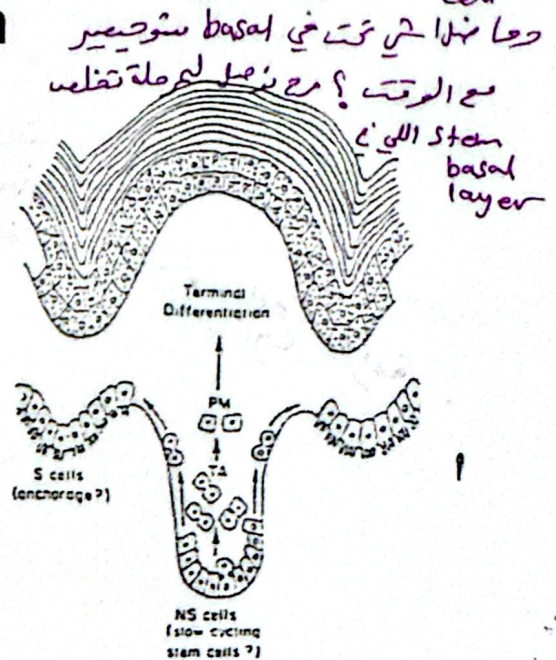
Saja Hamed, Ph.D

Stem cell = خلايا جذعية
Stem cell = خلايا جذعية
basal layer = طبقة القاعدة
differentiation = تمايز

لغز لم ماترصل آخر اشئ و تفسير شكل SC

Timing is everything in SC formation

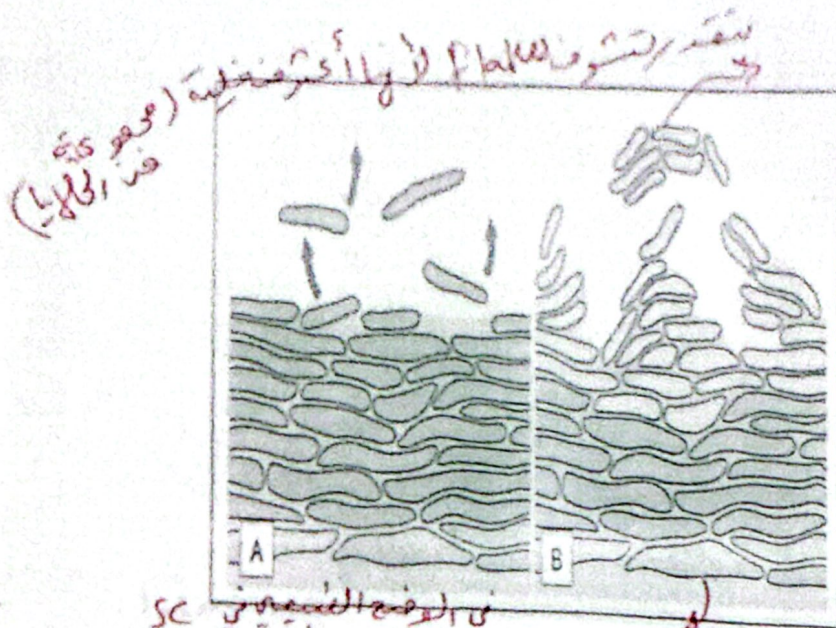
- Keratinization process is also referred to as the "cell cycle"
- Normal cell cycle of the epidermis is 26-42 days
- Desquamation process normally occurs invisibly with shedding of individual cells
- Disturbances of this process may result in accumulation of partially detached keratinocytes



10/22/2022

Saja Hamed, Ph.D

Shedding



من الرفع الكبير SC

dry skin

Saja Hamed, Ph.D

10/22/2022

Keratinocytes

المدينة وخرده طالع

flakes = لَشِيرَ لَانَه فِي مَشْكَلَة

لعمل الأنزيمات الموجودة نتيجة

SC - water content

Psoriasis

⇒ hyper
= Keratin's disease



e. Psoriasis

10/22/2022

Saja Hamed, Ph.D

nucleated
keratinocyte

SC
في الخلايا تبليغ بسرعة على

Psoriasis

A hyperproliferative hyperkeratosis

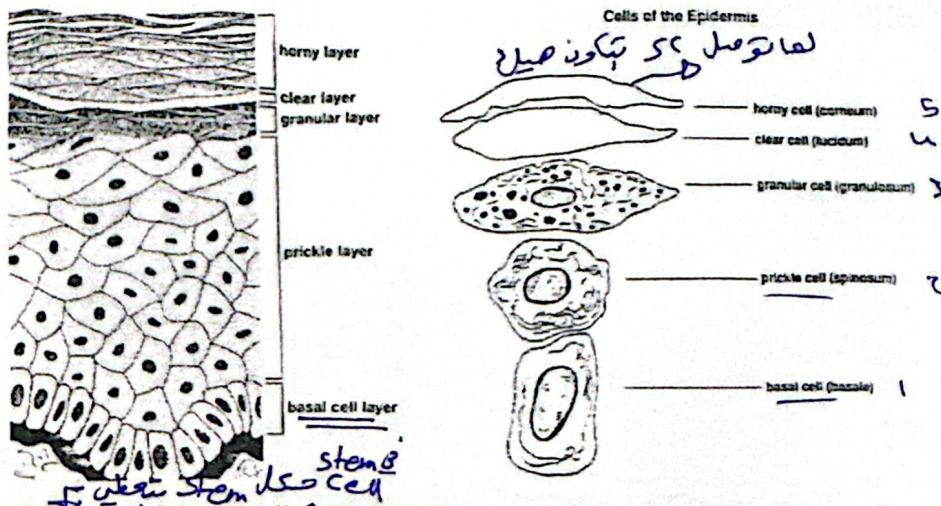
In psoriasis the skin turns over much too fast. Nucleated cells can be found in psoriatic plaques. These cells are called parakeratotic and should not exist in the SC.



10/22/2022

Saja Hamed, Ph.D

Epidermal layers and cells



- As daughter cells move through the epidermis and mature, they develop different characteristics
- The layers of the epidermis are named for these characteristics

اسم الطبقة له علاقة بالعصيرات

10/22/2022

Saja Hamed, Ph.D

لها ي الخلايا