Evaluation of a Pigmented Nail Lesion

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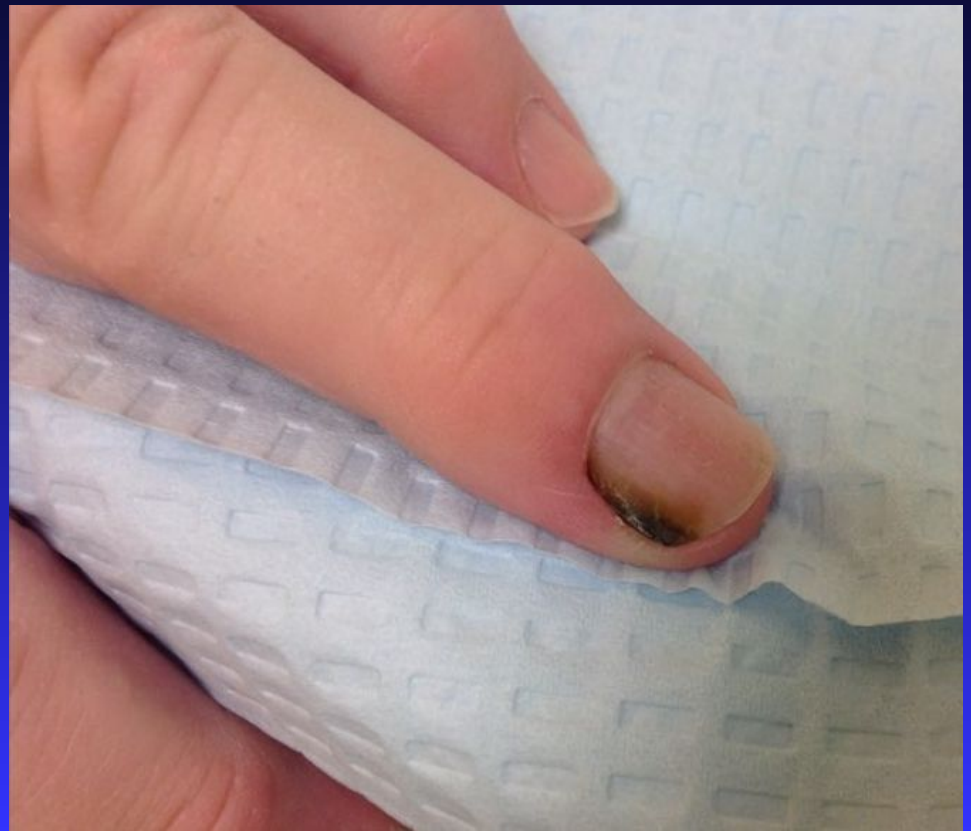
*No conflict of interest

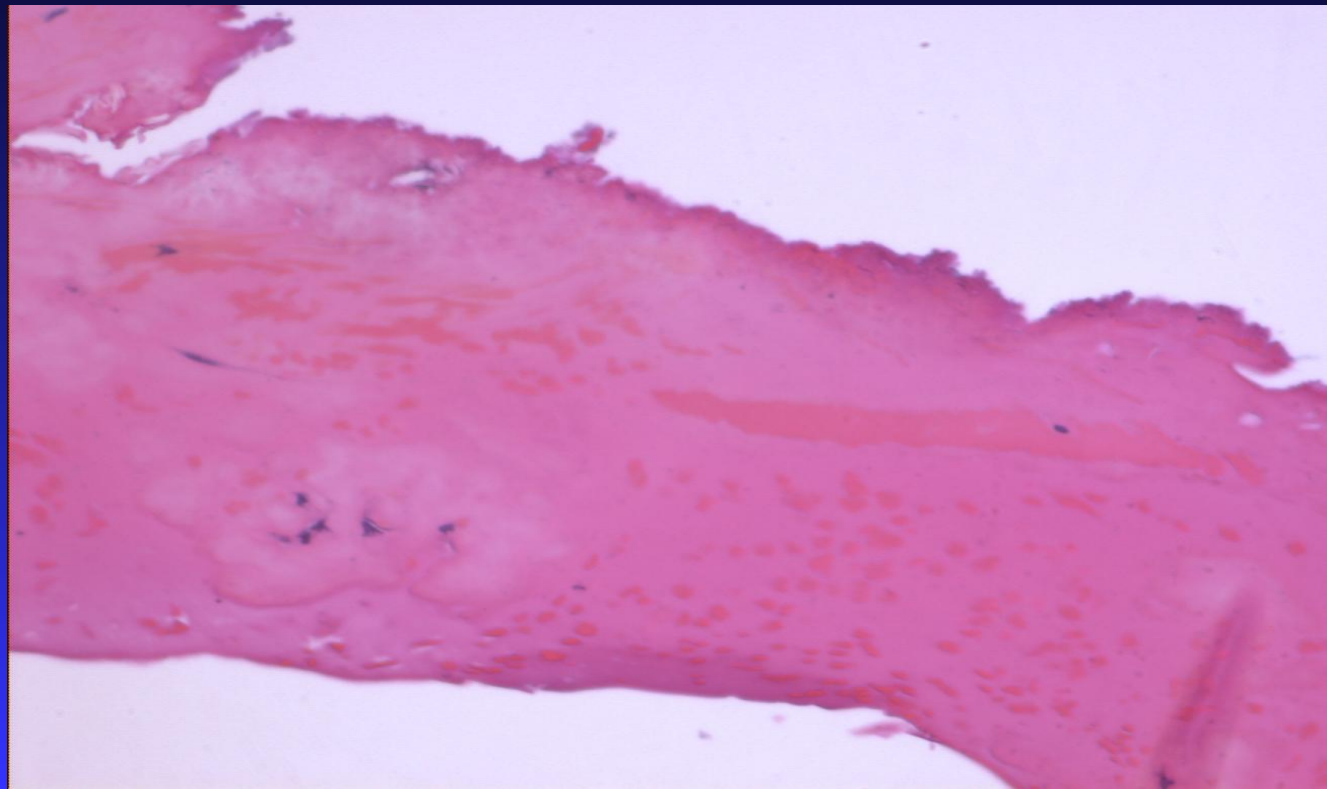
What is the source of the pigment?



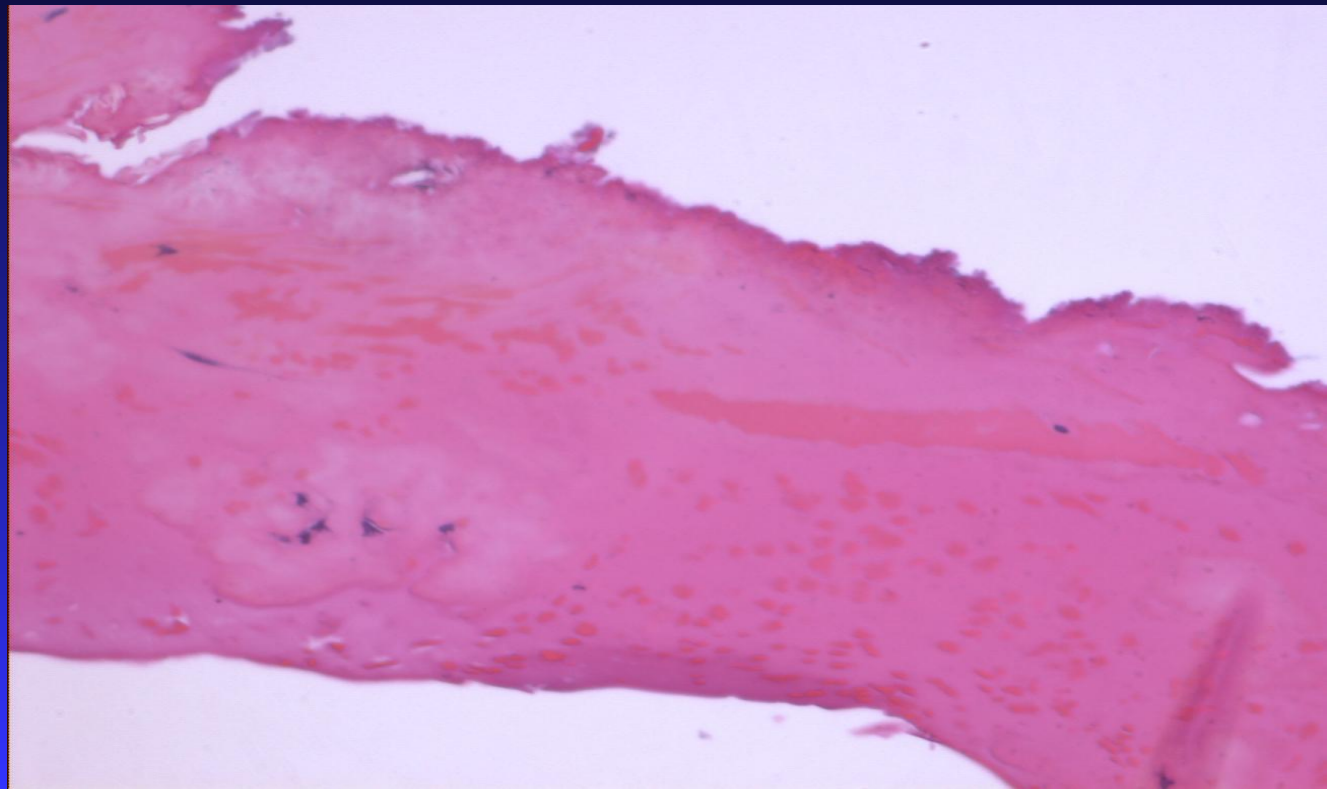
What is the source of the pigment?

- Melanocytic neoplasm
  - Benign
  - Malignant
- Melanocyte ‘activation’

Blood in nail plate

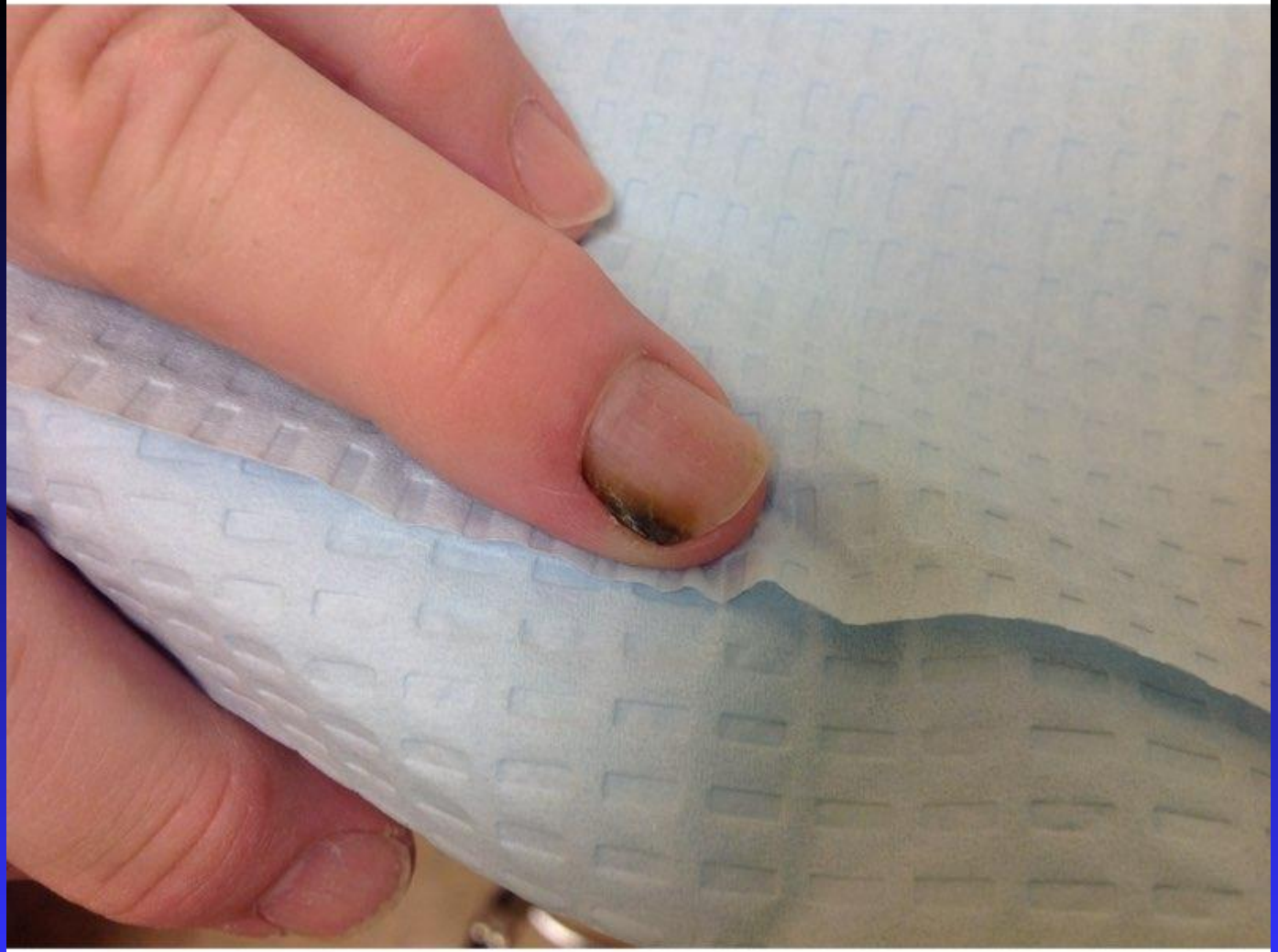


Perl's iron stain does not work.



What is the source of the pigment?

- Non-melanocytic
  - Trauma—blood



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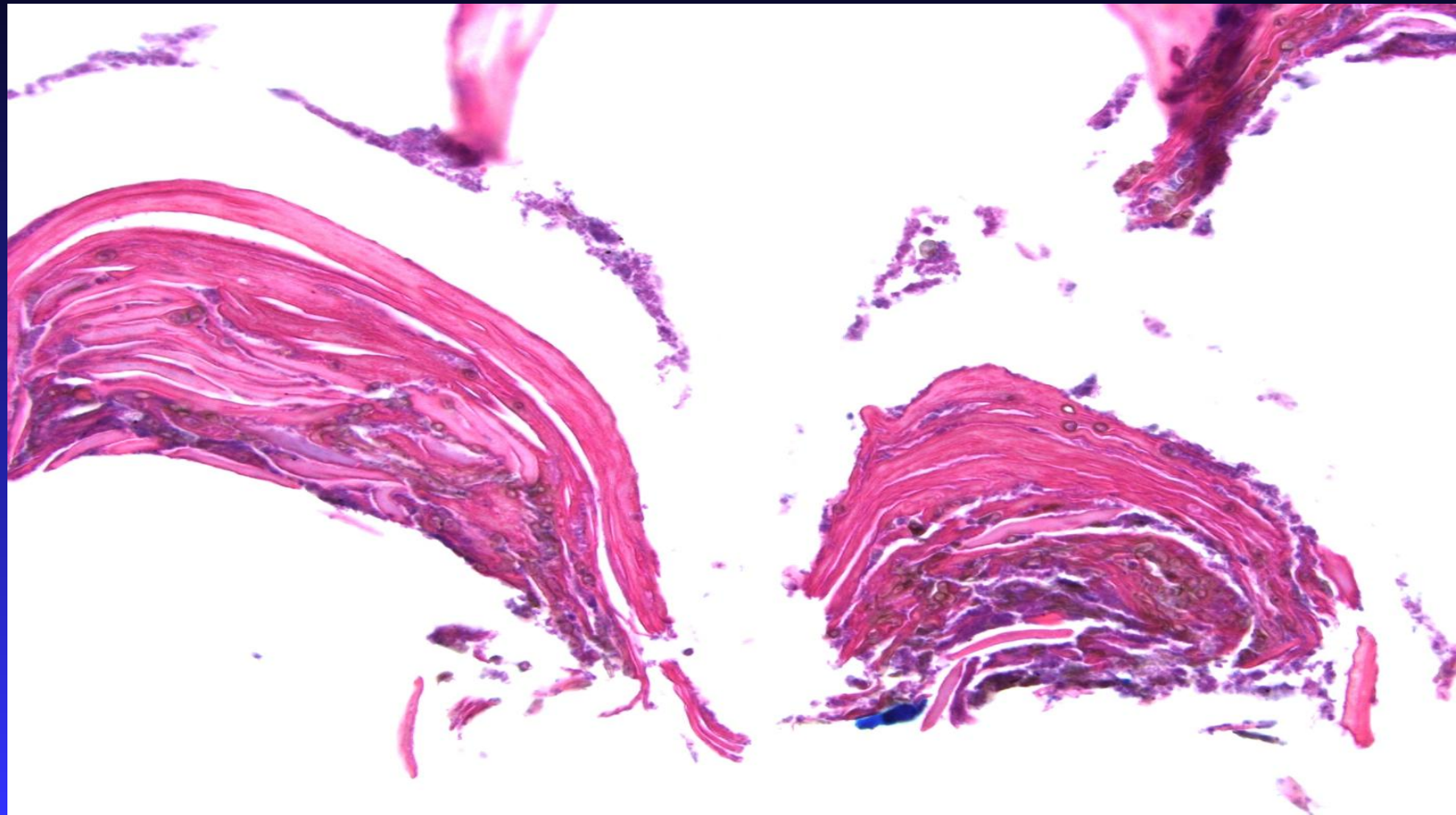
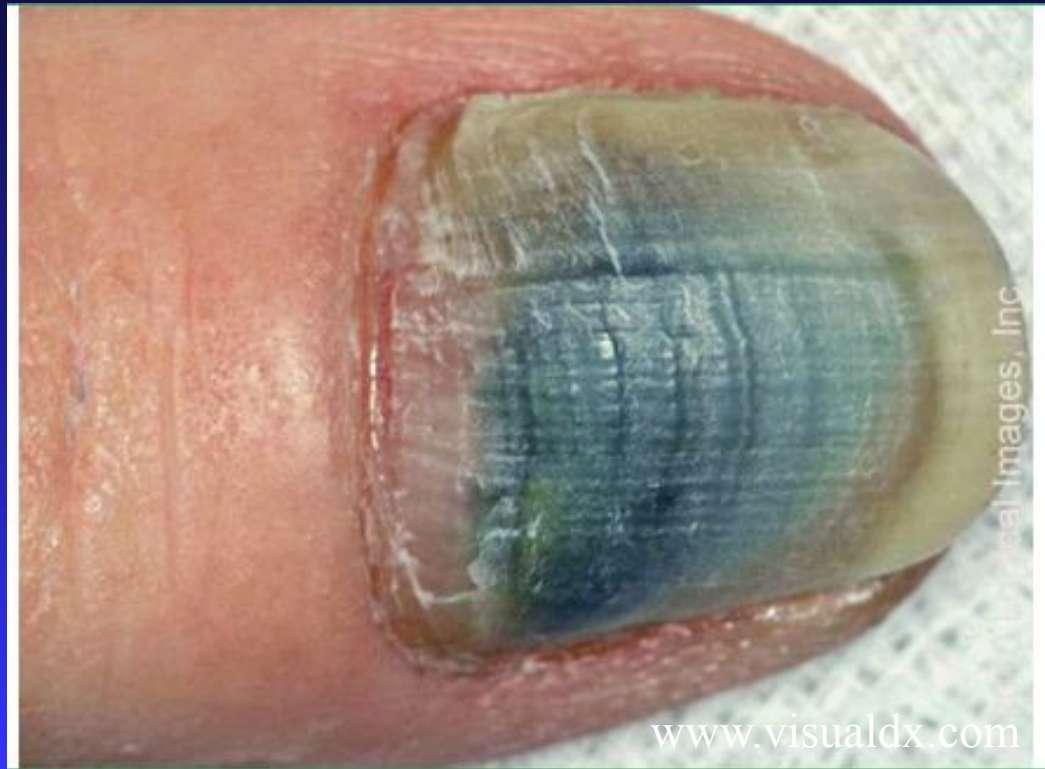
Pigmented fungus



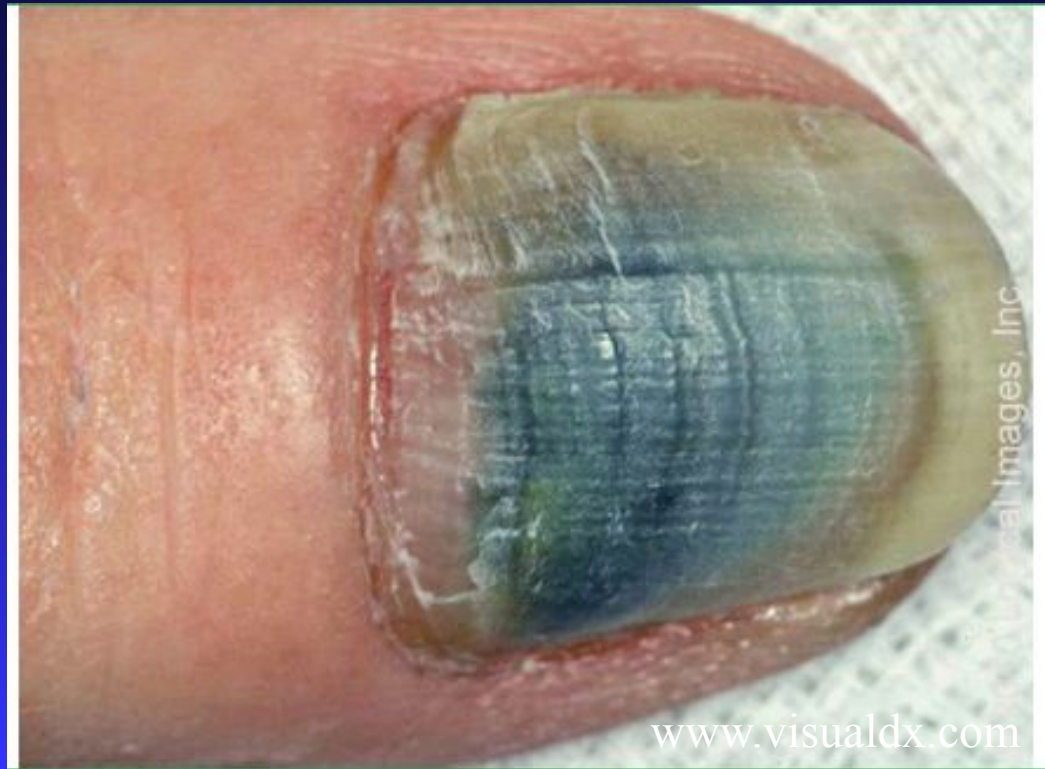
What is the source of the pigment?

- Non-melanocytic
  - Trauma—blood
  - Infection
    - Pigmented fungus

What is the source of the pigment?

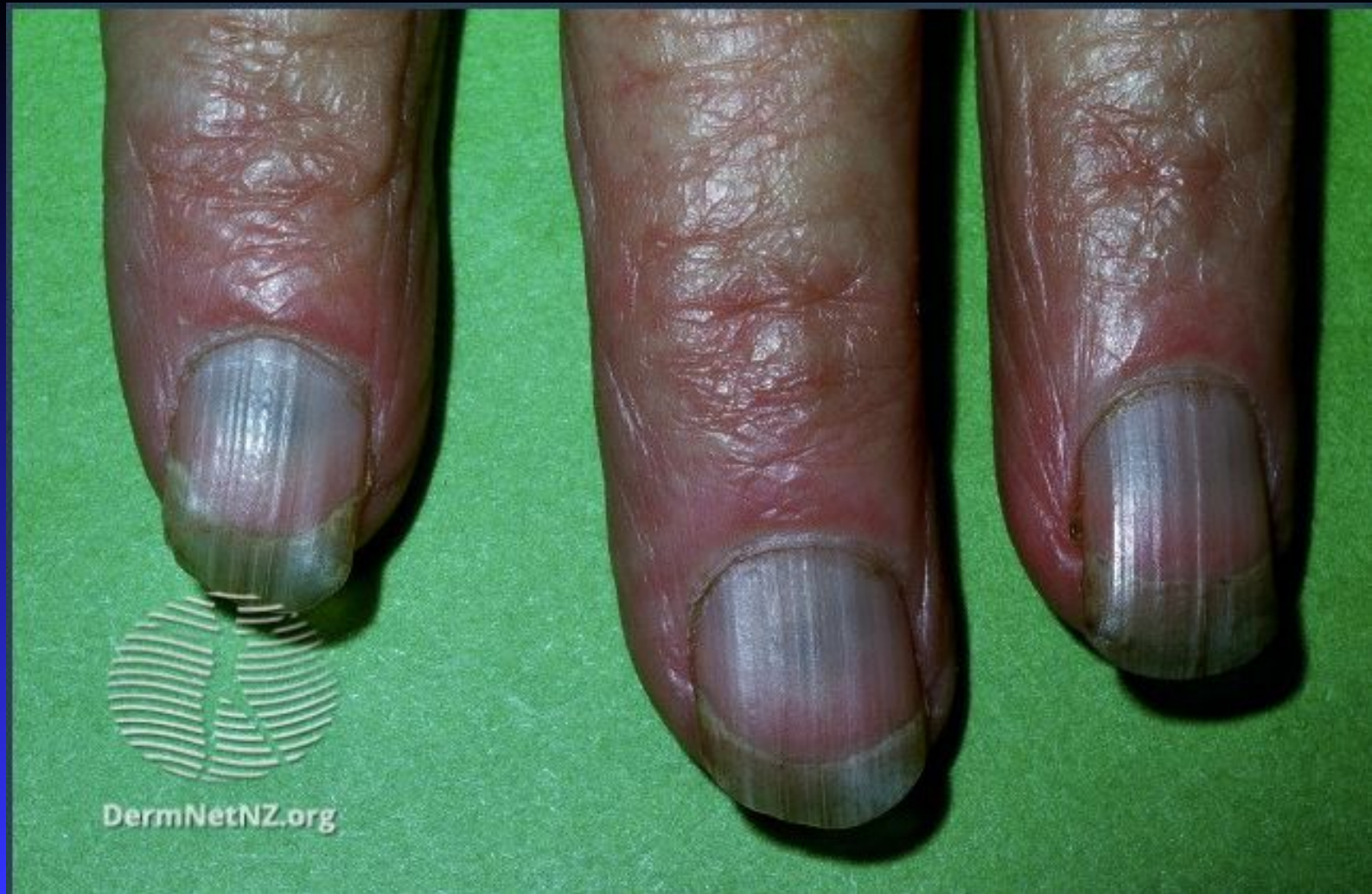


Pseudomonas *aeruginosa*

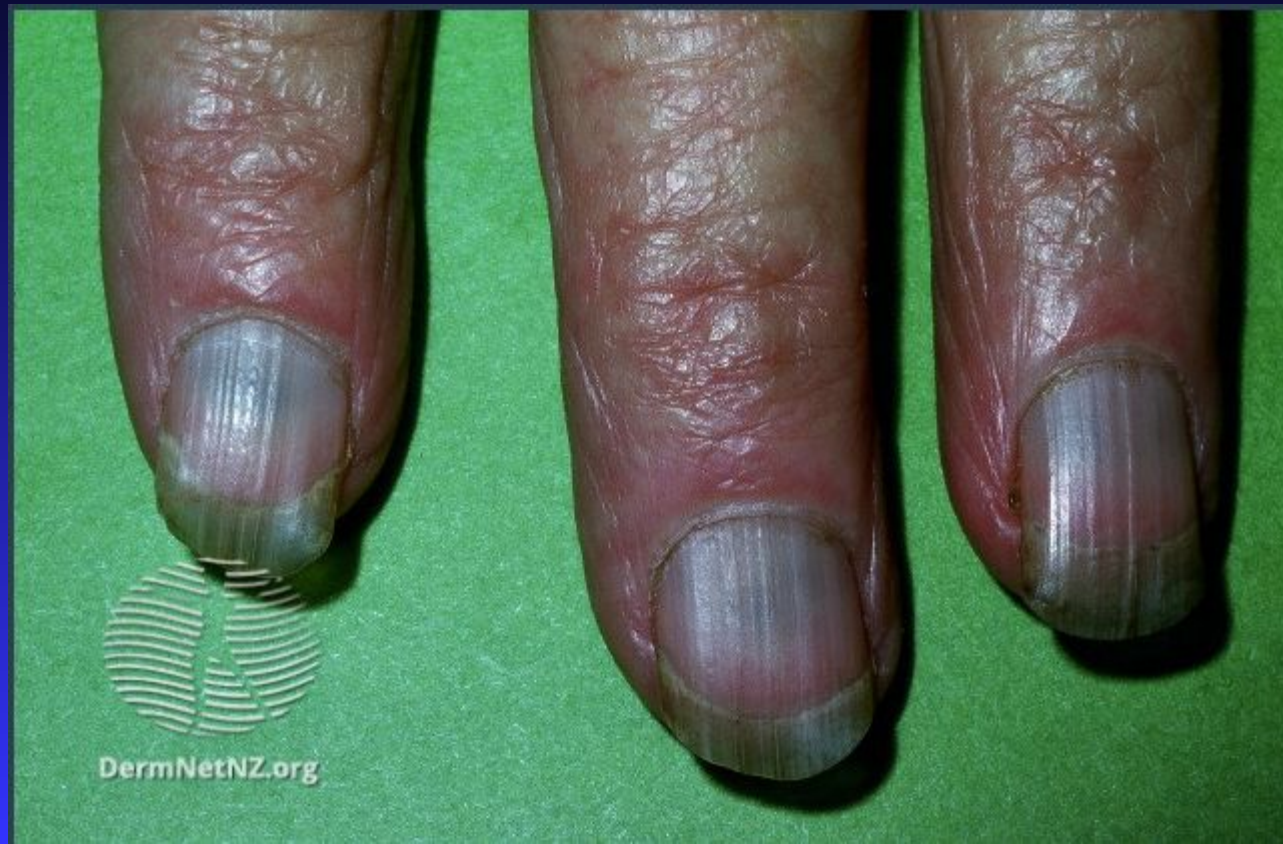


What is the source of the pigment?

- Non-melanocytic
  - Trauma—blood
  - Infection
    - Pigmented fungus
    - Bacteria (Pseudomonas)

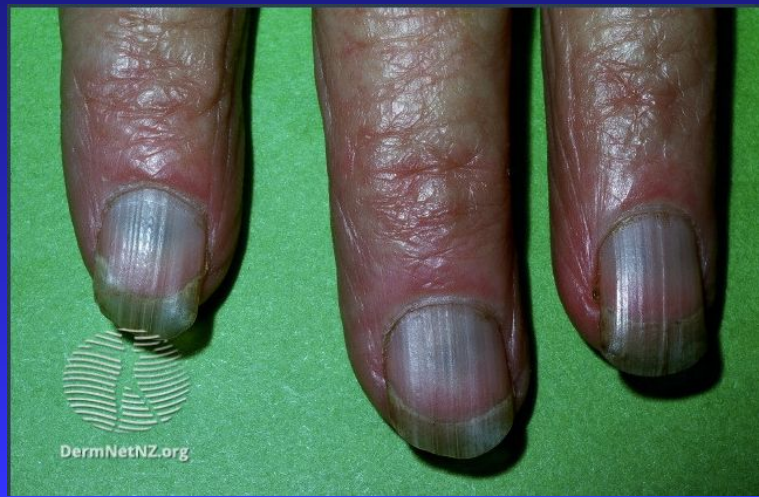


Drug deposition



Drug deposition

- Multiple nails
- Iron and melanin may be present



Drug

- Deposition
- Change in growth rate of nail
- Hemorrhage

Drug

- Deposition
- Change in growth rate of nail
- Hemorrhage (splinter or subungual)
  - Anticoagulants and antiplatelet agents
  - Taxanes
  - Tetracyclines
  - EGFR inhibitors (imatinib, etc)

What is the source of the pigment?

- Non-melanocytic
  - Trauma—blood
  - Infection
    - Pigmented fungus
    - Bacteria (Pseudomonas)
  - Drug

What is the source of the pigment?

- Melanocytic neoplasm
  - Benign
  - Malignant
- Melanocyte ‘activation’

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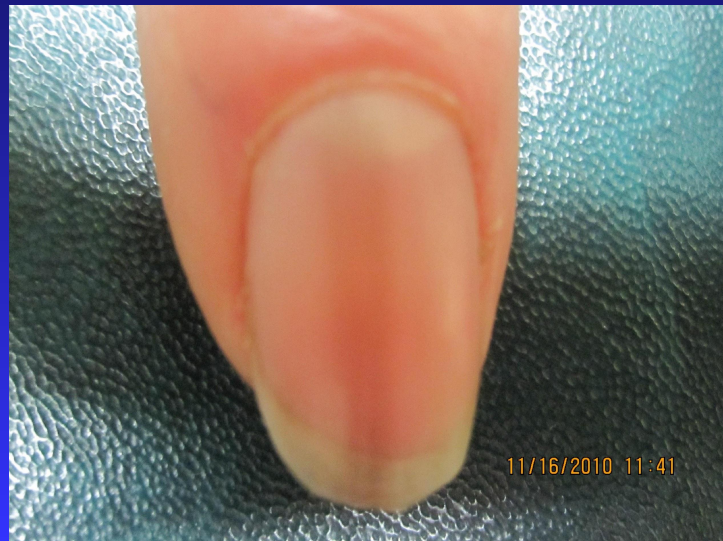
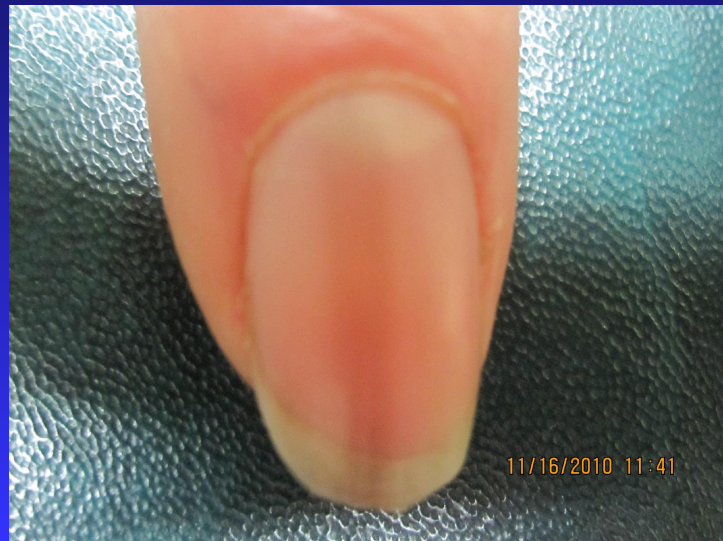
Longitudinal melanonychia



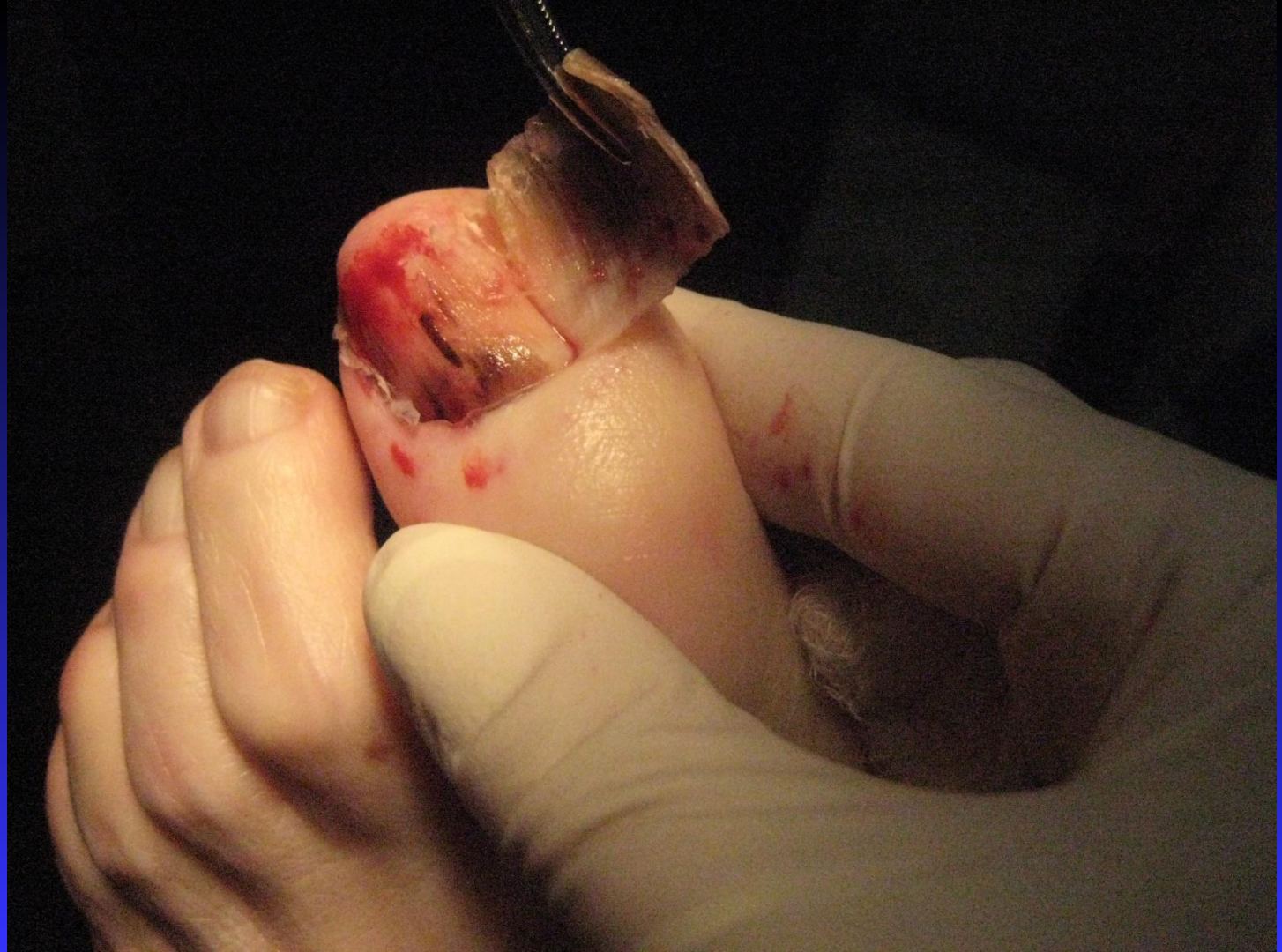
Challenge

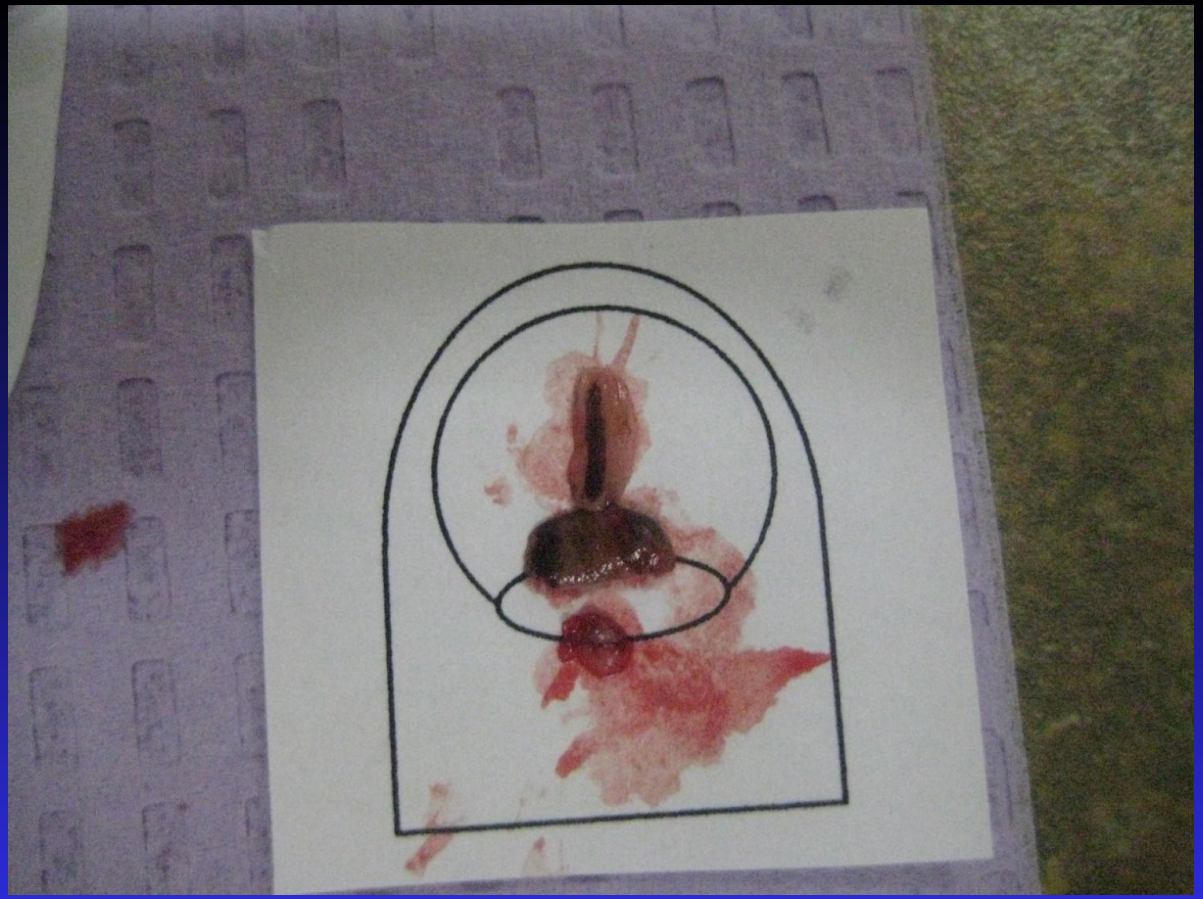
- Identifying source of clinical pigmentation



Finding the pigment

- H&E with initial levels
- MelanA IHC
- Fontana-Masson
- PAS fungus
- Unstained slides





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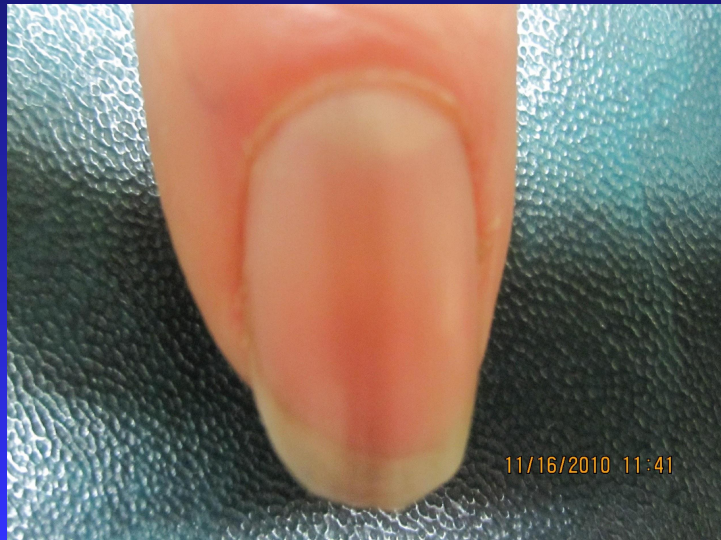
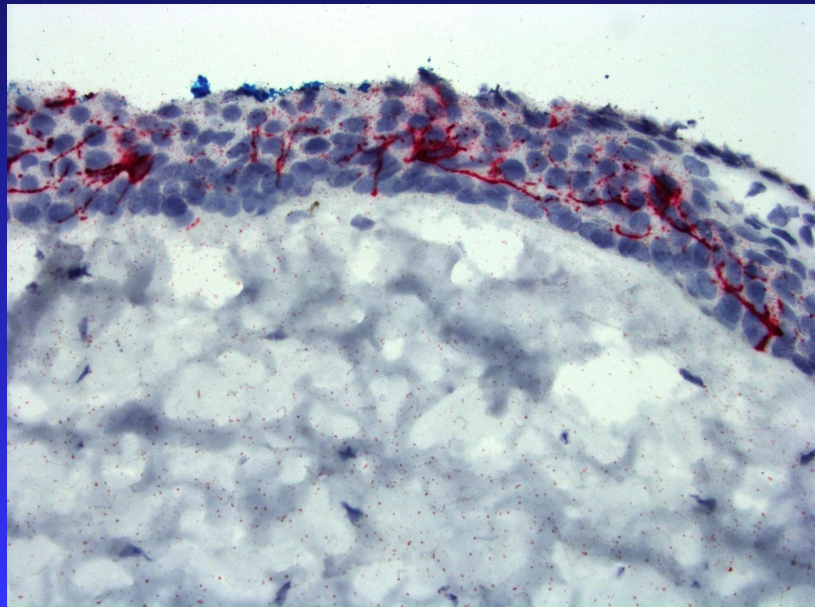
How to find the pigment

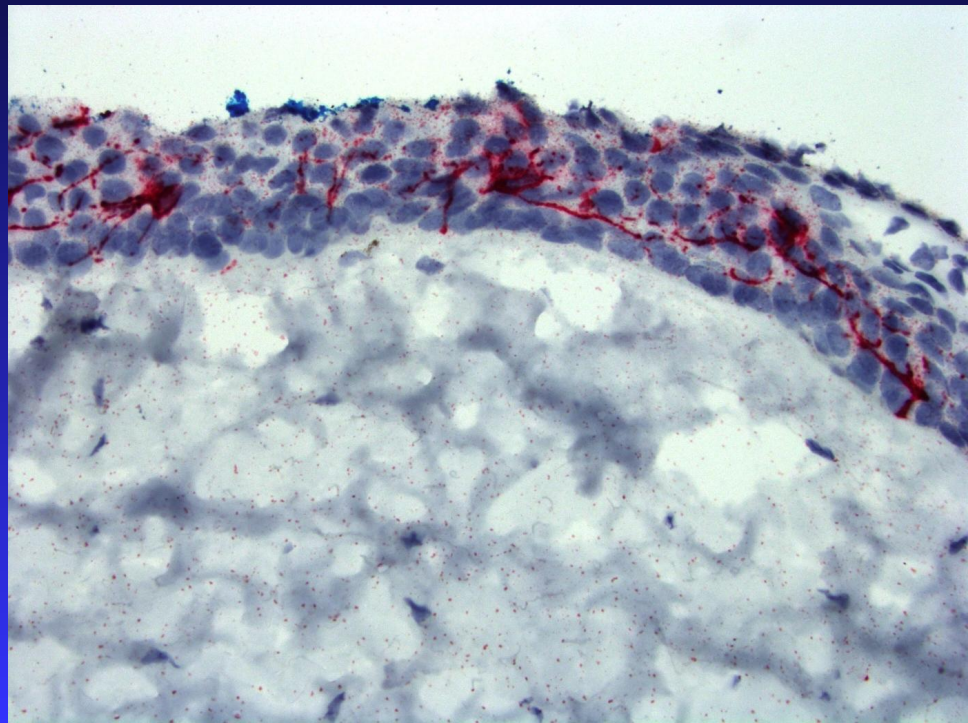


MelanA/Mart1

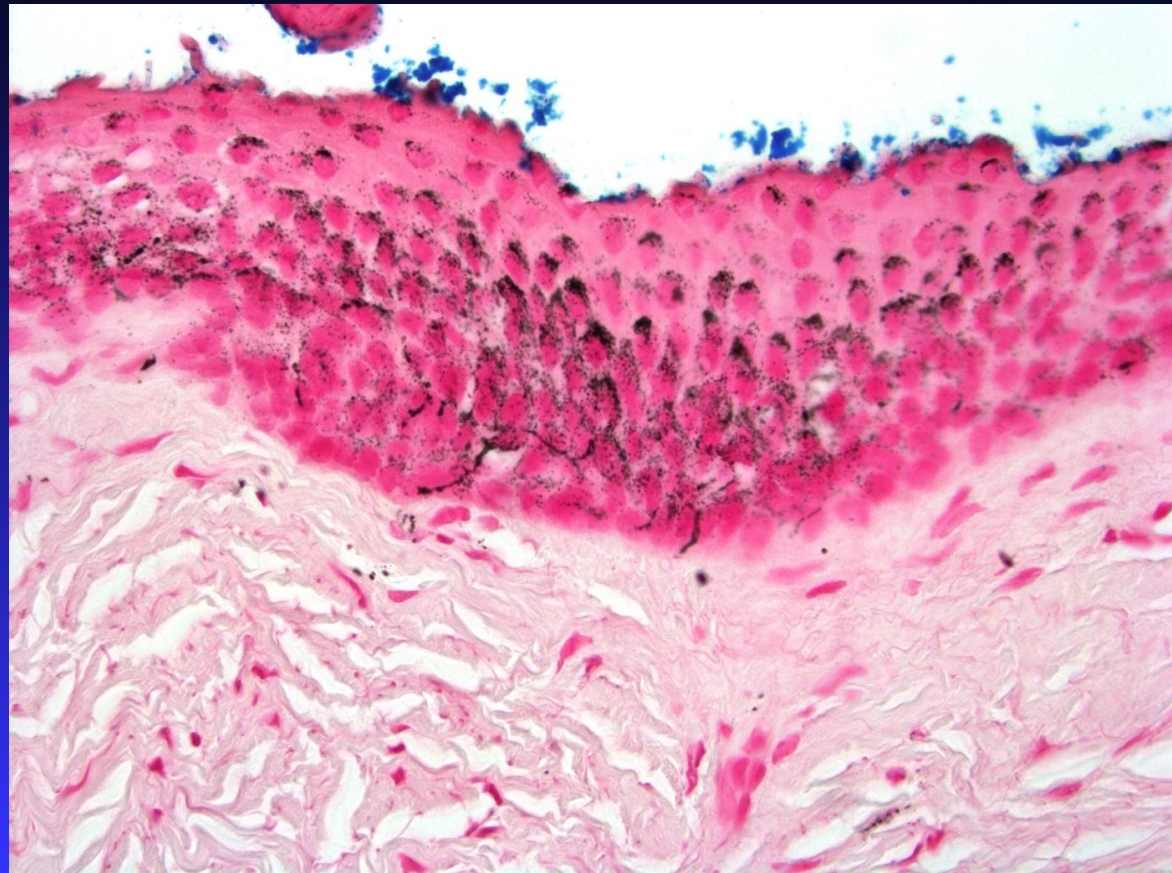
- Melanocyte density
- Red chromogen



melanA/Mart-1 is better than SOX-10



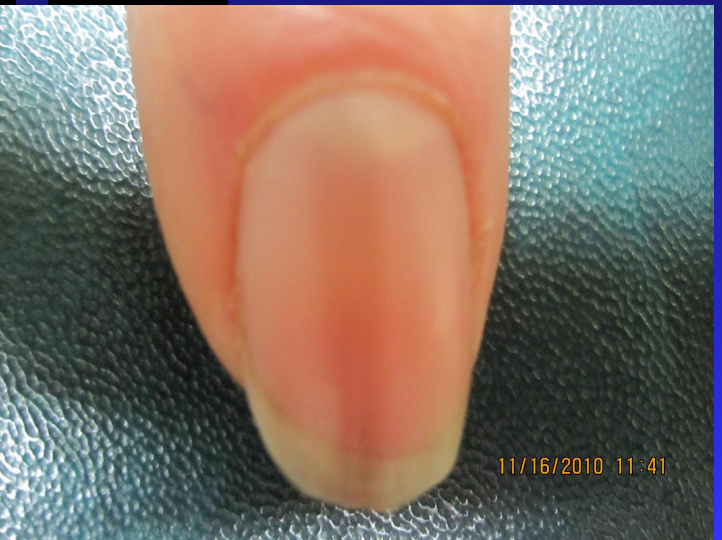
Fontana-Masson Stain

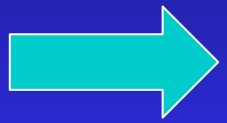


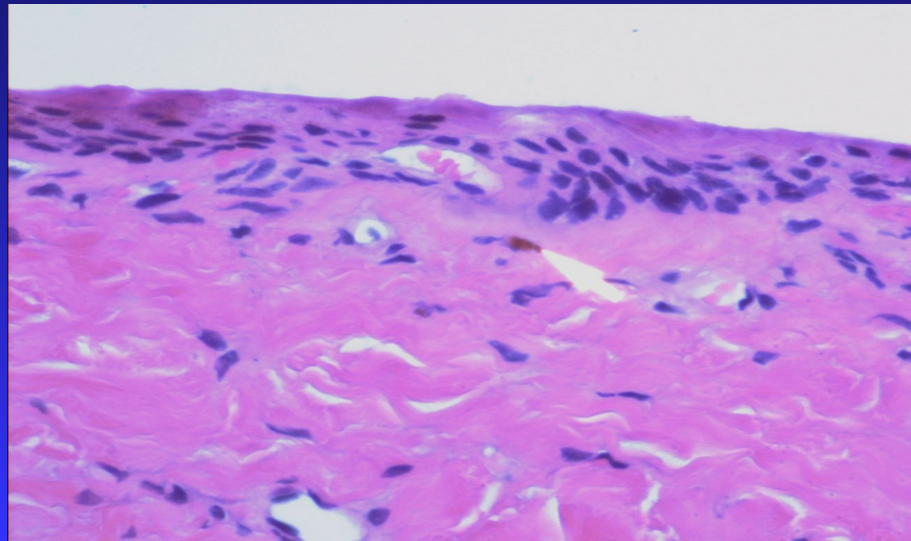
Special stains for pigment do not work in nail plate

Fontana-Masson—must dilute

Finding subtle pigment





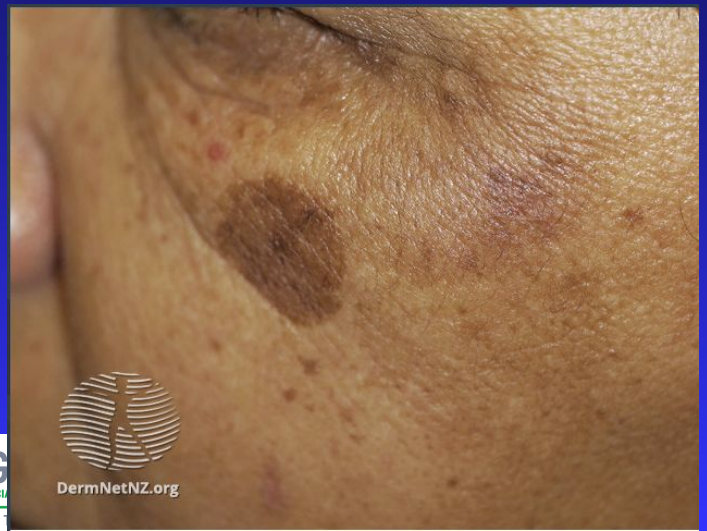


Benign Activation of Junctional Melanocytes

- Synonyms
  - Melanotic macule of the nail
  - Nail unit lentigo

Benign Activation of Junctional Melanocytes

- Similar to benign solar lentigo



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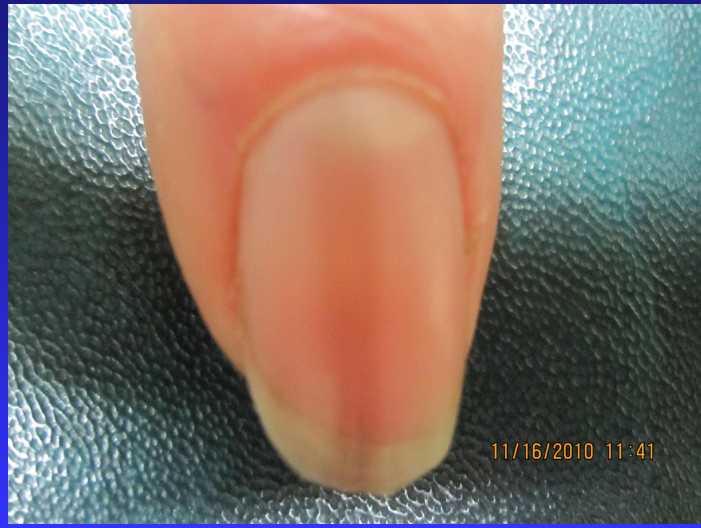
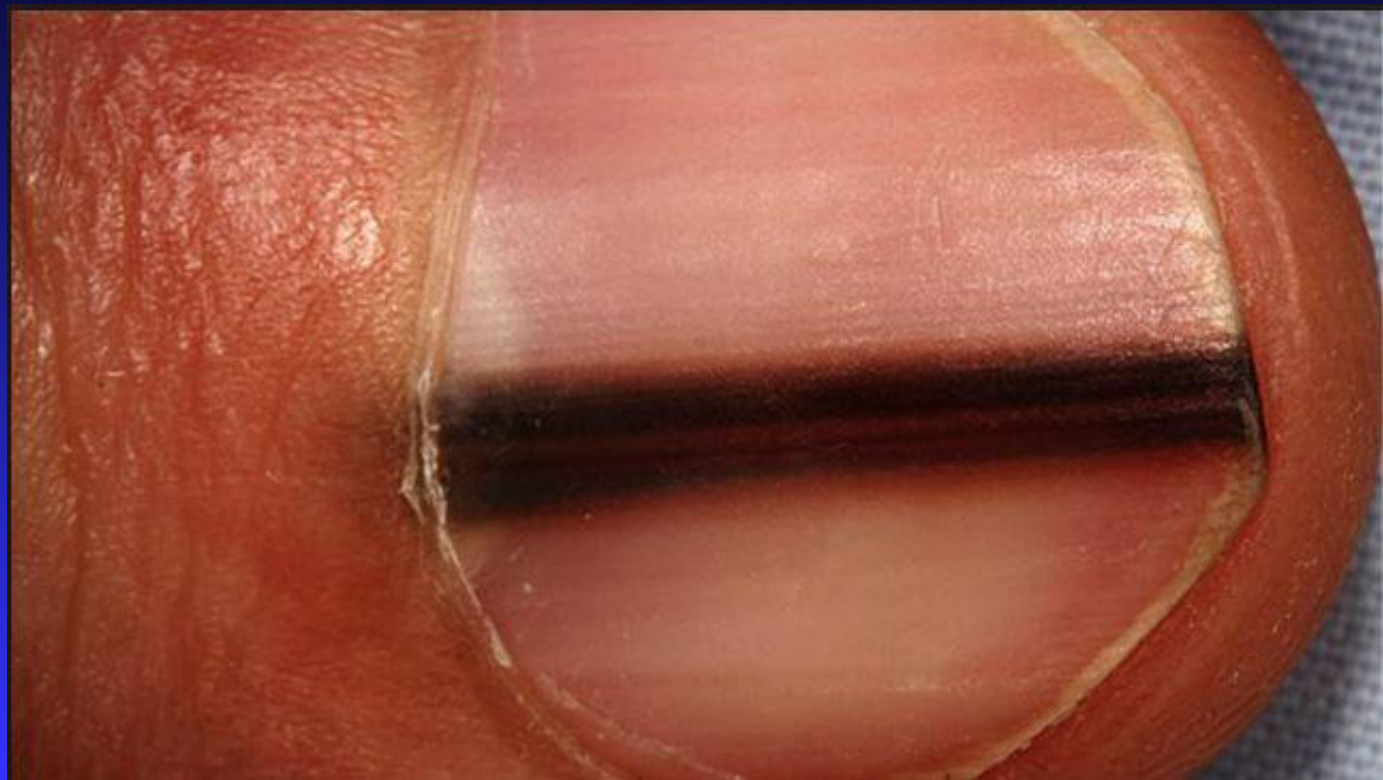


60 y/o left thumbnail



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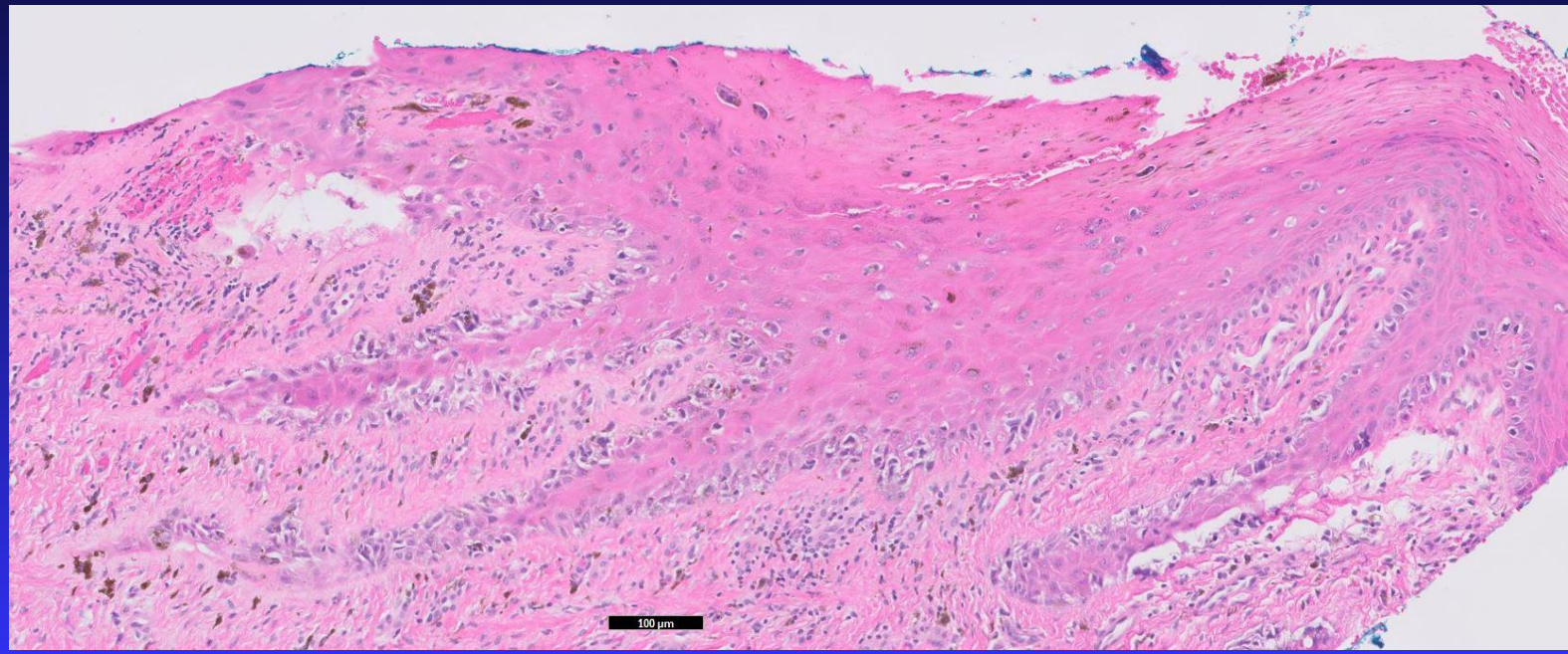

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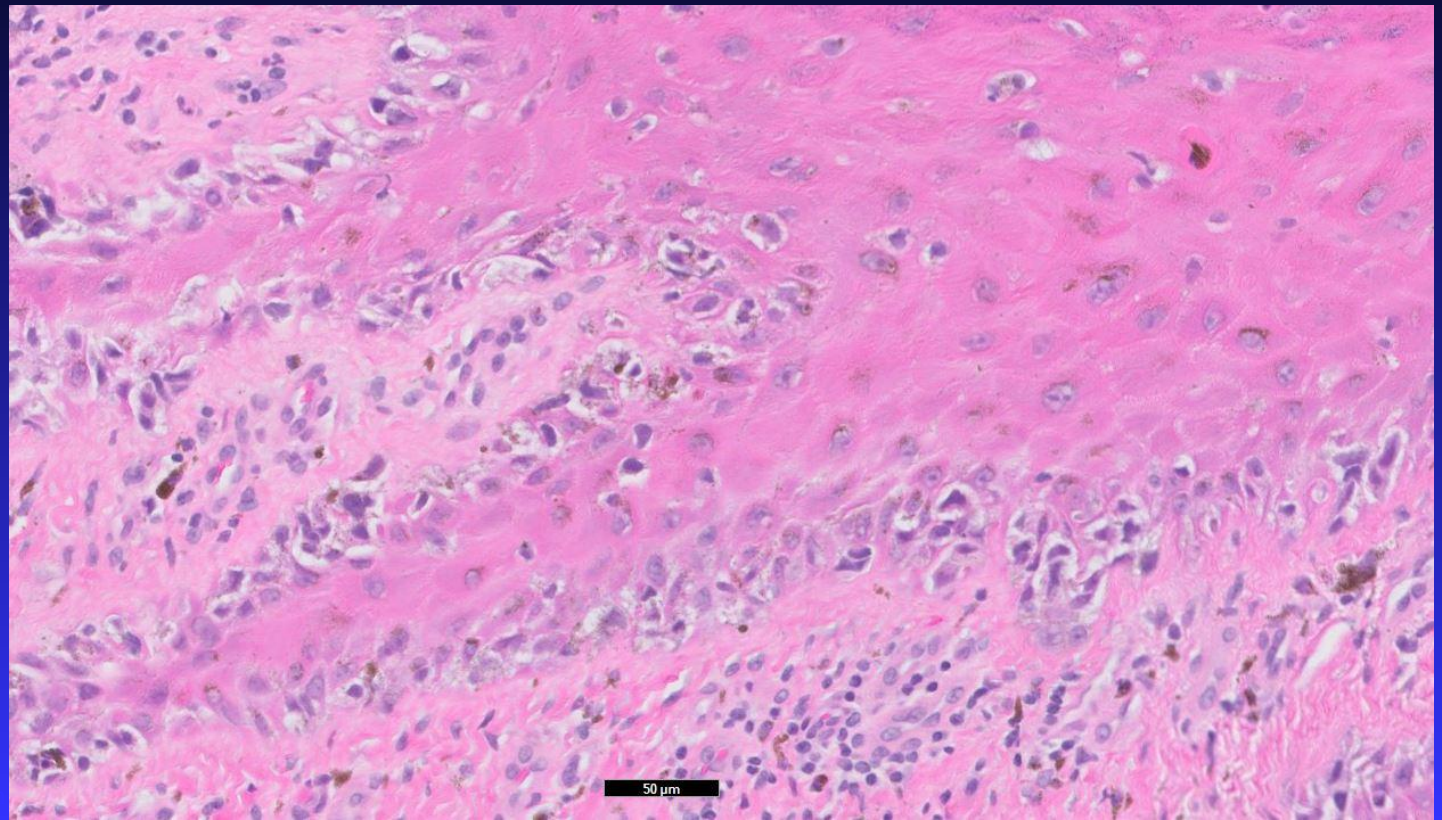

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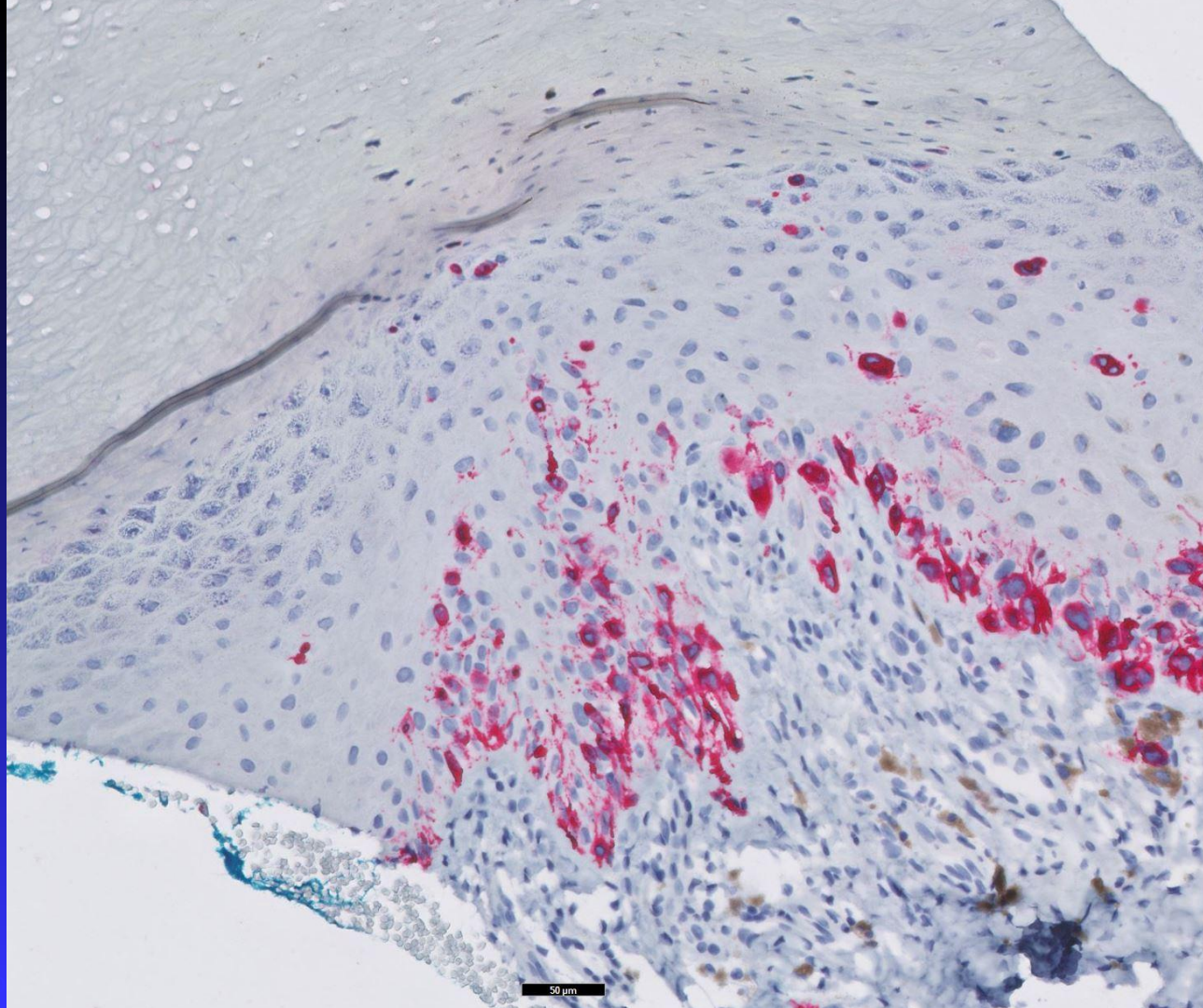
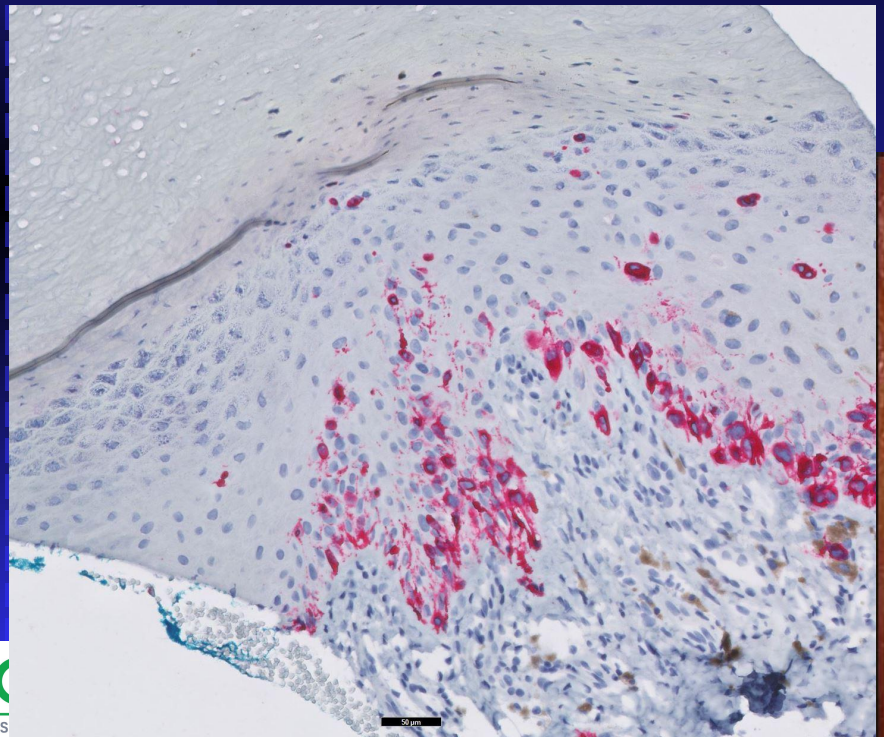
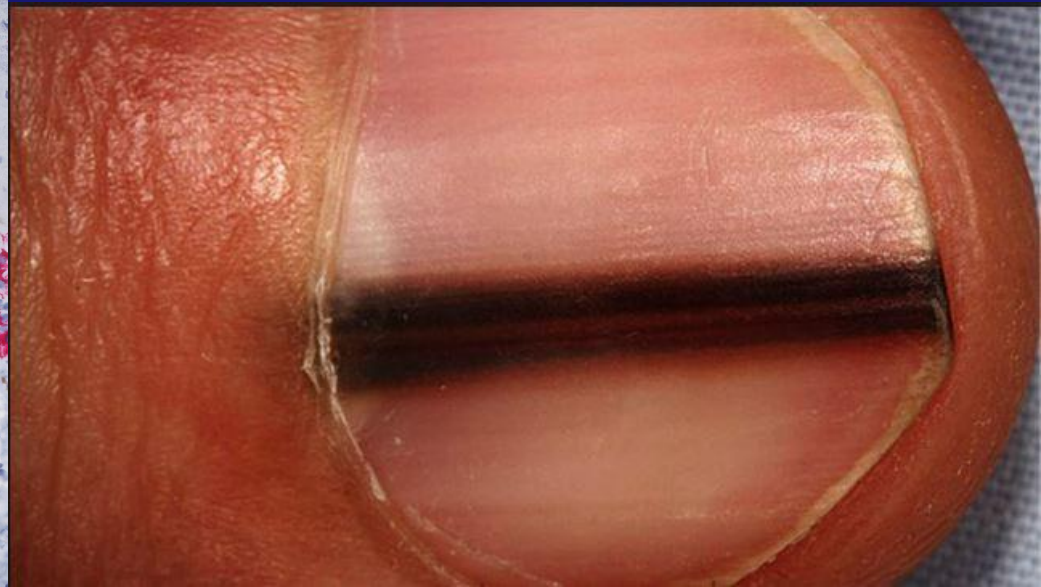


Melanoma in-situ





Am J Surg Pathol. 2008 Jun;32(6):835-43. doi: 10.1097/PAS.0b013e31815c8578.

Histologic distinction between subungual lentigo and melanoma

Bijal Amin [1], Kishwer S Nehal, Achim A Jungbluth, Bushra Zaidi, Mary S Brady, Daniel C Coit, Quin Zhou, Klaus J Busam

Affiliations + expand

PMID: 18391745 DOI: 10.1097/PAS.0b013e31815c8578

Abstract

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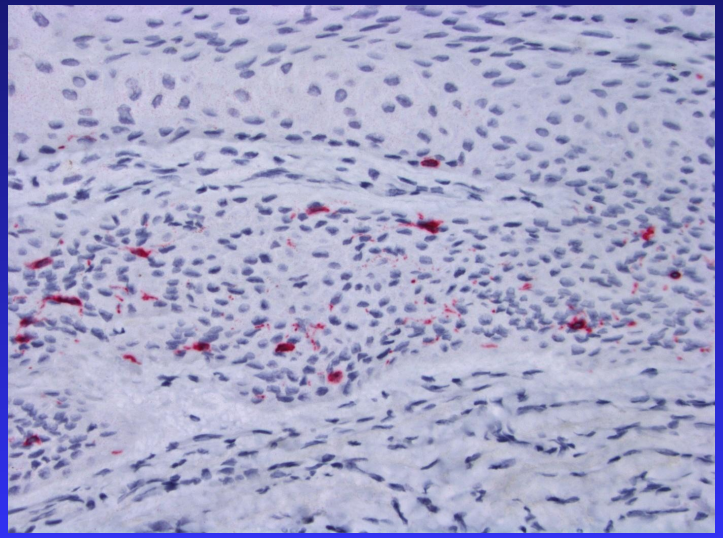
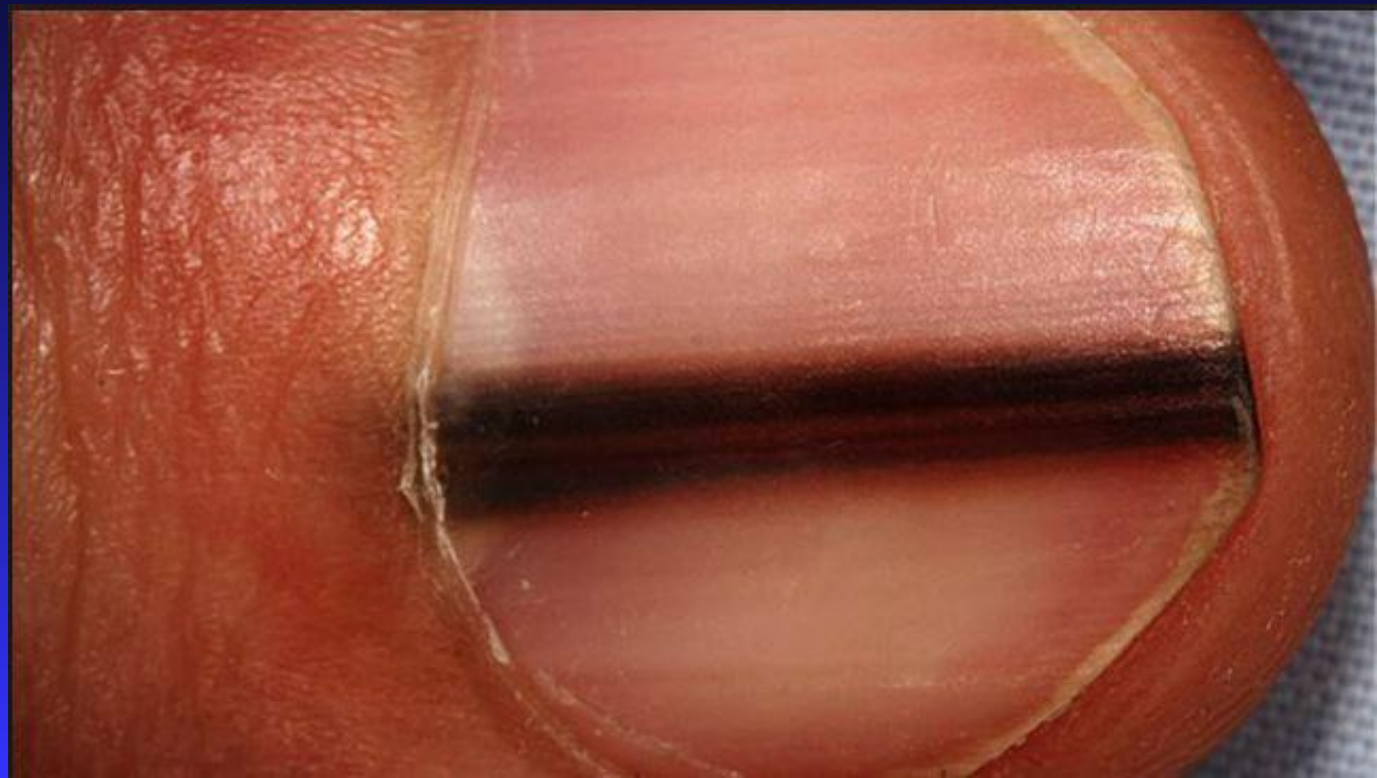
Density of melanocytes

- Depends upon skin type

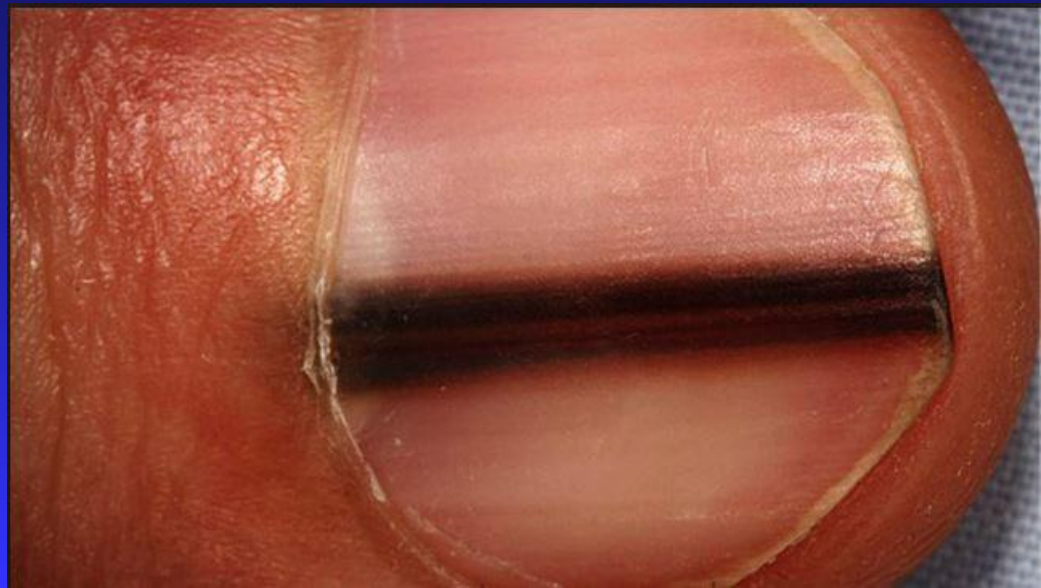


Clinical presentation important



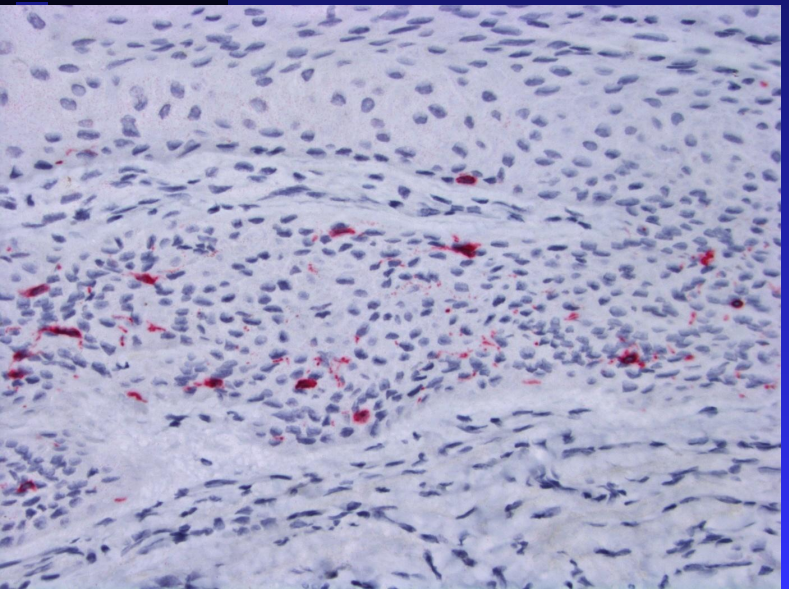
Clinical presentation important

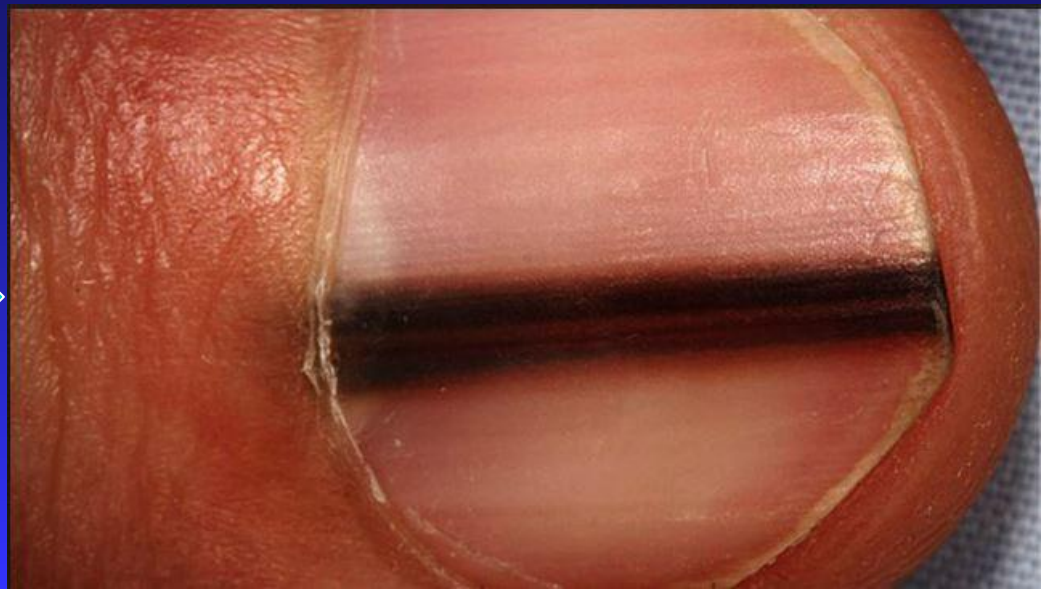
- New pigment
- Older age
- Skin type



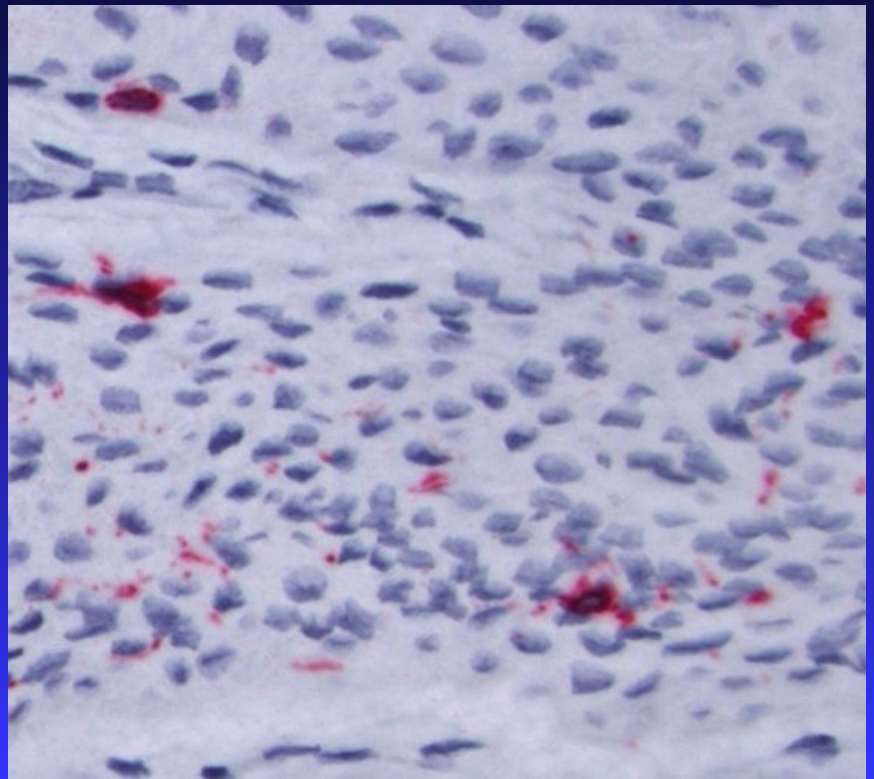
Clinical presentation important

- New lesion in older patient

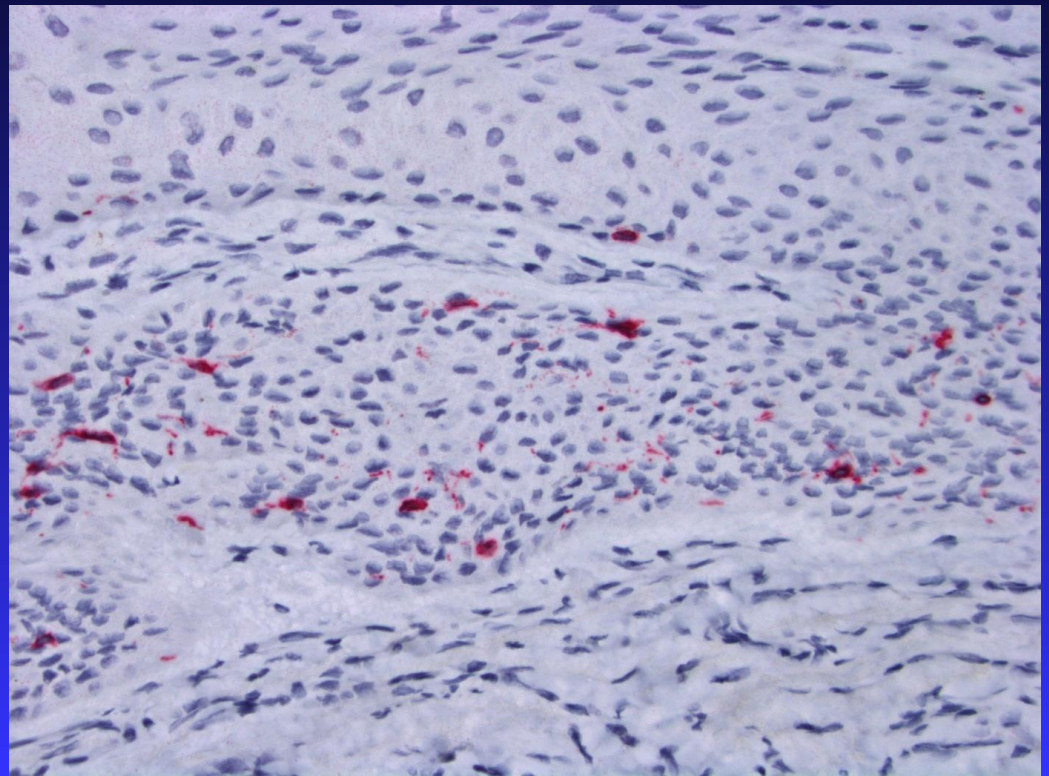




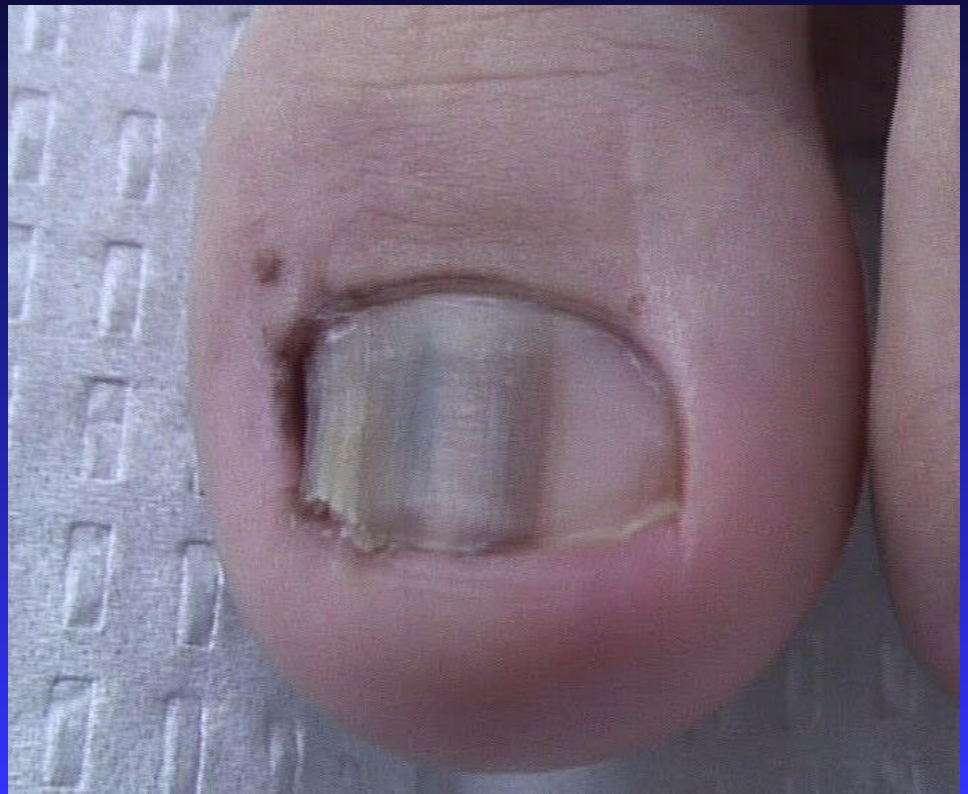
Dendritic melanocytes in B9 and malignant



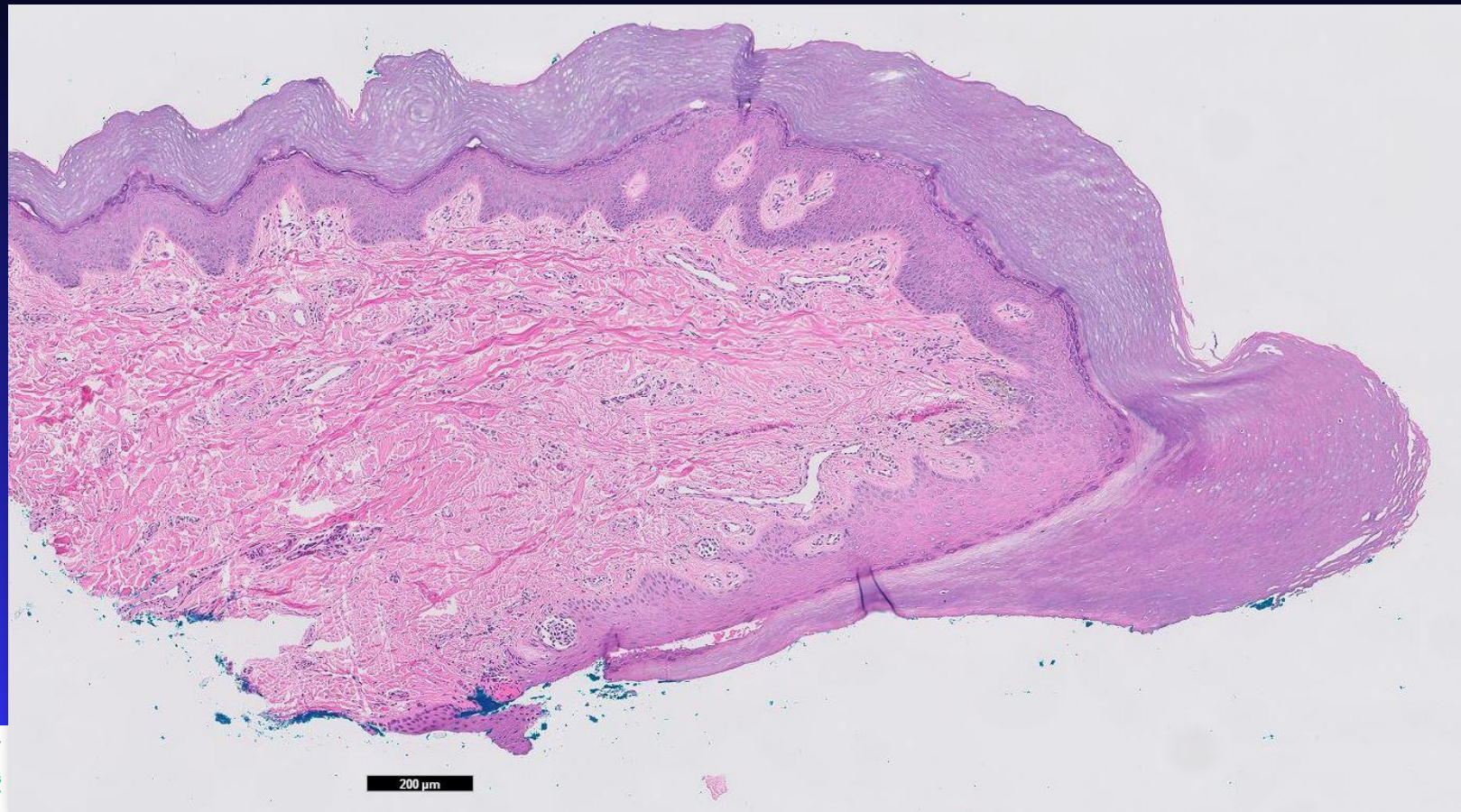
Margin assessment may be challenging

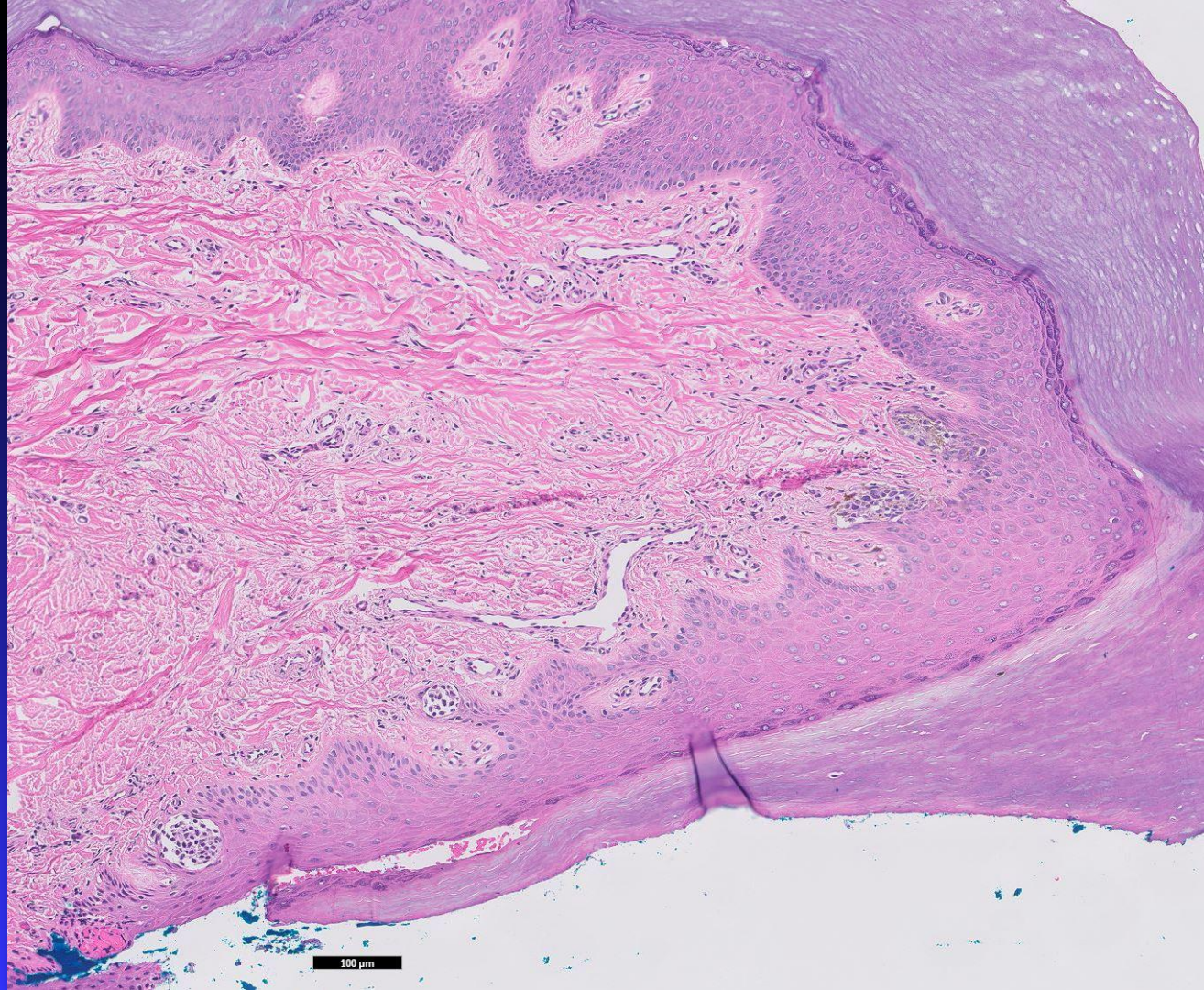


- 10 y/o male with pigmented nail of great toe. It appeared at age 3.



10 y/o boy





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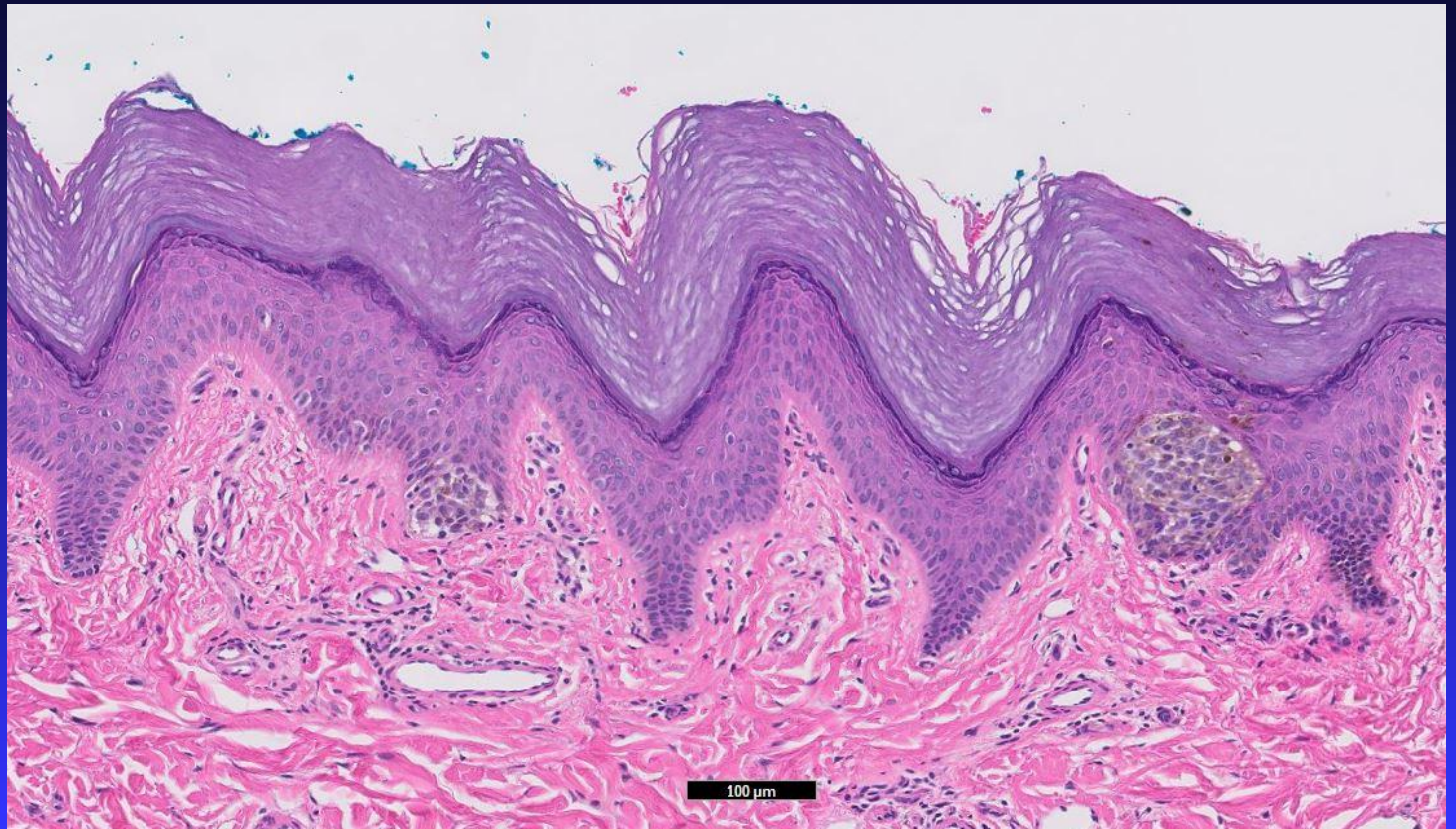
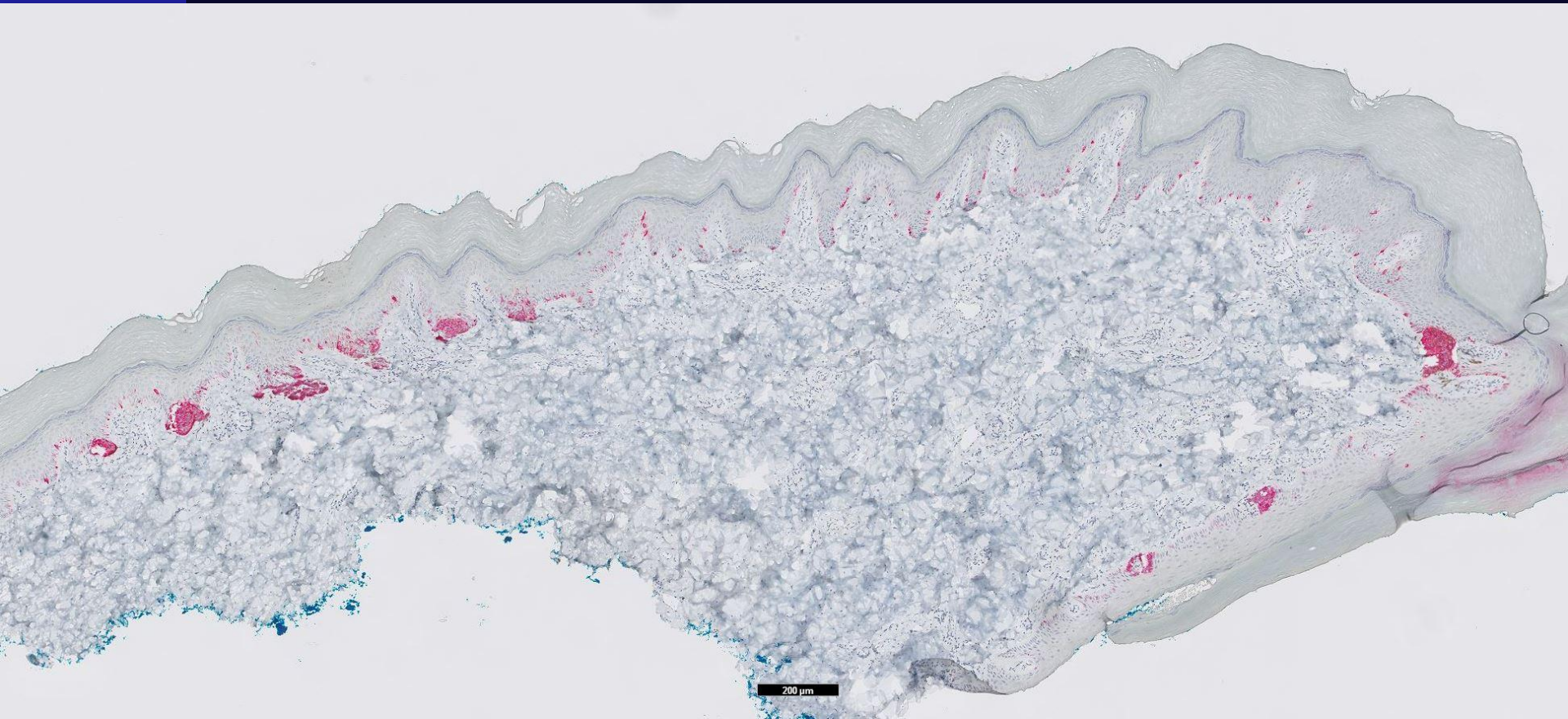
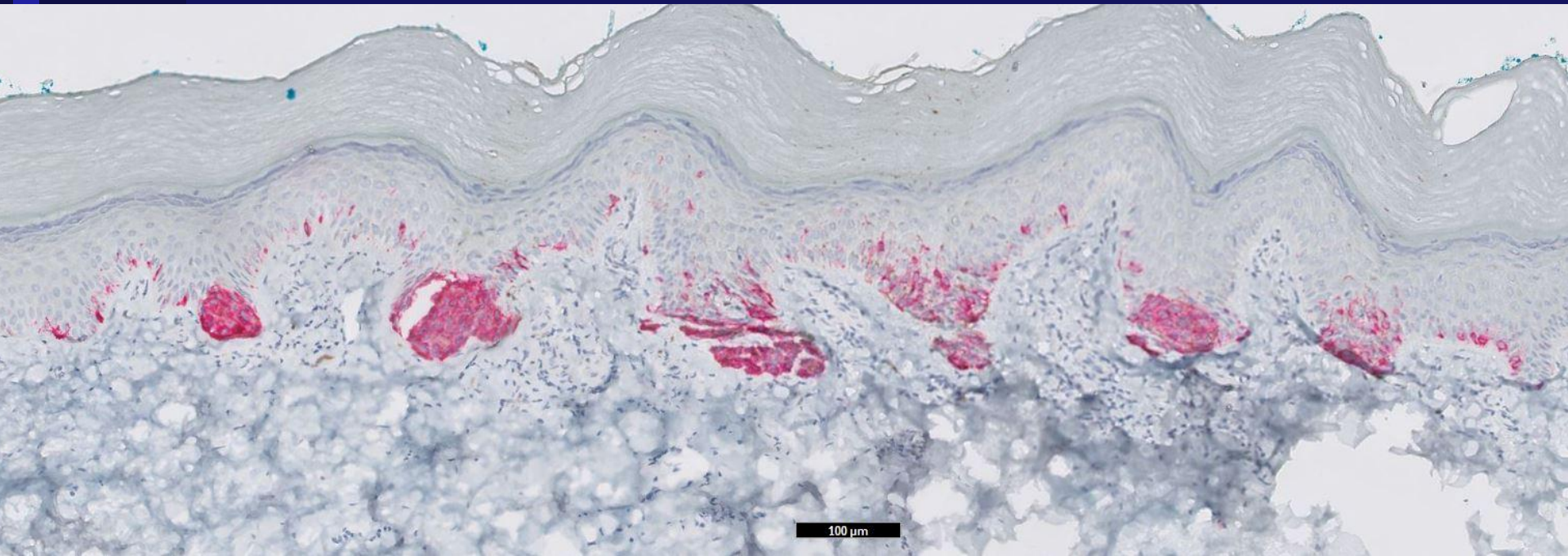
Proximal nail fold



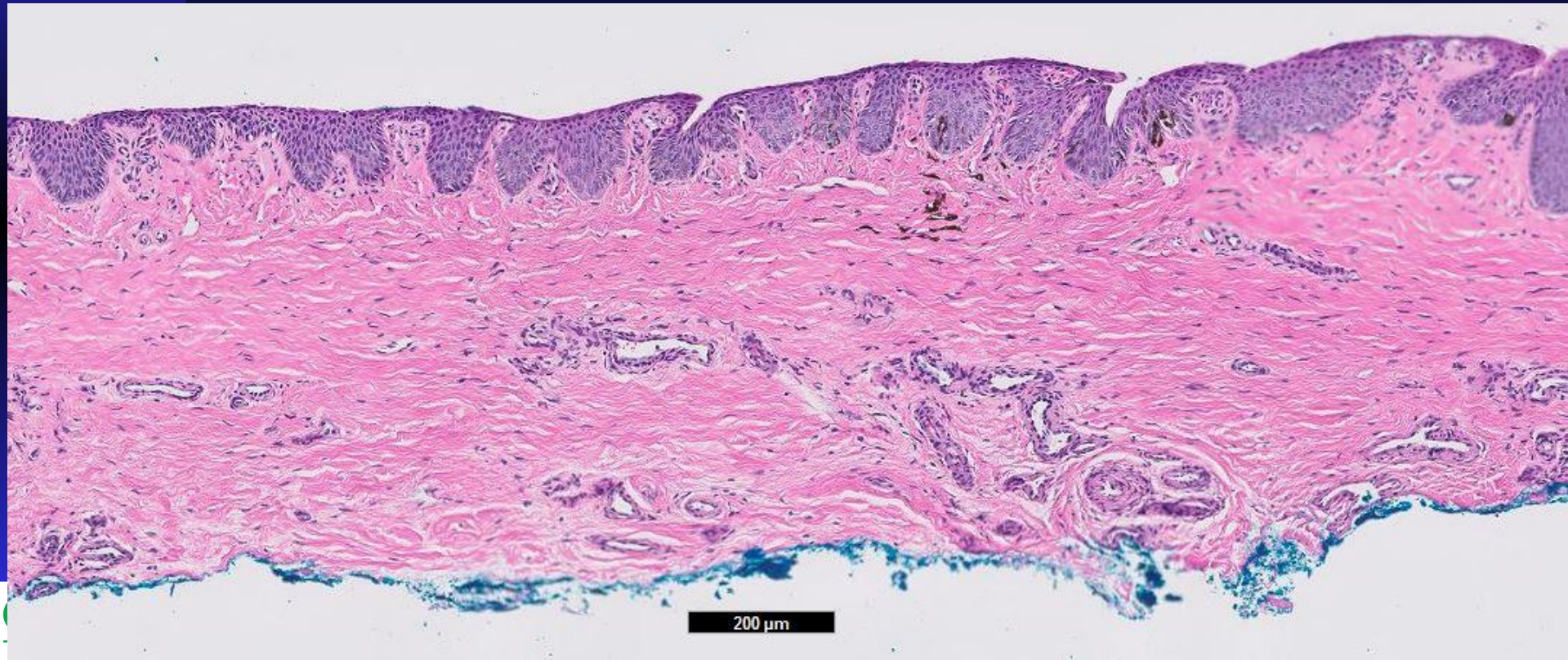
10 y/o



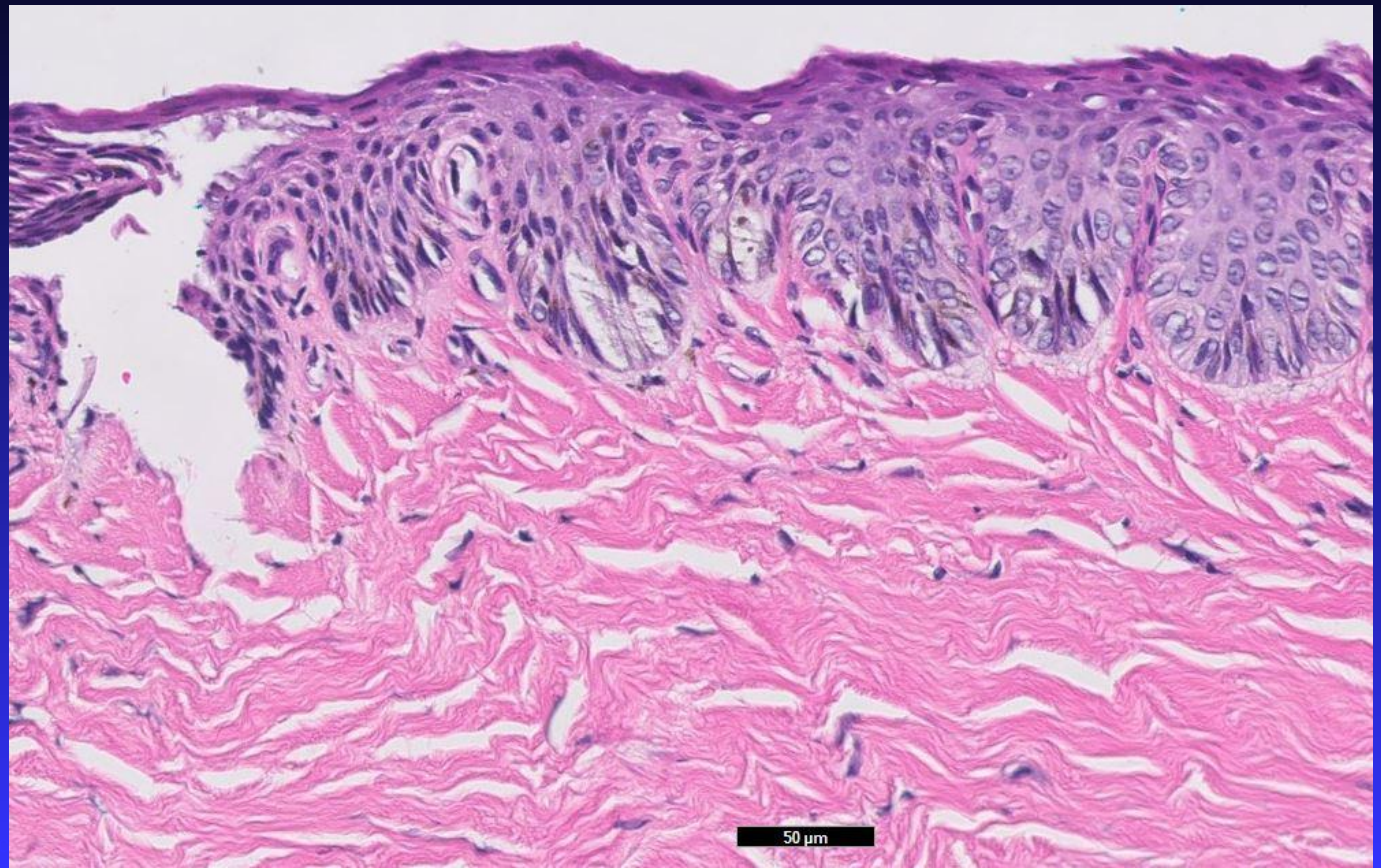
Proximal nail fold



Nail bed/matrix



10 y/o nail bed/matrix



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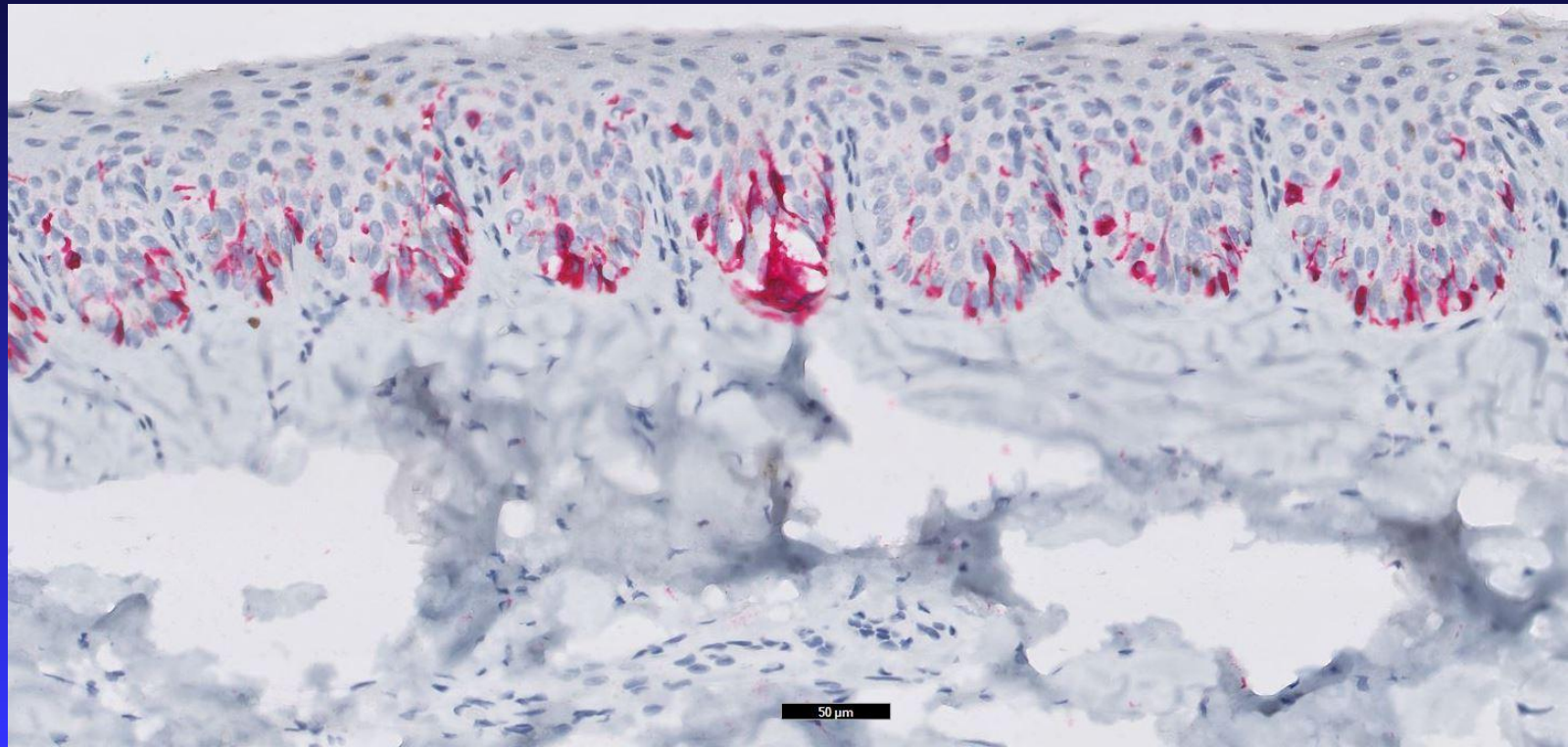

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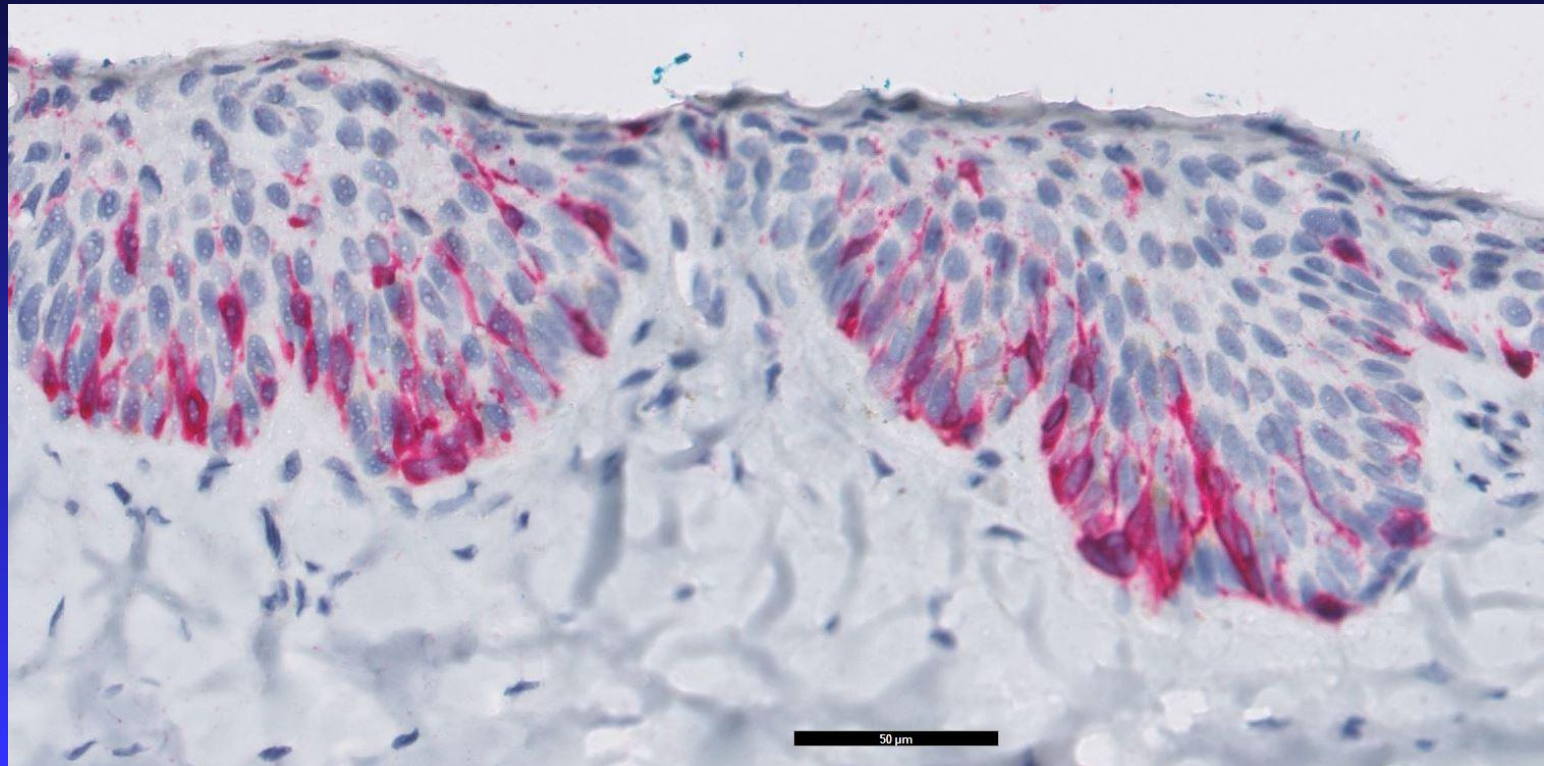
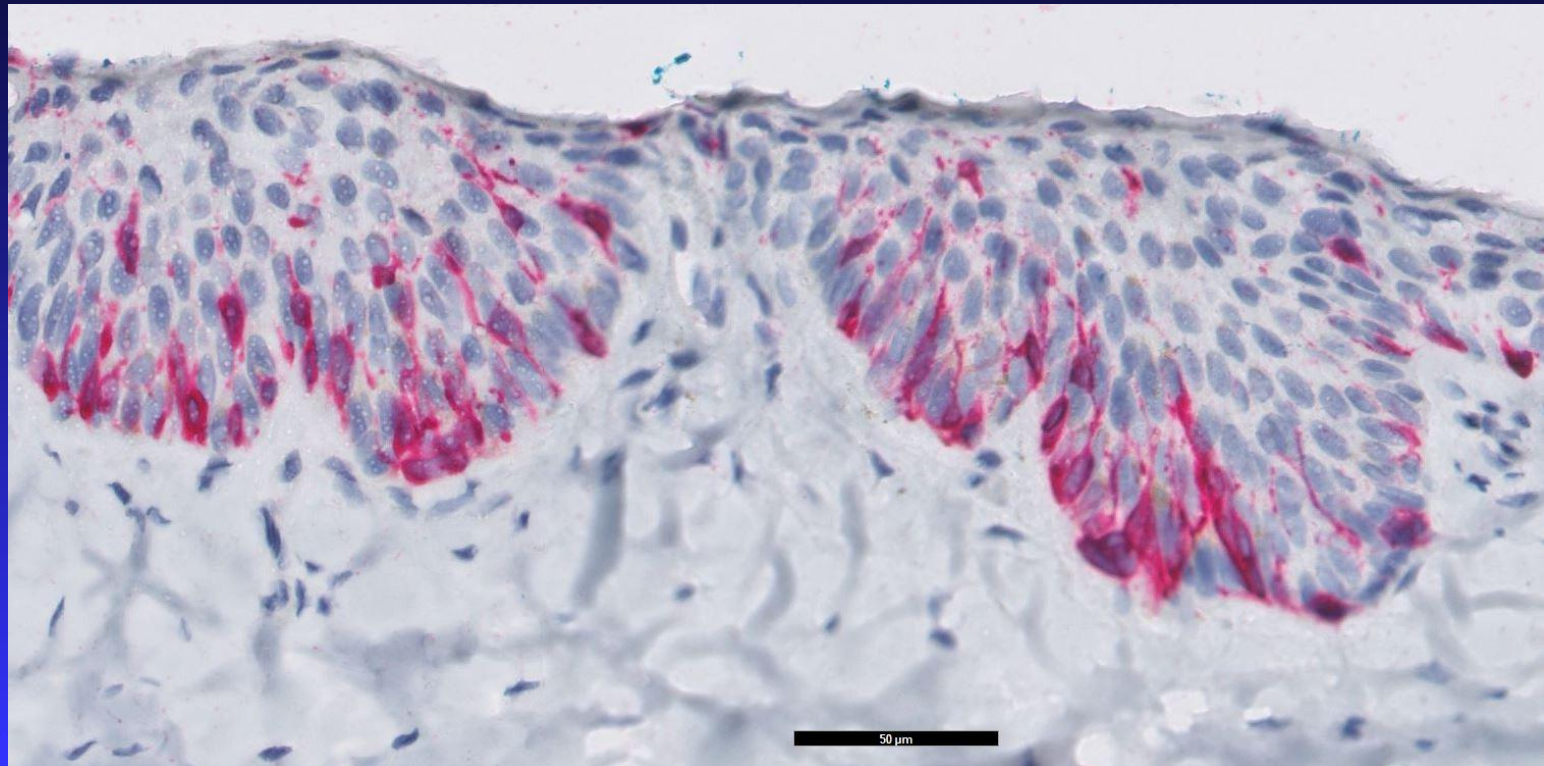
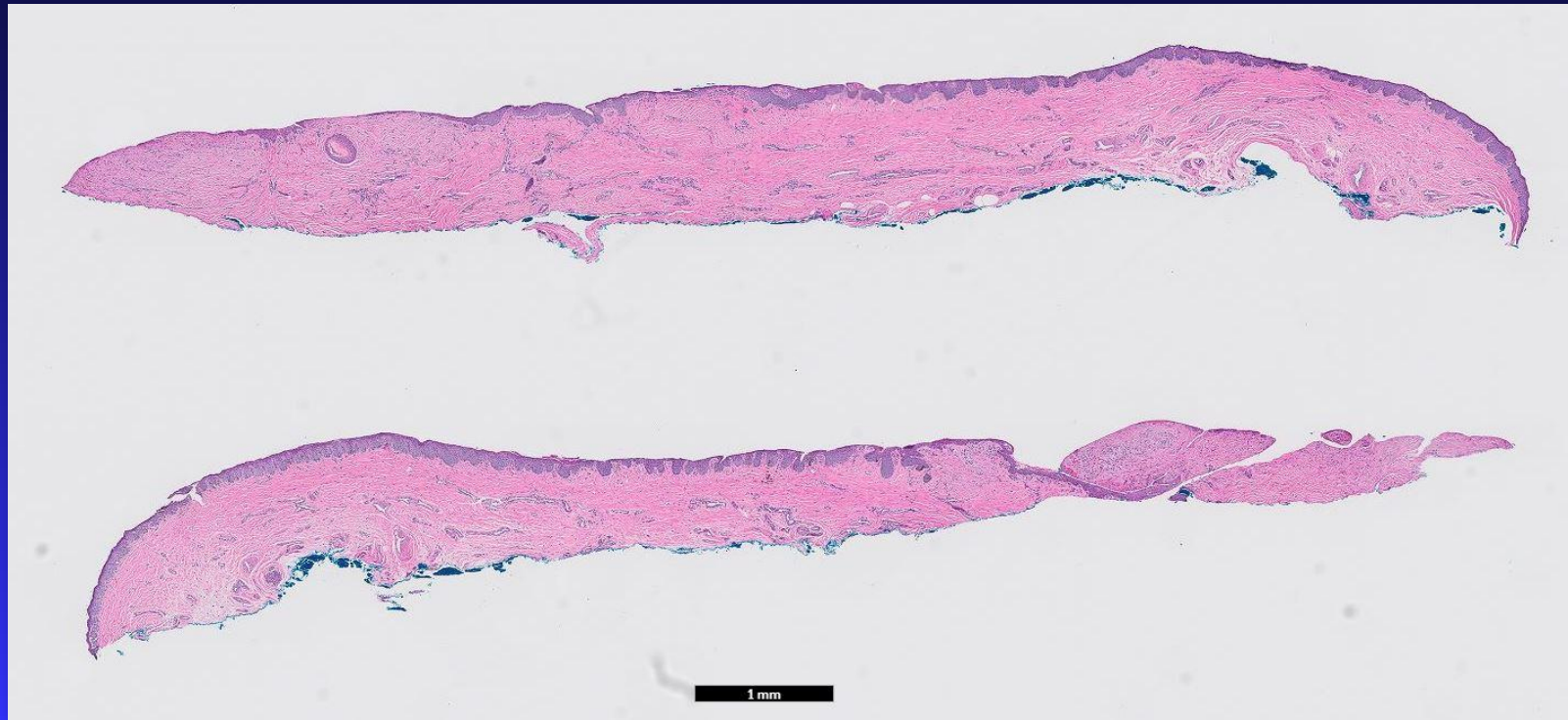


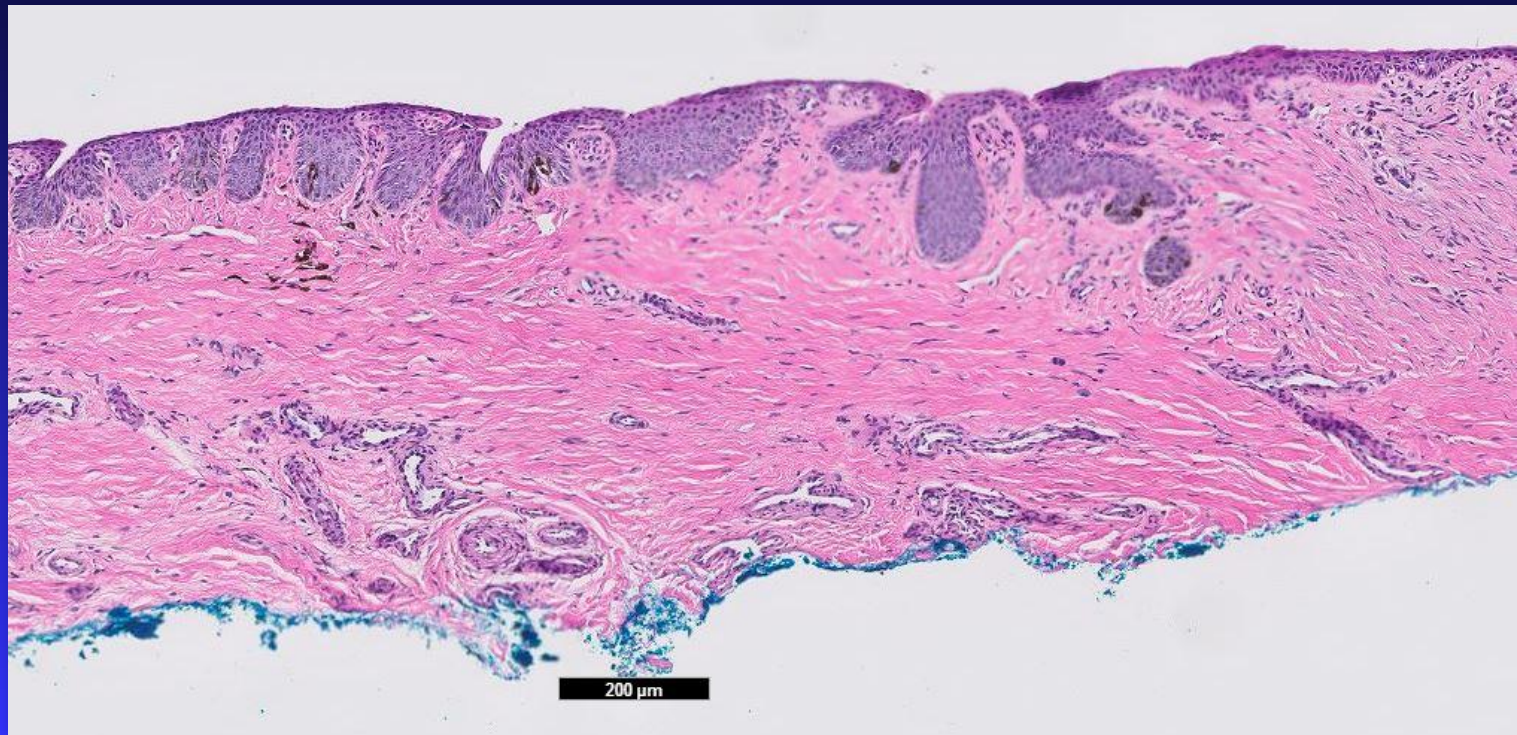
Benign nevus in 10 y/o



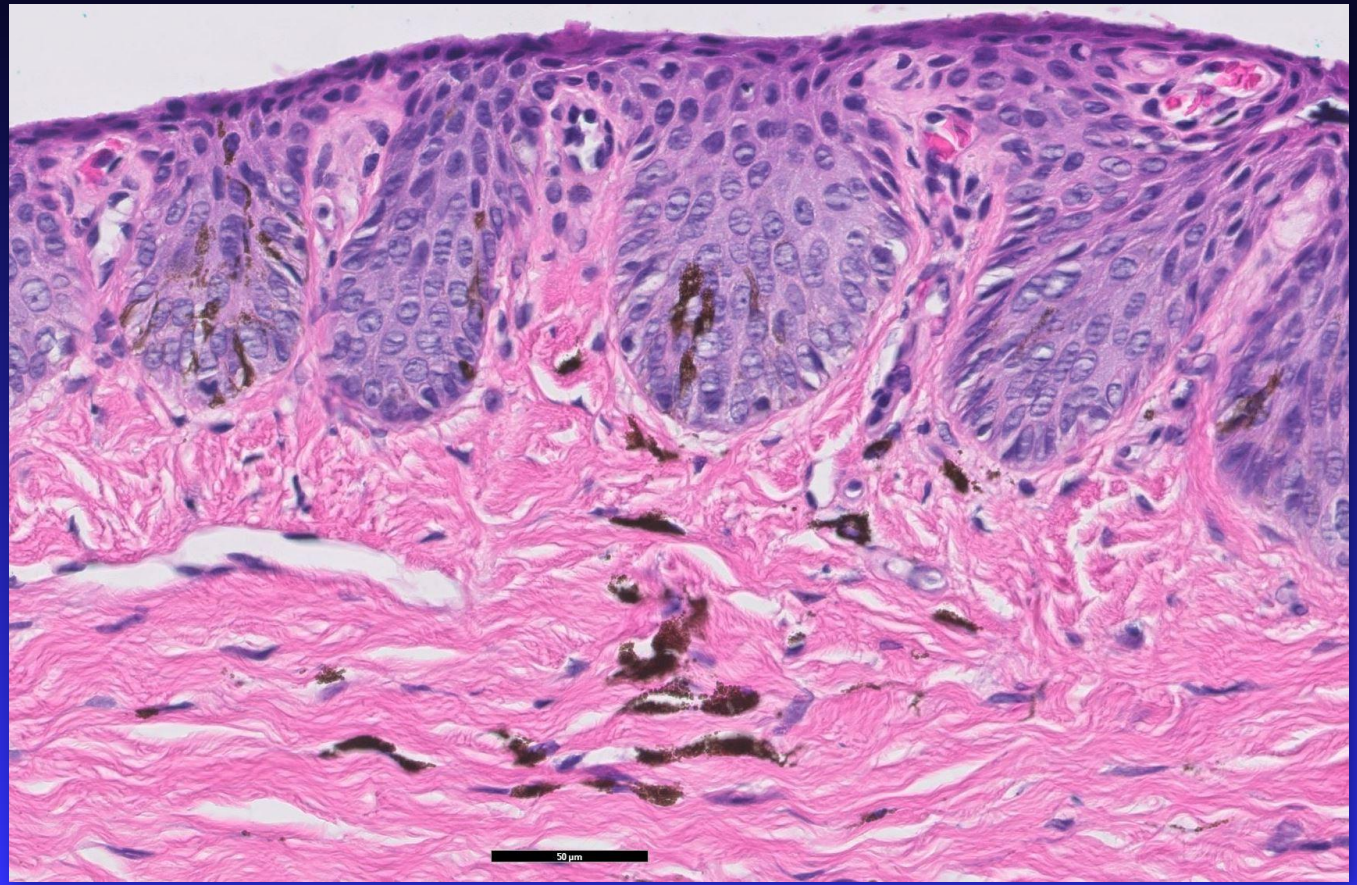
13 y/o male



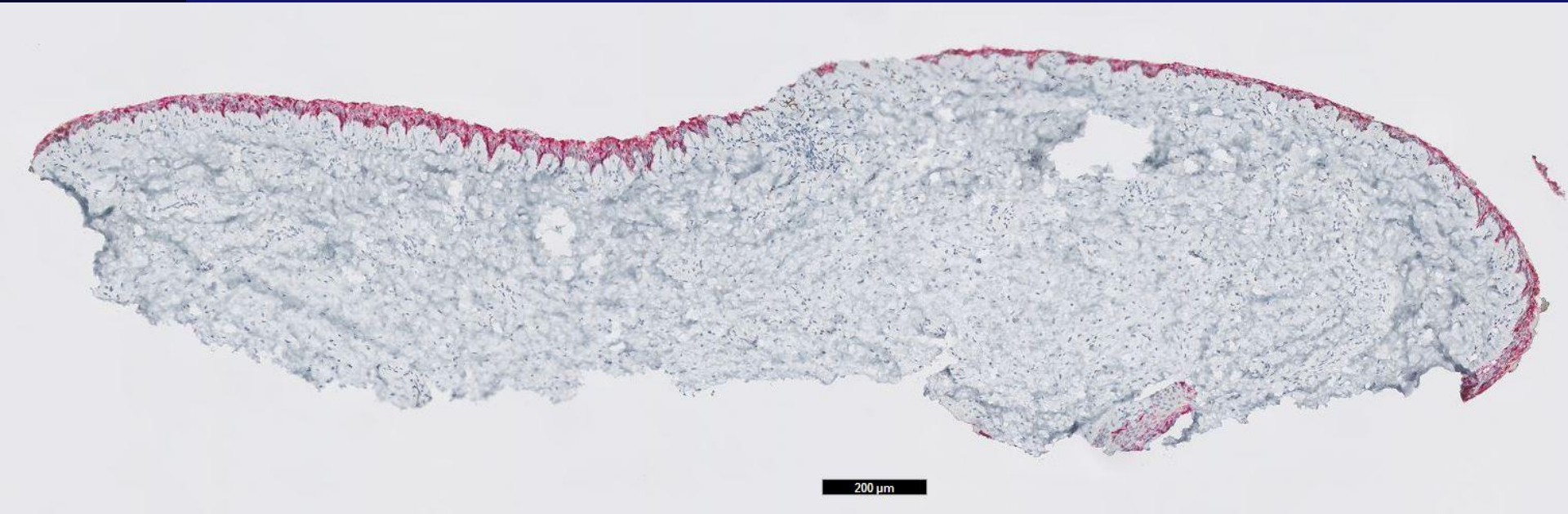
13 y/o male



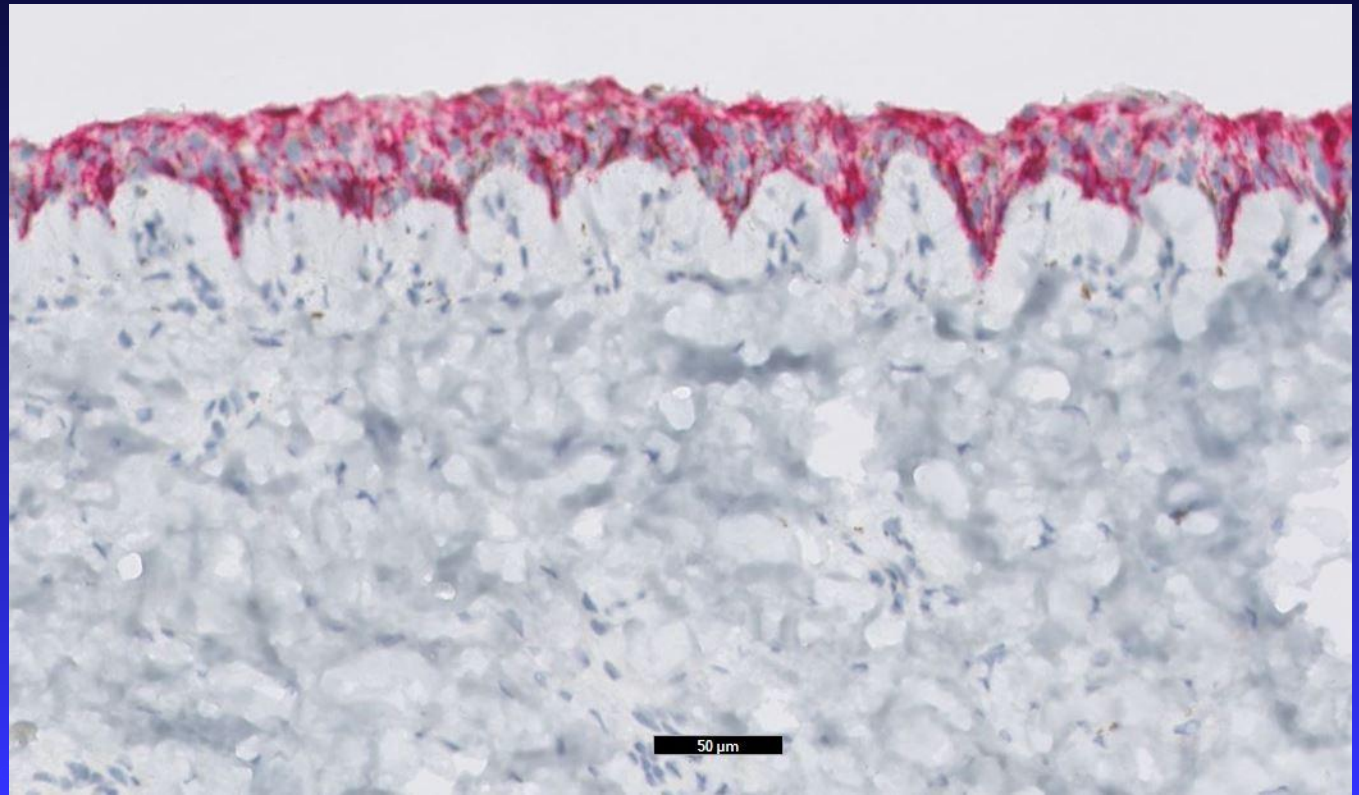
13 y/o male



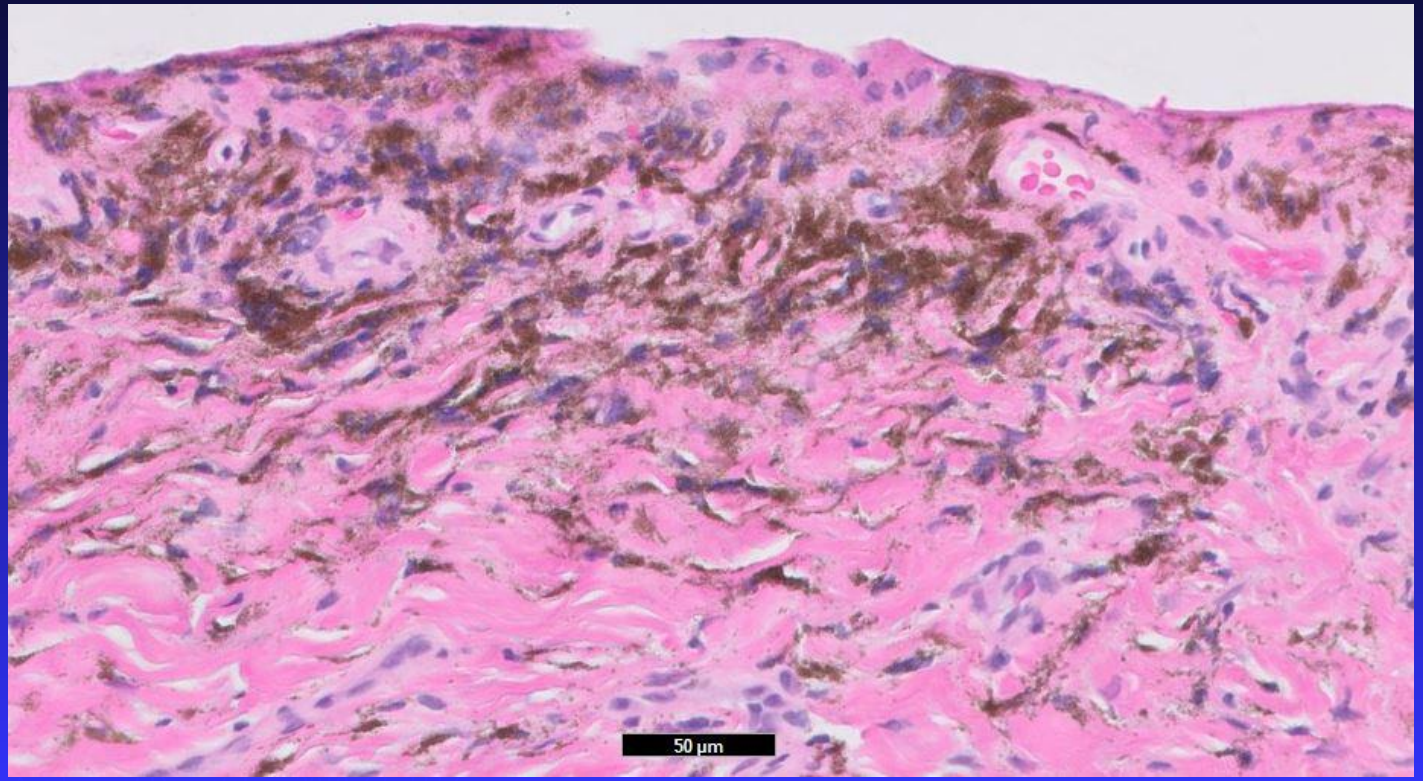
13 y/o nailbed



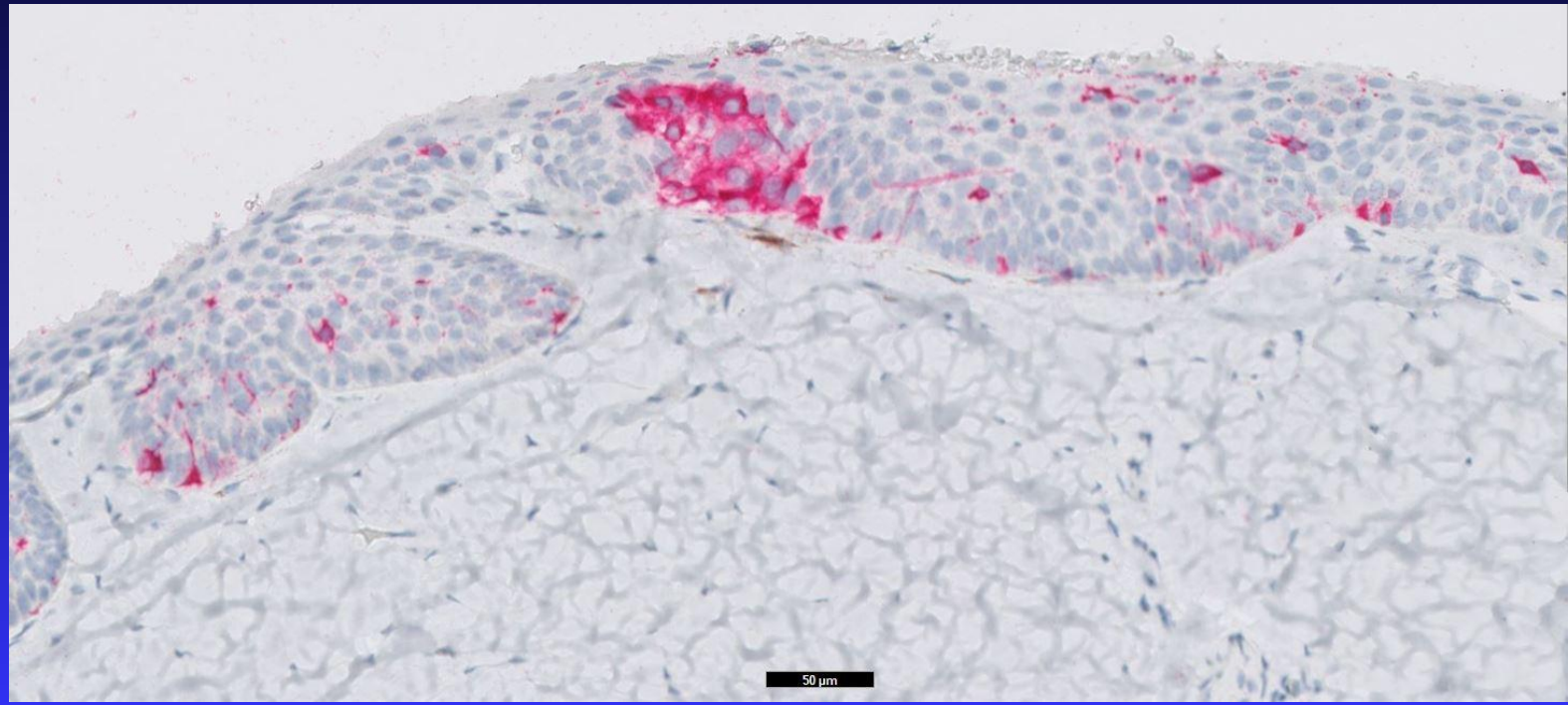
13 y/o nailbed



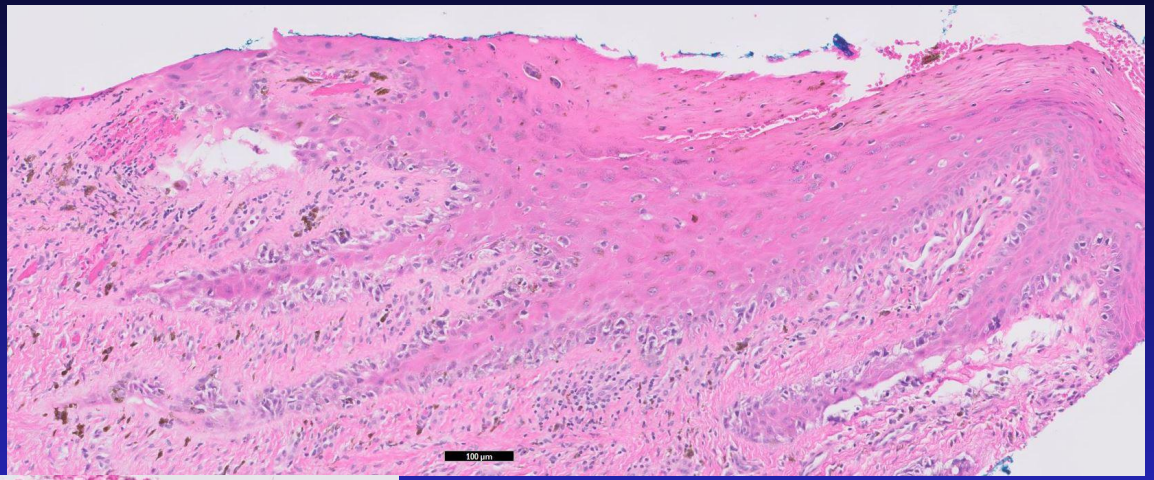
18 y/o

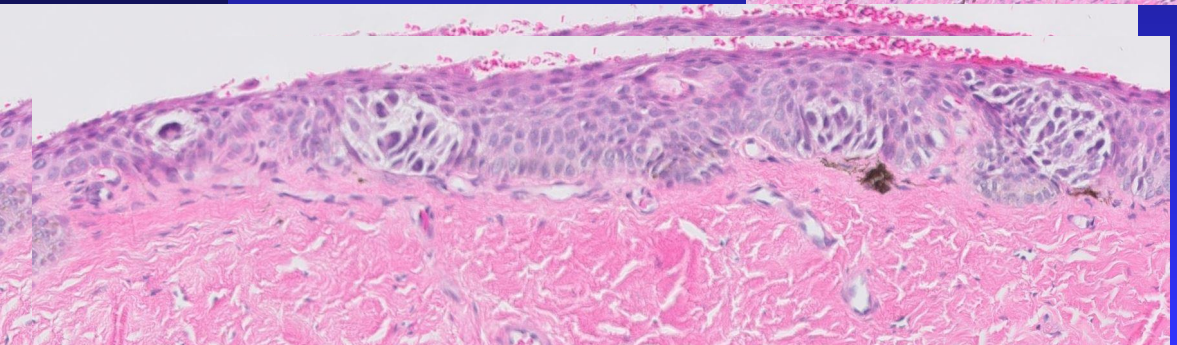


18 y/o nail

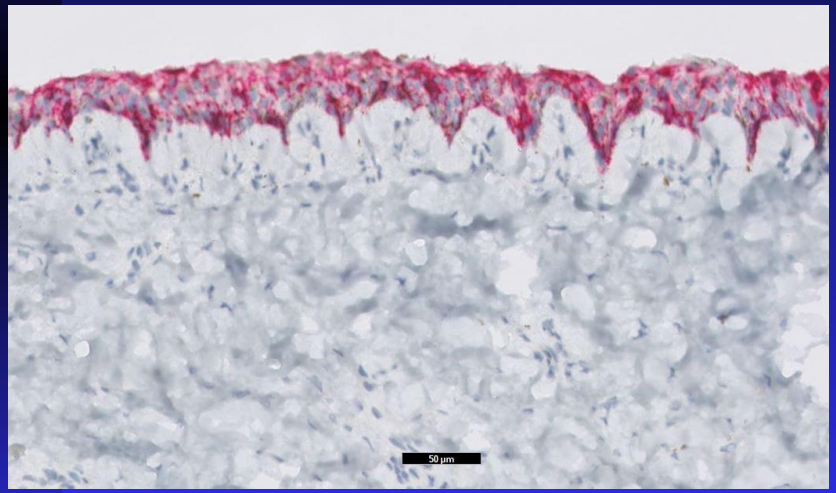


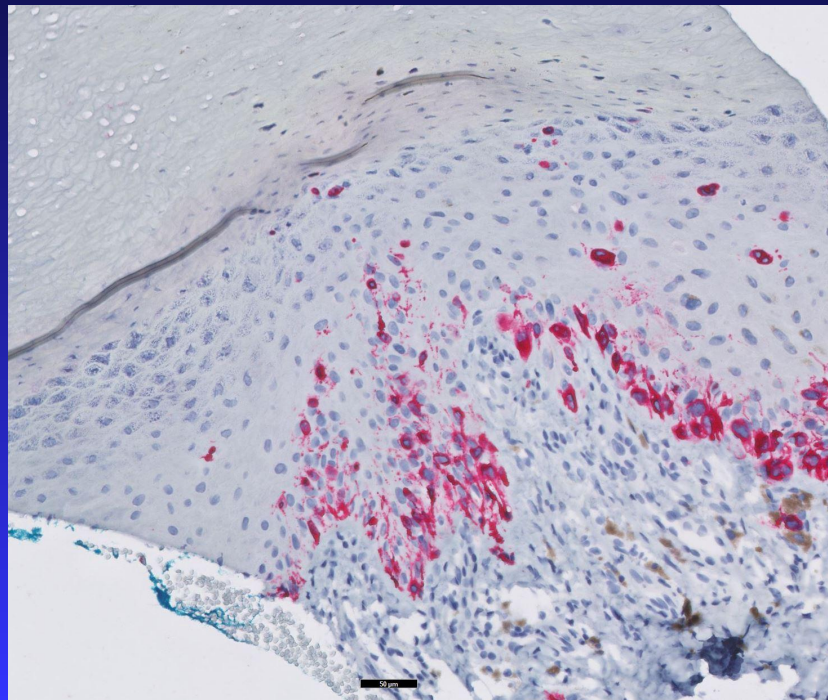
Benign? Atypical? Malignant?





Benign? Atypical? Malignant?





Pigmented lesion in a child

- Often type III skin type or above (worry about acral lentiginous MM)
- Concern to parents—pressure to biopsy
- Biopsy shows large, single, Spitzoid melanocytes (?Atypia?)

Pigmented lesion in a child

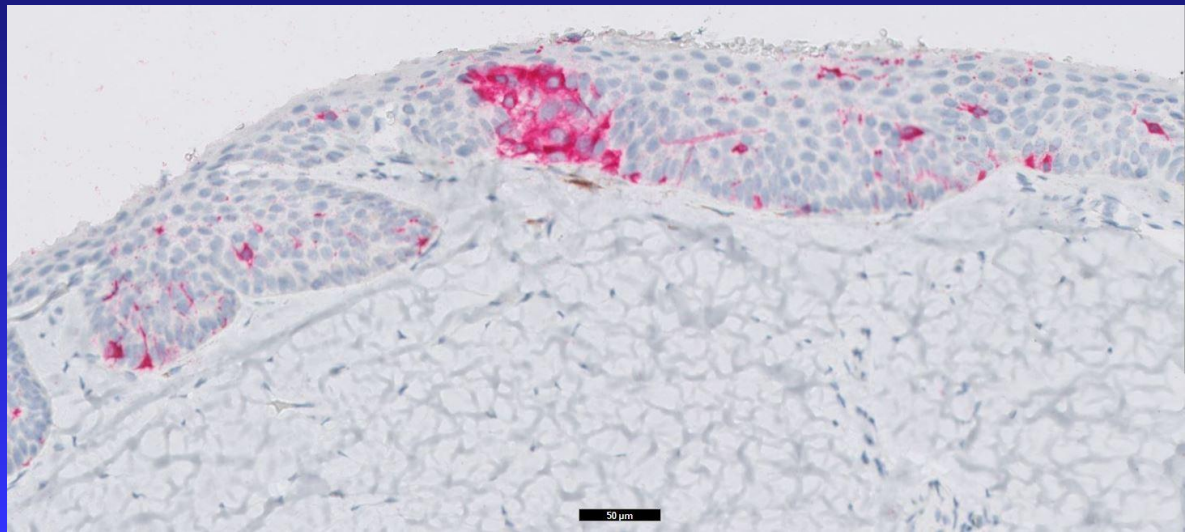
- Few pediatric melanocytic tumors sampled—nail experts do not sample
- Traditional criteria for benign vs atypical vs malignant do not apply

Current histopathology assessment is of limited utility.

- H&E
- Immunohistochemistry
- Genetic analysis—not yet possible

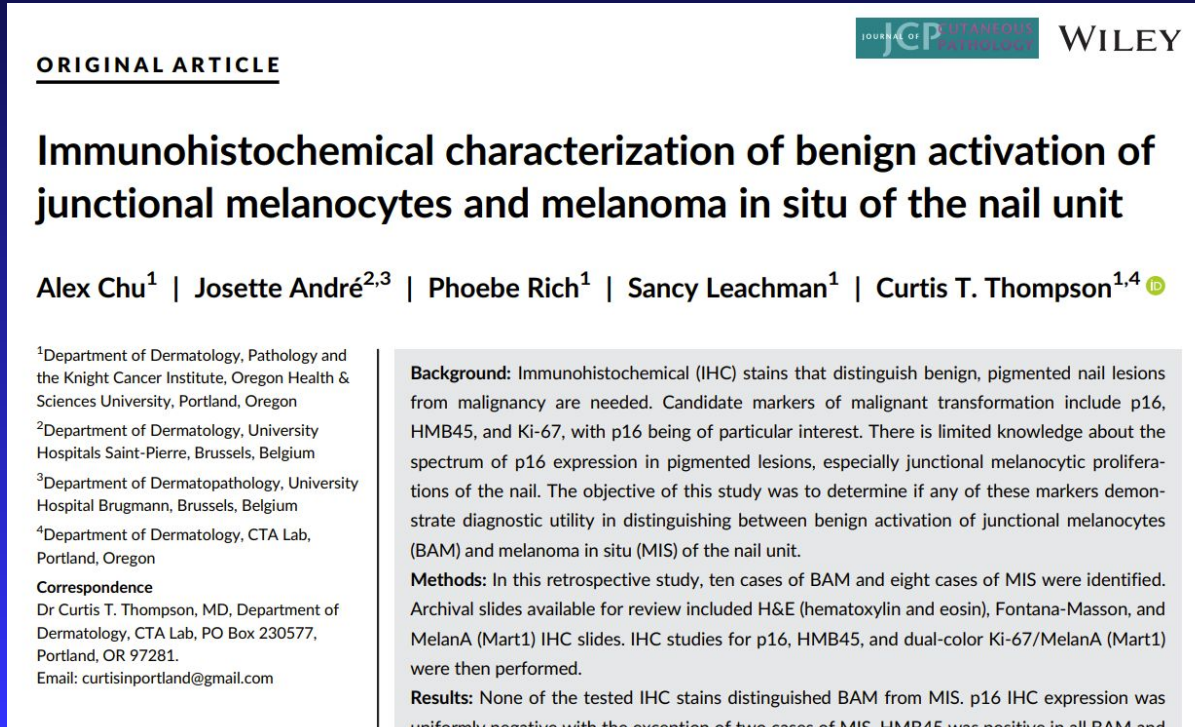
Immunohistochemistry

- Most only highlights melanocytes
- MelanA (Mart1), SOX-10, HMB45



Molecular markers—B9 vs malignant

- p16
- Not useful



ORIGINAL ARTICLE

JCP JOURNAL OF CUTANEOUS PATHOLOGY WILEY

Immunohistochemical characterization of benign activation of junctional melanocytes and melanoma in situ of the nail unit

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Background: Immunohistochemical (IHC) stains that distinguish benign, pigmented nail lesions from malignancy are needed. Candidate markers of malignant transformation include p16, HMB45, and Ki-67, with p16 being of particular interest. There is limited knowledge about the spectrum of p16 expression in pigmented lesions, especially junctional melanocytic proliferations of the nail. The objective of this study was to determine if any of these markers demonstrate diagnostic utility in distinguishing between benign activation of junctional melanocytes (BAM) and melanoma in situ (MIS) of the nail unit.

Methods: In this retrospective study, ten cases of BAM and eight cases of MIS were identified. Archival slides available for review included H&E (hematoxylin and eosin), Fontana-Masson, and MelanA (Mart1) IHC slides. IHC studies for p16, HMB45, and dual-color Ki-67/MelanA (Mart1) were then performed.

Results: None of the tested IHC stains distinguished BAM from MIS. p16 IHC expression was

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Molecular markers—B9 vs malignant

- PRAME?

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PRAME Expression in Melanocytic Tumors

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Abstract

Go to:

PRAME (PReferentially expressed Antigen in MElanoma) is a melanoma-associated antigen that was isolated by autologous T cells in a melanoma patient. While frequent *PRAME* mRNA expression is well documented in cutaneous and ocular melanomas, little is known about PRAME protein expression in melanocytic tumors. in this study we examined the immunohistochemical expression of PRAME in 400 melanocytic tumors, including 155 primary and 100 metastatic melanomas, and 145 melanocytic nevi. Diffuse nuclear immunoreactivity for PRAME was found in 87% of metastatic and 83.2% of primary melanomas. Among melanoma subtypes, PRAME was diffusely expressed in 94.4% of acral melanomas, 92.5% of superficial spreading melanomas, 90% of nodular melanomas, 88.6% of lentigo maligna melanomas, and 35% of desmoplastic melanomas. When in situ and nondesmoplastic invasive melanoma components were present, PRAME expression was seen in both. Of the 140 cutaneous melanocytic nevi,

Summary

- Melanocytic vs Non-melanocytic
- Find the pigment and the melanocytes
- Avoid biopsies in children

Thanks!

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