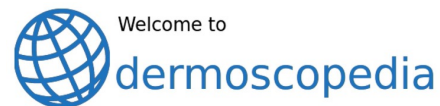


Special Site Dermoscopy: Volar Skin (palmar & plantar surfaces)

Ashfaq A. Marghoob, M.D.
Attending Physician



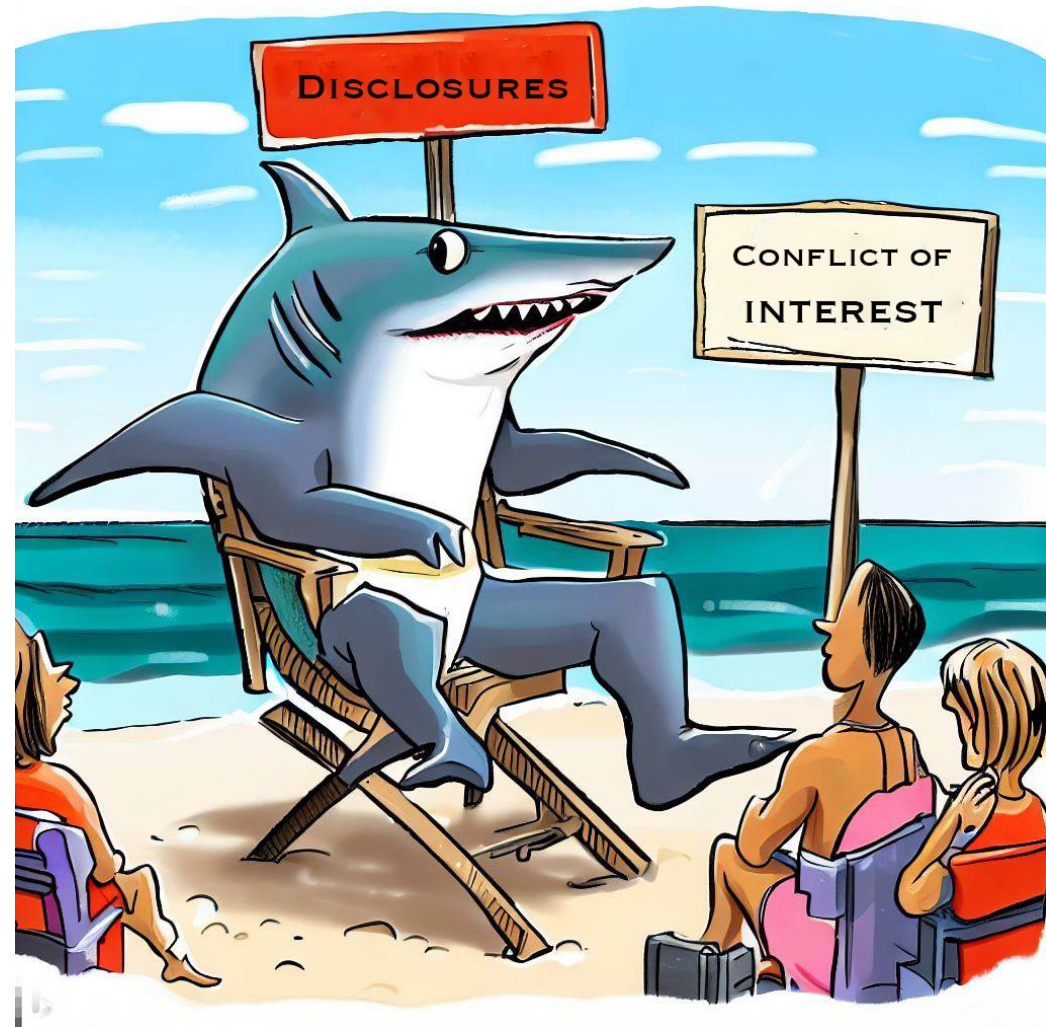
Memorial Sloan Kettering
Cancer Center™



AMERICAN
DERMOSCOPY
MEETING

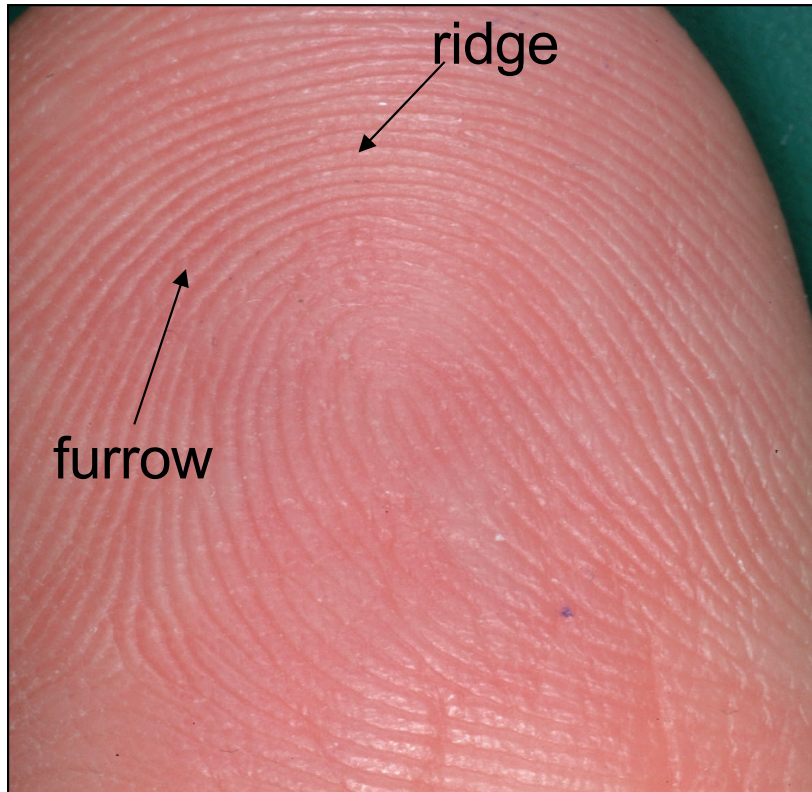
Disclosures

- American Dermoscopy Meeting
- Canfield
- Casio
- DermLite
- FotoFinder
- Heine
- HealthCert
- Lecturing
- Publications: Books
- UpToDate

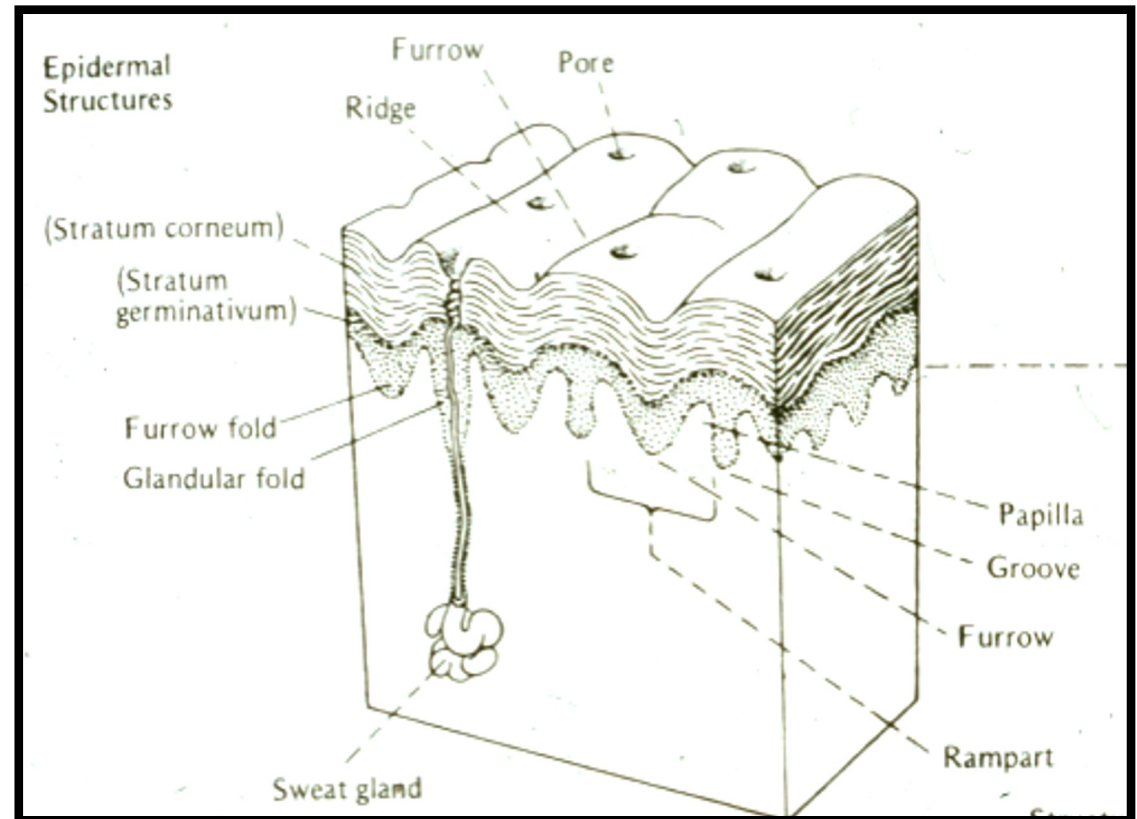


Microsoft Bing AI image generator (no need for copyright)

Dermatoglyphics

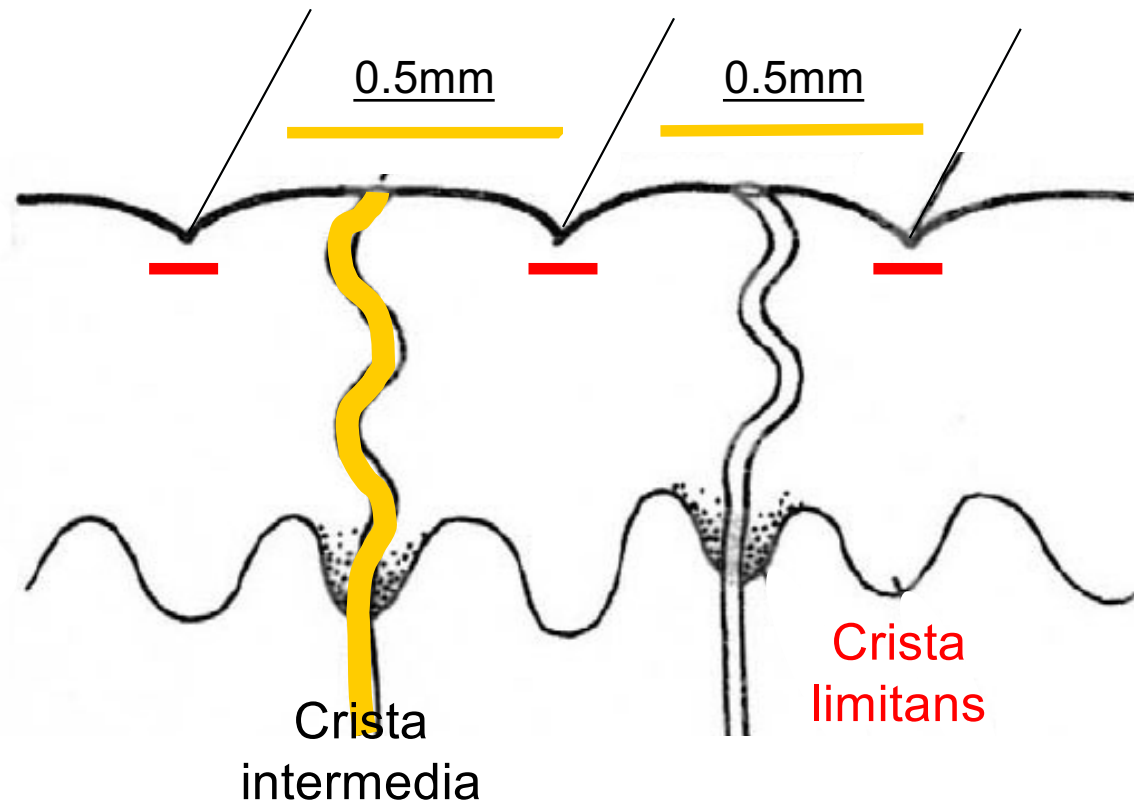


Micro-anatomy

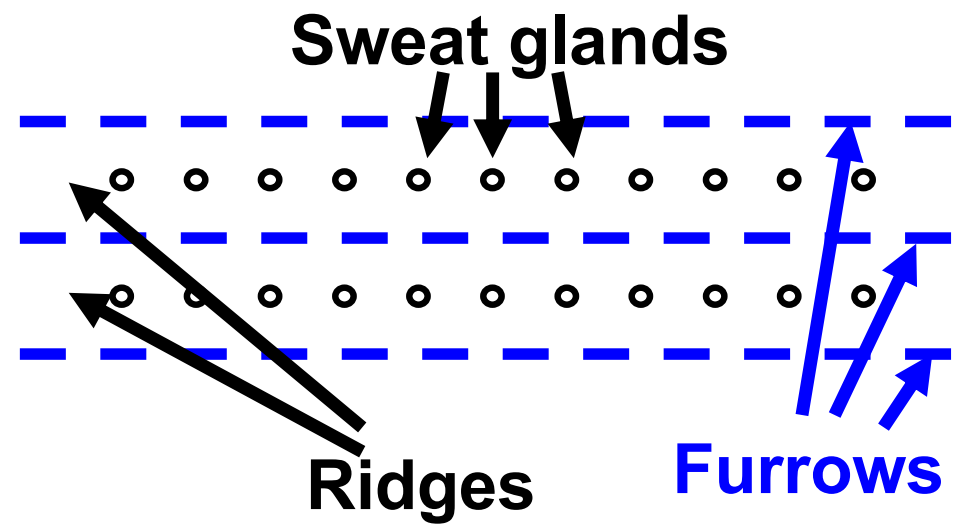
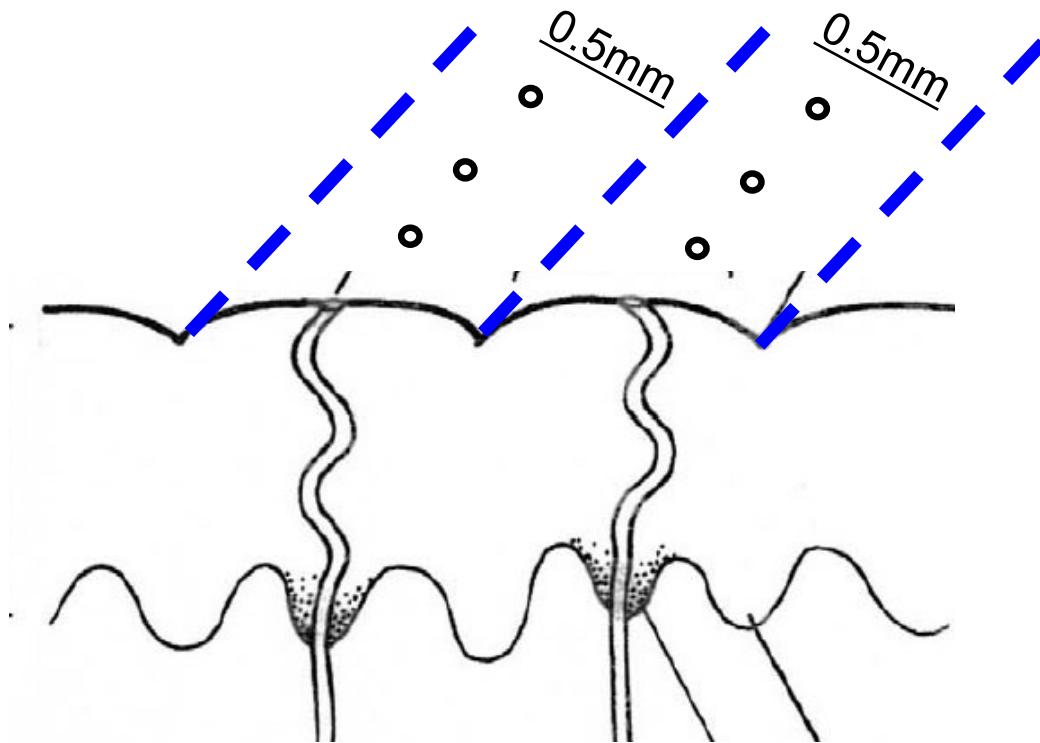


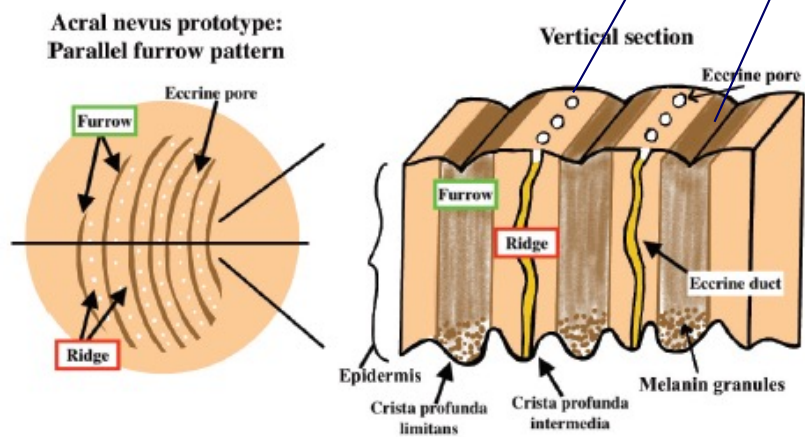
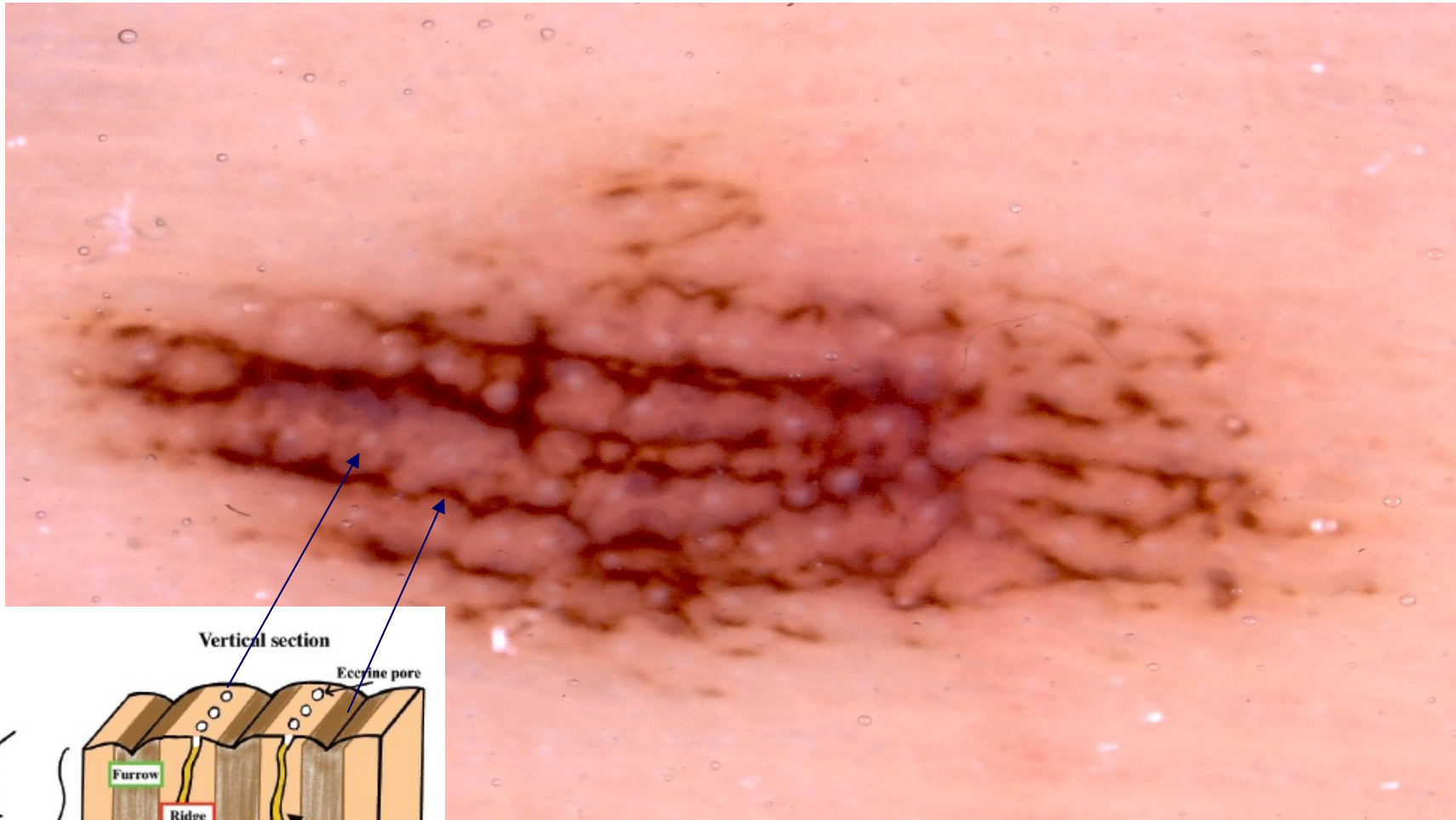
T. Saida et al. *Clin.Dermatol.* 20 (3):279-285, 2002.

Ridges & Furrows



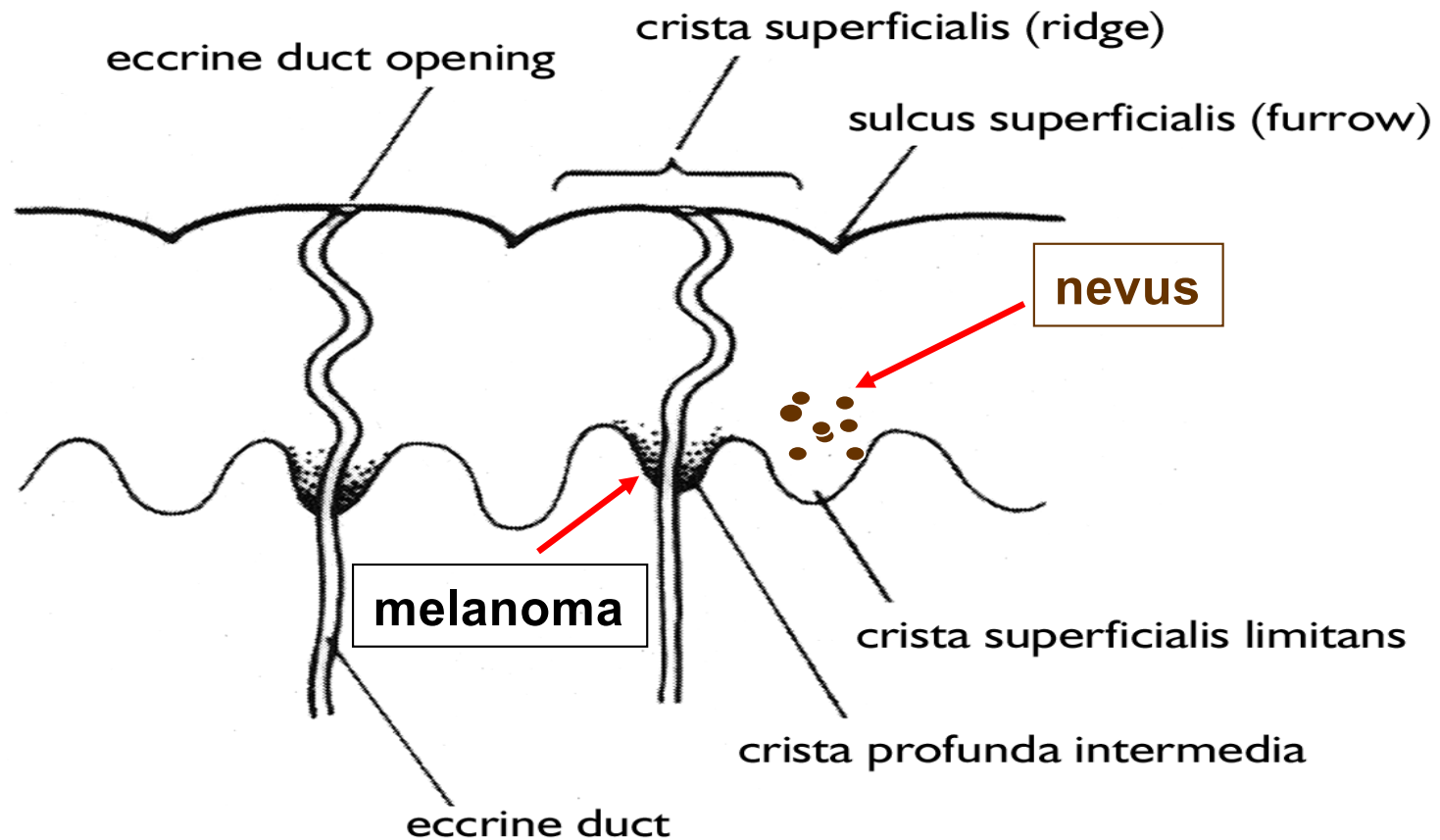
Anatomy



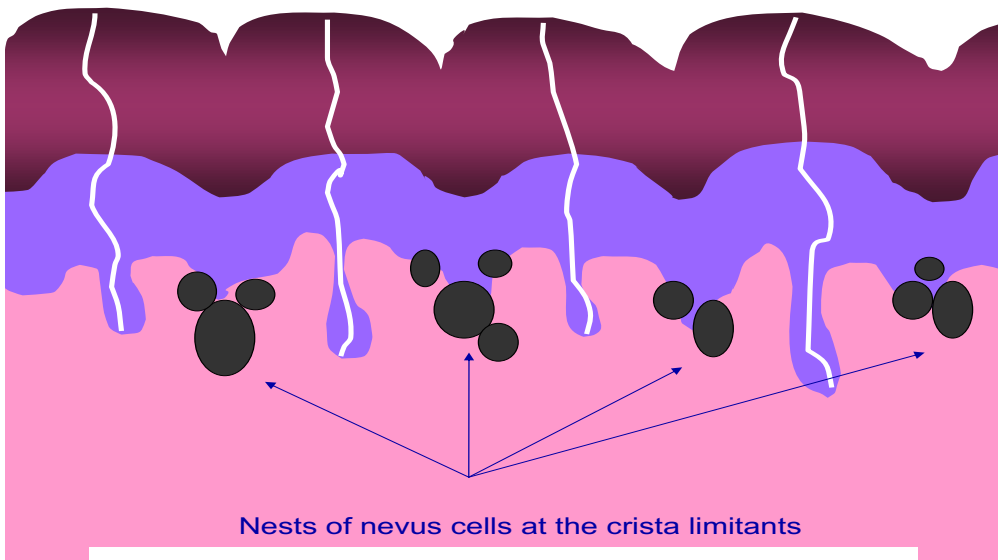


Why is it so important to locate
ridges and furrows?

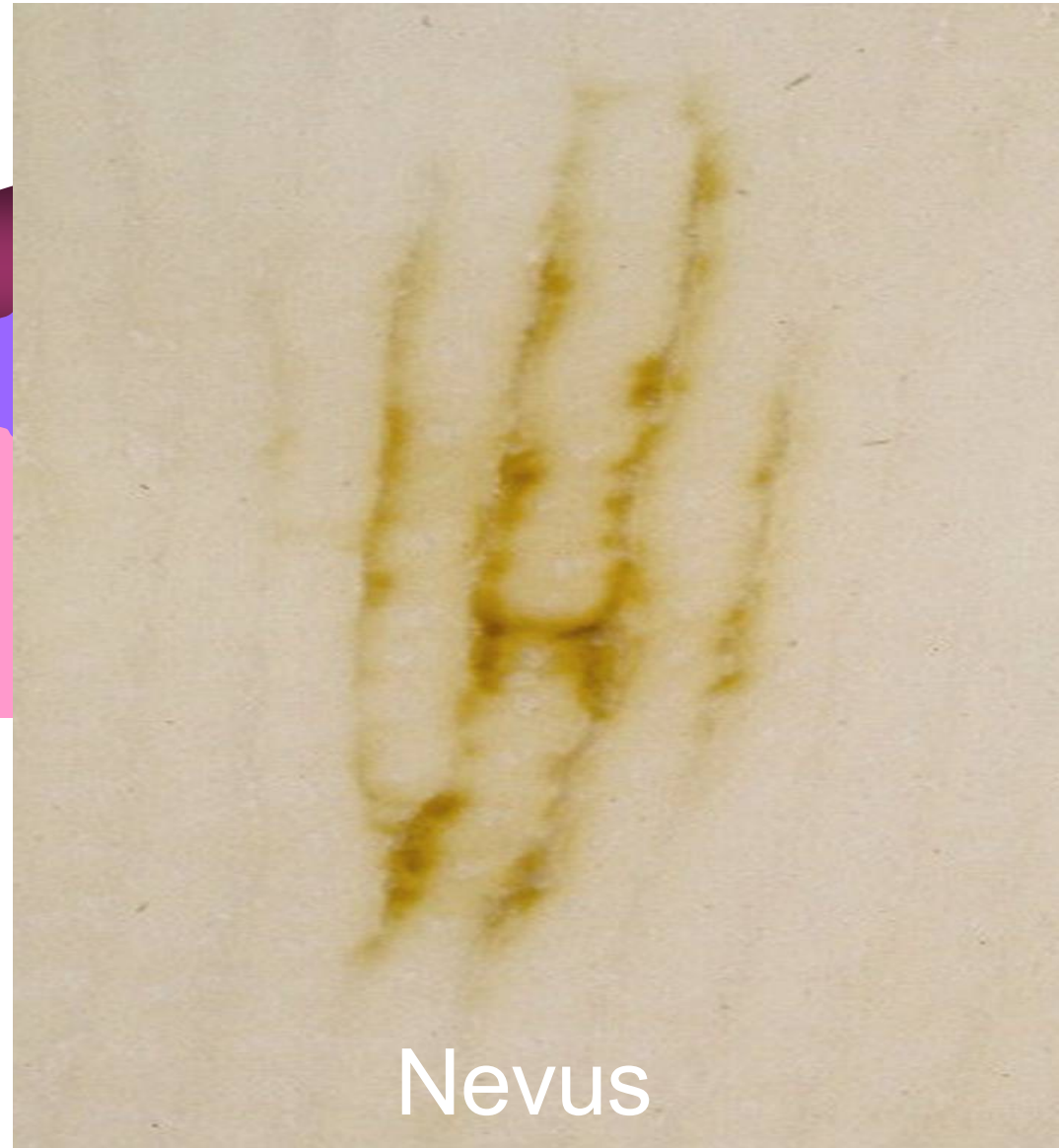
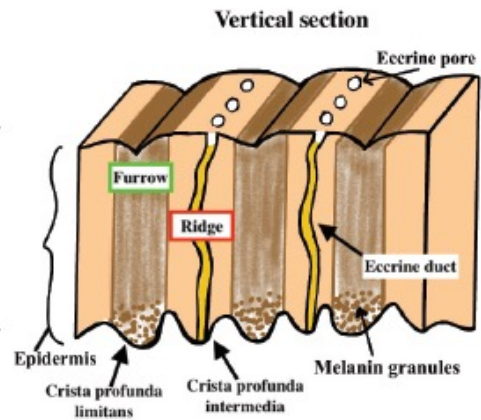
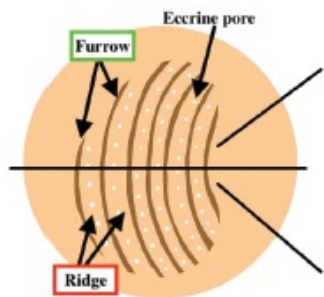
Anatomy of Volar skin

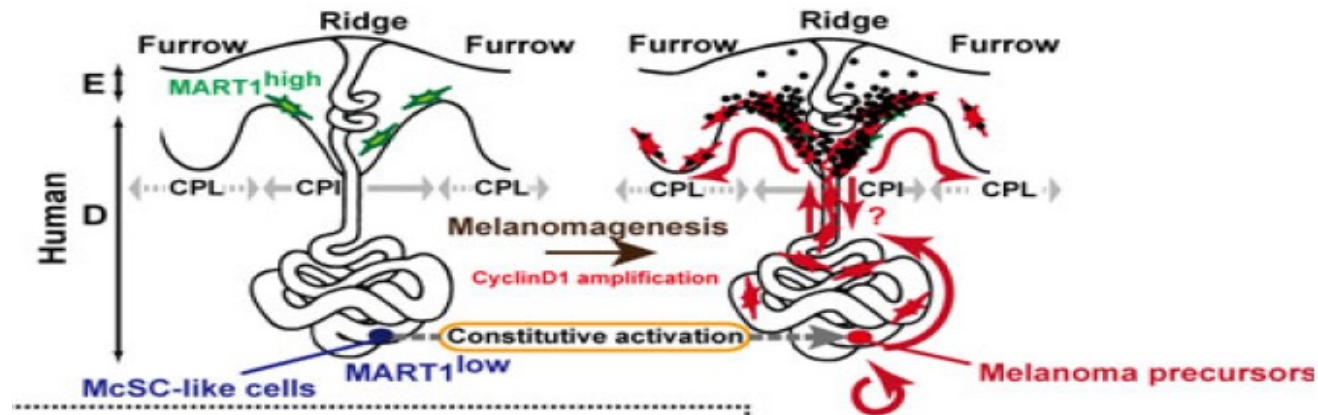


Parallel furrow pattern



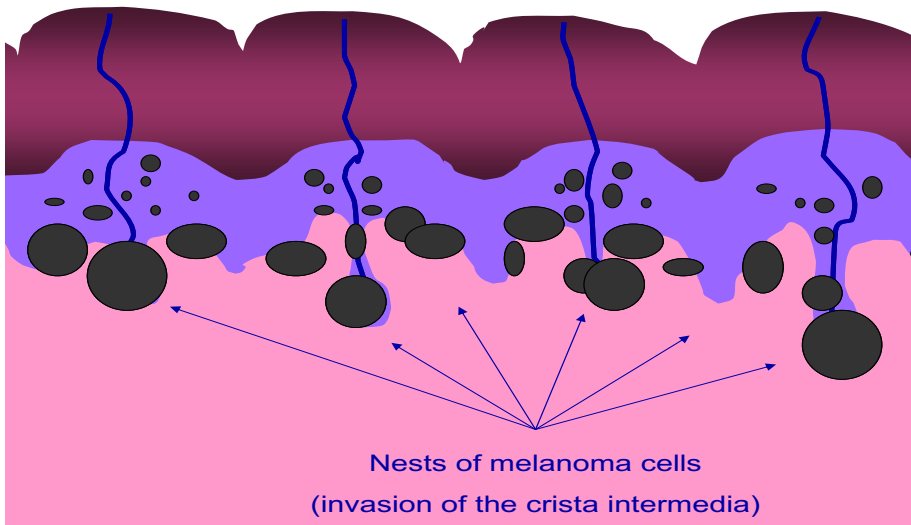
Acral nevus prototype:
Parallel furrow pattern



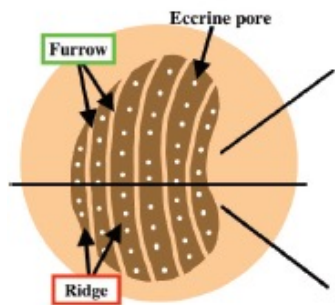


- Secretory portion of eccrine sweat glands provide an anatomical niche for melanocyte–melanoma precursor cells
- This explains preferential distribution of early melanoma cells around sweat glands (crista profunda intermedia) in human volar skin = parallel ridge pattern

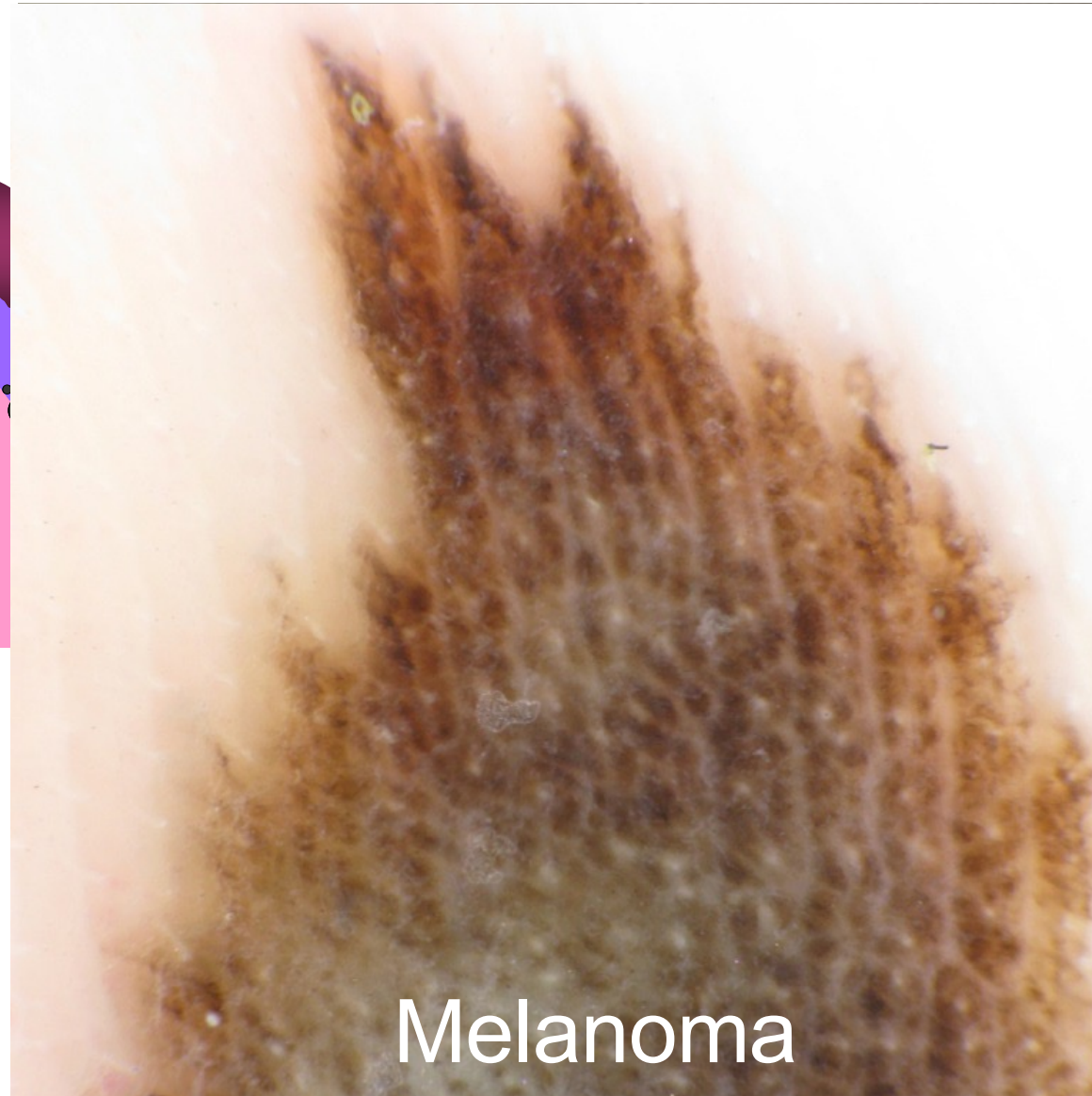
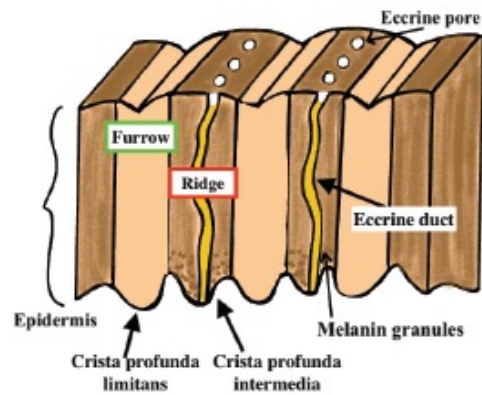
Parallel ridge pattern

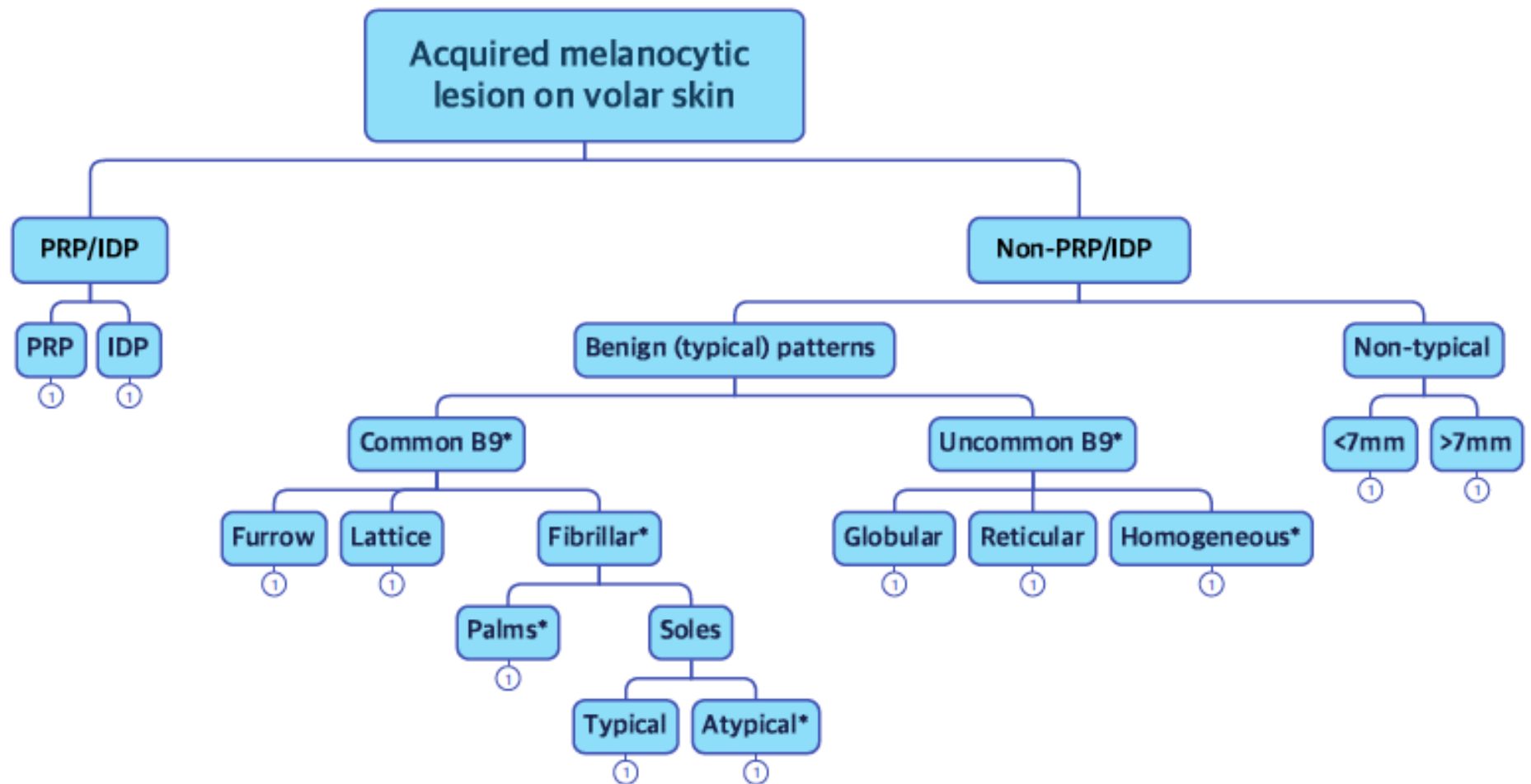


Acral melanoma prototype:
Parallel ridge pattern



Vertical section





Acquired melanocytic lesion on volar skin

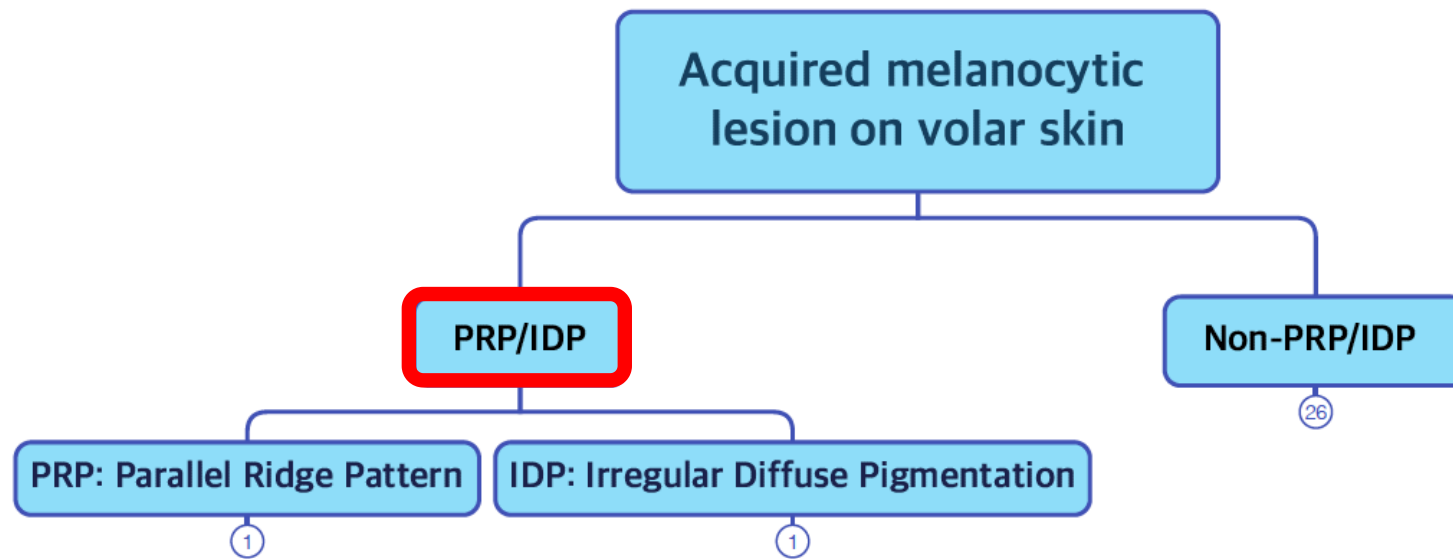
```
graph TD; A[Acquired melanocytic lesion on volar skin] --> B[PRP/IDP]; A --> C[Non-PRP/IDP]; B --- D((4)); C --- E((26))
```

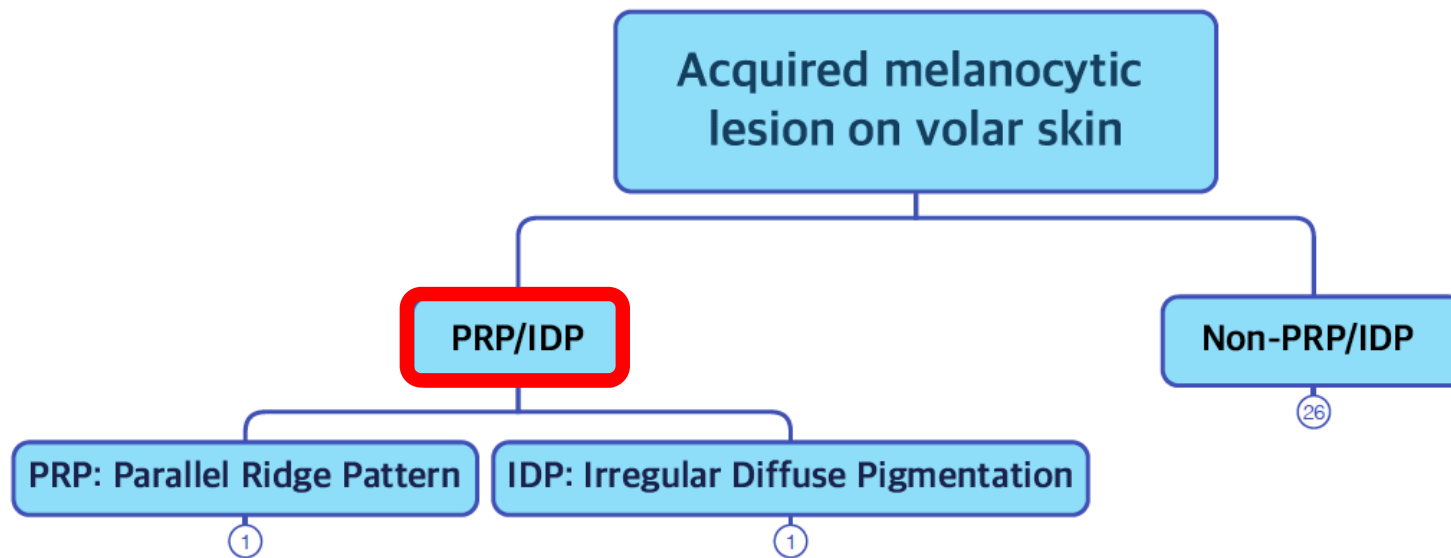
PRP/IDP

4

Non-PRP/IDP

26





Both are Melanoma
specific patterns

Significance of Dermoscopic Patterns in Detecting Malignant Melanoma on Acral Volar Skin

Results of a Multicenter Study in Japan

Toshiaki Saida, MD, PhD; Atsushi Miyazaki, MD; Shinji Oguchi, MD, PhD; Yasushi Ishihara, MD; Yoriko Yamazaki, MD; Sumio Murase, MD, PhD; Shusuke Yoshikawa, MD; Tetsuya Tsuchida, MD, PhD; Yasuhiro Kawabata, MD, PhD; Kunihiro Tamaki, MD, PhD

Objective: To determine diagnostic variables such as sensitivity and specificity of the major dermoscopic patterns observed in melanocytic lesions on acral volar skin, with particular attention to the significance of the parallel ridge pattern and irregular diffuse pigmentation in detecting acral melanoma.

Design: Multicenter, retrospective study.

Setting: University hospitals in Japan.

Patients: Patients with melanocytic lesions on acral volar skin. A total of 712 melanocytic lesions (103 malignant melanomas, including 36 in situ lesions, and 609 melanocytic nevi) were consecutively collected from the files of 3 hospitals. Diagnoses of all the lesions had been determined histopathologically.

Interventions: Dermoscopic examination.

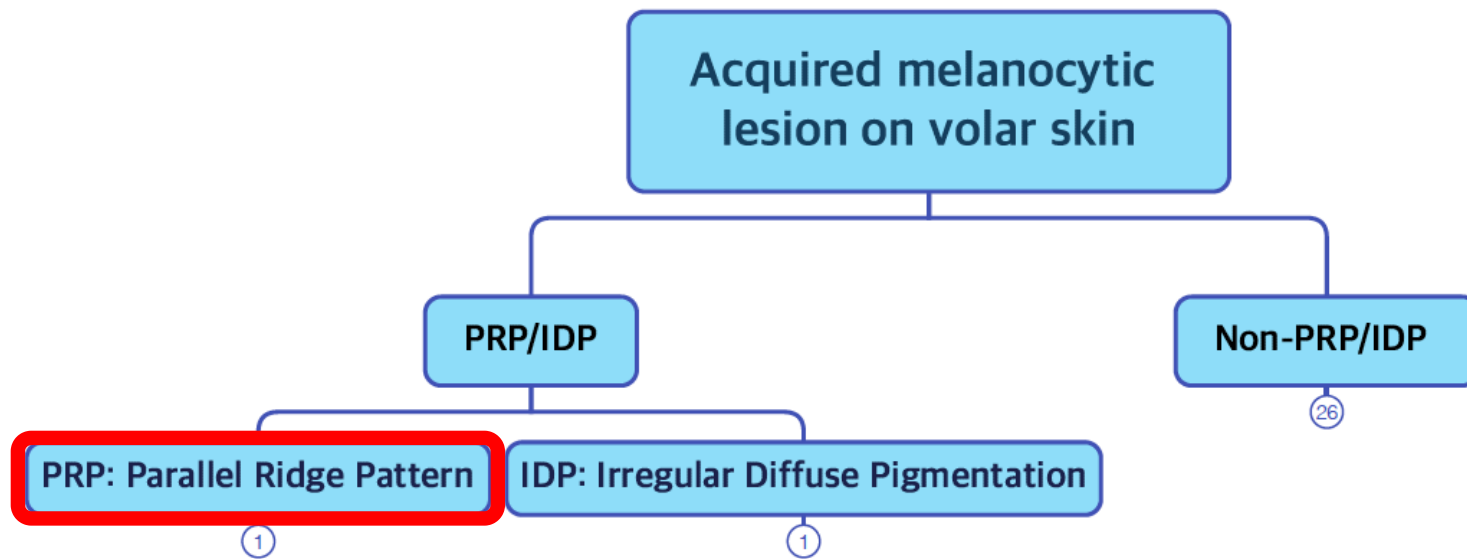
Main Outcome Measures: The sensitivity, specificity, positive predictive value, negative predictive value,

and diagnostic accuracy of the major dermoscopic patterns seen in benign and malignant melanocytic lesions on acral volar skin.

Results: The parallel ridge pattern and irregular diffuse pigmentation showed extremely high specificity (99.0% and 96.6%, respectively) and very high negative predictive value (97.7% and 97.5%, respectively) in malignant melanoma. For melanoma in situ, the positive predictive value and diagnostic accuracy of the parallel ridge pattern were significantly higher than those of irregular diffuse pigmentation ($P=.009$ and $P=.006$, respectively). In melanocytic nevi, the specificity and positive predictive value of the parallel furrow pattern and/or the latticelike pattern were found to be very high (93.2% and 98.3%, respectively).

Conclusions: Dermoscopy is immensely helpful in differentiating malignant melanomas from melanocytic nevi on acral volar skin. Moreover, the parallel ridge pattern aids in detecting acral melanomas in early, curable stages.

Arch Dermatol. 2004;140:1233-1238

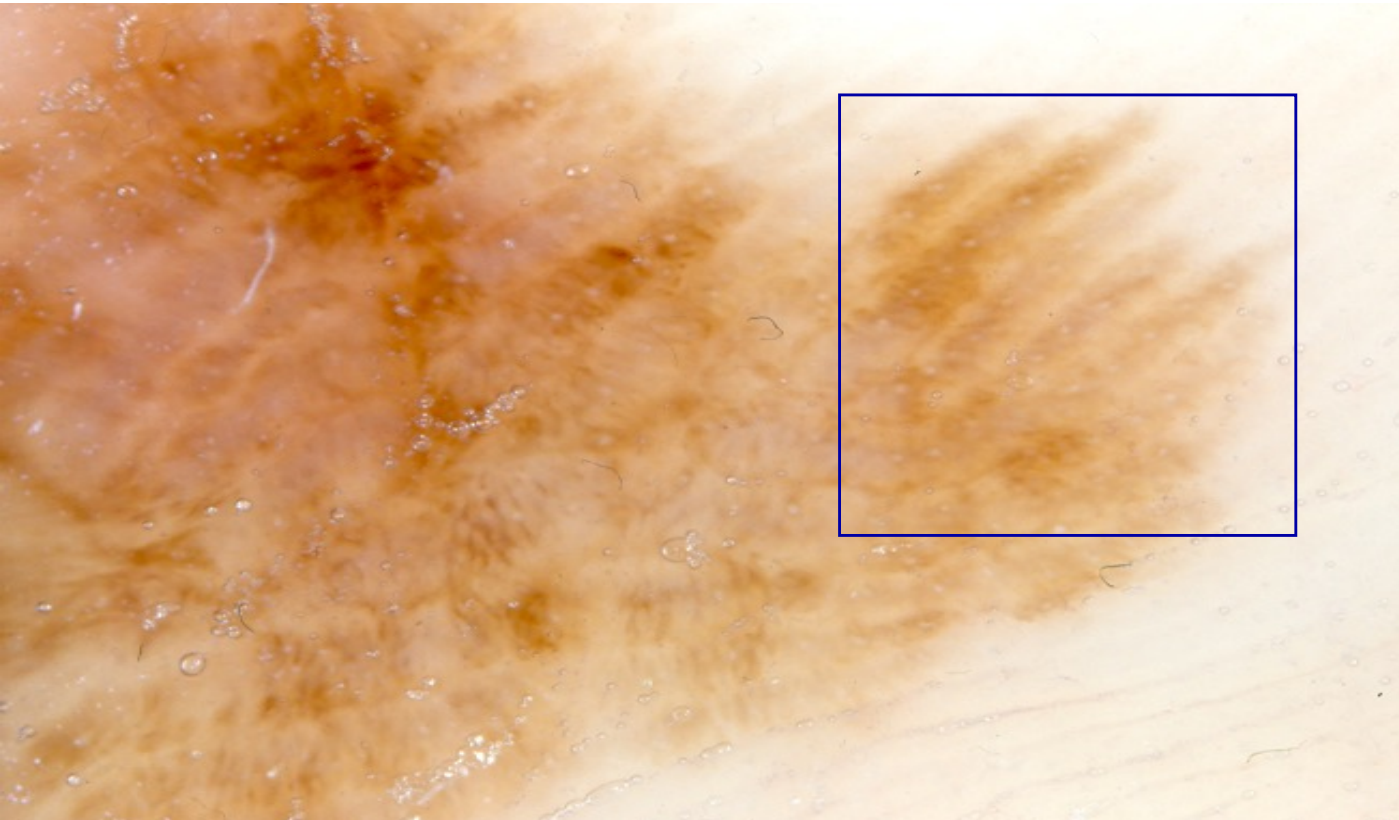
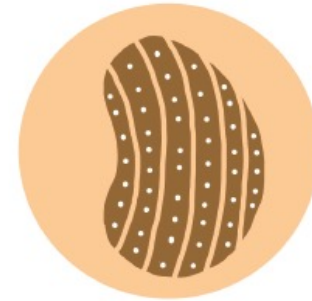


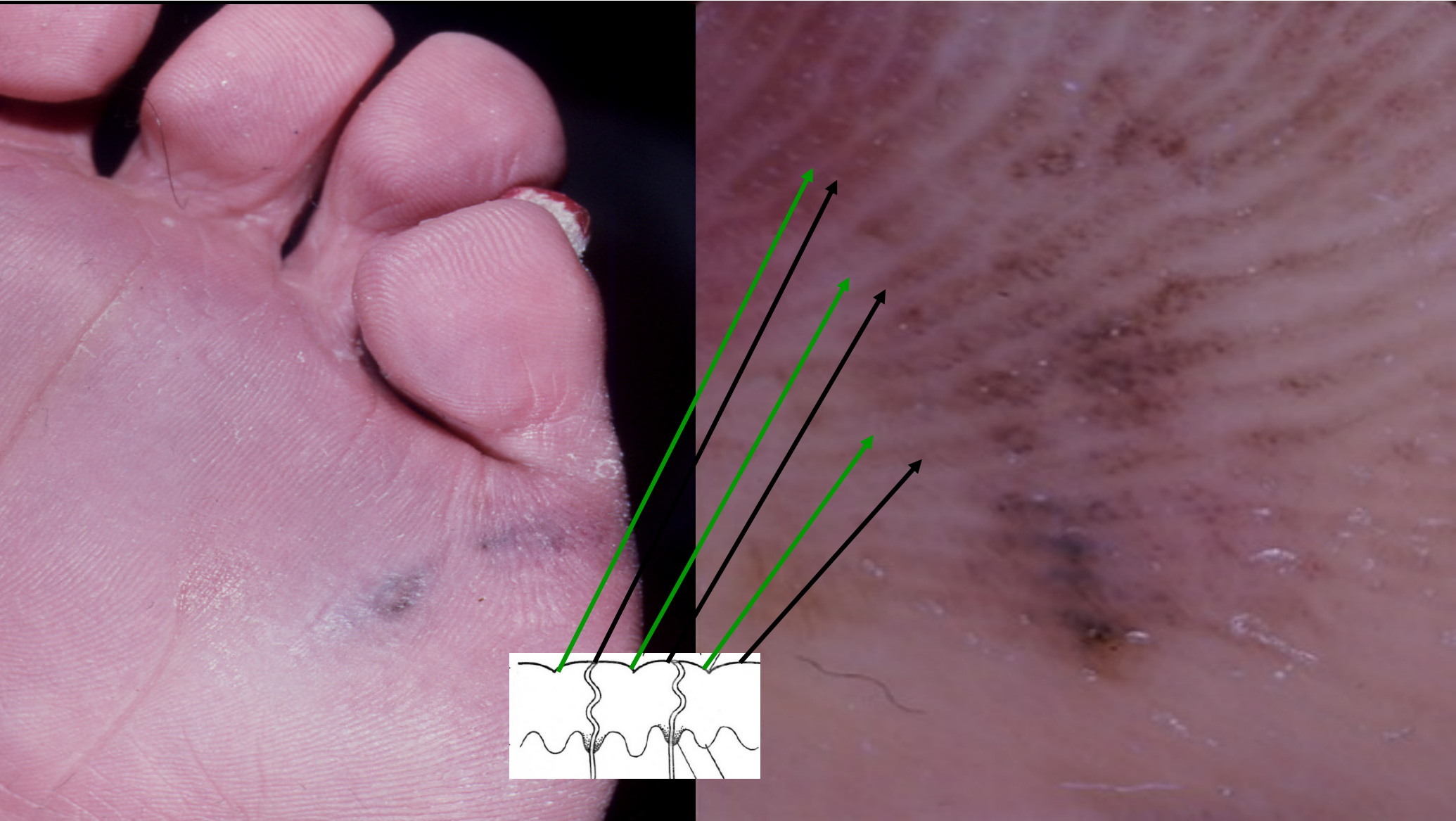


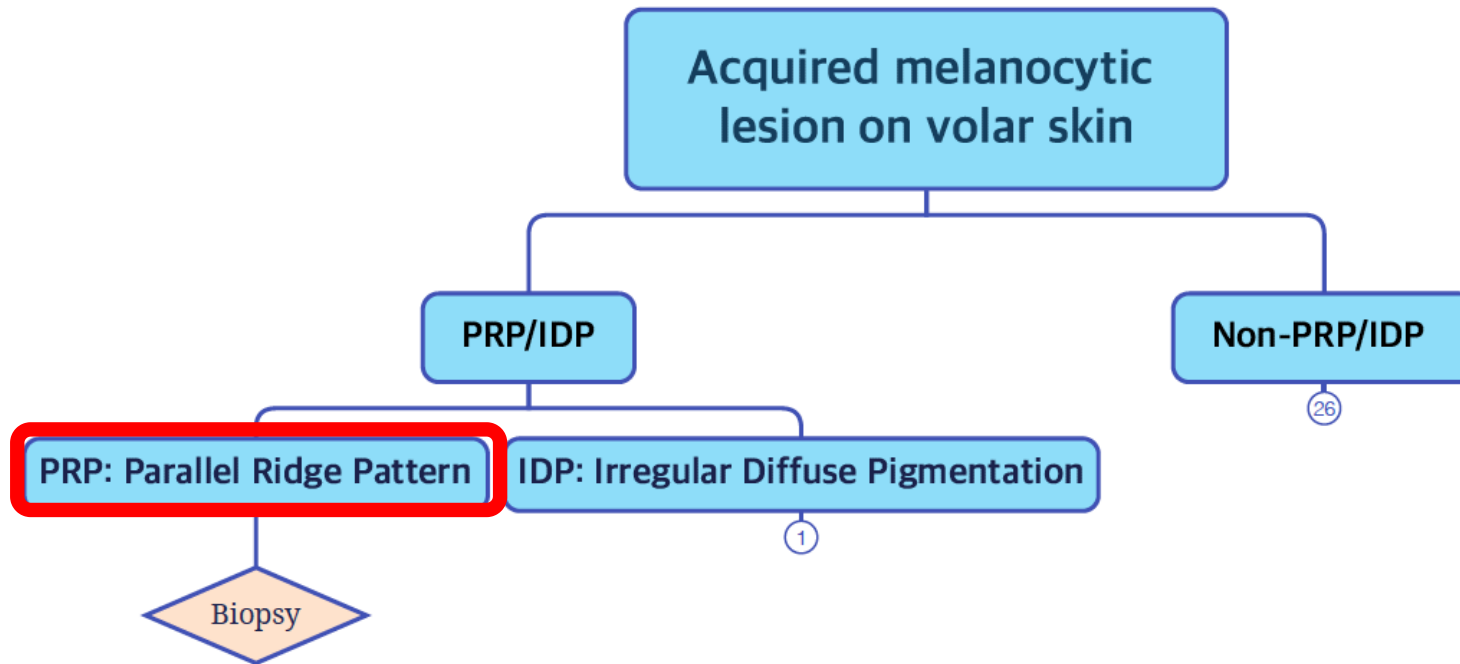
Parallel ridge pattern

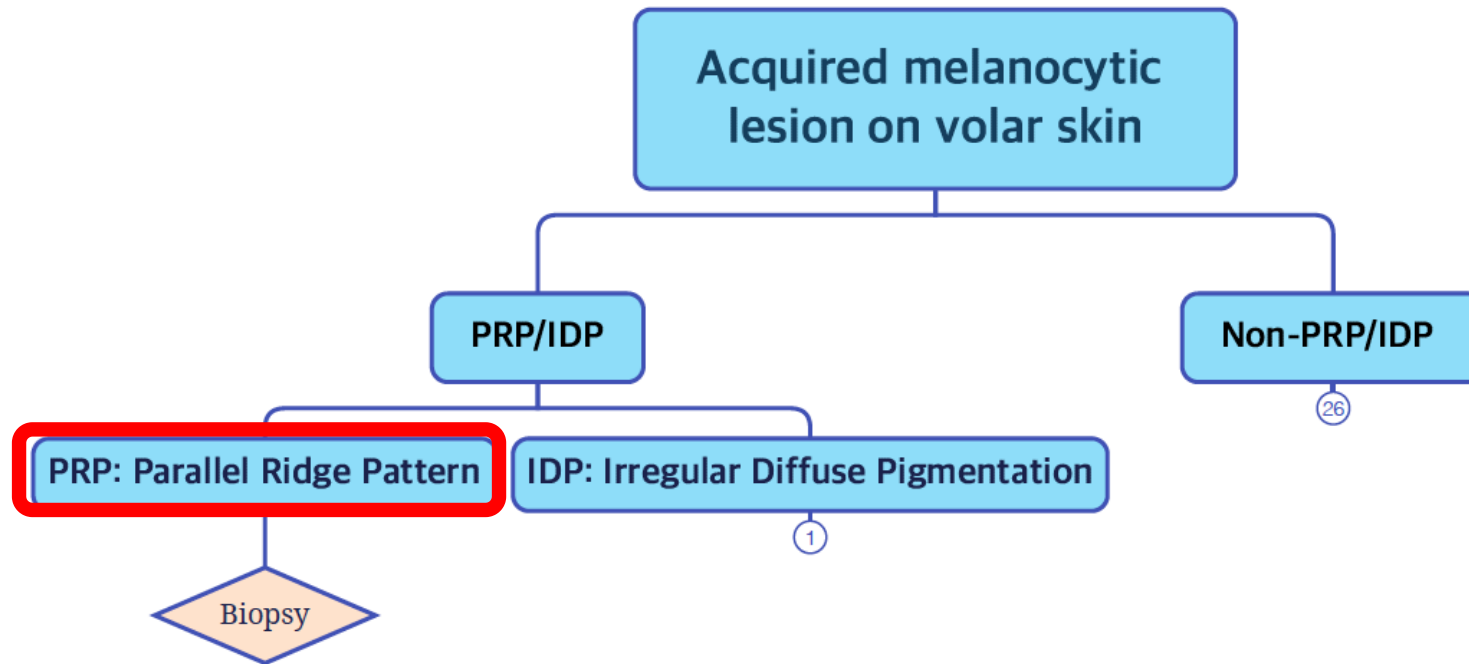
98% of melanomas

<1% volar nevi









N.B: there are
some exceptions

Exceptions to the PRP rule for MM

1. Peutz-Jeghers syndrome macules
2. Laugier-Hunziker syndrome
3. Ethnic pigmented macules: progressive volar melanotic macules (PVMM)
4. Dye (exogenous)
5. Chemotherapy induced pigmentation
6. CMN (<1% of other nevi)
7. Subcorneal hemorrhage

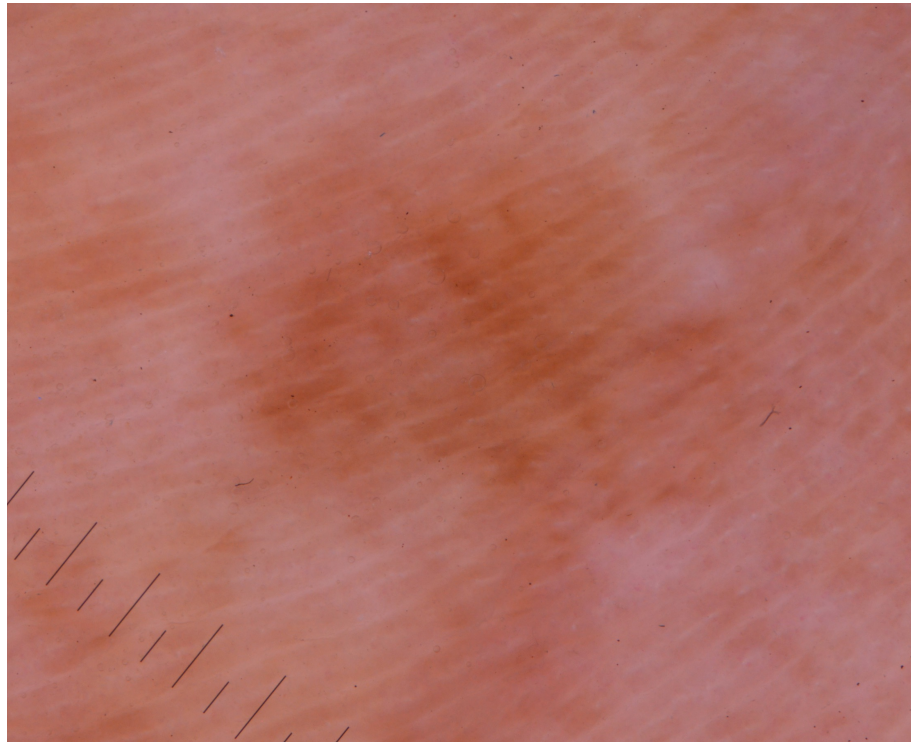
Benign Dermoscopic Parallel Ridge Pattern Variants

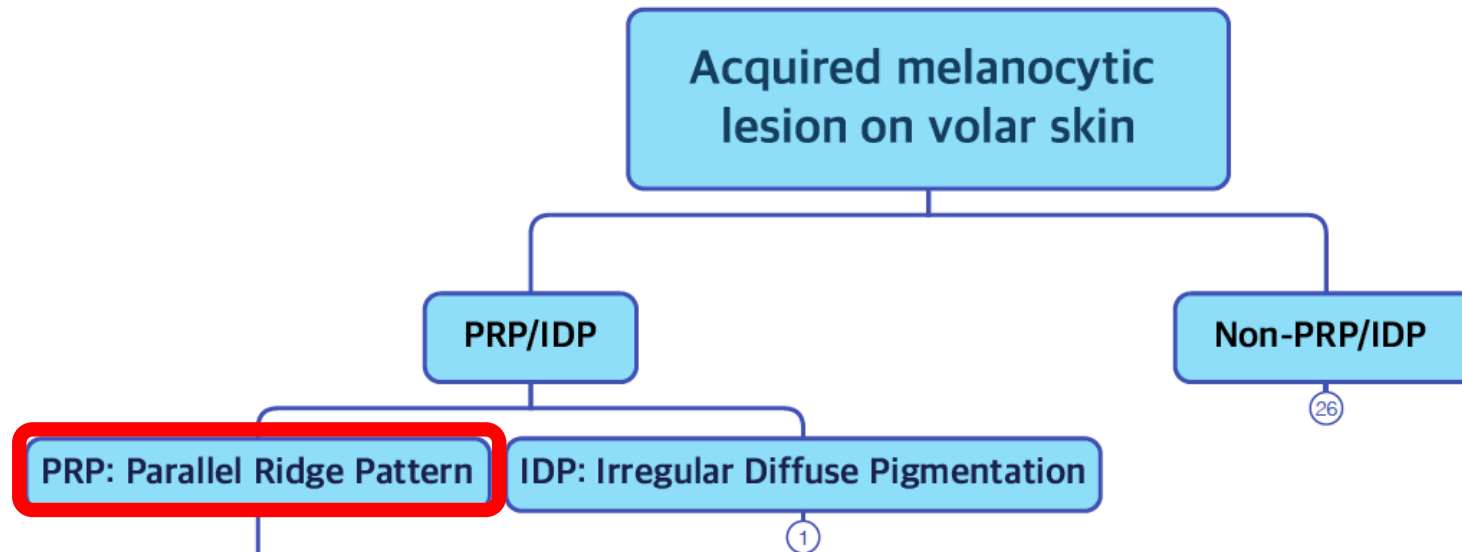
*Alice Phan, MD; Stéphane Dalle, MD; Marie-Cécile Marcilly, MD; Jean-Pierre Bergues, MD; Luc Thomas, MD, PhD;
Centre Hospitalier Lyon-Sud, Claude Bernard University, Pierre Bénite, France*

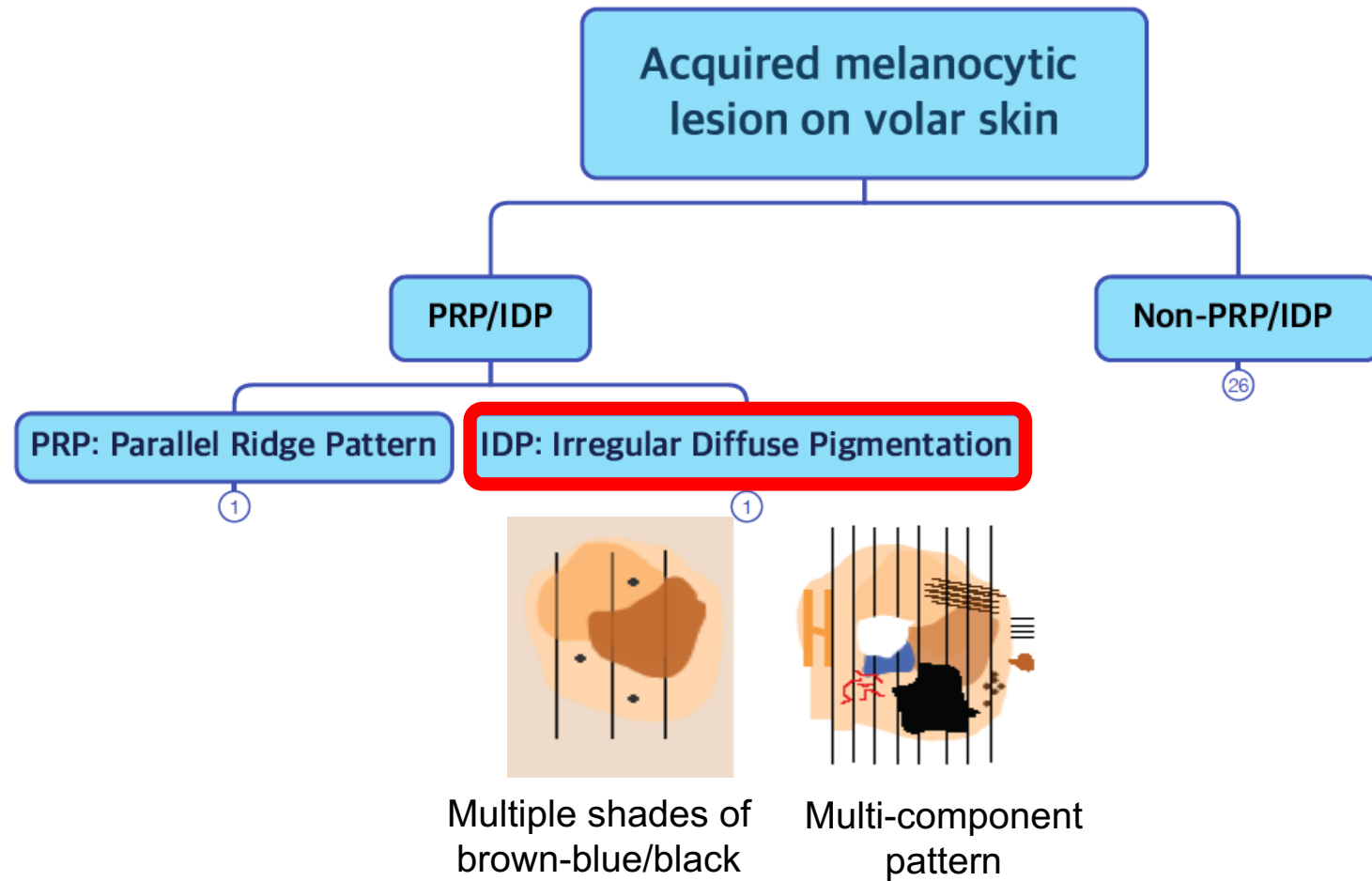
3. Ethnic pigmented macules: progressive volar melanotic macules (PVMM)

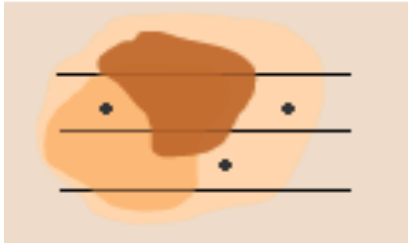


My experience: Context is key. These darker macules occur in a background of normal skin that also has a PRP!



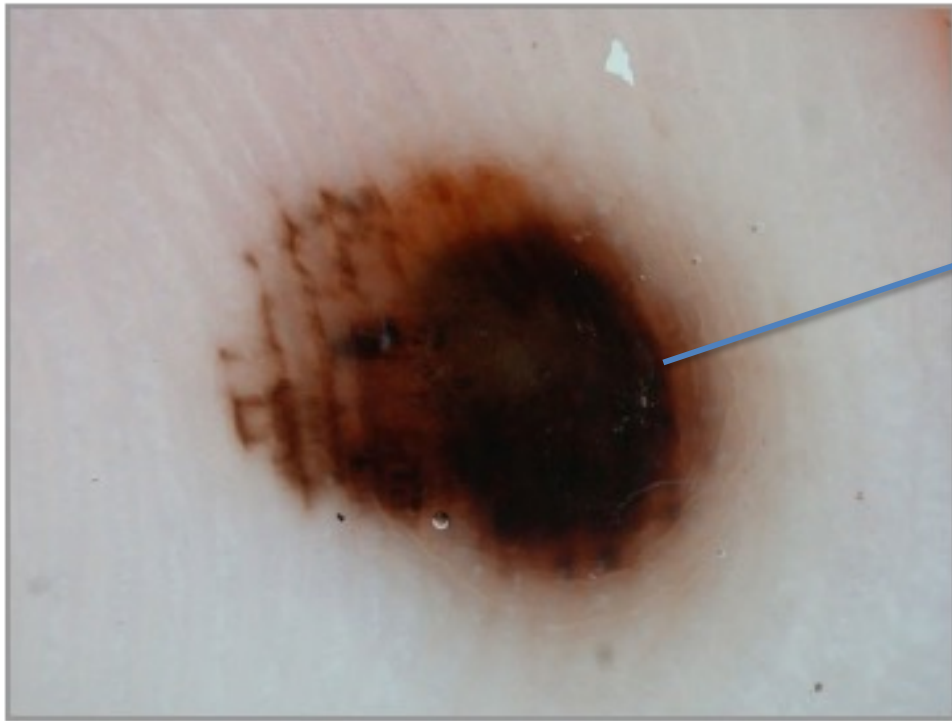




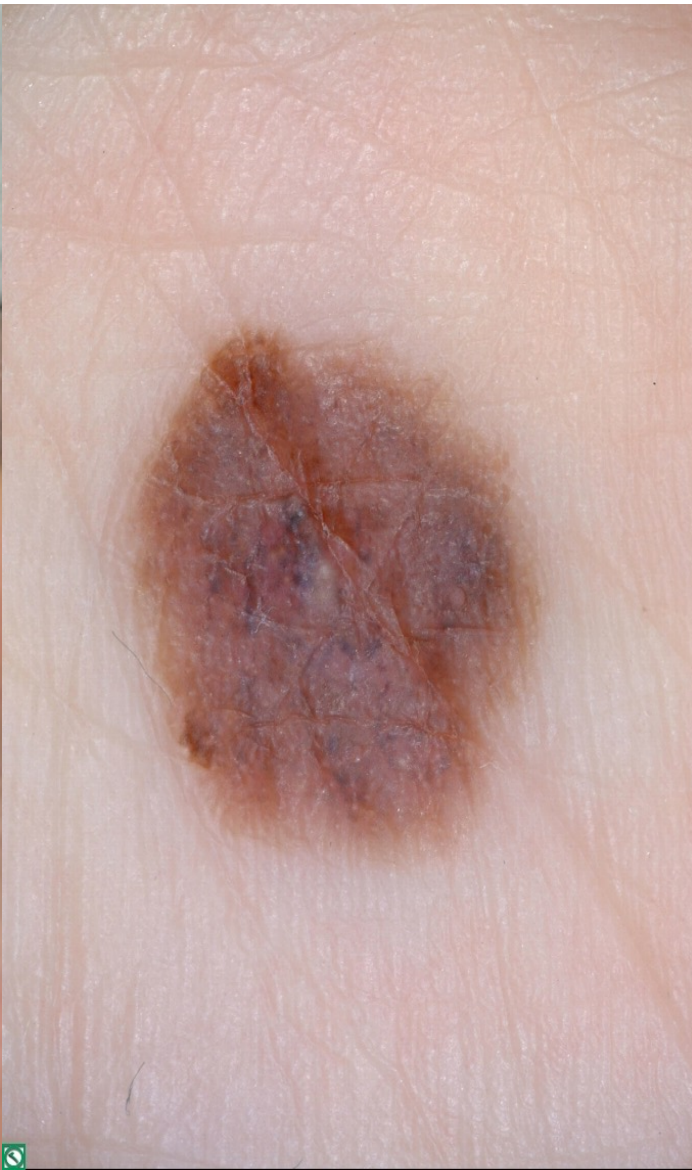


Irregular Diffuse Pigmentation

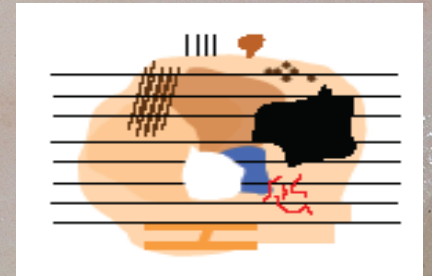
Multiple shades of brown, blue/black

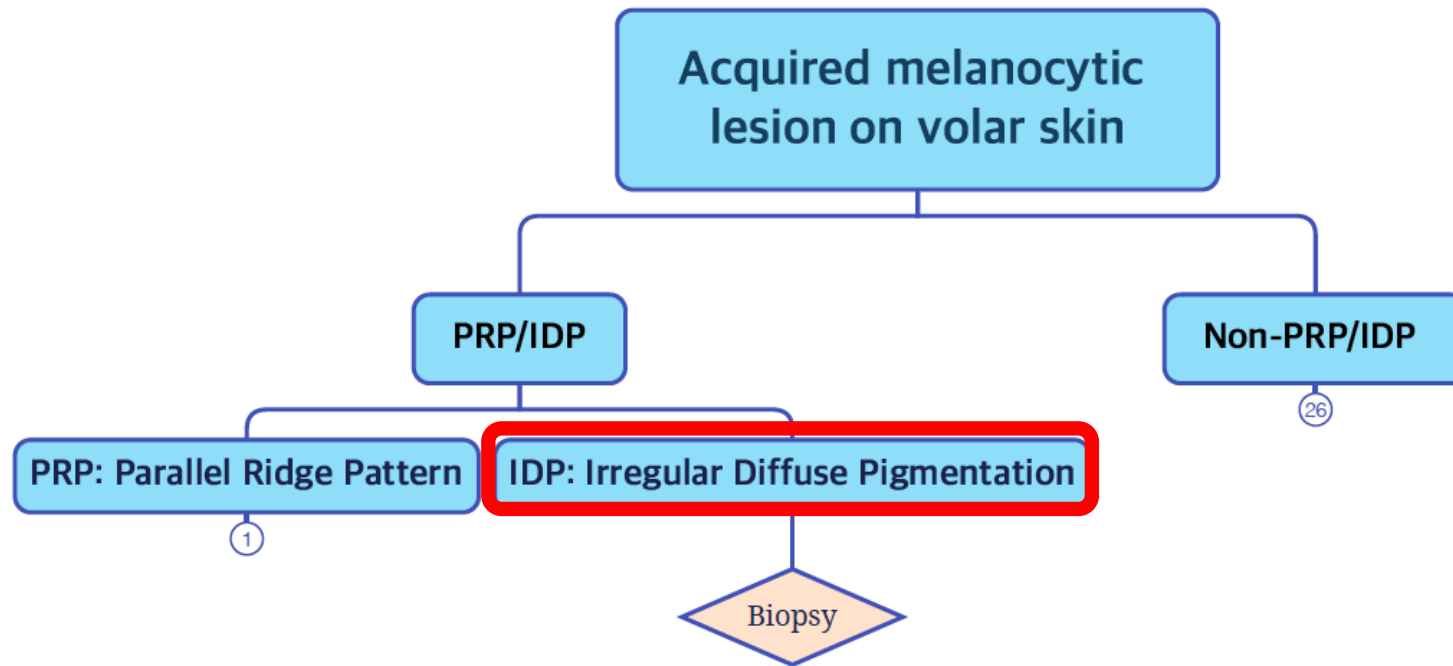


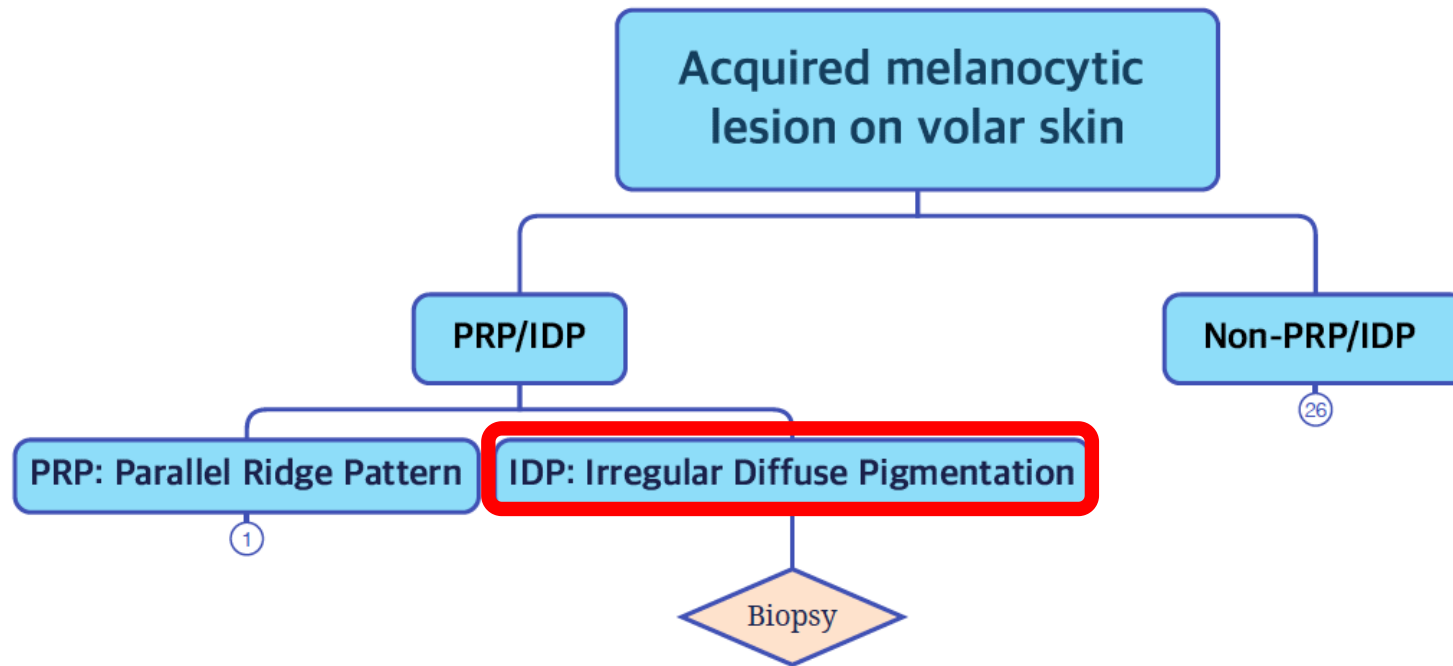
Irregular (*asymmetric, disorganized, or multi-colored*) diffuse pigmentation (*blotch*) that encompasses fissures & ridges



Irregular diffuse pigmentation with a
multicomponent pattern







N.B: there are
some exceptions

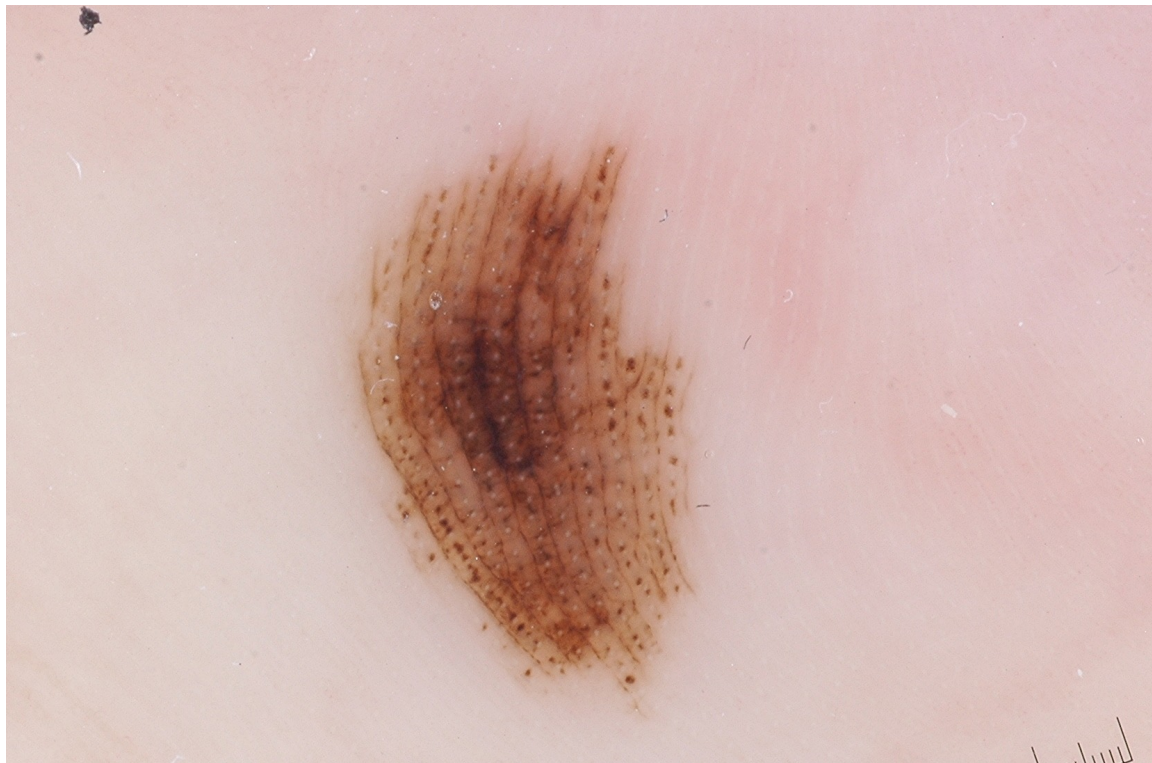
Exceptions to IDP rule for MM

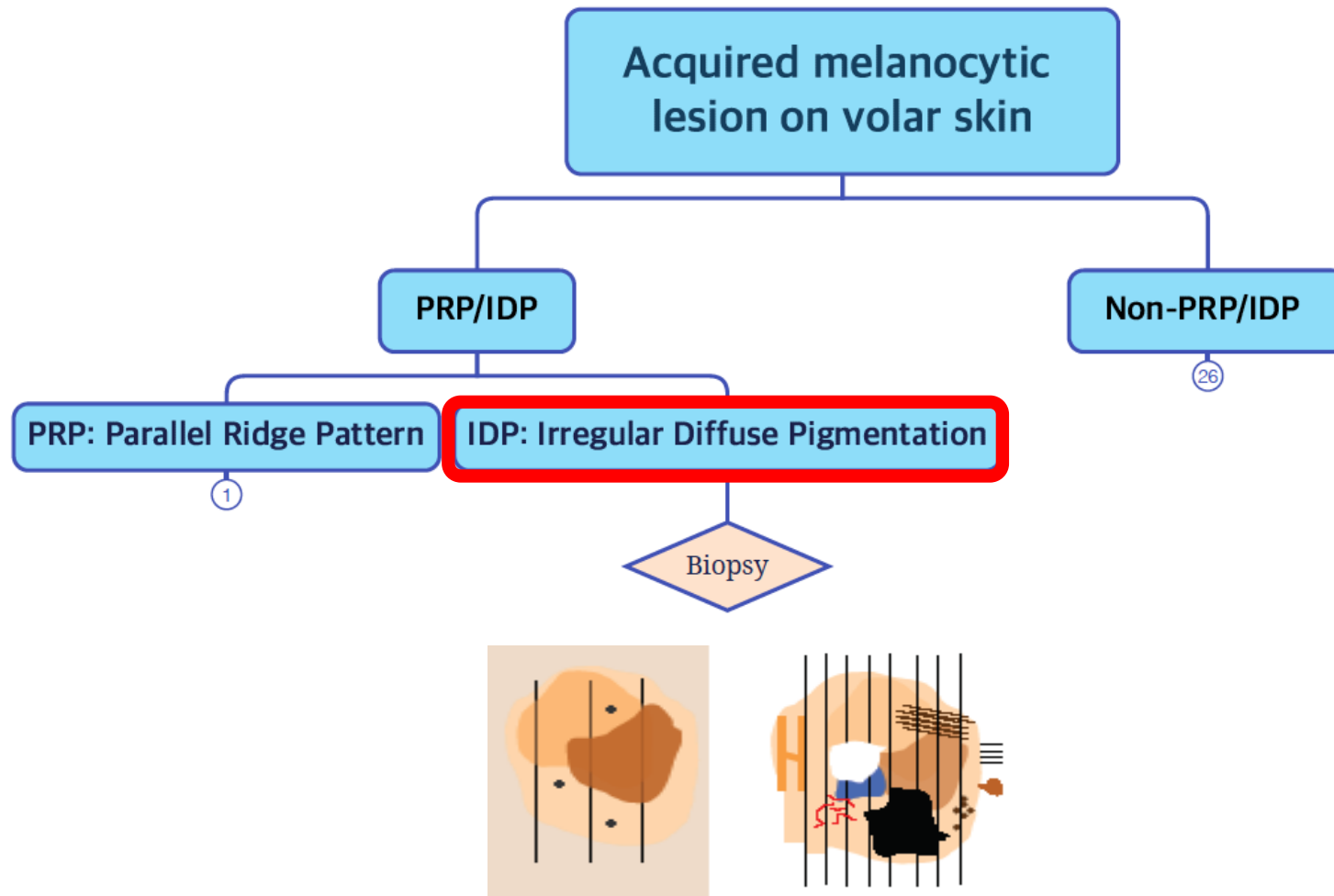
1. Blue nevus
 - homogeneous blue crossing ridges & furrows
 - can display multiple shades of blue & brown
2. Congenital nevus (tardive)
 - parallel furrow pattern with dots/globules on ridges
 - By definition they display a multicomponent pattern

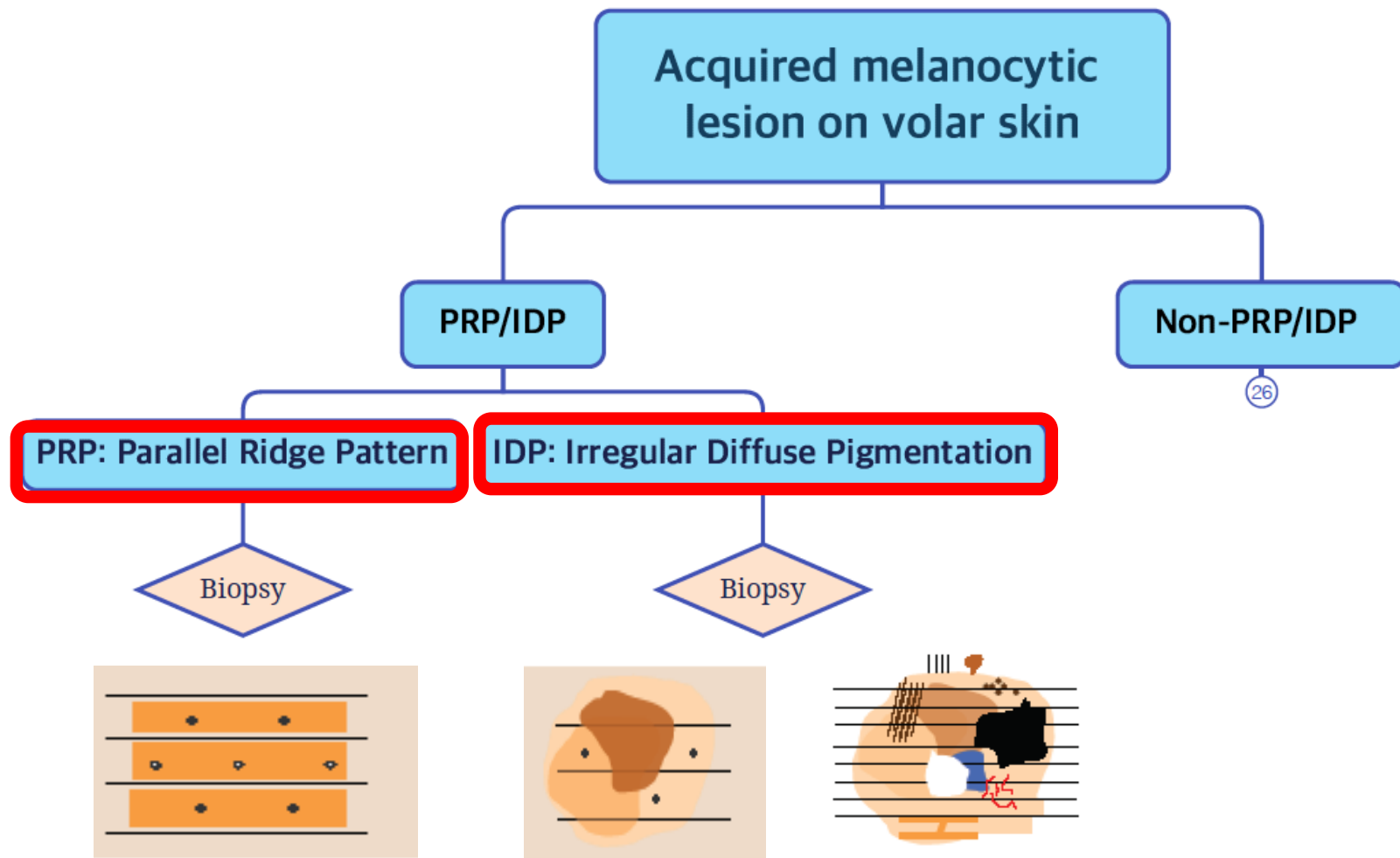
- Blue nevi on volar surfaces cross ridges & furrows
- Often display slight IDP (histo vs biology)



- CMN tend to display a unique multicomponent pattern know as “peas-in-the-pod” pattern
- will discuss together with the other benign patterns..







Validation of a dermatoscopy-based algorithm for the diagnosis of acral melanoma

Müller C, Kittler H, Tschandl P, Rinner C, Grausenburger M-L, Kyrgidis A, Koga H, Moscarella E, Apalla Z, Di Stefani A, Kobayashi K, Lazaridou E, Longo C, Phan A, Saida T, Sotiriou E, Tanaka M, Thomas L, Zalaudek I, Argenziano G, Lallas A

Simplified checklist

parallel ridge pattern

irregular blotch

asymmetry of colors

asymmetry of structures

IDP

Sensitivity 95%
Specificity 60%

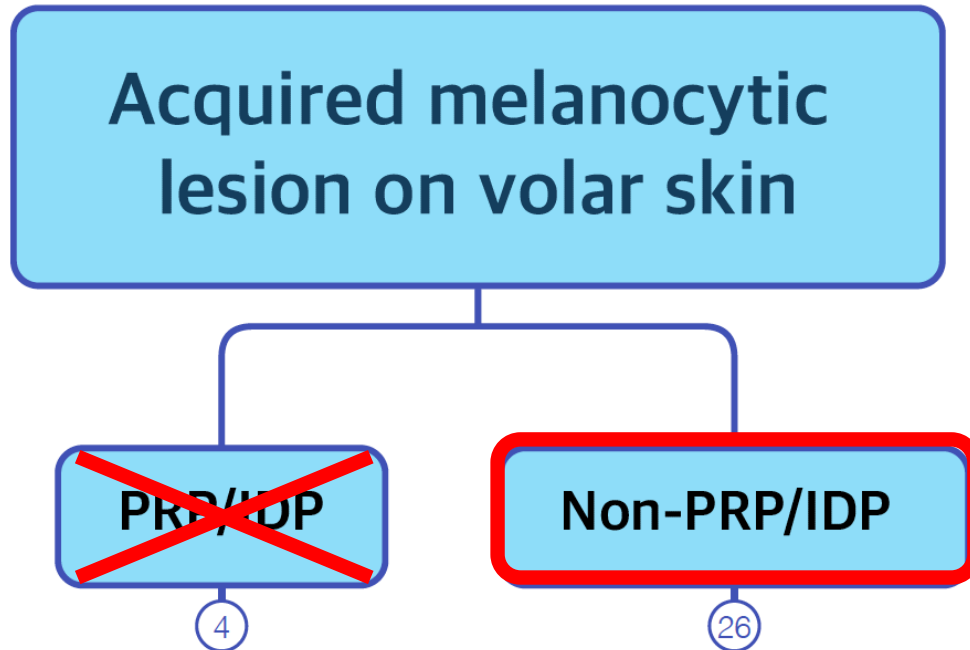
Acquired melanocytic lesion on volar skin

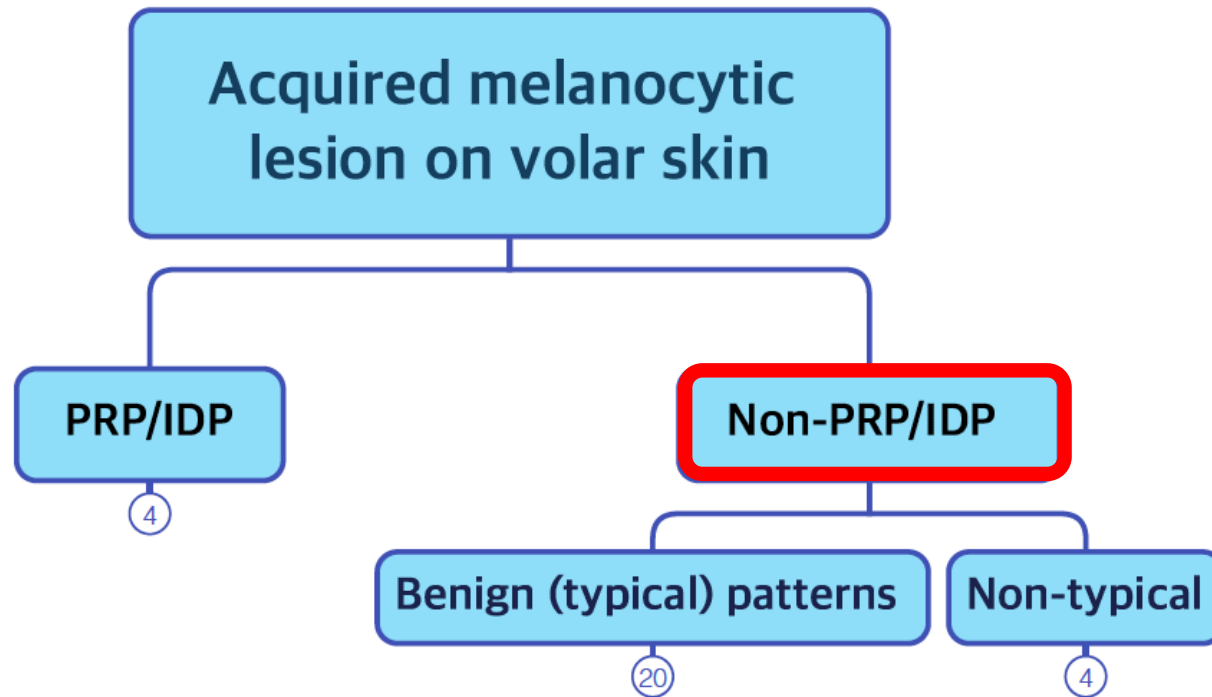
~~PRP/IDP~~

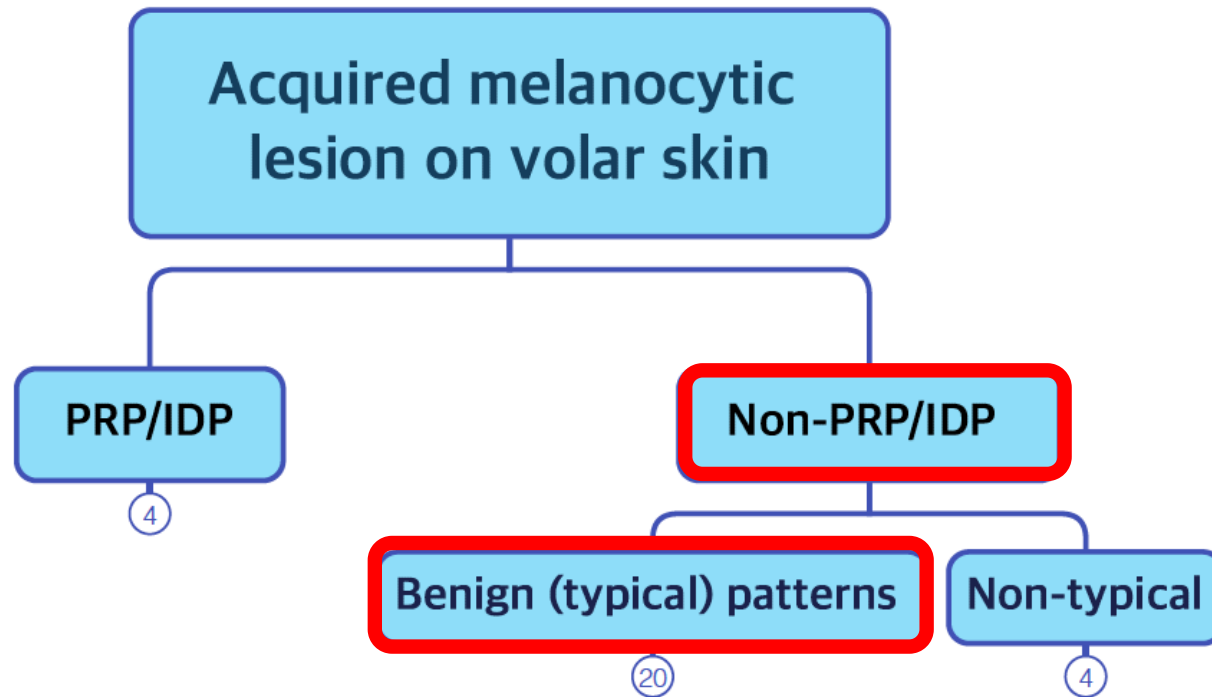
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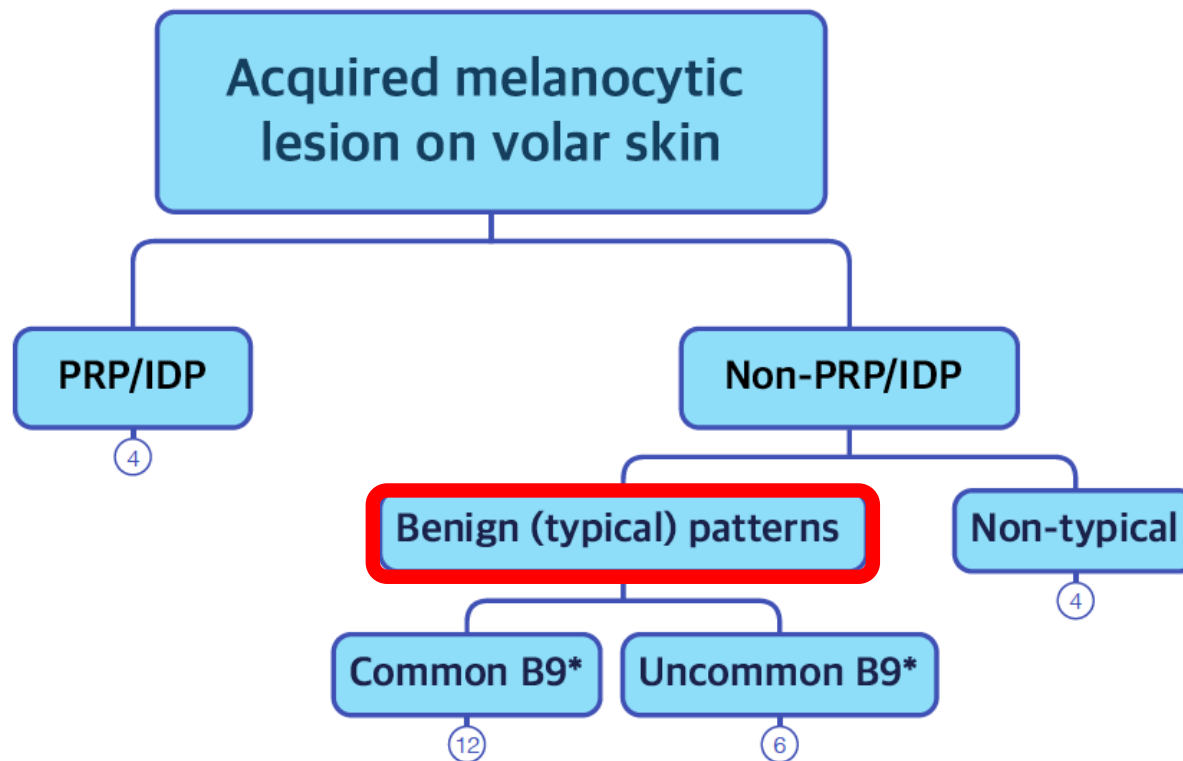
Non-PRP/IDP

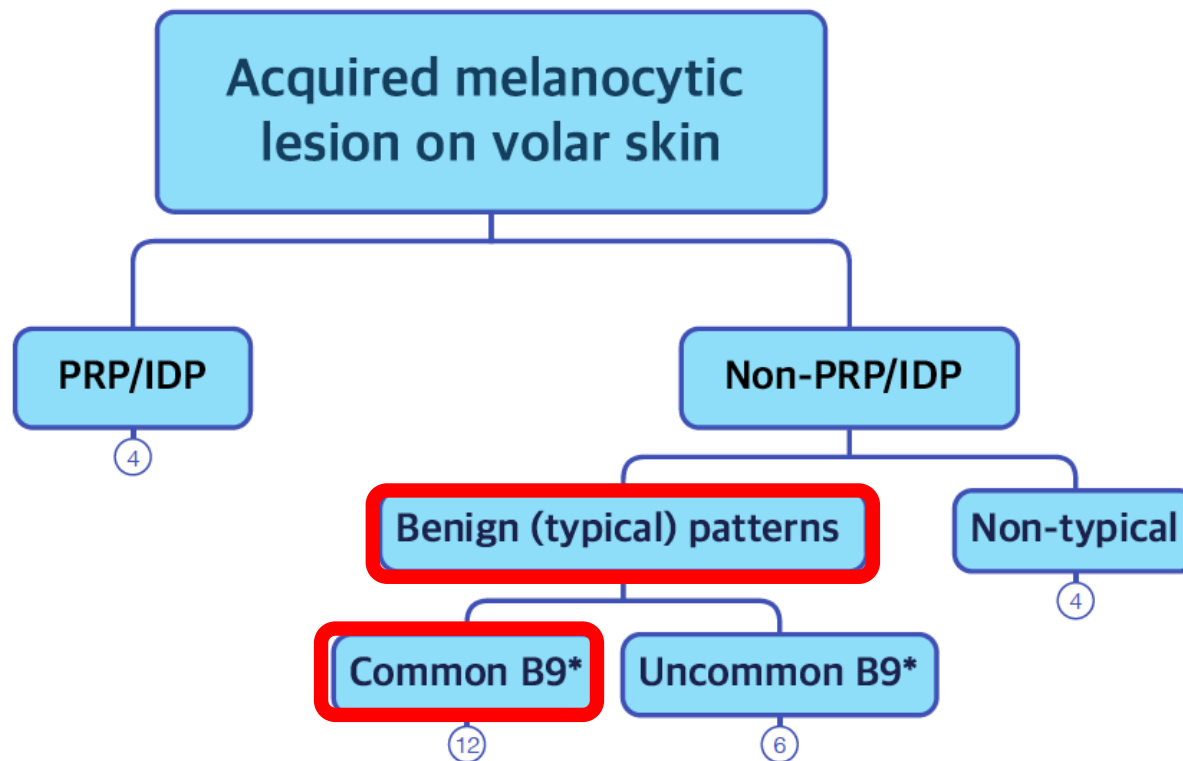
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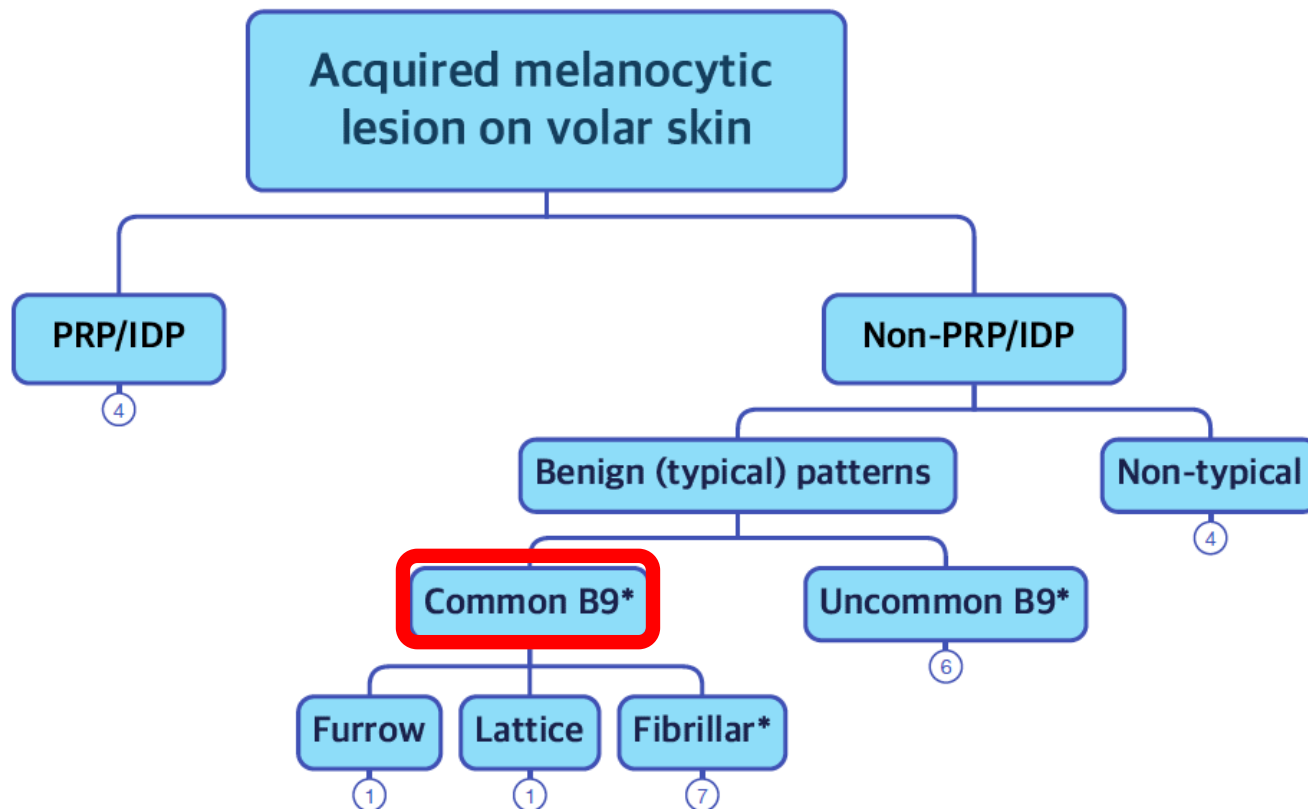


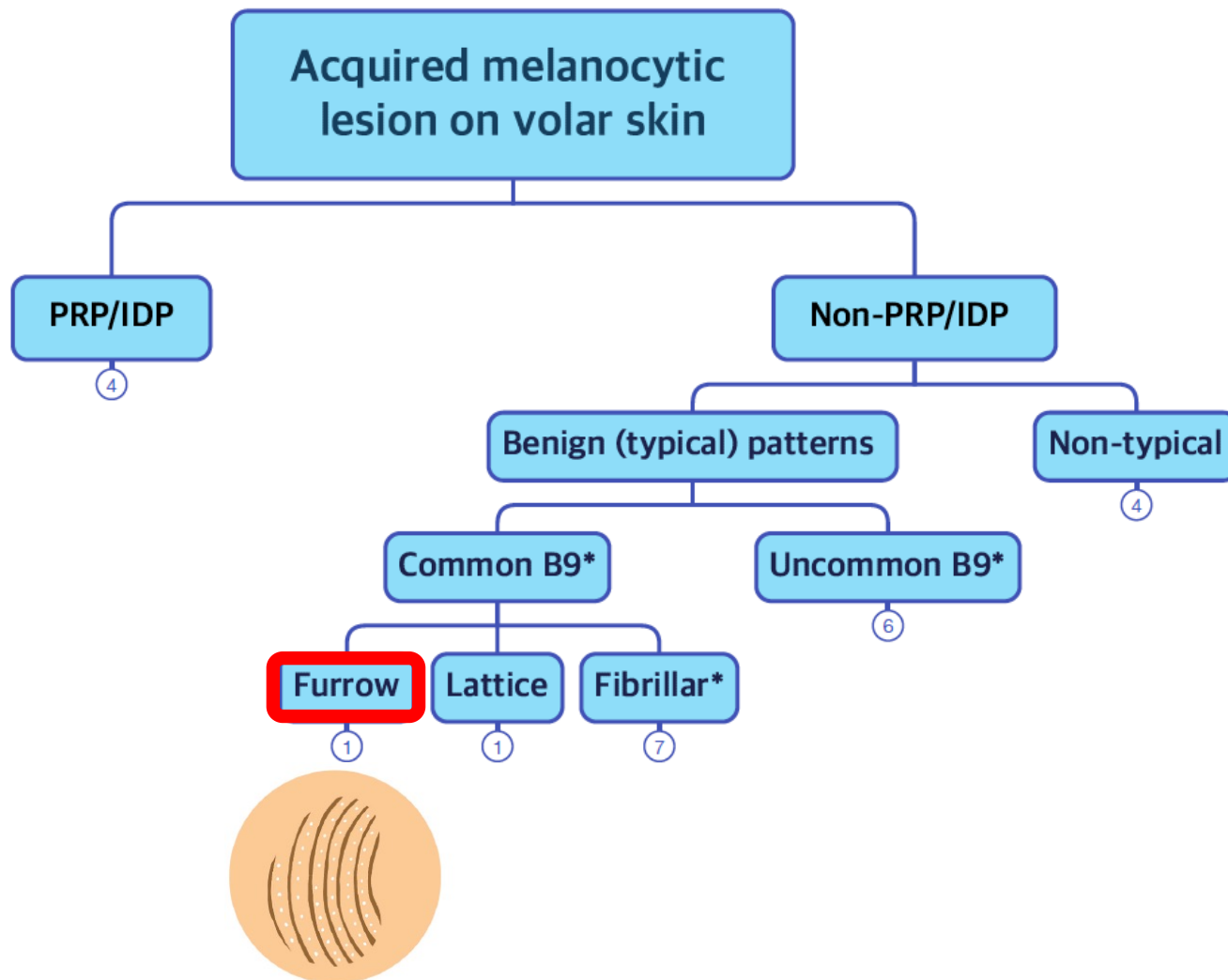






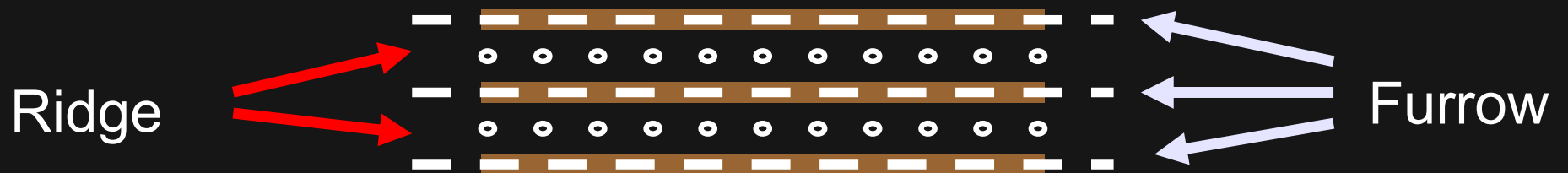






Parallel-furrow pattern

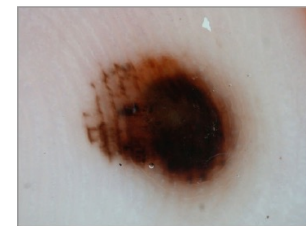
- linear pigmentation in the furrows



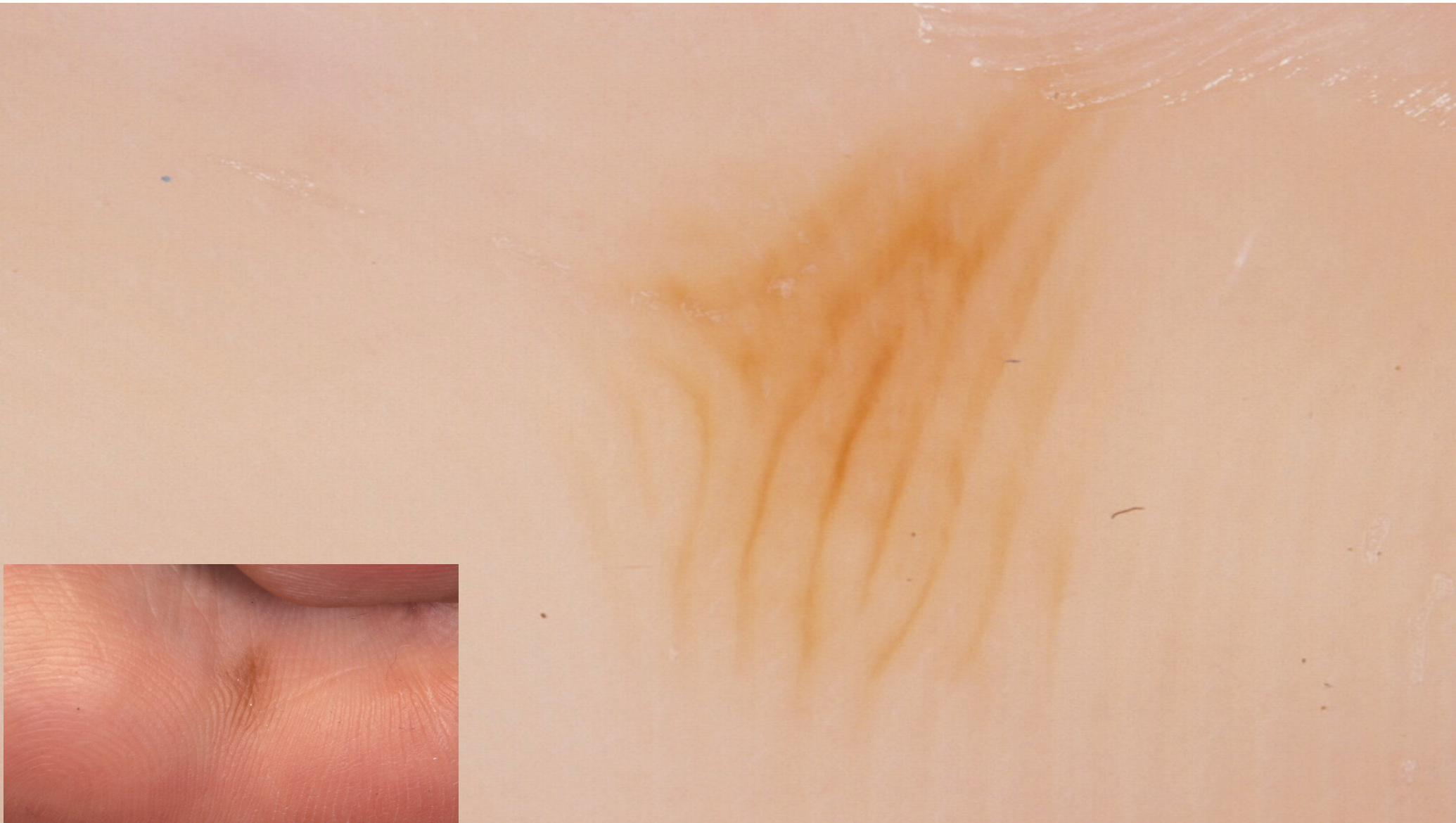
Dermoscopy patterns	Definition	Schema
Benign patterns		
Parallel furrow pattern	Pigmentation following the furrows	



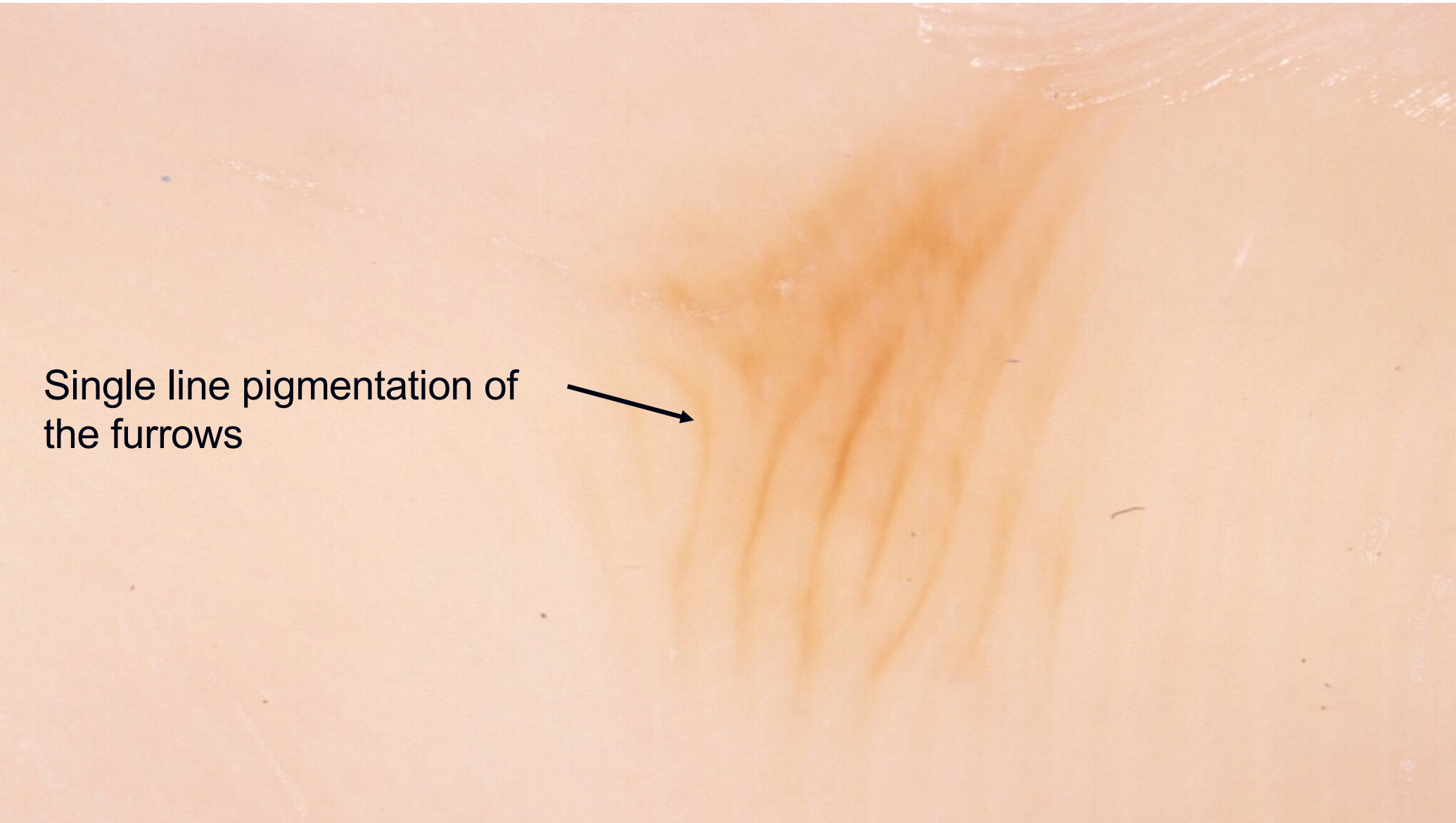
9% of melanomas
(focal with PRP/IDP)

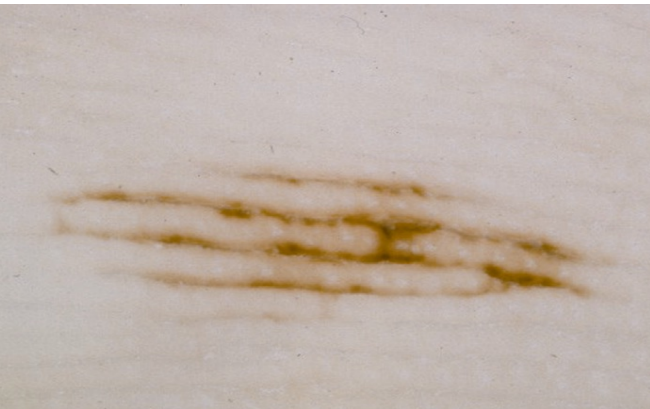


42% of nevi
(throughout & predominant
pattern)

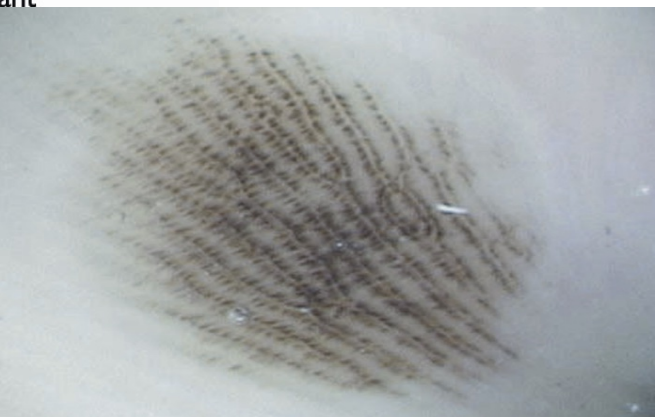
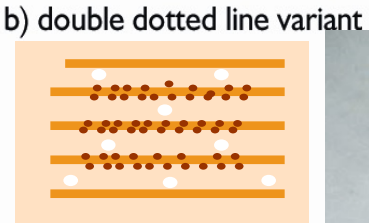
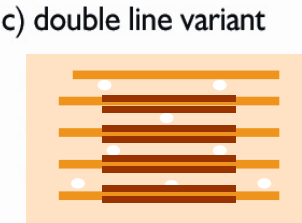
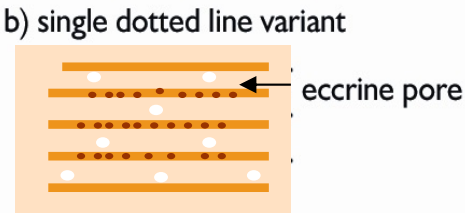
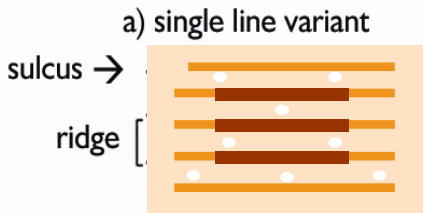
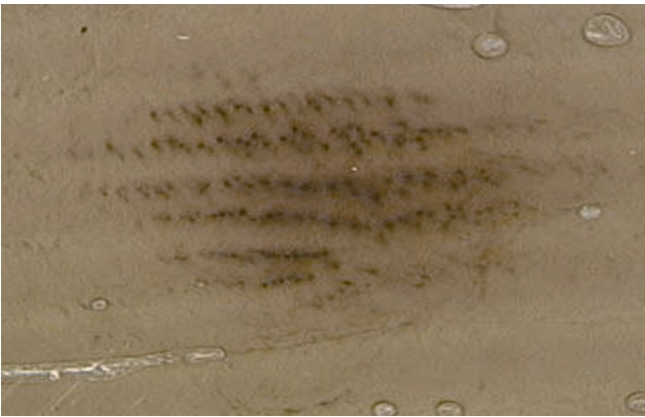


Single line pigmentation of
the furrows



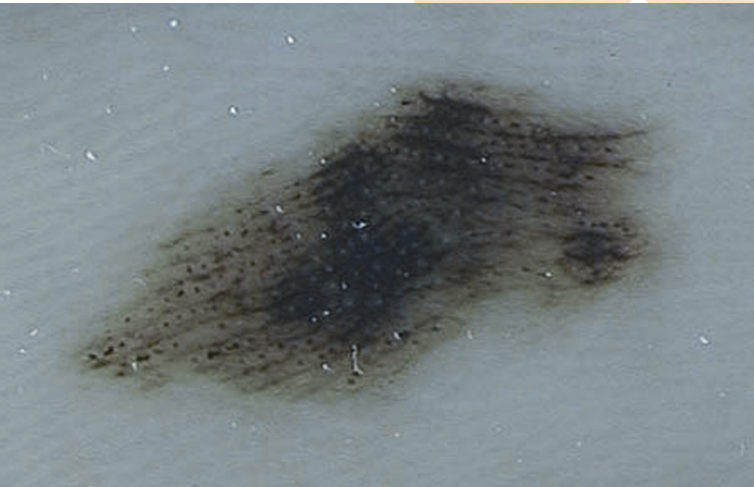
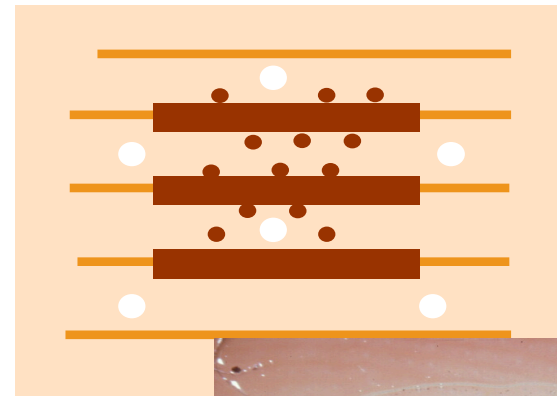
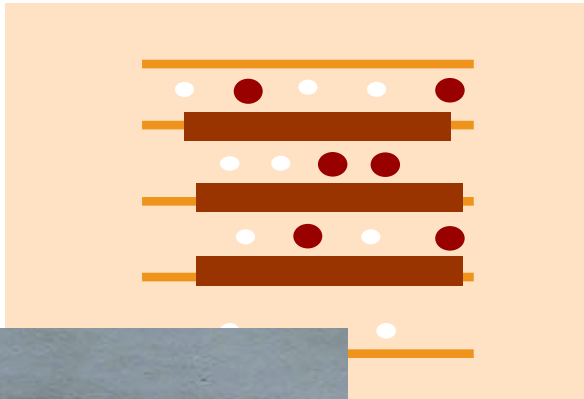


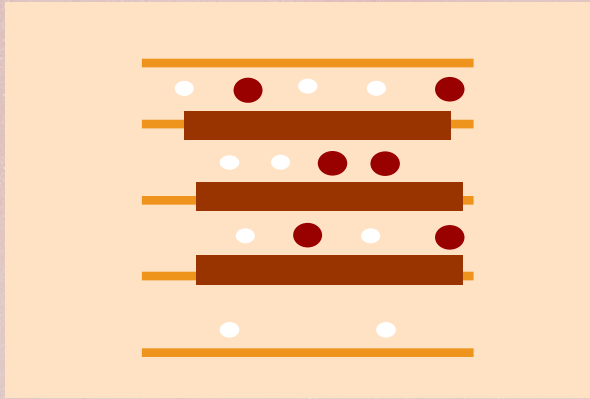
• Parallel furrow pattern



Dermoscopic Characteristics of Congenital Melanocytic Nevi Affecting Acral Volar Skin

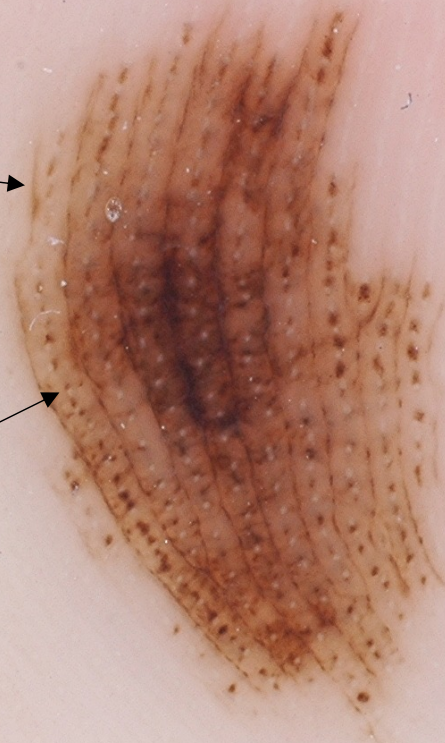
Akane Minagawa, MD; Hiroshi Koga, MD; Toshiaki Saida, MD, PhD



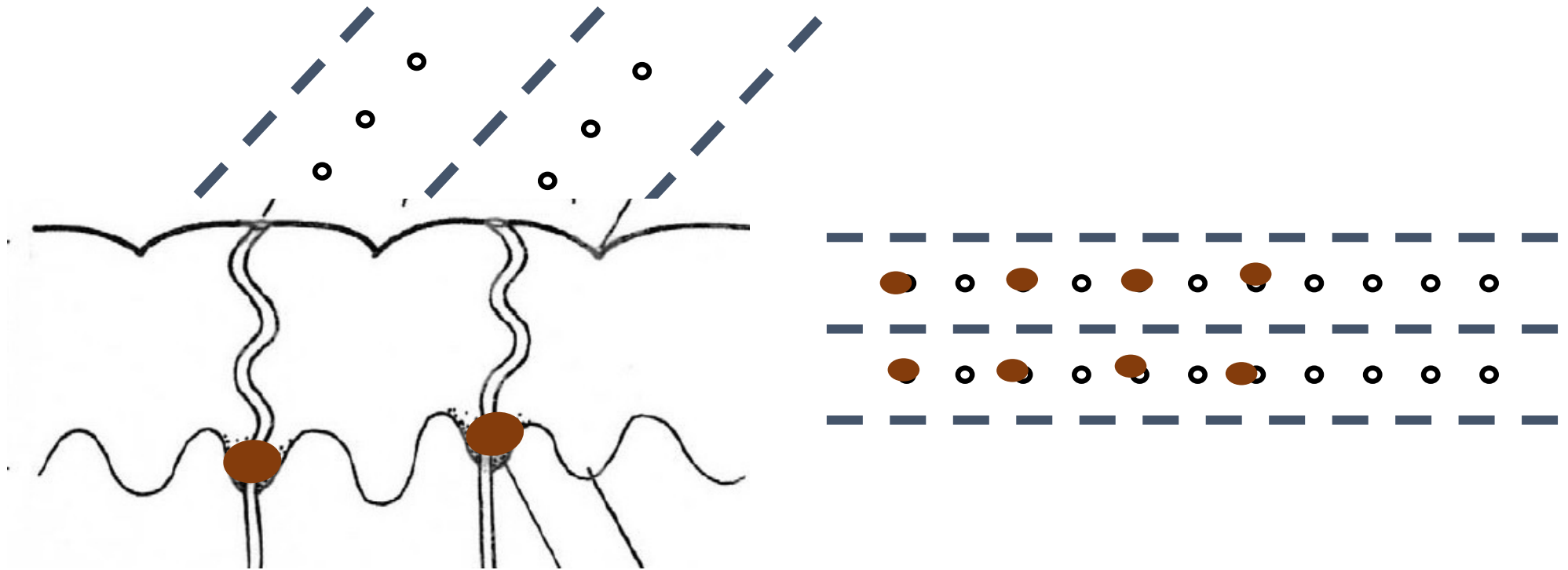


Parallel pigmented
lines in the furrows

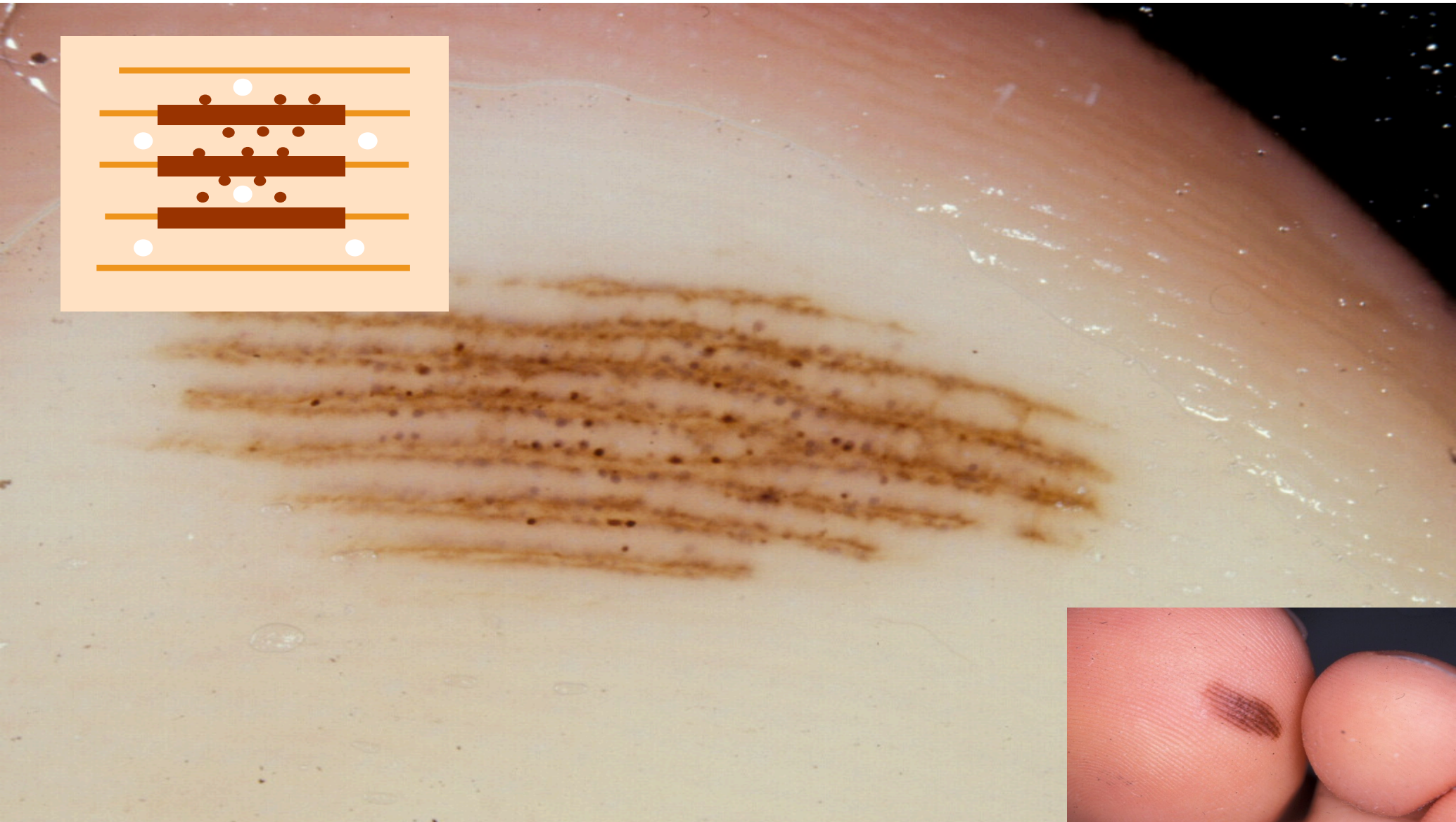
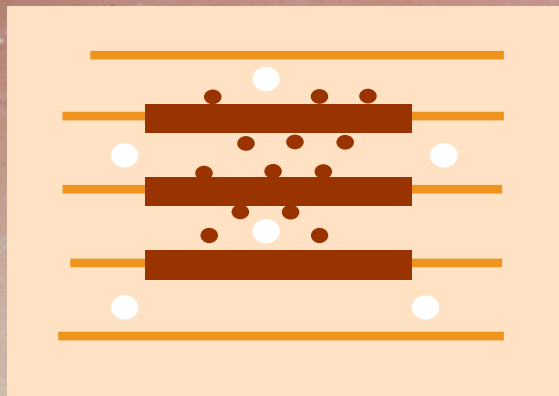
Dots/globules on the ridge
(replacing eccrine openings)

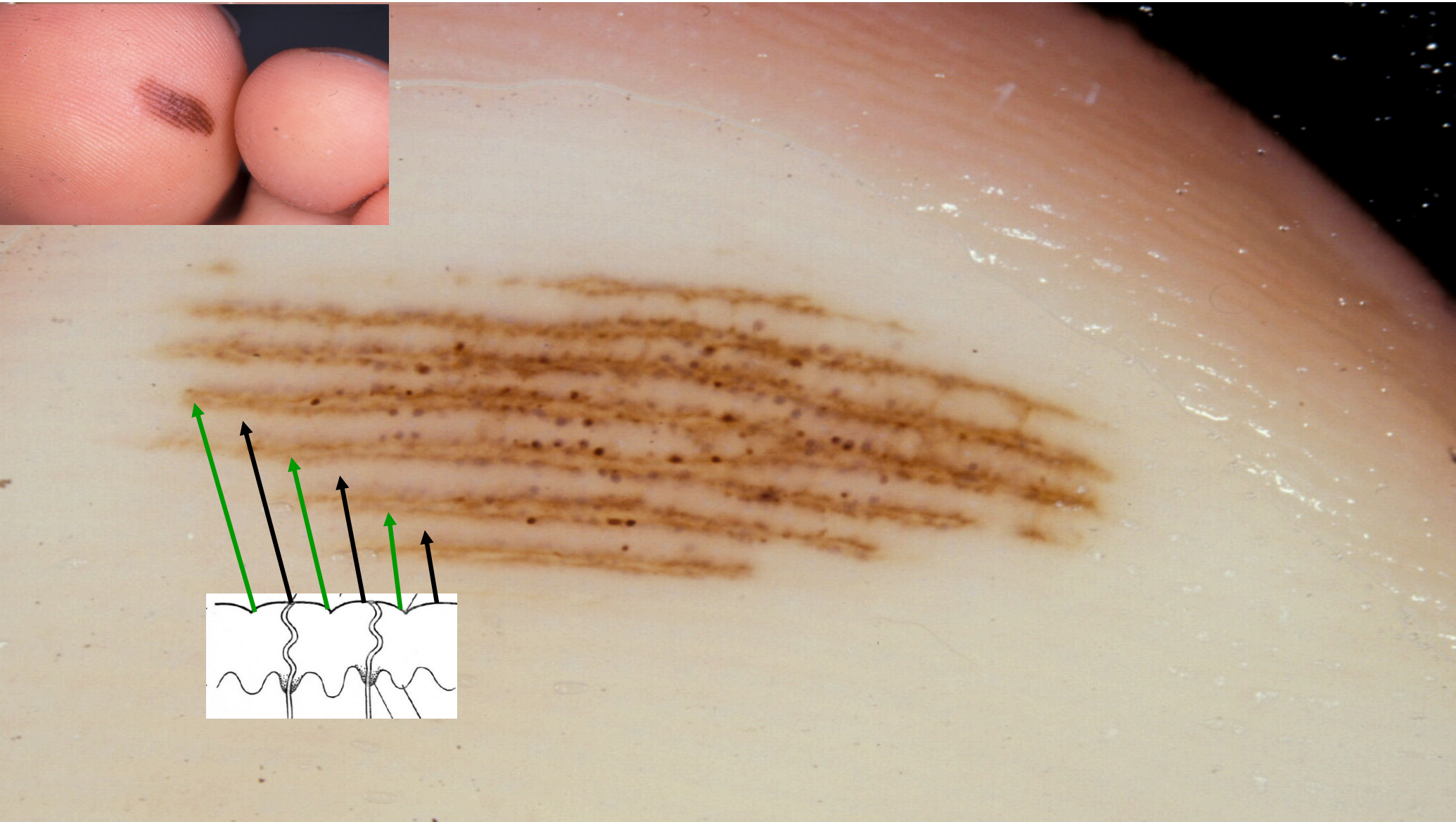


Anatomy

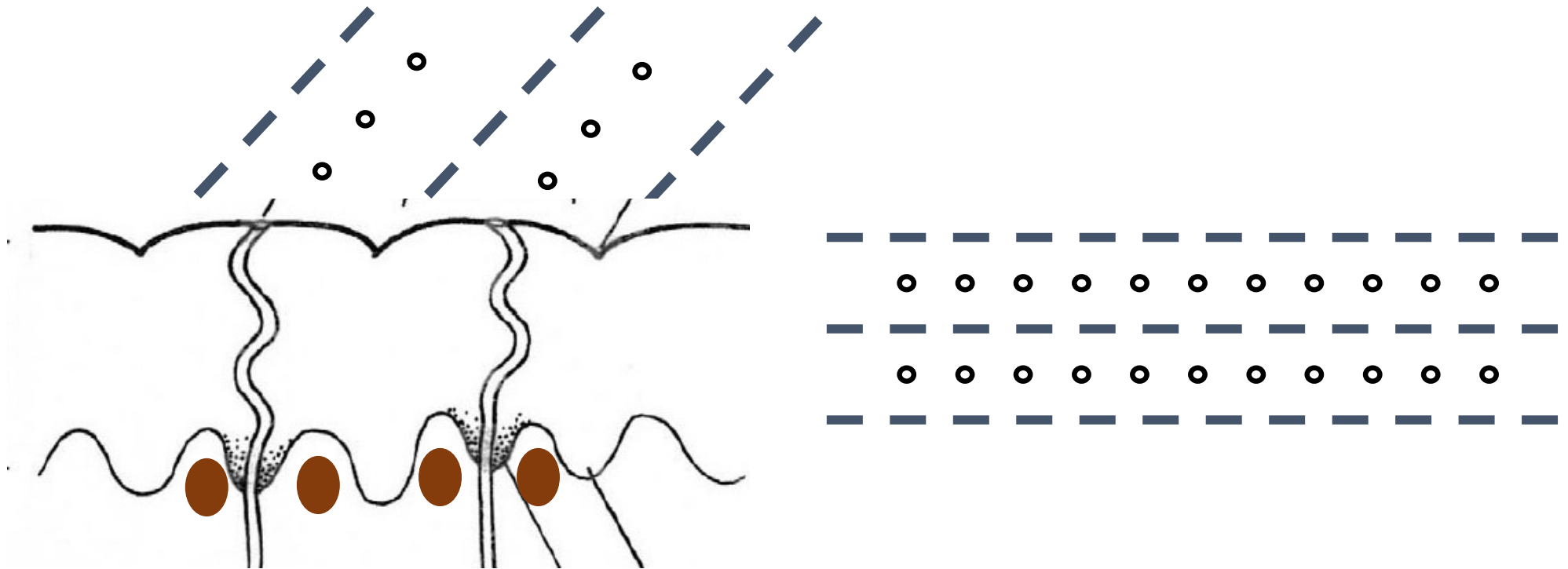


Nevomelanocytic nests surrounding adnexal structures



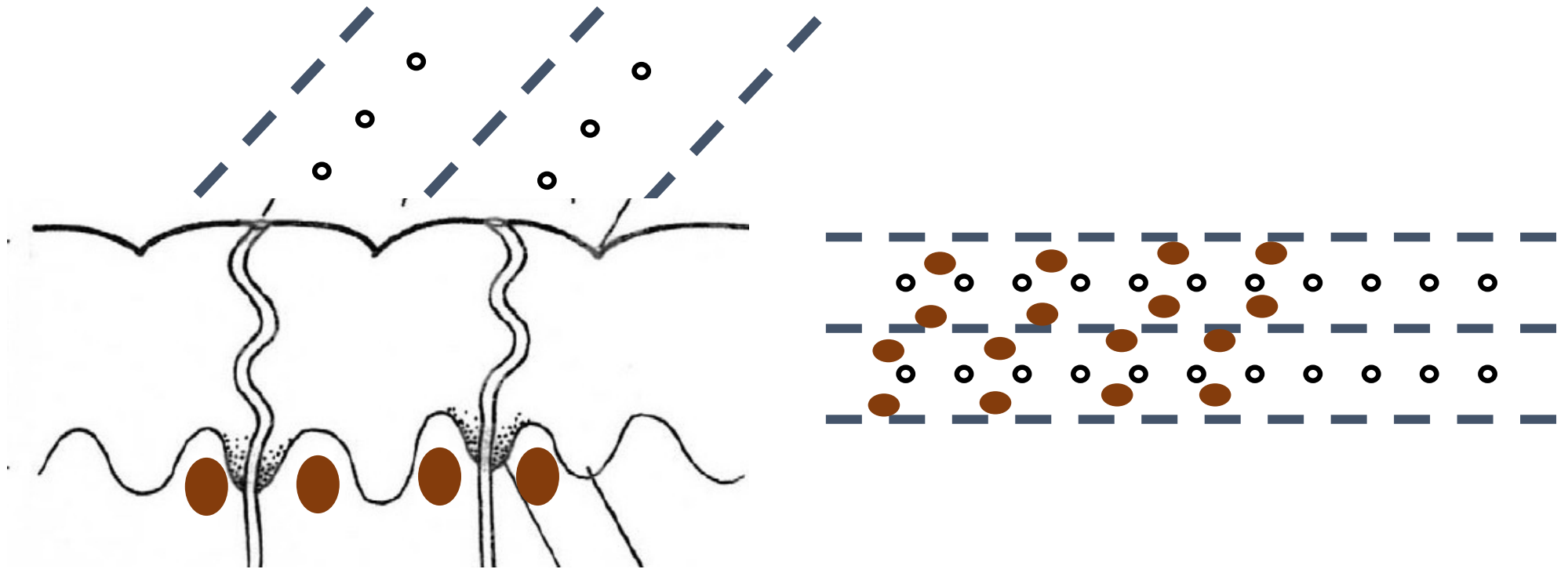


Anatomy



Nevomelanocytic nests in the papillary dermis

Anatomy

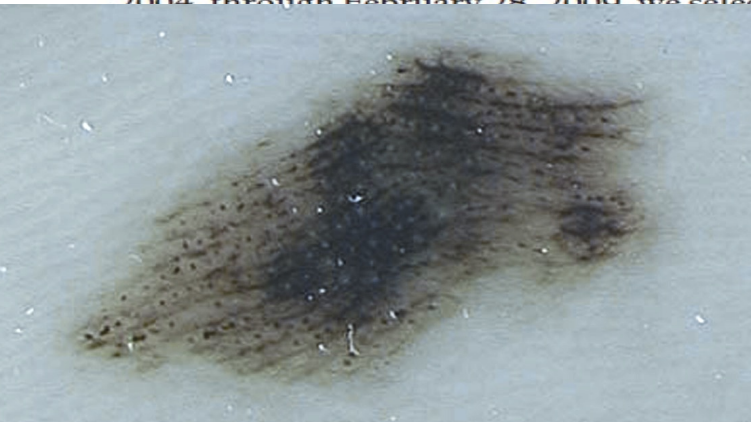


Nevomelanocytic nests in the papillary dermis

Dermoscopic Characteristics of Congenital Melanocytic Nevi Affecting Acral Volar Skin

Akane Minagawa, MD; Hiroshi Koga, MD; Toshiaki Saida, MD, PhD

Tardive CMN



opic features of
().

uation of der-

rsity hospital.

om January 1,
2004, through February 28, 2009, we selected cases with
t were present
months of life.

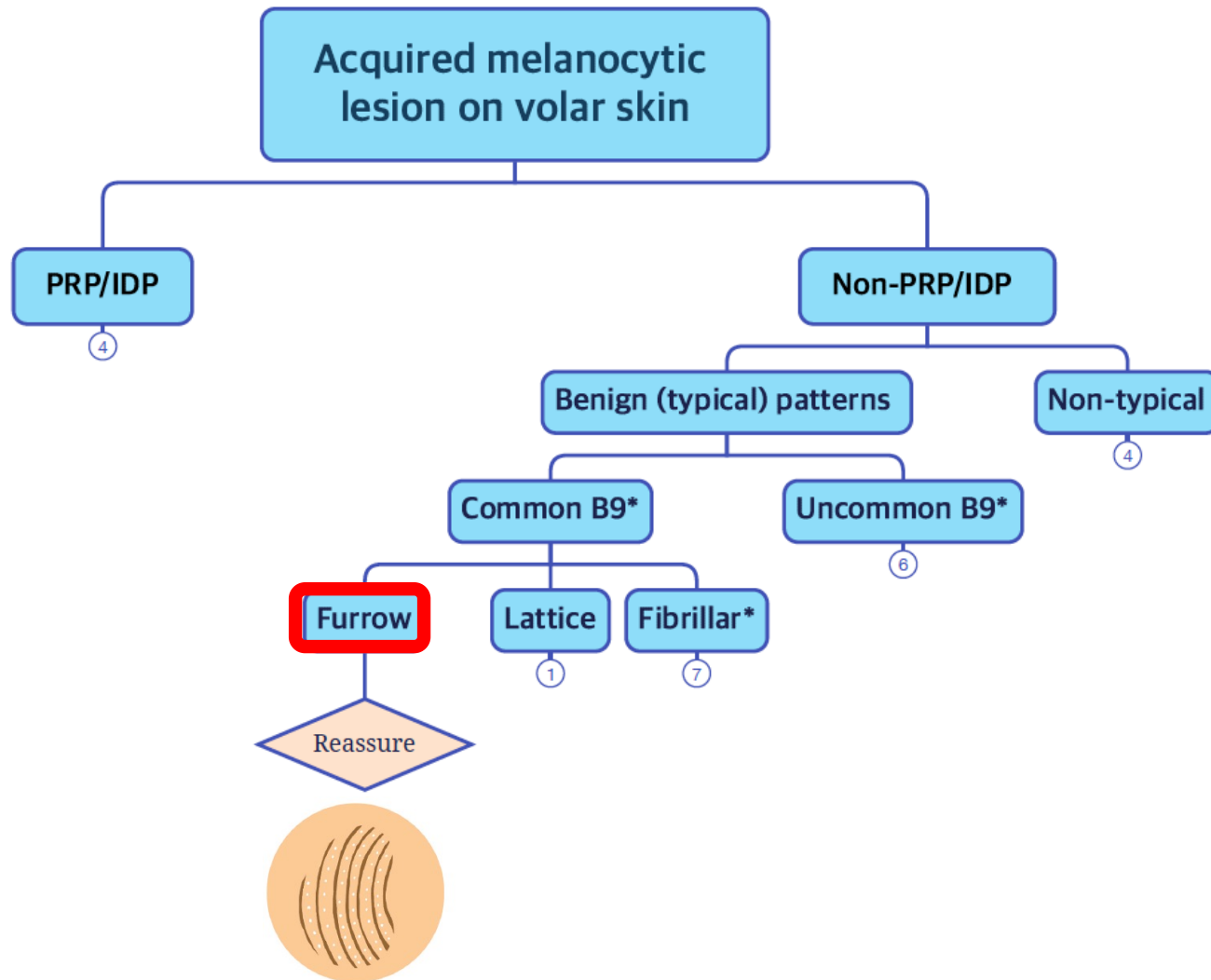
eristic dermo-

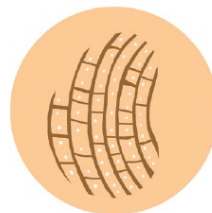
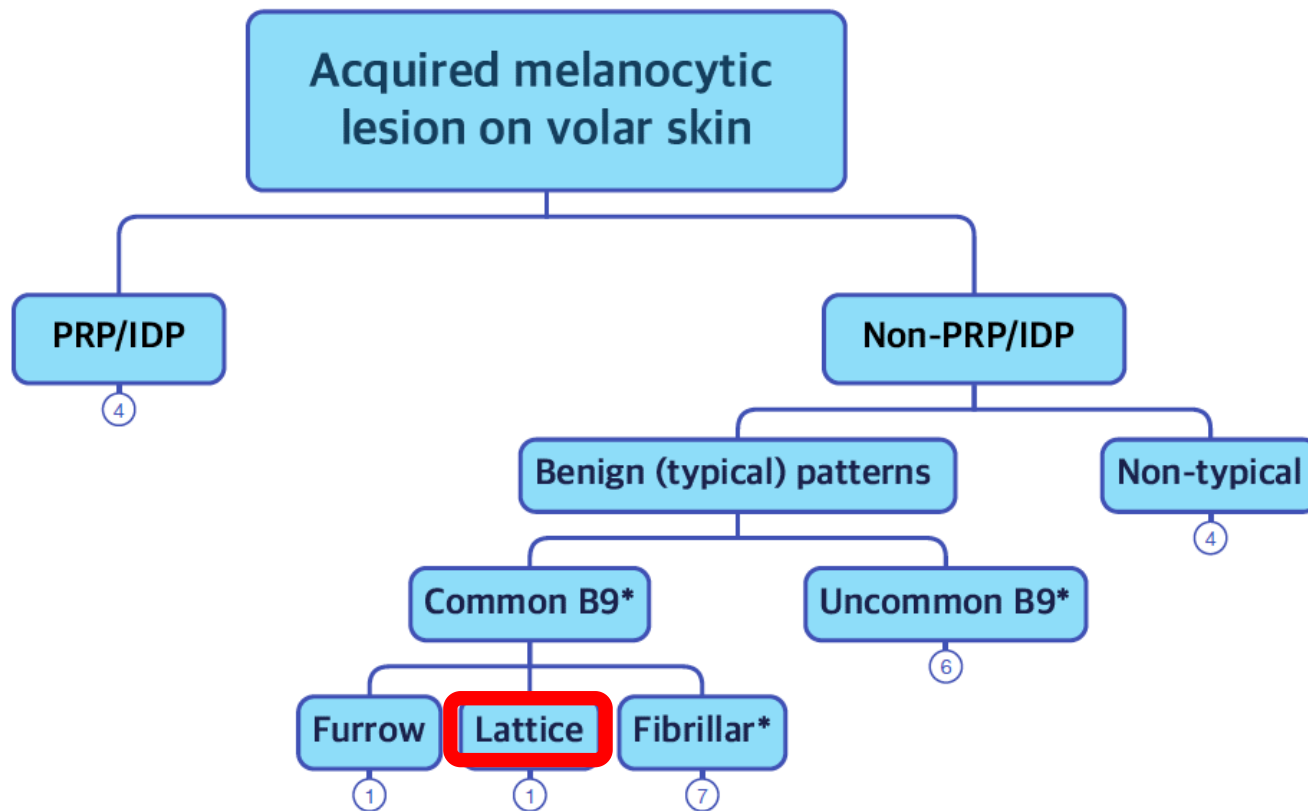
CMN lesions.
a combination
el furrow pat-
ar pattern. The
owing single-

component patterns: the parallel furrow pattern in 6 (25%), the crista dotted pattern in 3 (12%), the fibrillar pattern in 2 (8%), and the globular, globulostreaklike, nontypical, and parallel ridge patterns in 1 each (4%). We also followed up 6 lesions for several years. Changes in the dermoscopic features were observed in 4 CMN lesions from patients younger than 14 years. Three lesions had a combination of the crista dotted and parallel furrow patterns on the first visit that changed to the nontypical pattern; in addition, the degrees of pigmentation decreased during follow-up. In the remaining lesion, the globulostreaklike pattern changed to the parallel furrow pattern.

Conclusions: Most CMN lesions affecting acral volar skin show characteristic dermoscopic features distinguishable from acral melanoma. The combination of the crista dotted and parallel furrow patterns (ie, peas-in-a-pod pattern) is the most common feature in acral CMN. Some lesions of acral CMN fade during childhood.

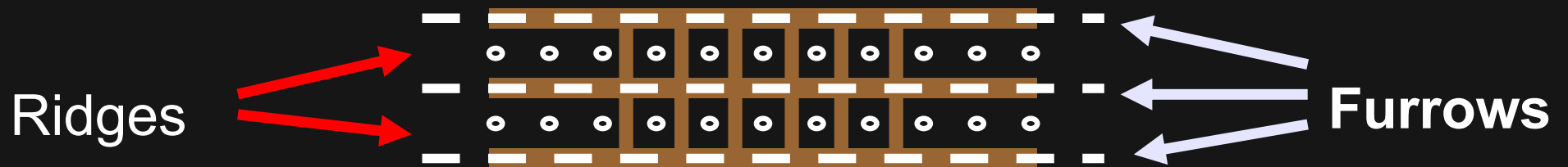
Arch Dermatol. 2011;147(7):809-813





Lattice-like pattern

- linear pigmentation in the furrows
- with cross striations across the ridges

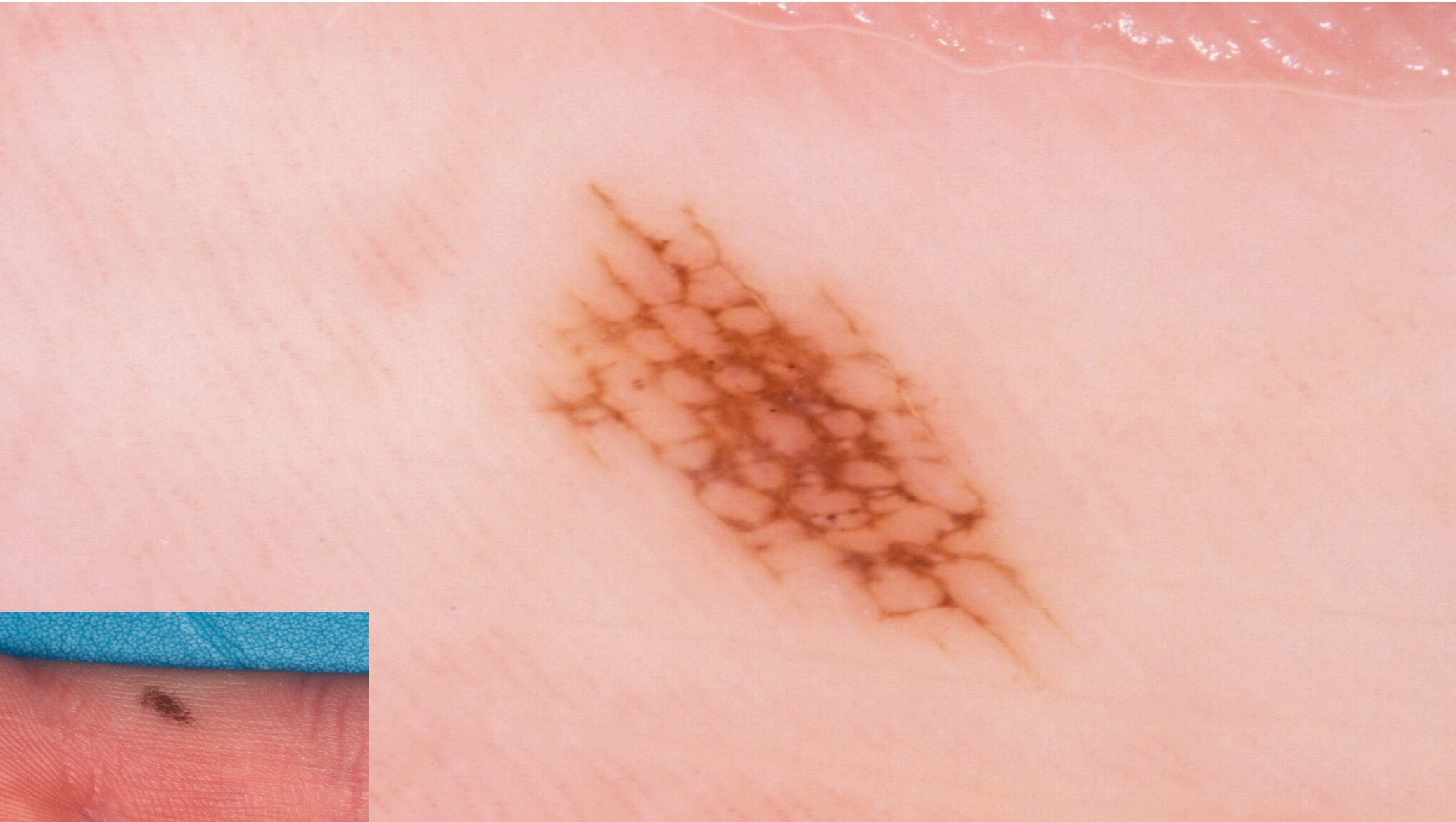


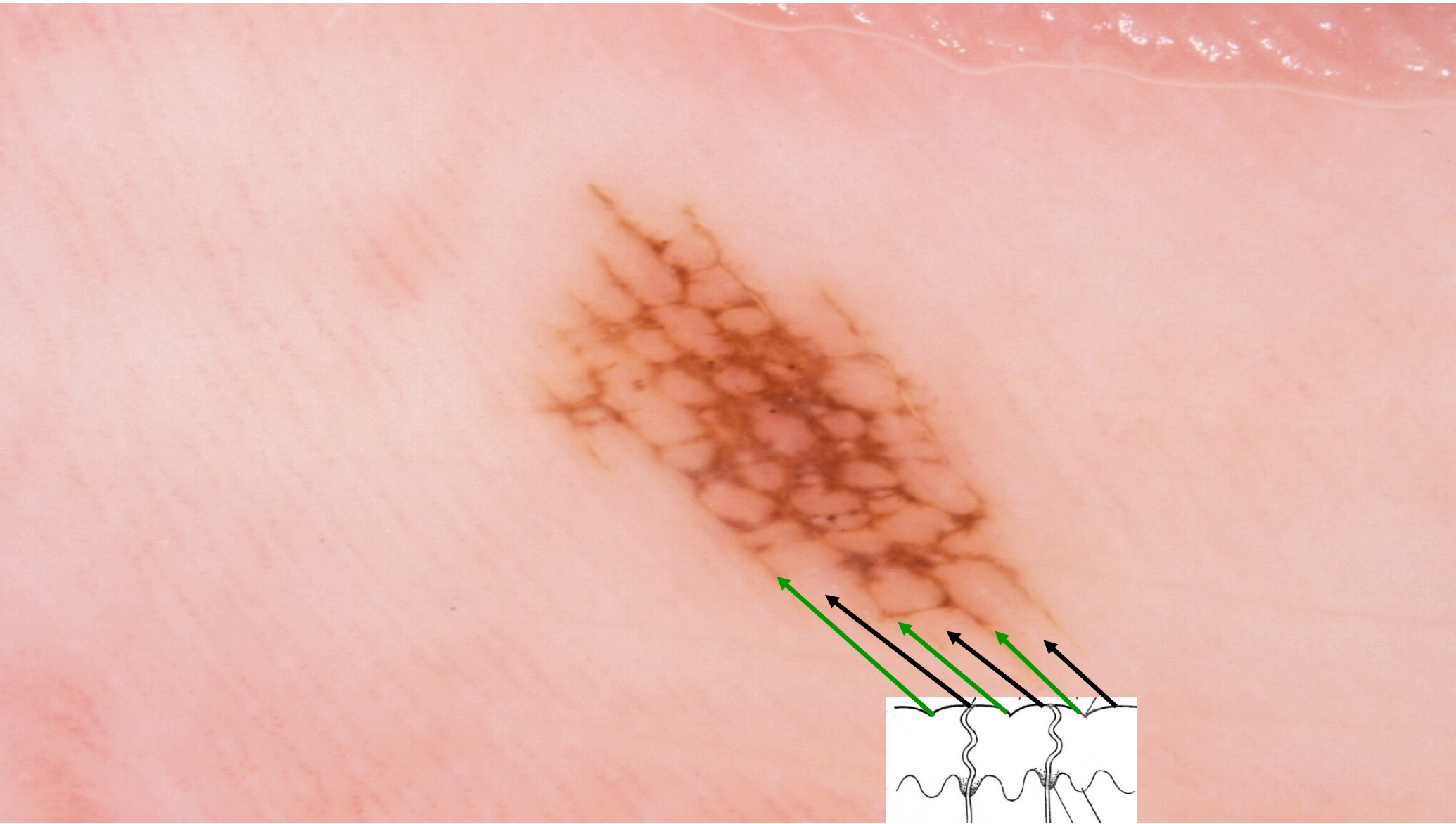
Lattice-like pattern

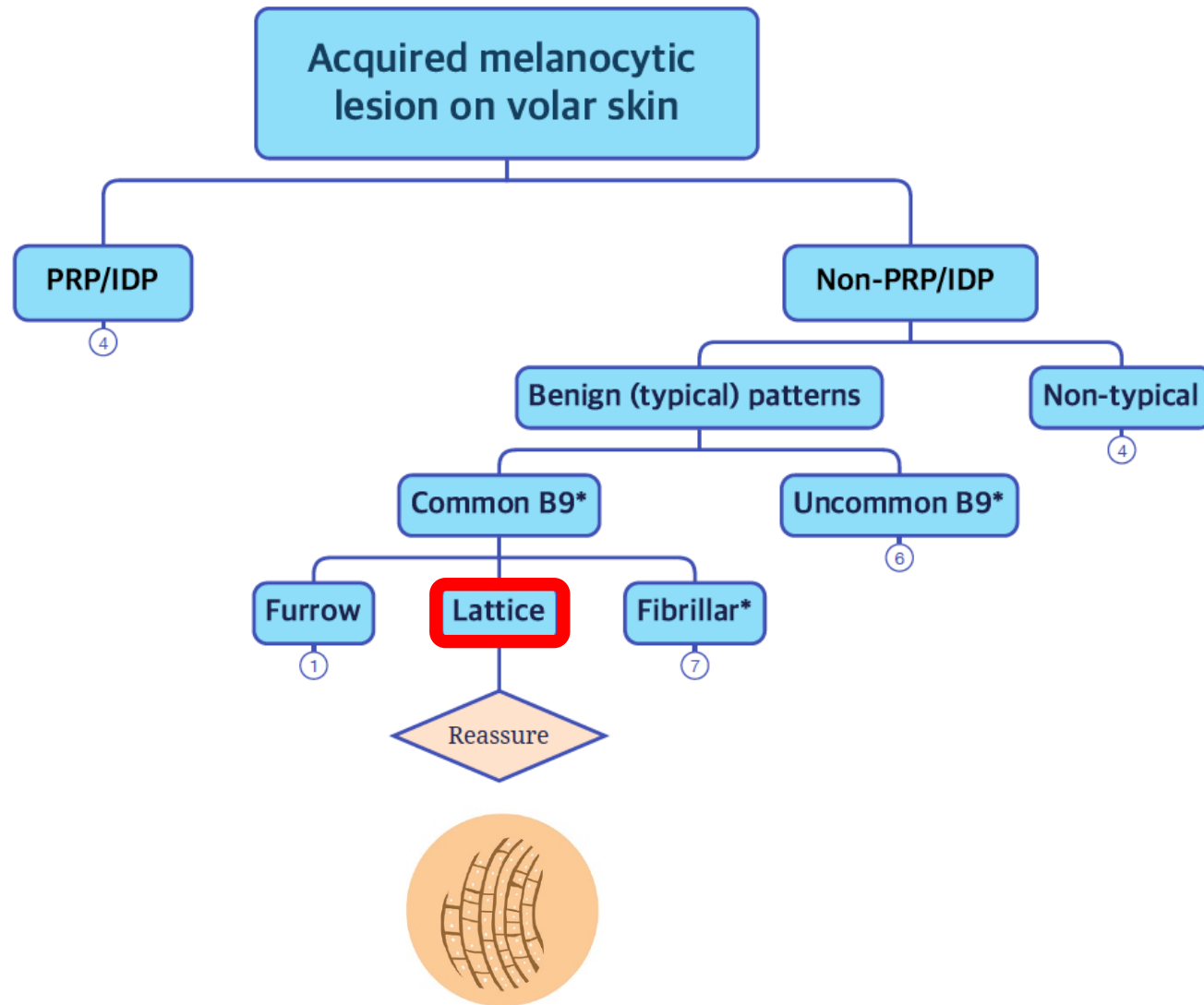


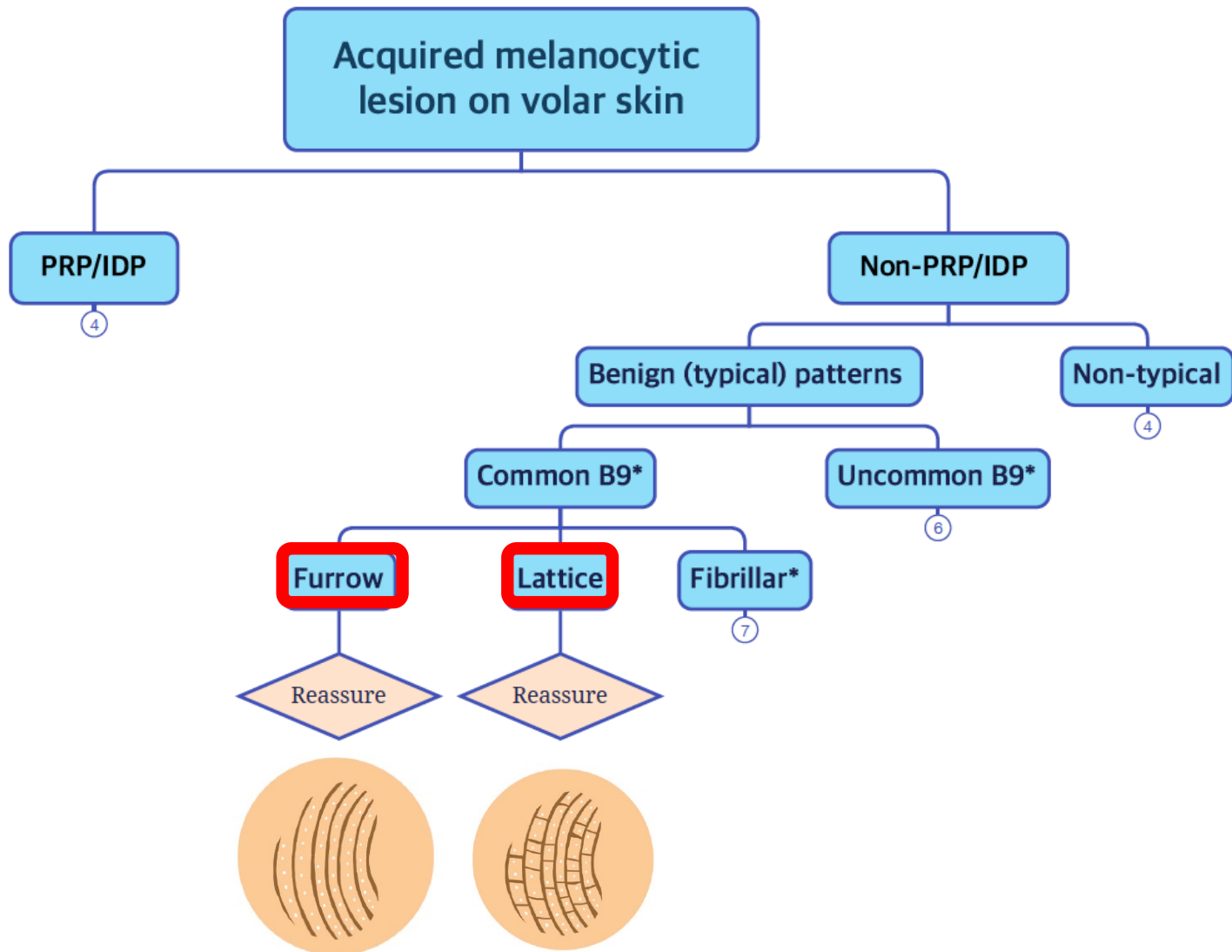
7% melanomas (focal
with PRP/IDP)

19% of nevi (throughout
and predominant
pattern)









Significance of Dermoscopic Patterns in Detecting Malignant Melanoma on Acral Volar Skin

Results of a Multicenter Study in Japan

Toshiaki Saida, MD, PhD; Atsushi Miyazaki, MD; Shinji Oguchi, MD, PhD; Yasushi Ishihara, MD; Yoriko Yamazaki, MD; Sumio Murase, MD, PhD; Shusuke Yoshikawa, MD; Tetsuya Tsuchida, MD, PhD; Yasuhiro Kawabata, MD, PhD; Kunihiro Tamaki, MD, PhD

Objective: To determine diagnostic variables such as sensitivity and specificity of the major dermoscopic patterns observed in melanocytic lesions on acral volar skin, with particular attention to the significance of the parallel ridge pattern and irregular diffuse pigmentation in detecting acral melanoma.

Design: Multicenter, retrospective study.

Setting: University hospitals in Japan.

Patients: Patients with melanocytic lesions on acral volar skin. A total of 712 melanocytic lesions (103 malignant melanomas, including 36 in situ lesions, and 609 melanocytic nevi) were consecutively collected from the files of 3 hospitals. Diagnoses of all the lesions had been determined histopathologically.

Interventions: Dermoscopic examination.

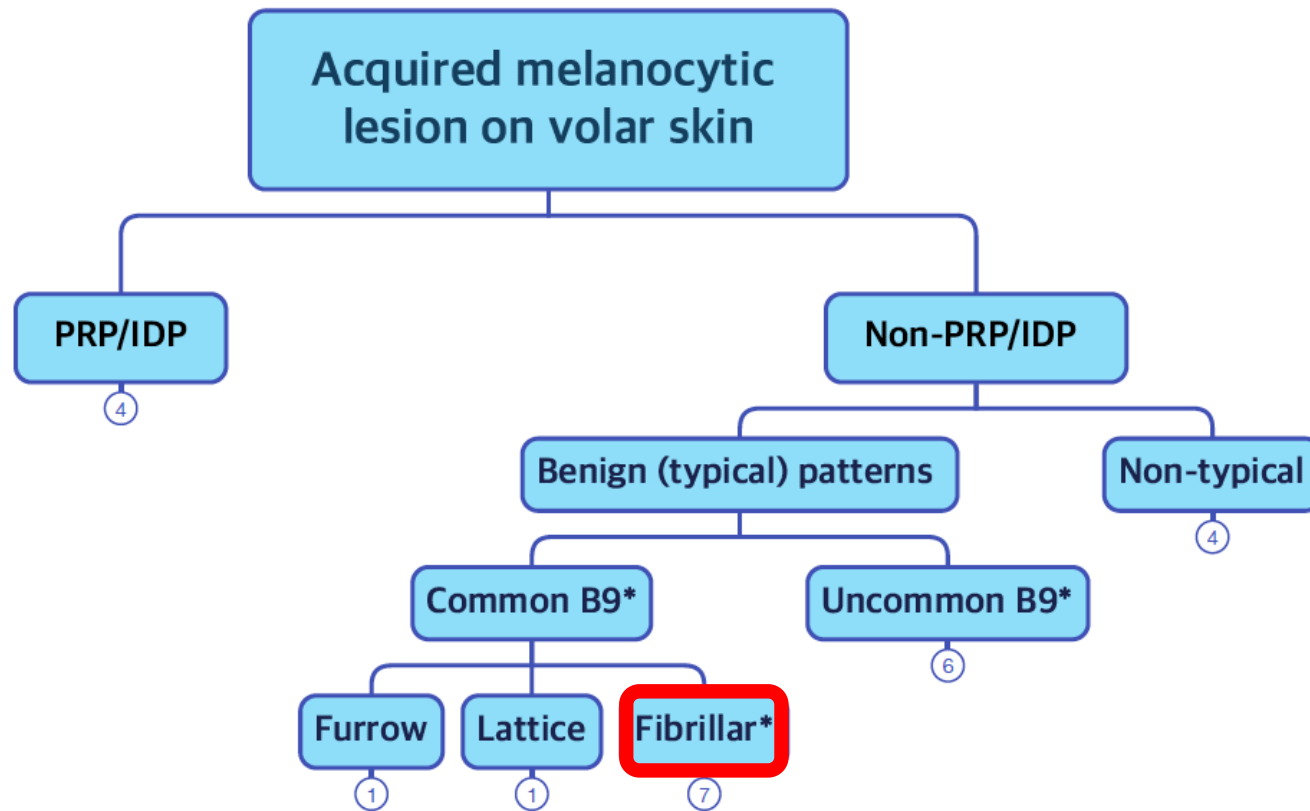
Main Outcome Measures: The sensitivity, specificity, positive predictive value, negative predictive value,

and diagnostic accuracy of the major dermoscopic patterns seen in benign and malignant melanocytic lesions on acral volar skin.

Results: The parallel ridge pattern and irregular diffuse pigmentation showed extremely high specificity (99.0% and 96.6%, respectively) and very high negative predictive value (97.7% and 97.5%, respectively) in malignant melanoma. For melanoma in situ, the positive predictive value and diagnostic accuracy of the parallel ridge pattern were significantly higher than those of irregular diffuse pigmentation ($P=.009$ and $P=.006$, respectively). In melanocytic nevi, the specificity and positive predictive value of the parallel furrow pattern and/or the latticelike pattern were found to be very high (93.2% and 98.3%, respectively).

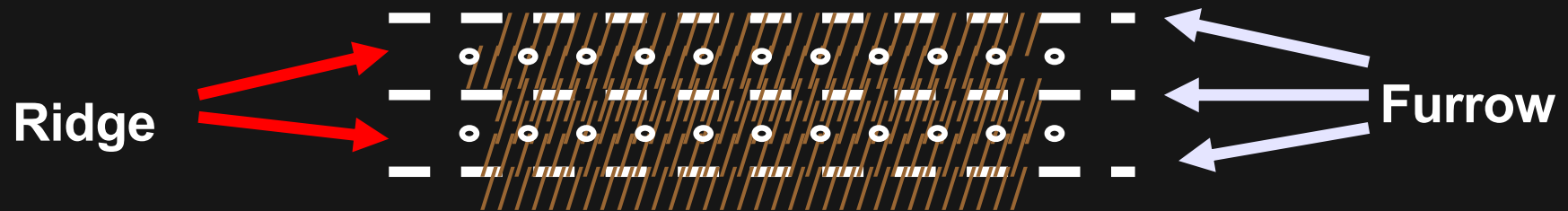
Conclusions: Dermoscopy is immensely helpful in differentiating malignant melanomas from melanocytic nevi on acral volar skin. Moreover, the parallel ridge pattern aids in detecting acral melanomas in early, curable stages.

Arch Dermatol. 2004;140:1233-1238



Fibrillar pattern

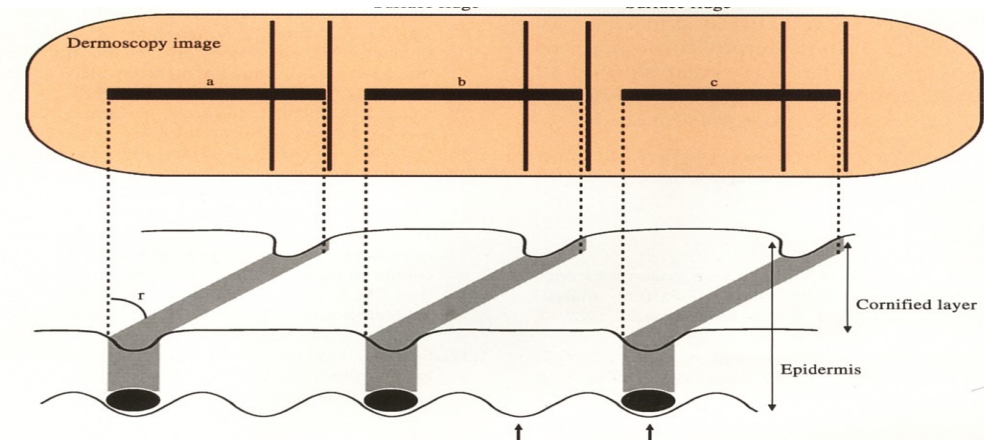
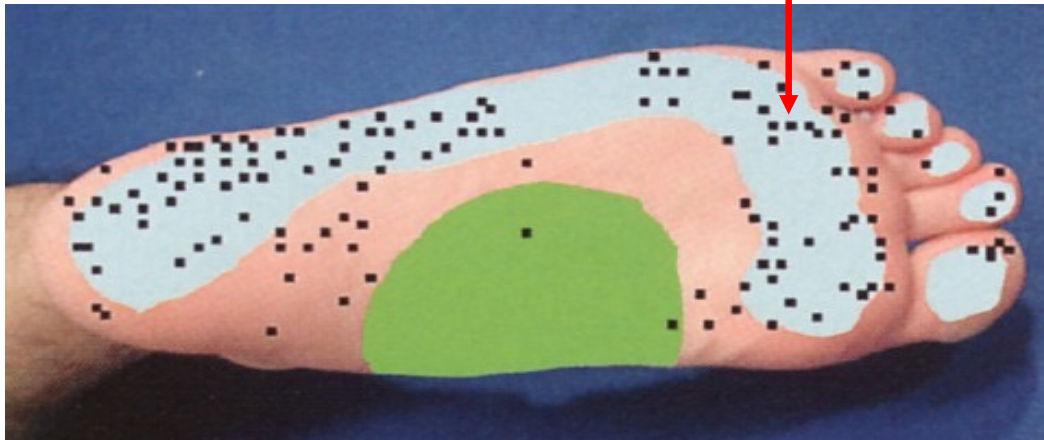
- Lines crossing at an angle across both the furrows and ridges





Histology fibrillar pattern:

Weight bearing sole



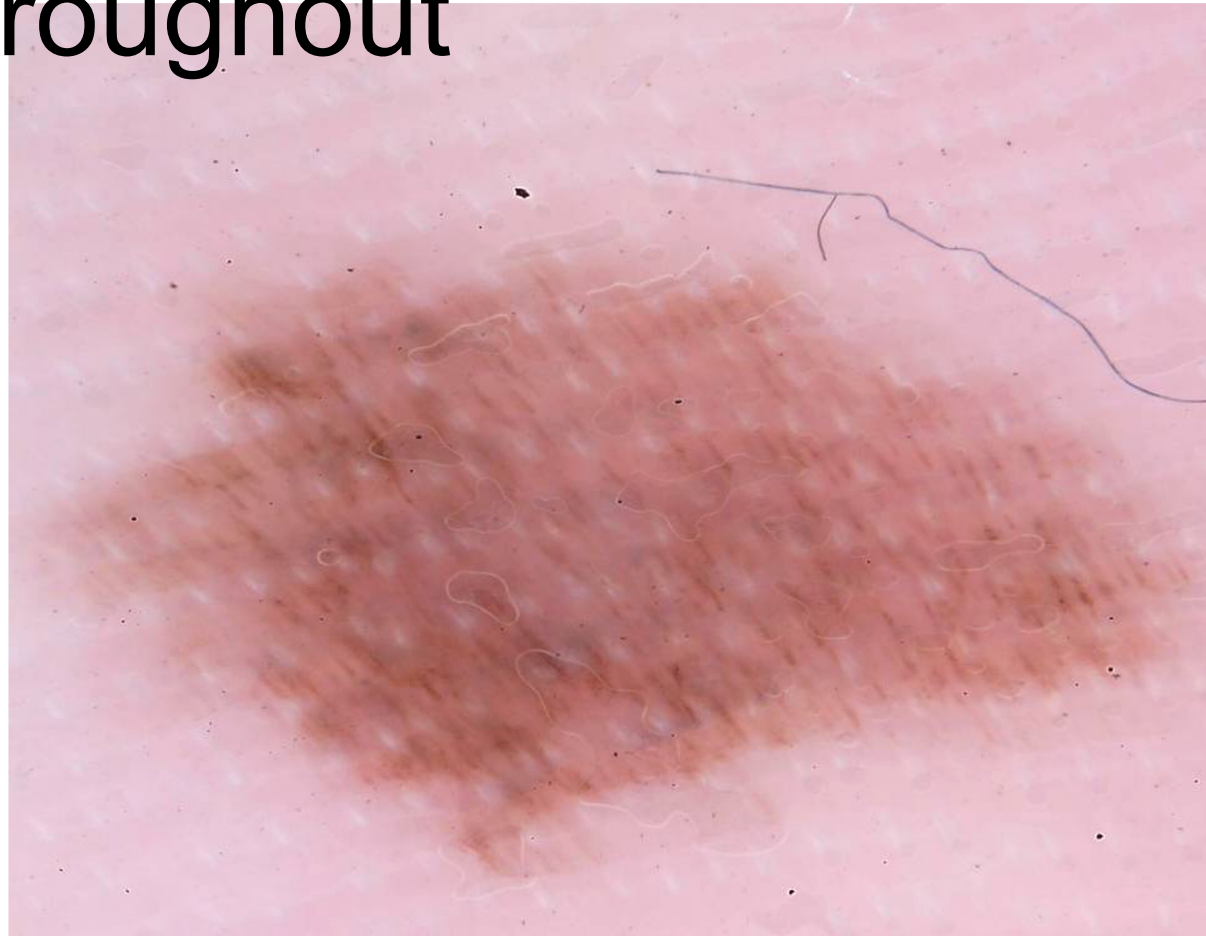
column slants

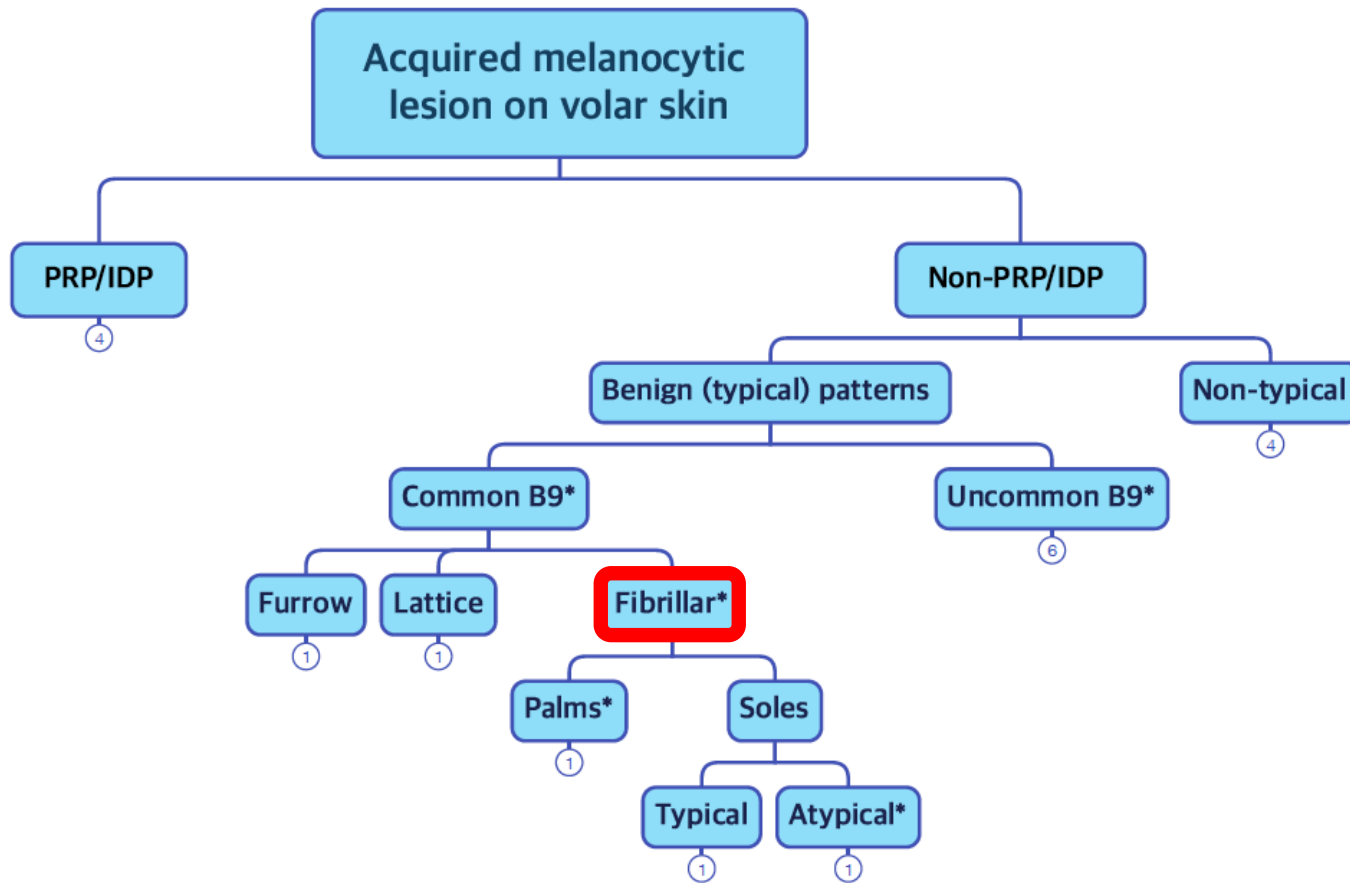
Ref: Myazaki A et al.: JAAD 53:230, 2005

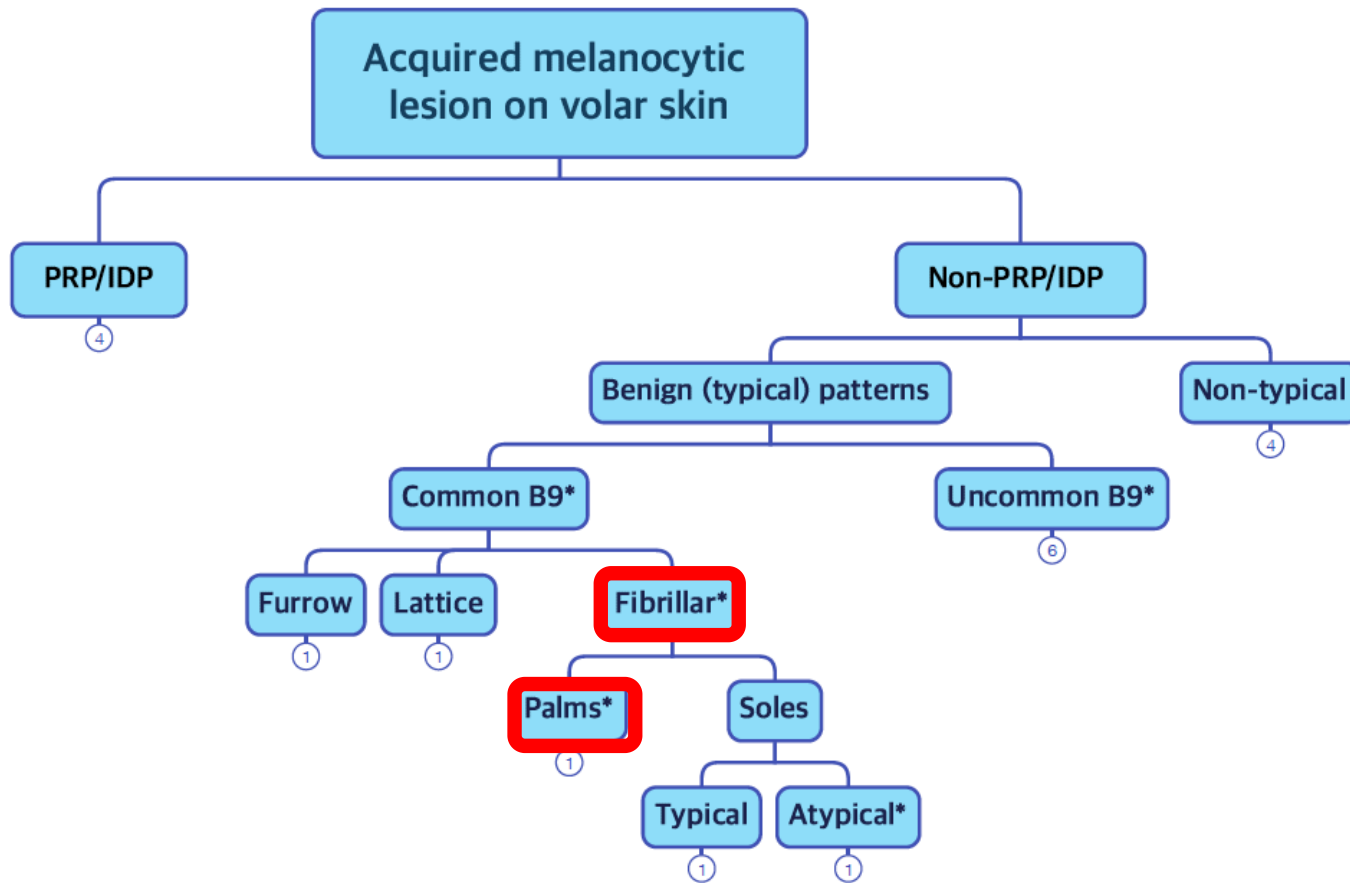
Fibrillar pattern: predominant pattern throughout

35% of melanomas

33% of nevi







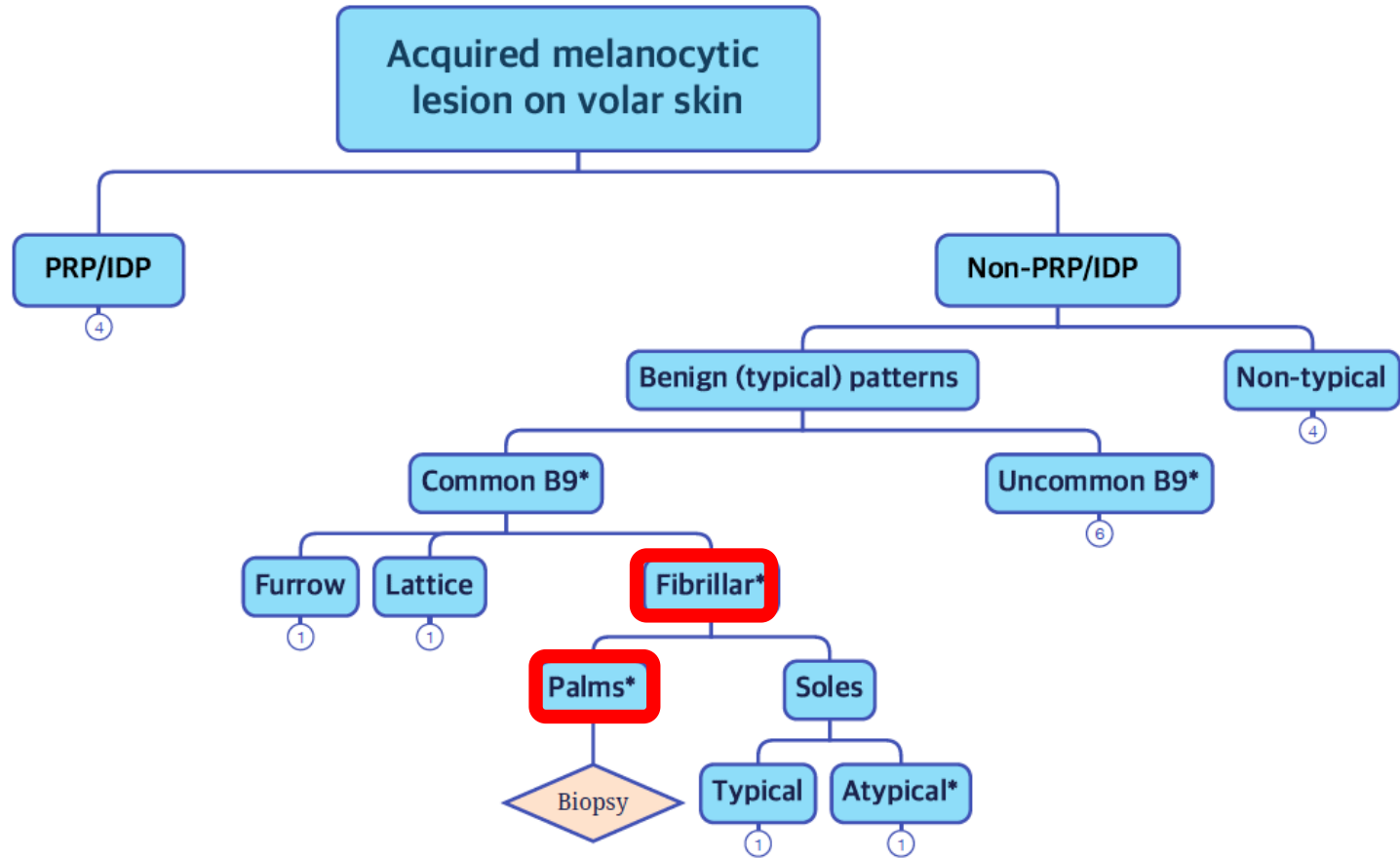
Benign Dermoscopic volar patterns

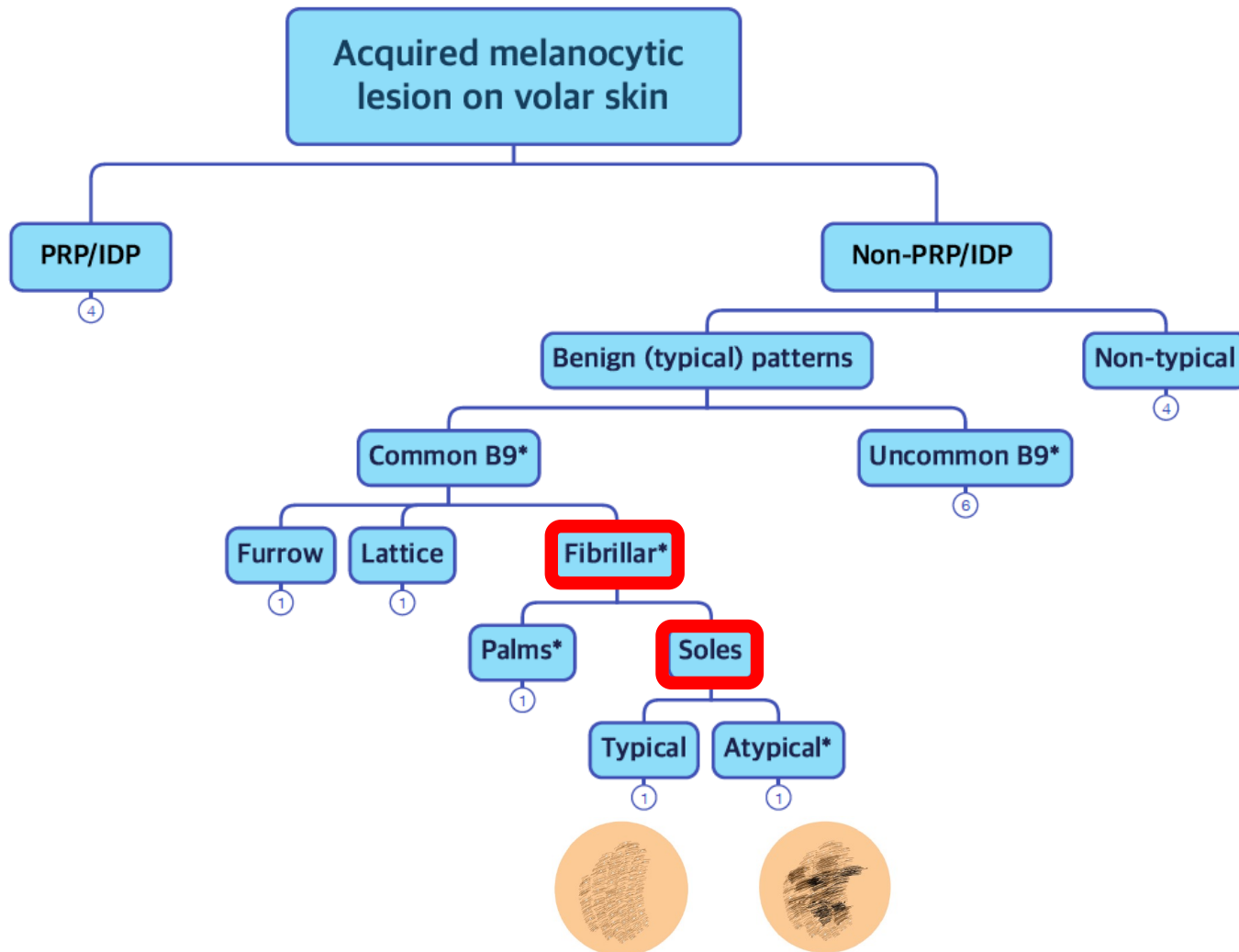
Pattern	Soles N=165	Palms N=45	Total N=210
“Parallel furrow* “	81 (49%)	29 (64%)	110 (52,4%)
“Lattice-like”	17 (10%)	9 (20%)	26 (12%)
“Fibrillar”	13 (7,9%)	0	13 (6%)

J. Malvehy, S. Puig. Dermoscopic patterns of benign volar melanocytic lesions in patients with atypical mole syndrome. Arch Dermatol, 2004

NB: All fibrillar lesions on the palm are considered suspect!

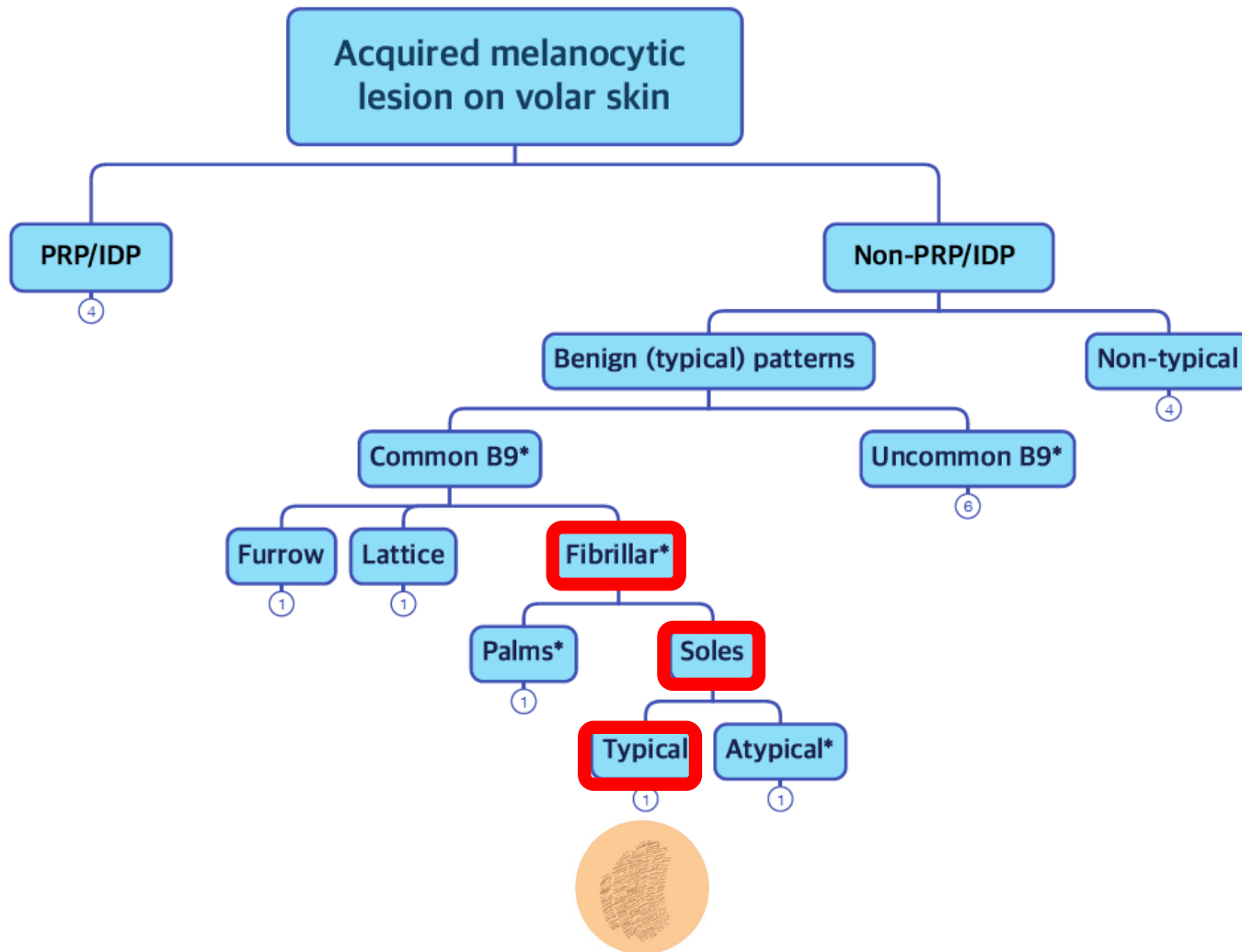






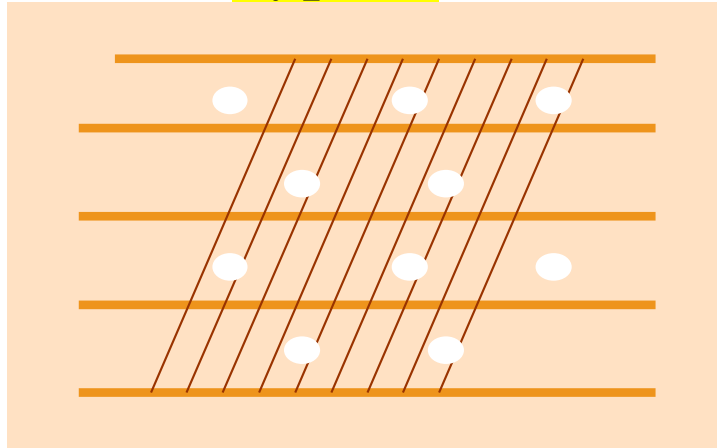
Fibrillar pattern on plantar surface: Typical vs Atypical

- The key is to determine if the fibrillar pattern is anchored in furrows or on the ridges
- The morphology of the fibrillar pattern can also be helpful (organized vs disorganized)



Typical Fibrillar pattern: anchored in furrows & organized

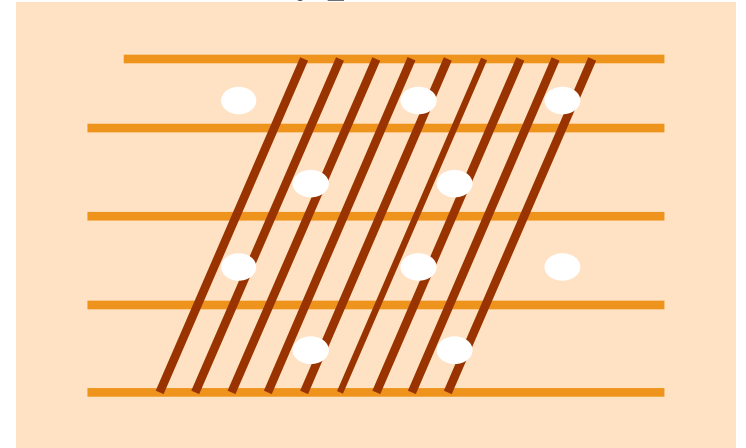
Typical



Junctional/compound nevus



Atypical



Melanoma in situ



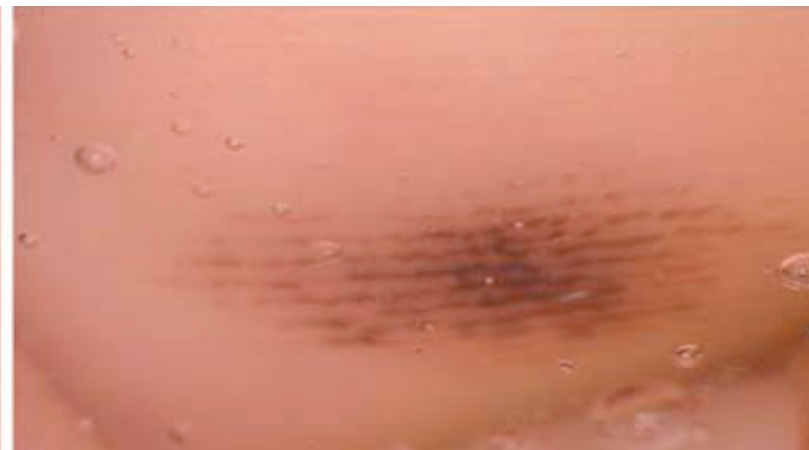
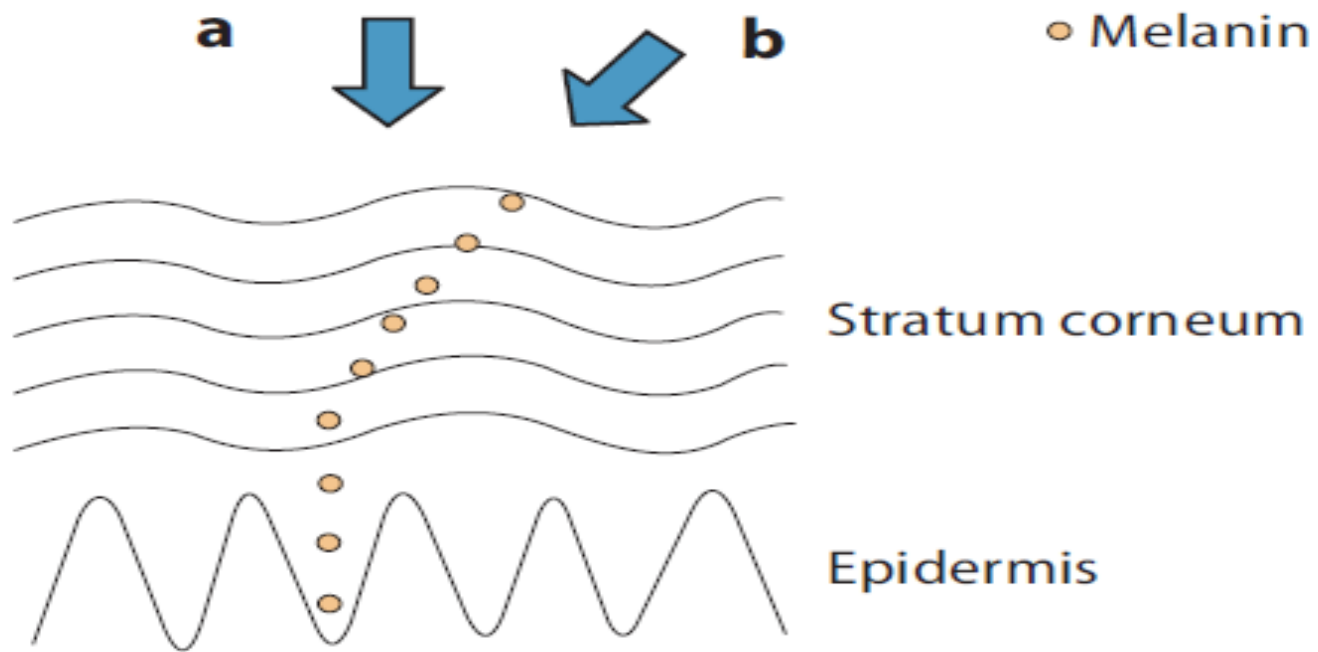
Dermatology 2009;218:385–386

DOI: [10.1159/000202986](https://doi.org/10.1159/000202986)

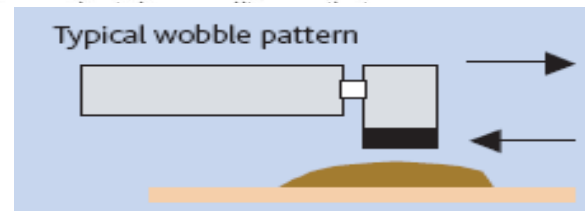
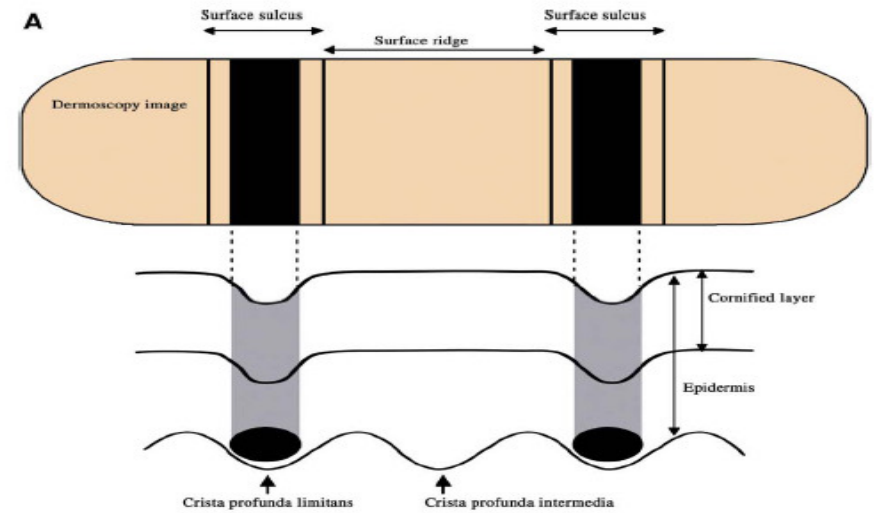
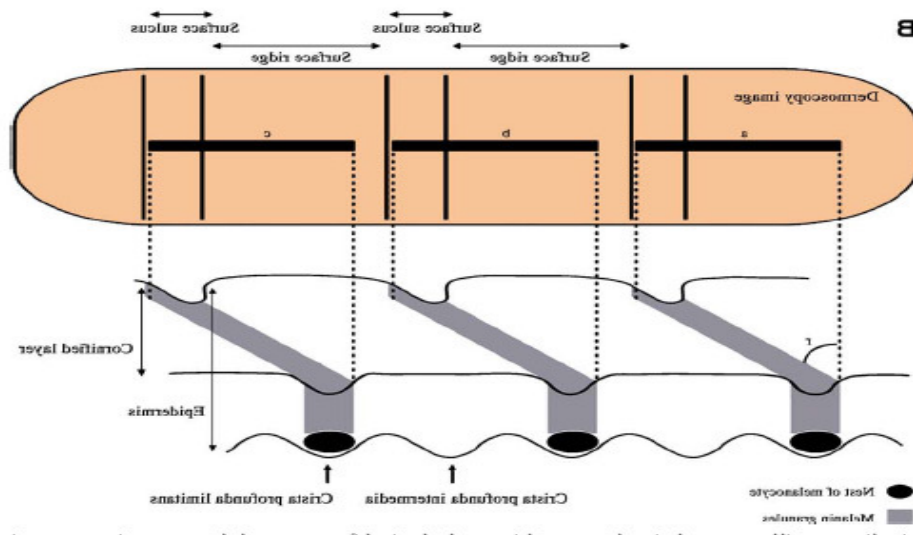
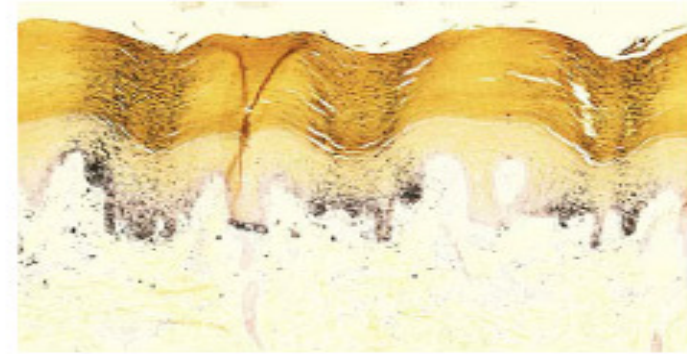
Oblique View Dermoscopy Changes Regular Fibrillar Pattern into Parallel Furrow Pattern

Yoshifumi Maumi, Masayuki Kimoto, Ken Kobayashi, Naoko Ito, Toshiaki Saida, Masaru Tanaka

Department of Dermatology, Tokyo Women's Medical University Medical Center East, Tokyo, and Shinshu University School of Medicine, Matsumoto, Japan

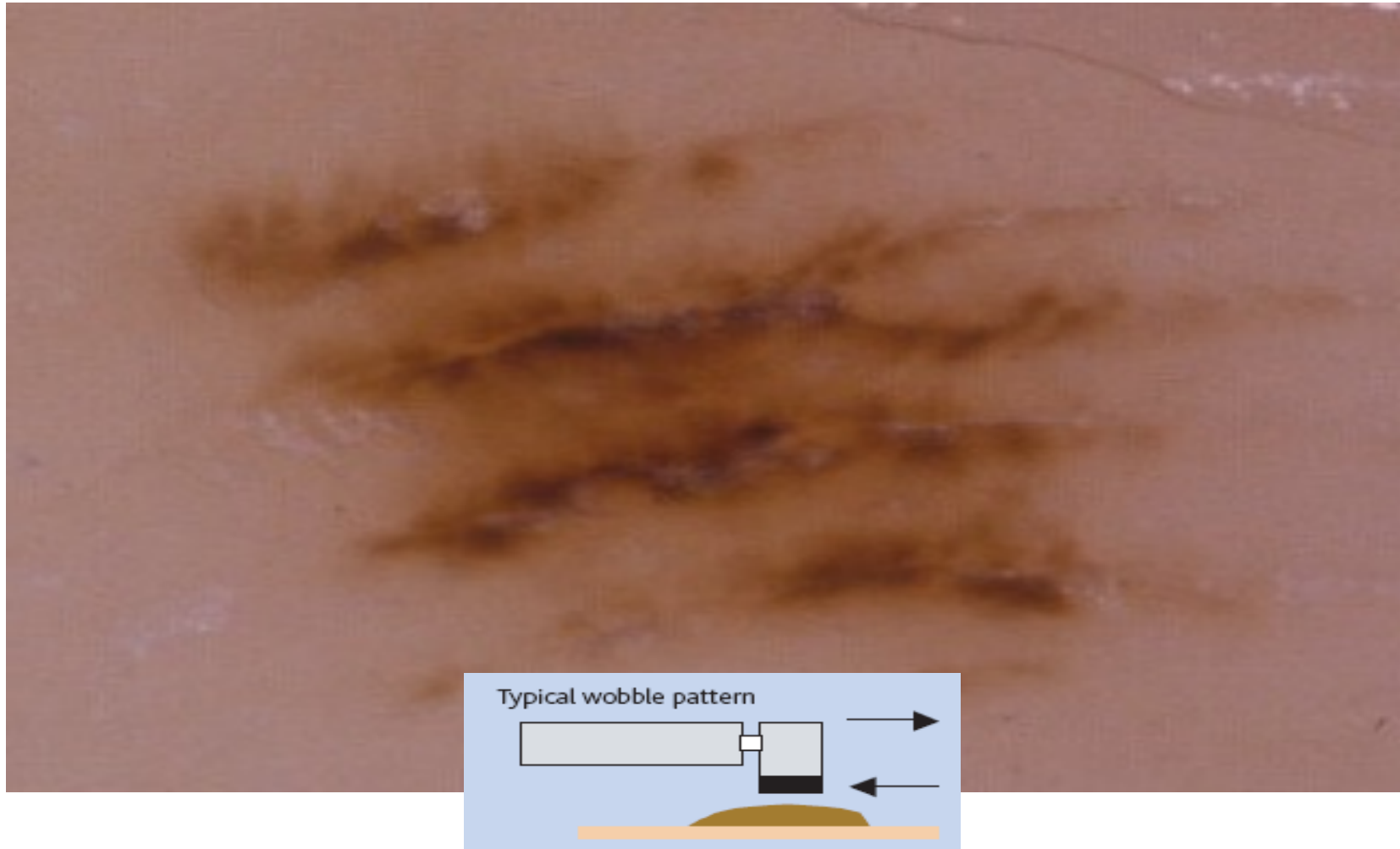


Dermatology 2009;218:385-386.

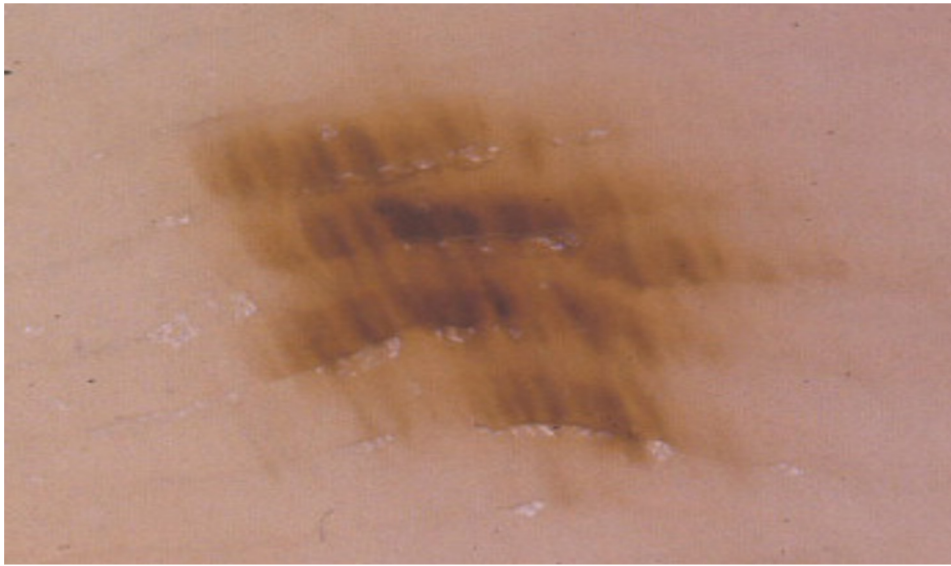


From Mivazaki et al. J Am Acad Dermatol 2005

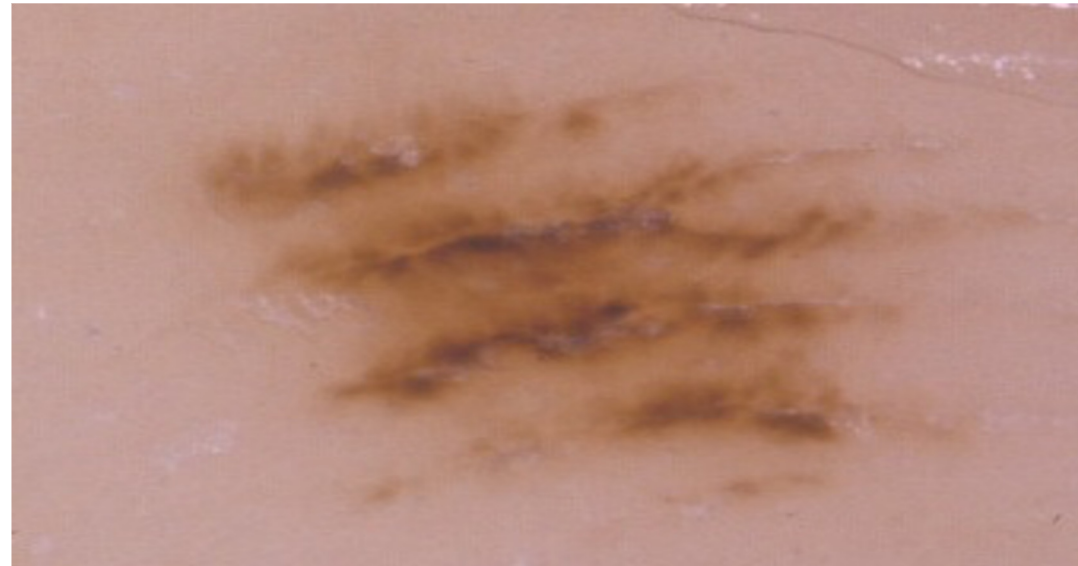
Fibrillar pattern anchored in the furrows (Type A)



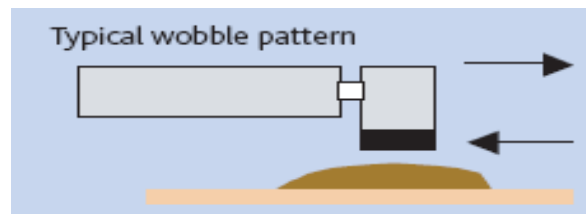
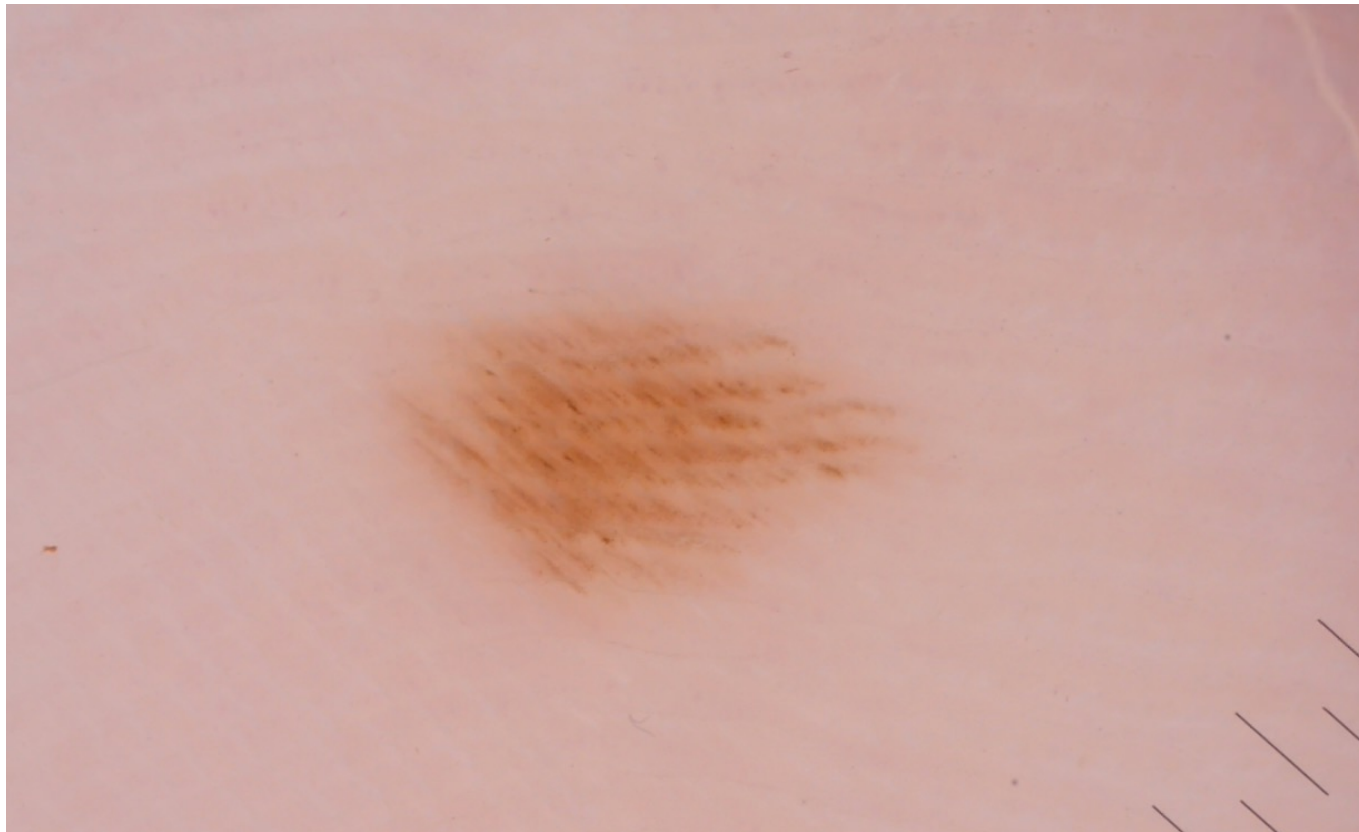
“Horizontal pressure”

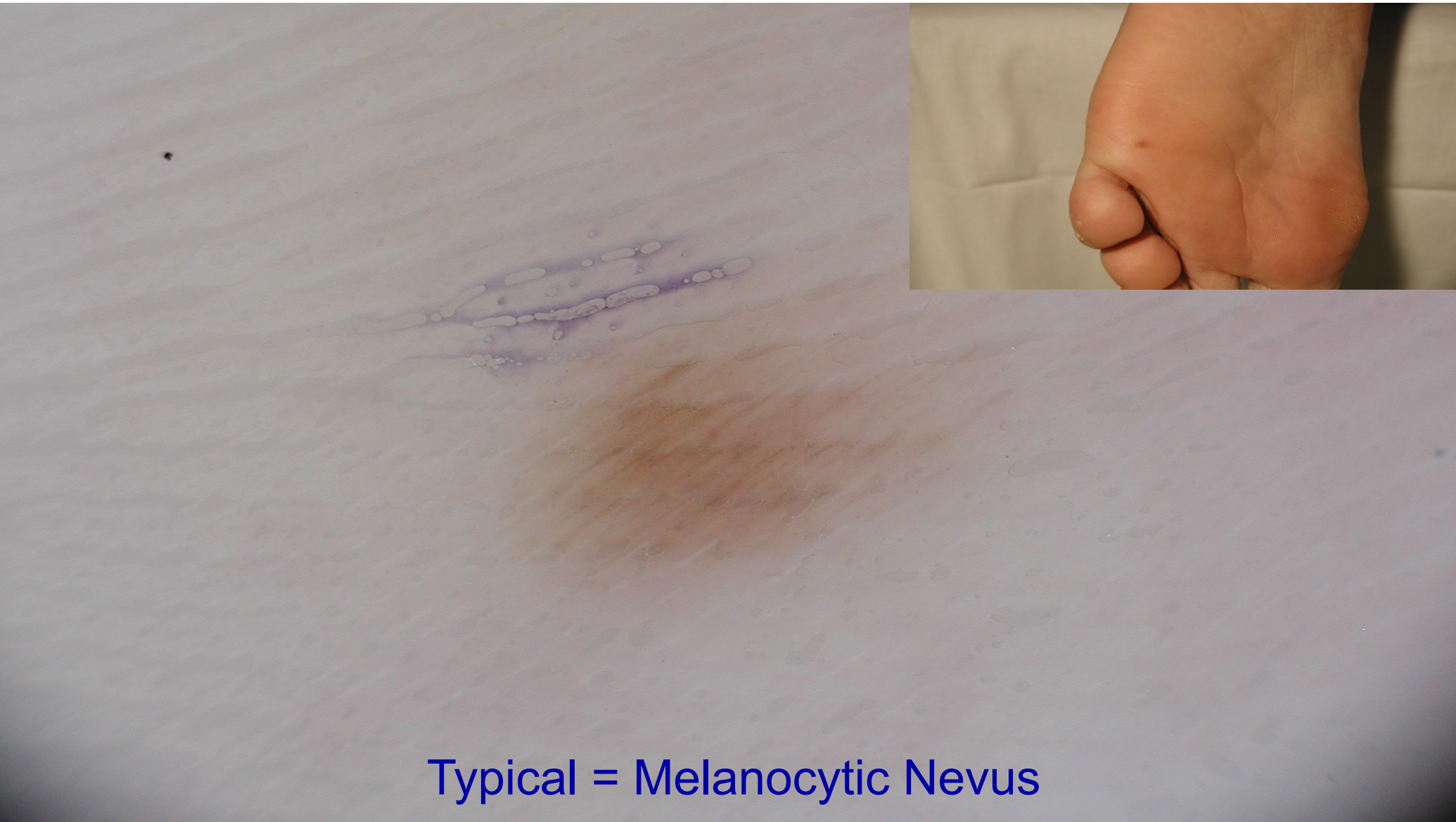


At rest: fibrillar

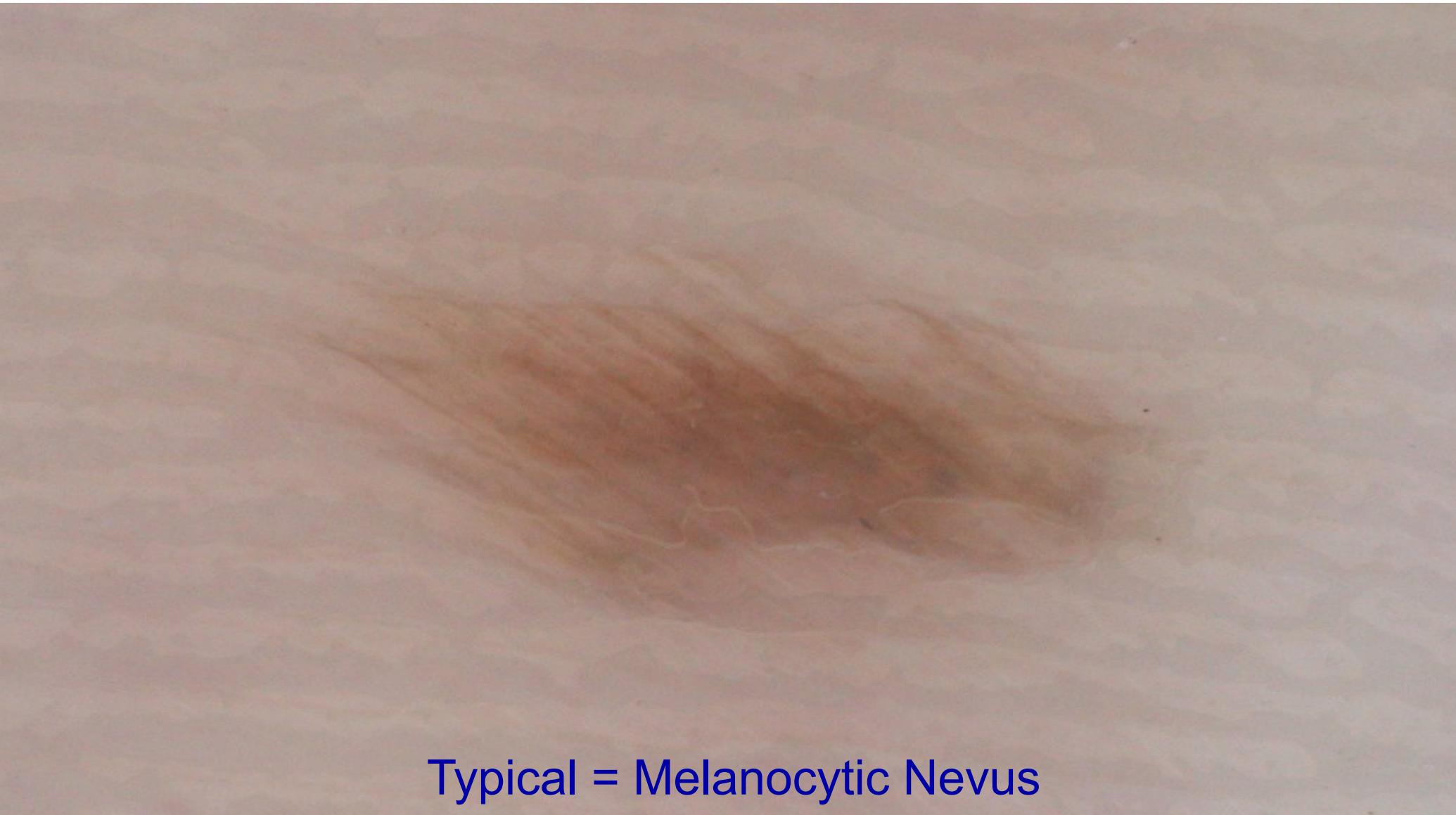


Horizontal pressure: furrow

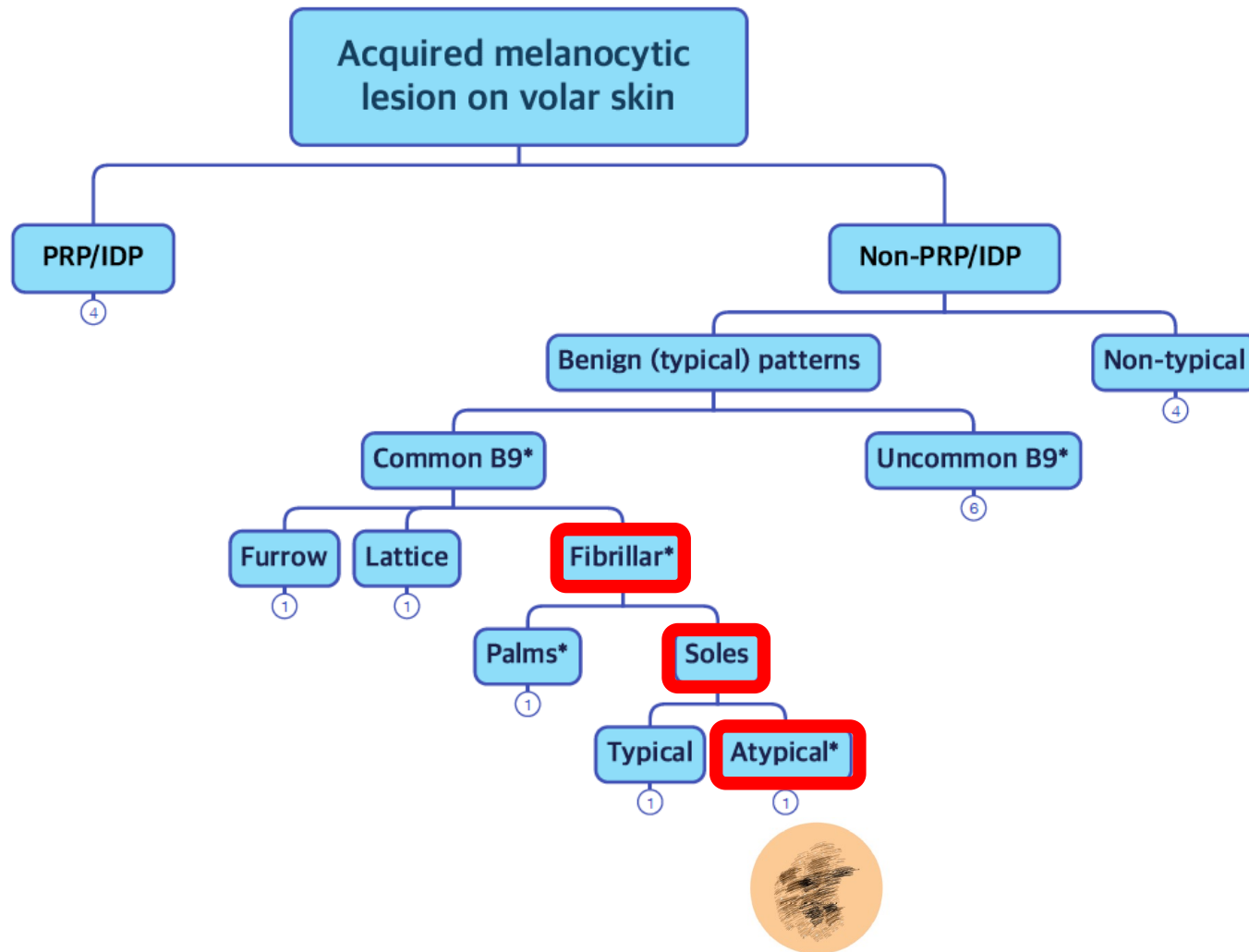




Typical = Melanocytic Nevus

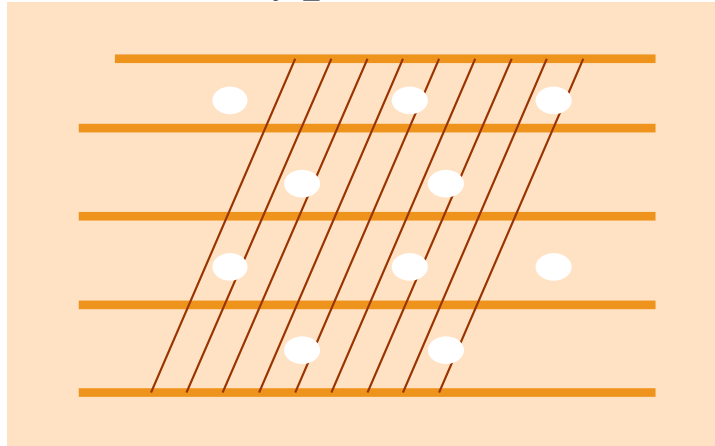
A close-up photograph of a human skin surface showing a typical melanocytic nevus. The lesion is an oval-shaped, light brown to tan macule with slightly irregular borders. It has a subtle, mottled appearance with some darker brown areas interspersed with lighter tan areas. The surrounding skin is fair and shows some natural texture and fine lines.

Typical = Melanocytic Nevus



Atypical Fibrillar pattern: anchored in ridges & disorganized

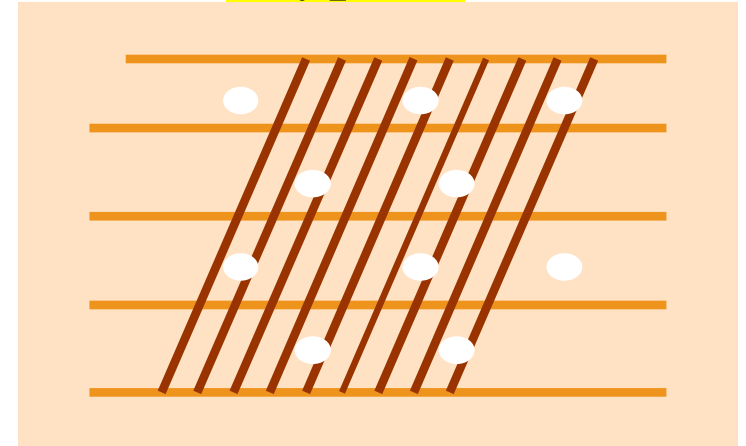
Typical



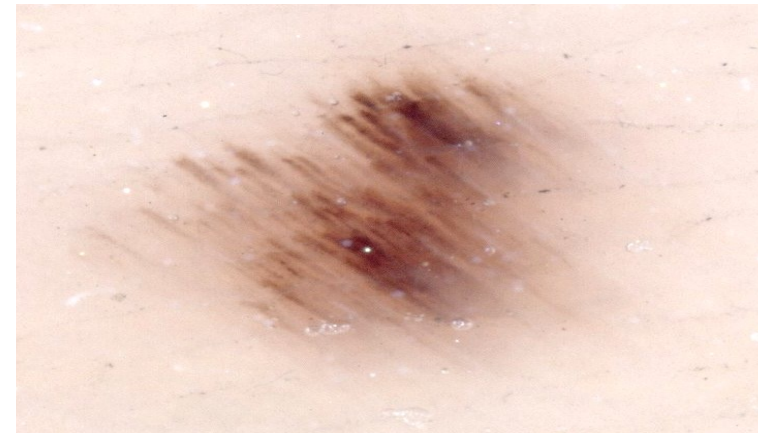
Junctional/compound nevus



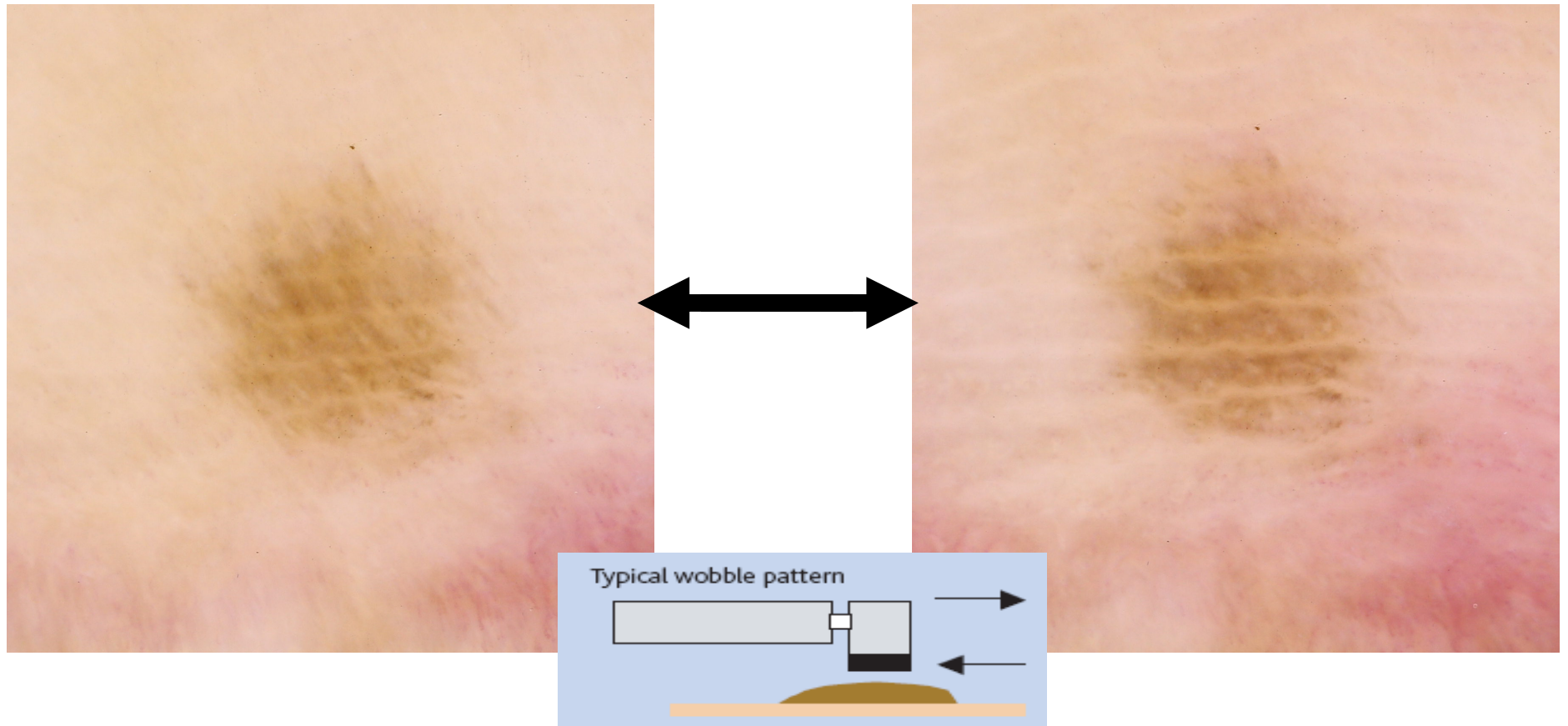
Atypical



Melanoma in situ

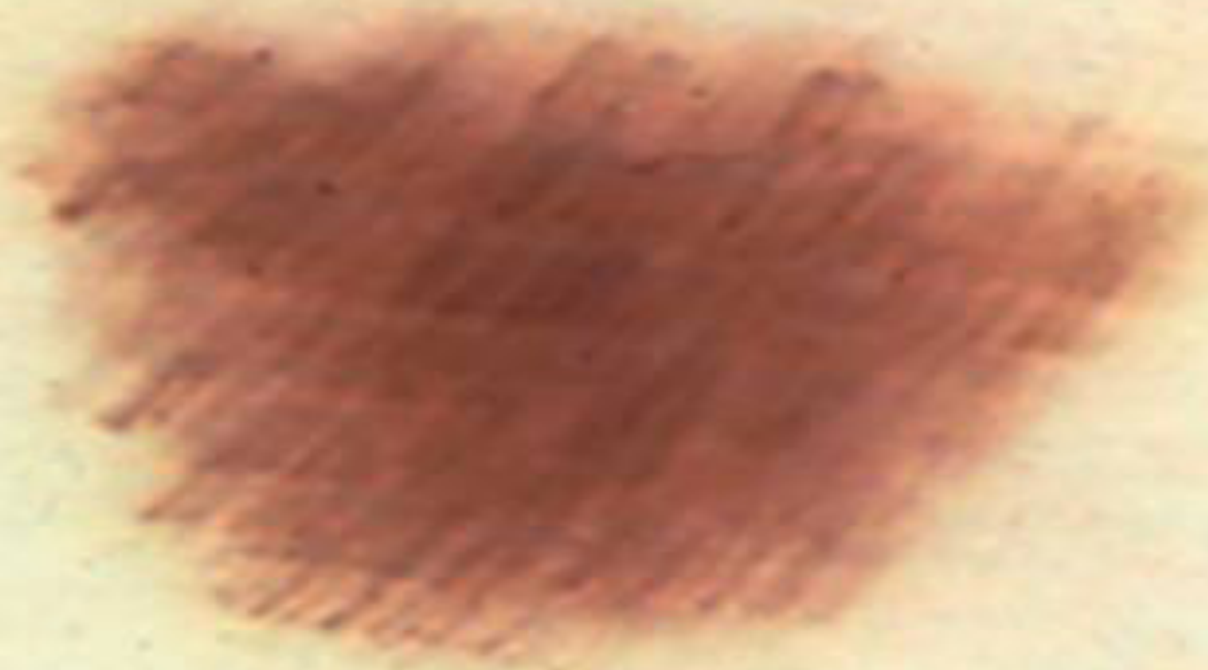


Fibrillar pattern anchored on the ridges (Type B)

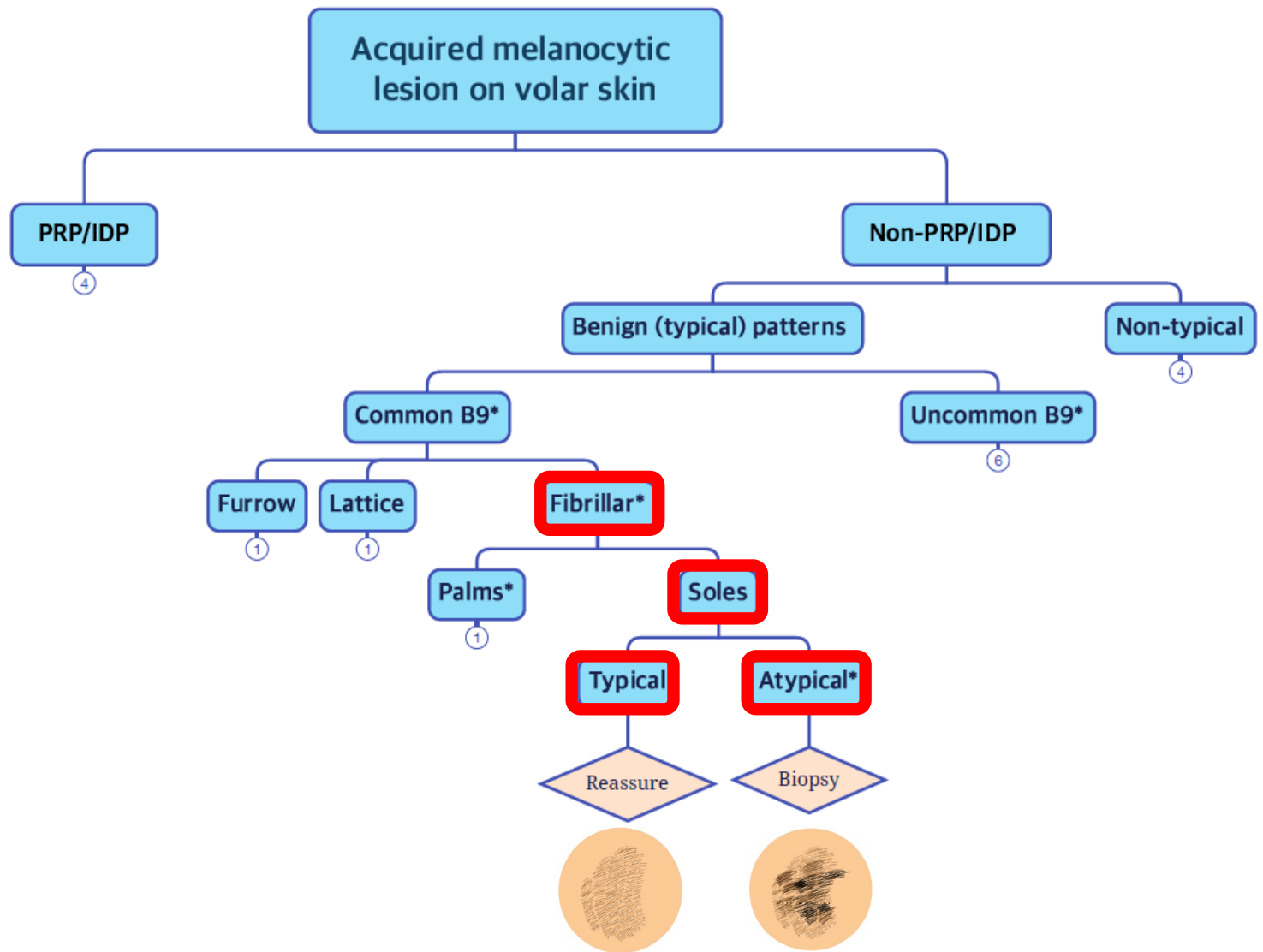


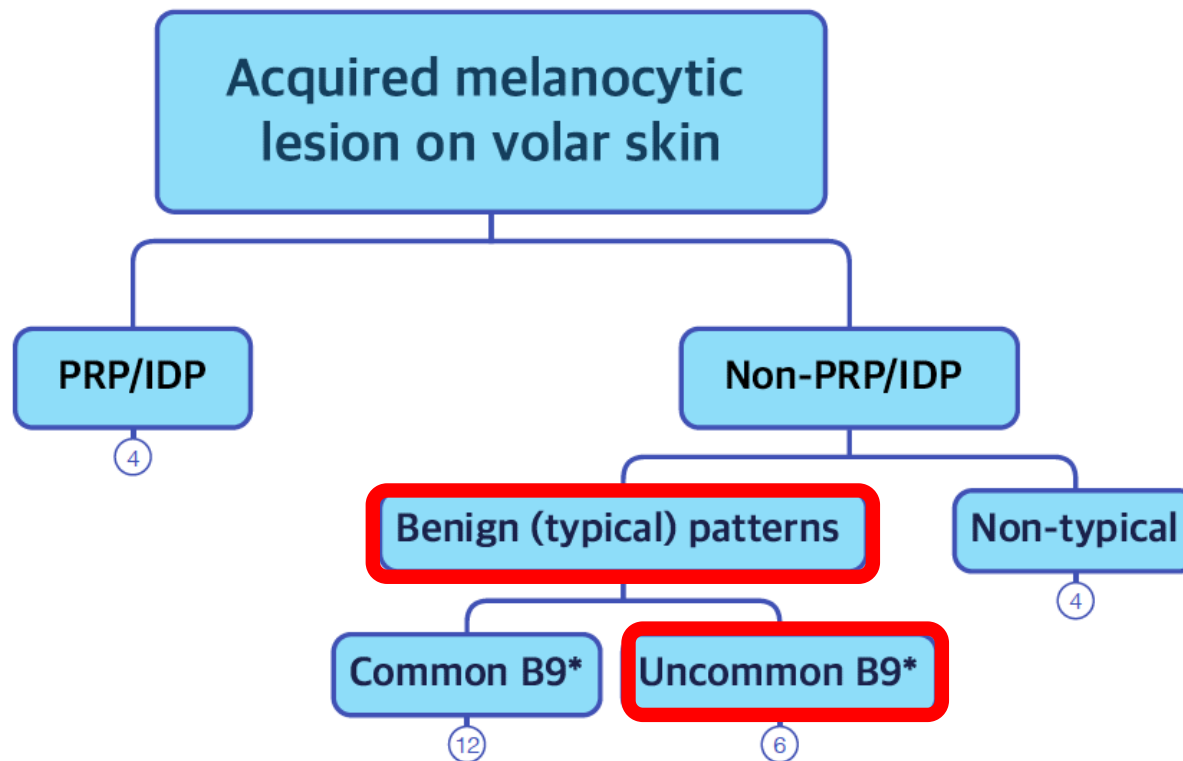


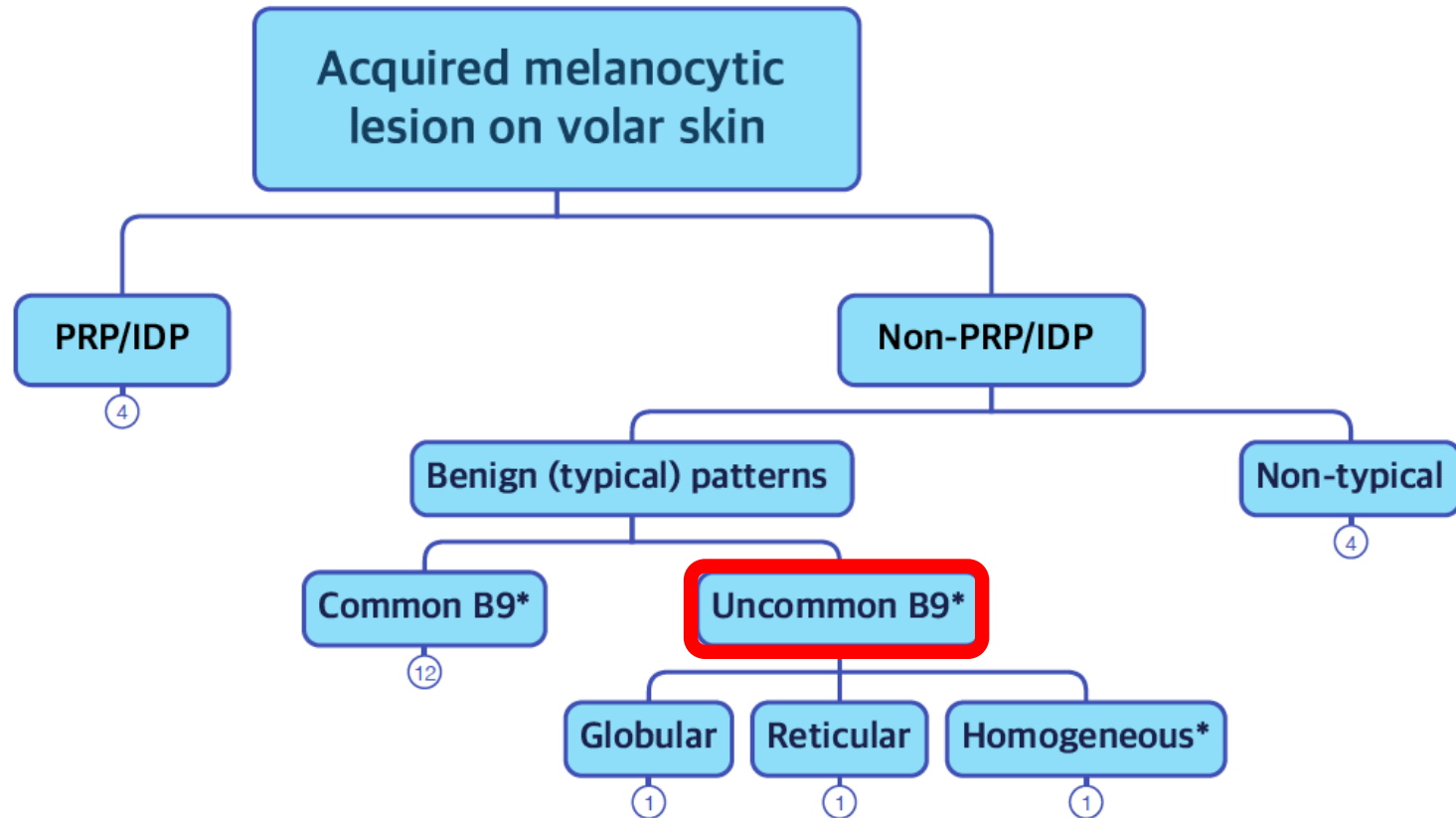
Type B = Melanoma



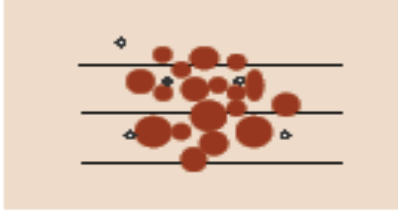
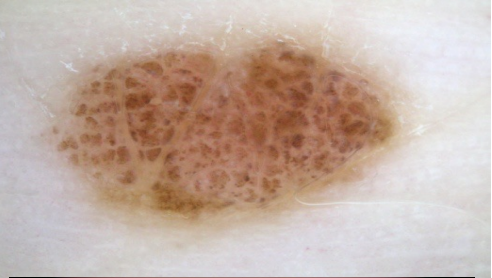
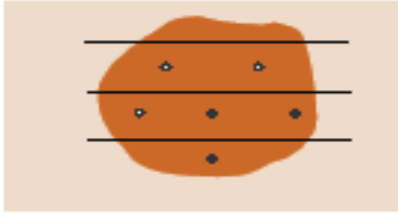
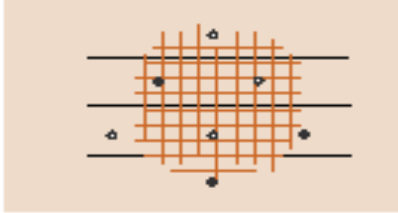
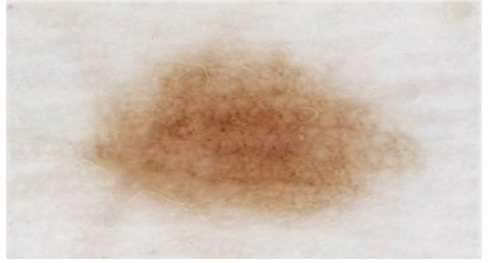
Type B = Melanoma





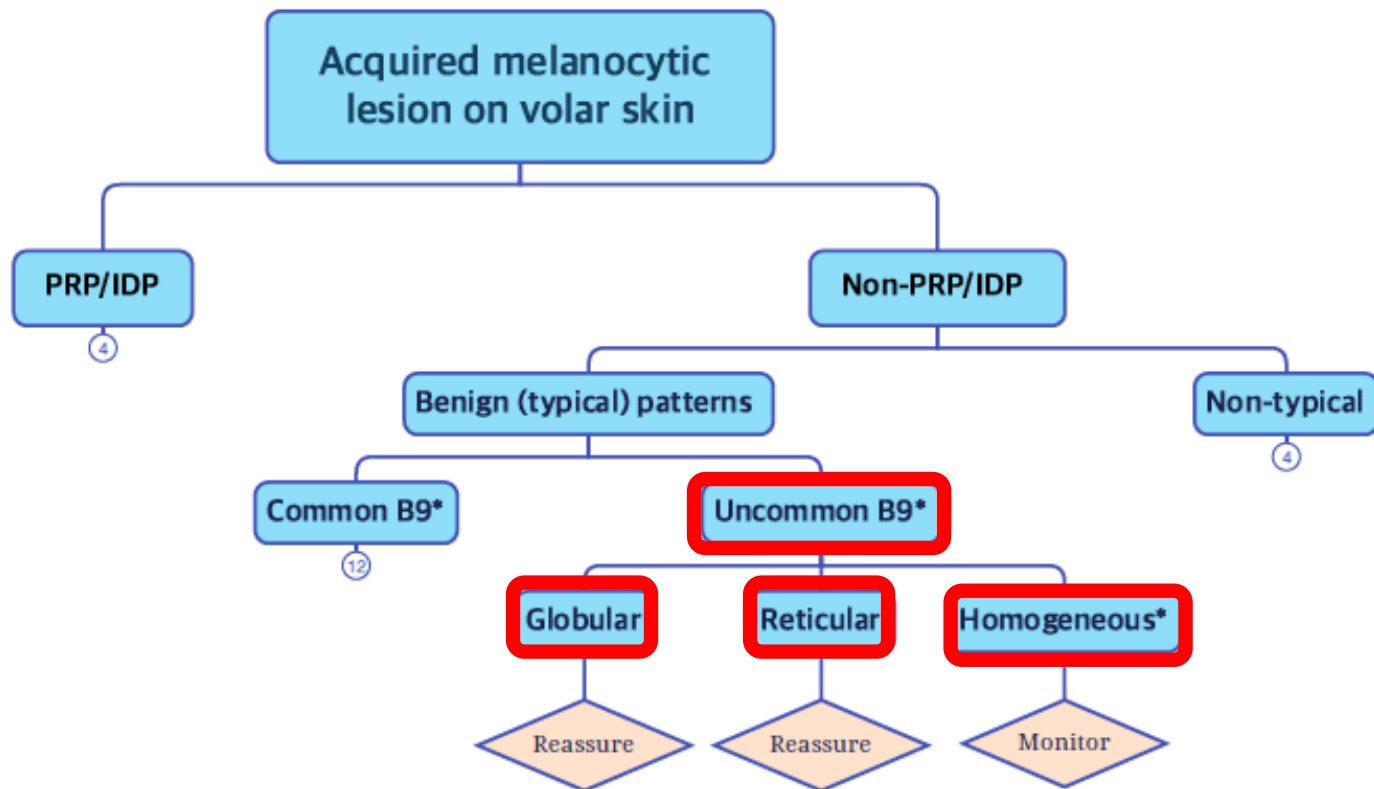


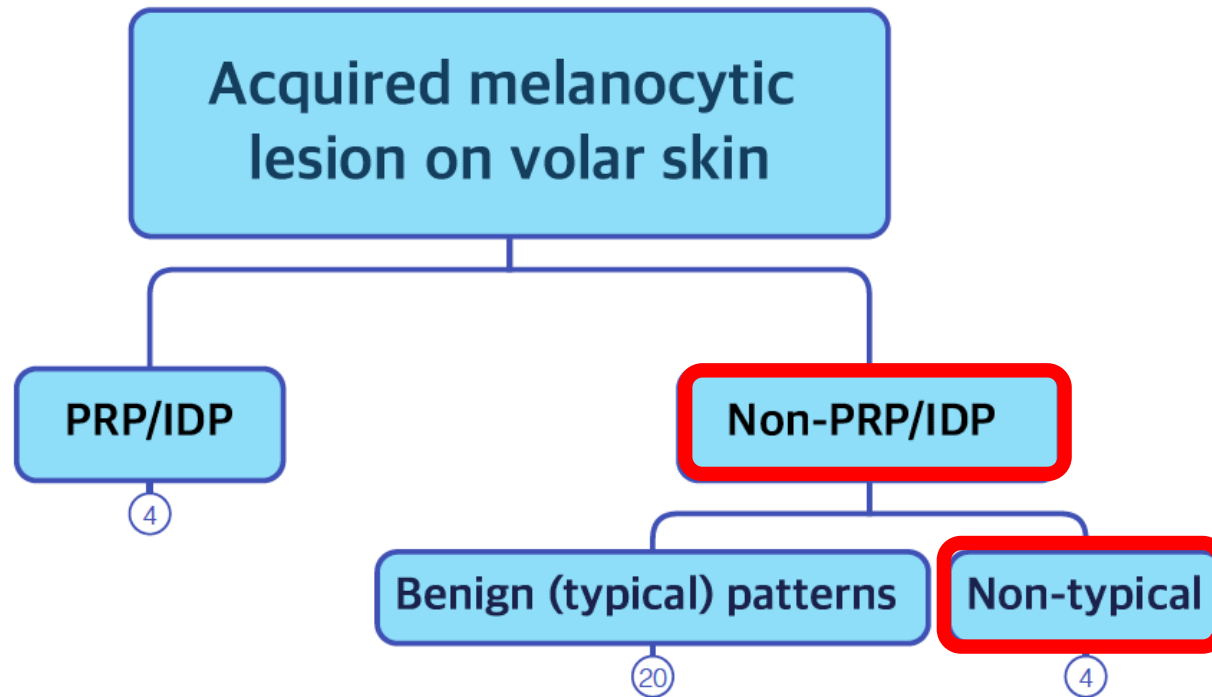
Uncommon benign patterns

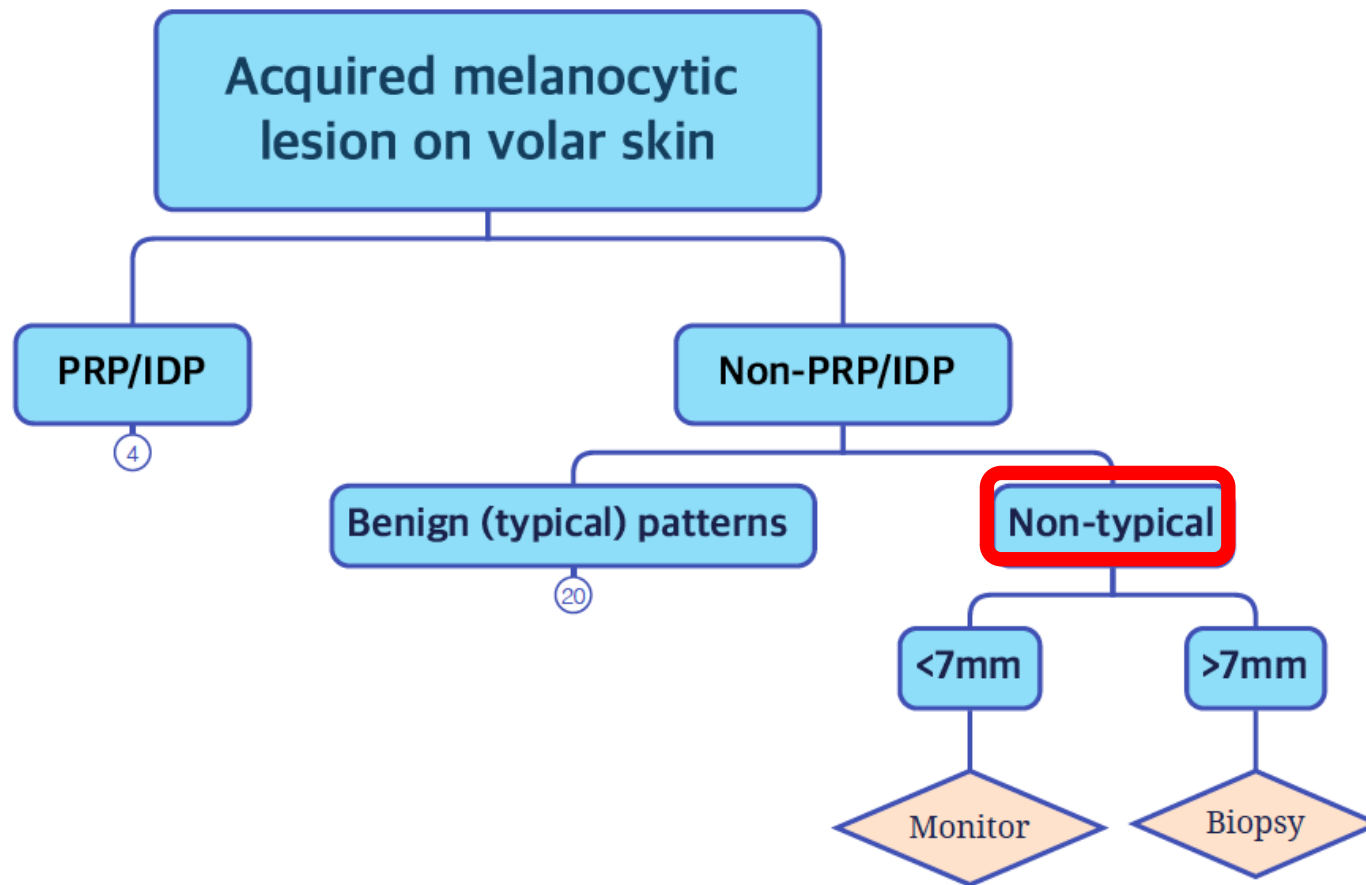
Globular pattern	Globules not associated with a parallel pattern	 A diagram showing a cluster of red circles (globules) of various sizes. Three horizontal black lines pass through the cluster, and small black dots are scattered around the globules, indicating they are not aligned with the lines.	 A clinical photograph of a skin lesion showing a globular pattern, characterized by numerous small, brown, rounded pigmented structures.
Homogeneous pattern *	Light brown homogeneous pigmentation with an amorphous appearance	 A diagram showing a solid, light brown, amorphous shape. Three horizontal black lines pass through it, with small black dots scattered within the shape, indicating no specific alignment.	 A clinical photograph of a skin lesion showing a homogeneous pattern, appearing as a smooth, dark brown, oval-shaped pigmented area.
Acral reticular pattern	Well-defined pigment network not associated with the skin markings	 A diagram showing a well-defined grid-like pattern of orange lines. Three horizontal black lines pass through the grid, and small black dots are scattered around the grid, indicating it is not aligned with the lines.	 A clinical photograph of a skin lesion showing an acral reticular pattern, characterized by a brown, grid-like pigmented network.

- Blue nevi on volar surfaces cross ridges & furrows
- Often display slight IDP
- Monitor





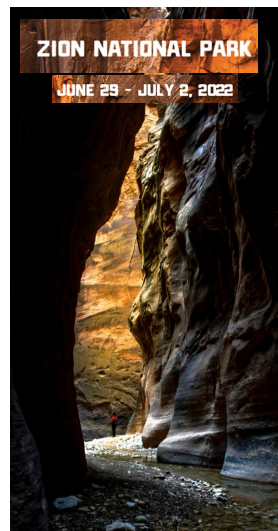
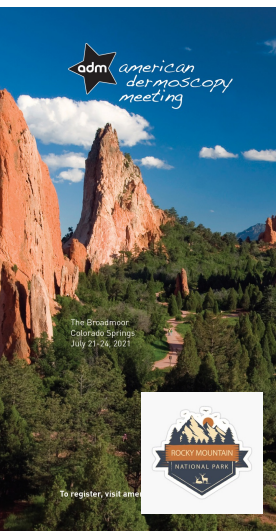
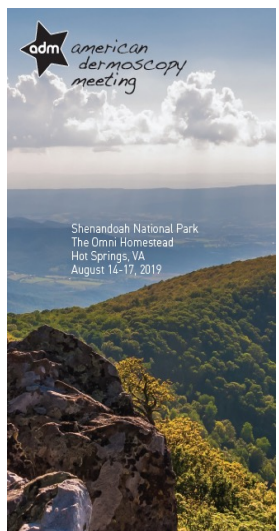
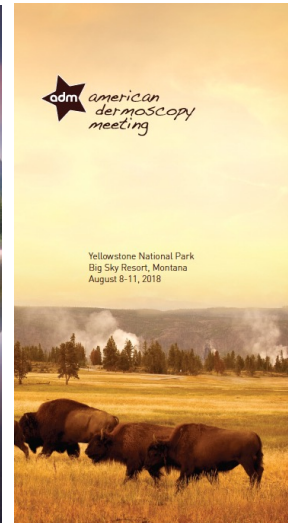
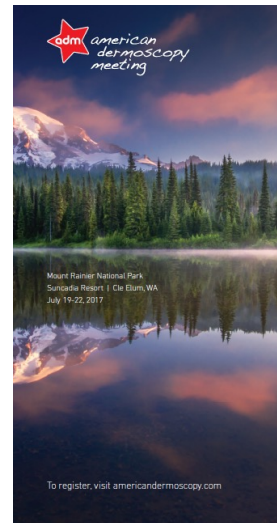
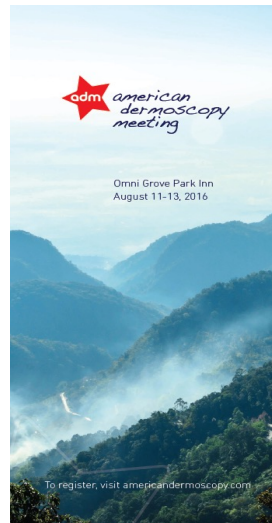
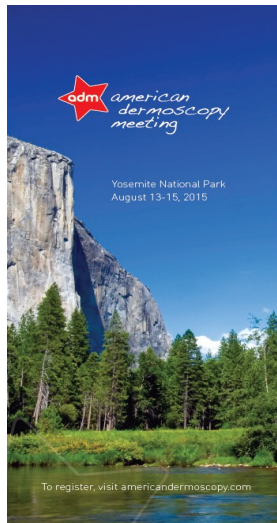
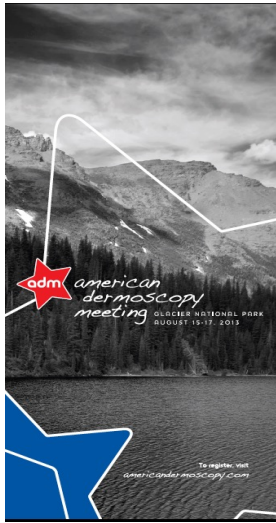




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