

# Revisión histopatológica de enfermedades y neoplasias ungueales

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CTA Lab

and

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Oregon Health and Sciences University

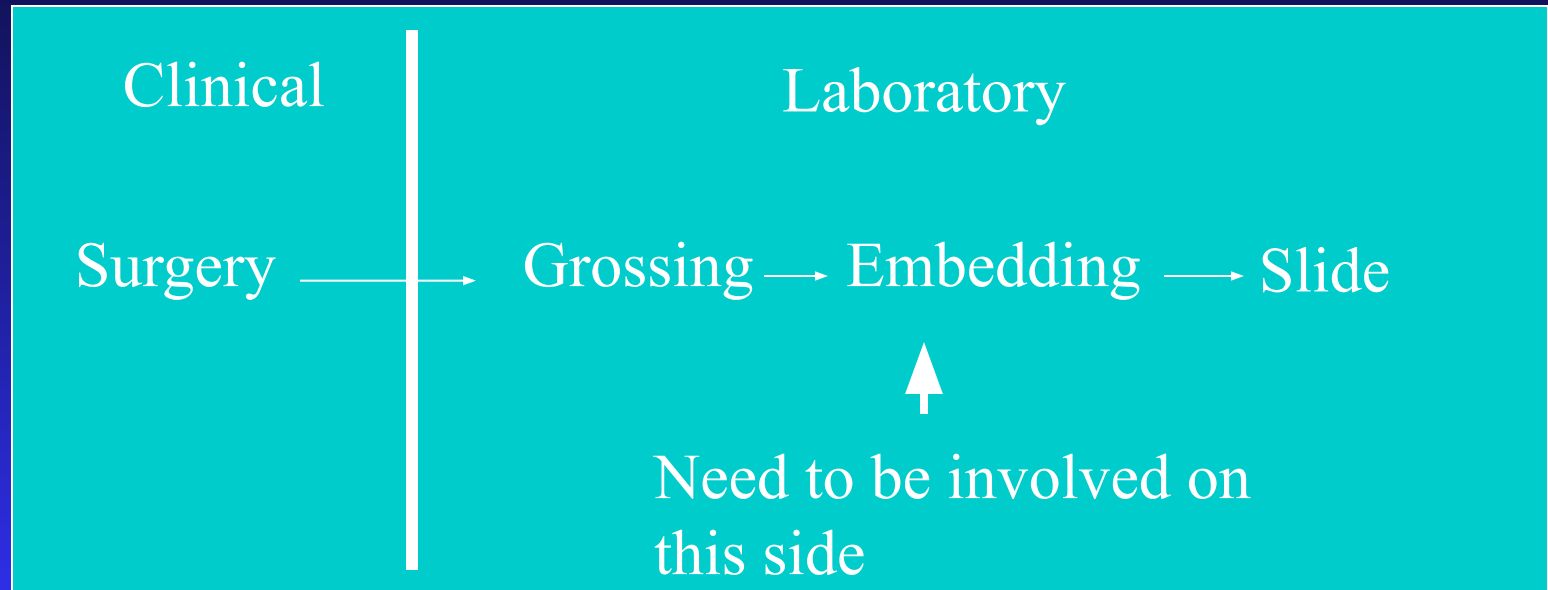
Portland, Oregon, USA

# Objectives

- Tissue submission/processing
- Most common nail lesions
- Fungal identification including mold

What can the nail surgeon do to submit a bed/matrix specimen for appropriate interpretation?

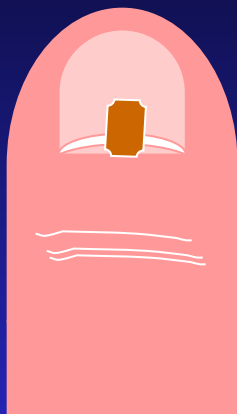
# Need to be involved in lab prep



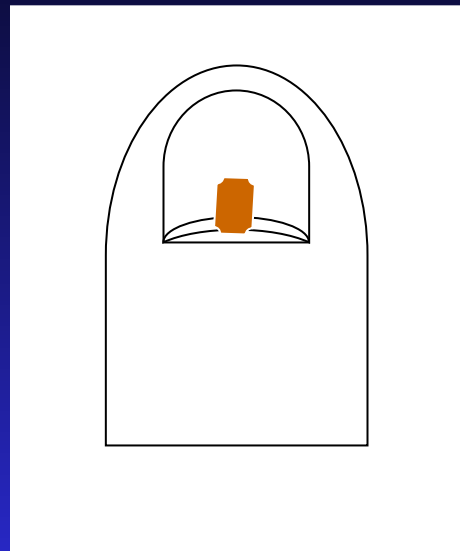
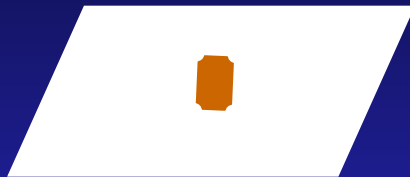


# Need concise and clear guidelines for specimen submission:

- Orientation of tissue
- Clear information to histotechnicians
- Reproducible among different laboratories



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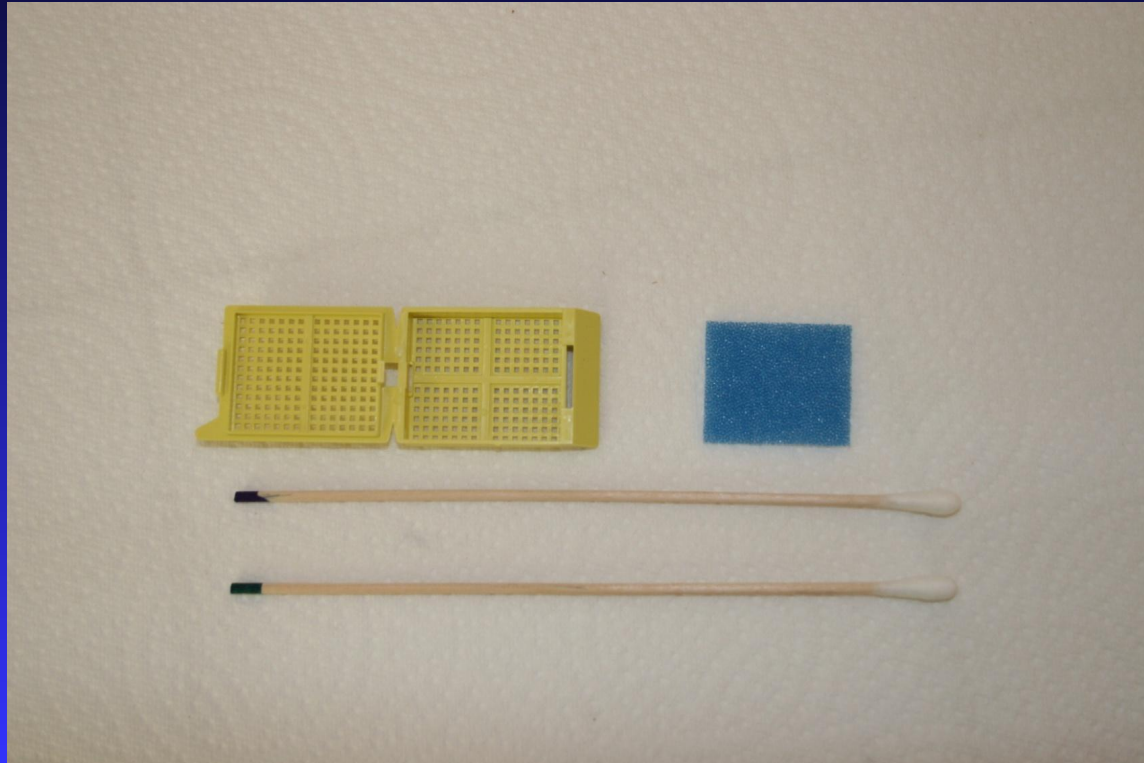


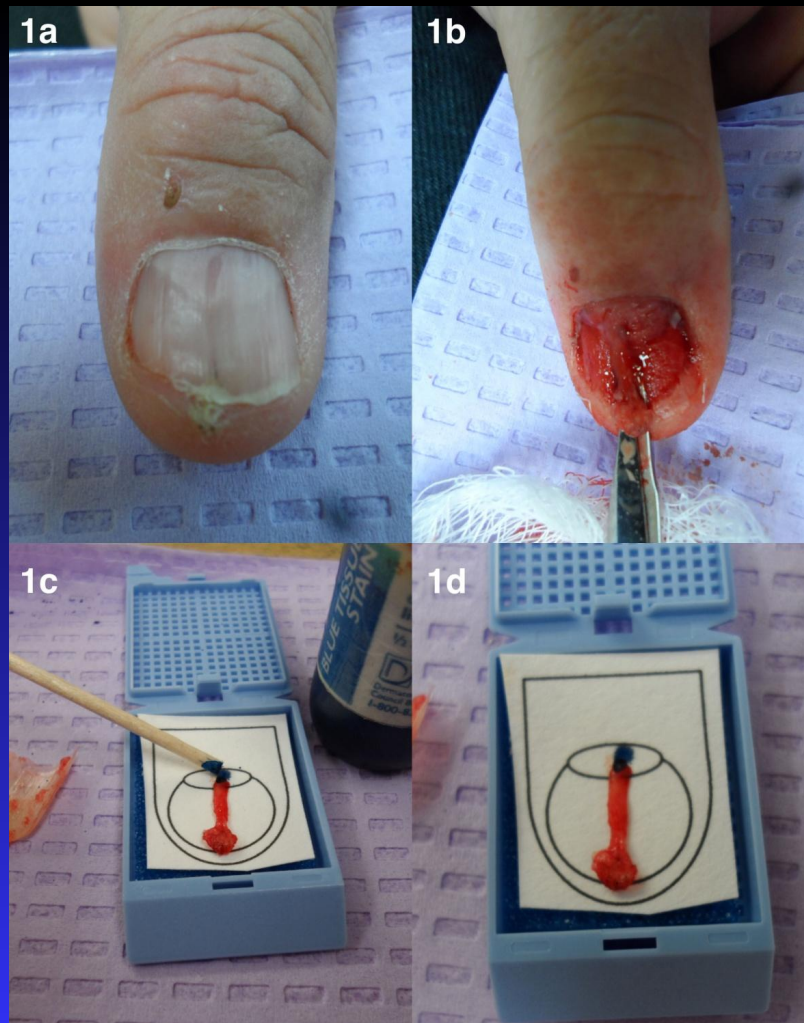


Print template at [www.cta-lab.com](http://www.cta-lab.com)



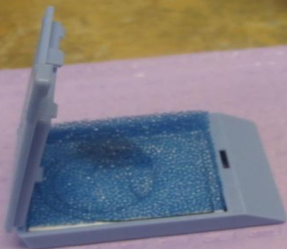
# Histology Materials





**Figure 1**

2a



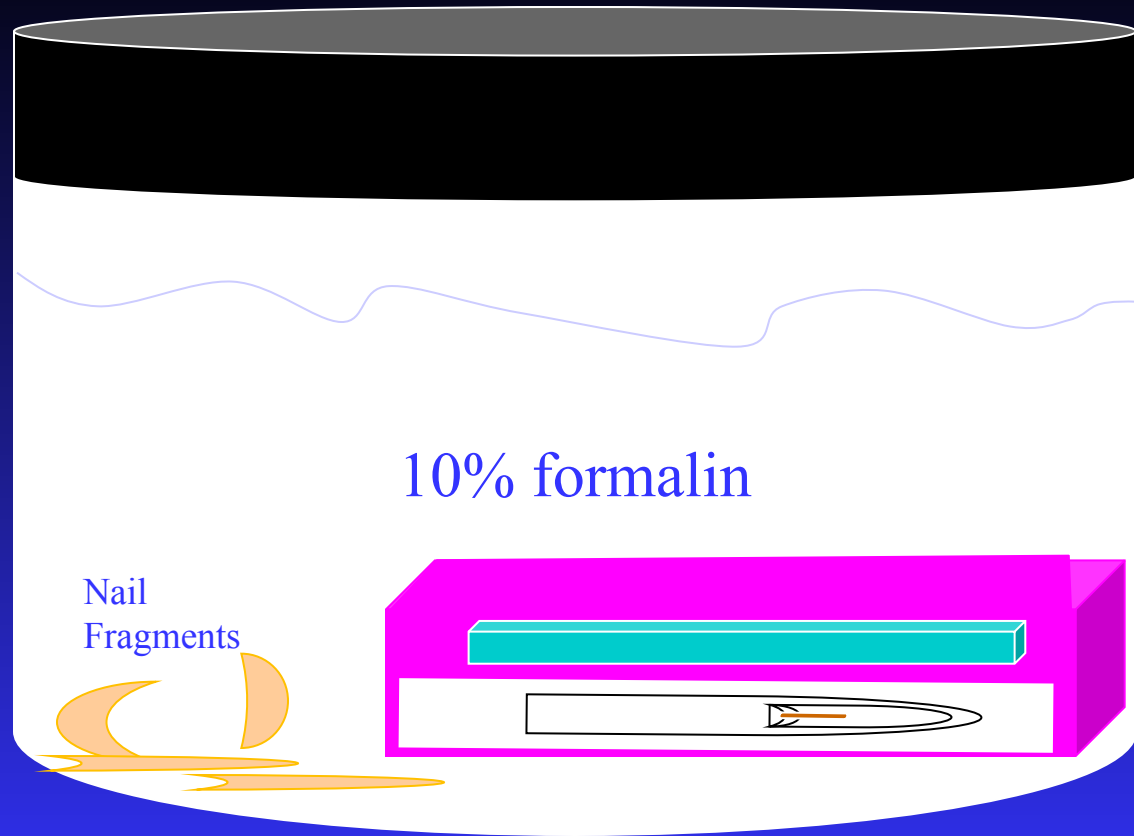
2b



2c



**Figure 2**





Each specimen is different



# Pathologist review before grossing

- Number tissue blocks
- Unstained slides or levels at the start
- Special stains
- Importance of nail
- Reserve nail for culture

# Think about the differential diagnosis when grossing

- Onychopapilloma
- Onychomatricoma
- Digital myxoid/mucous cyst
- Squamous cell carcinoma
- Longitudinal melanonychia

# Onychopapilloma

## ■ Clinical

- ◆ Longitudinal erythronychia (redness)
- ◆ Distal nail split



# Onychopapilloma

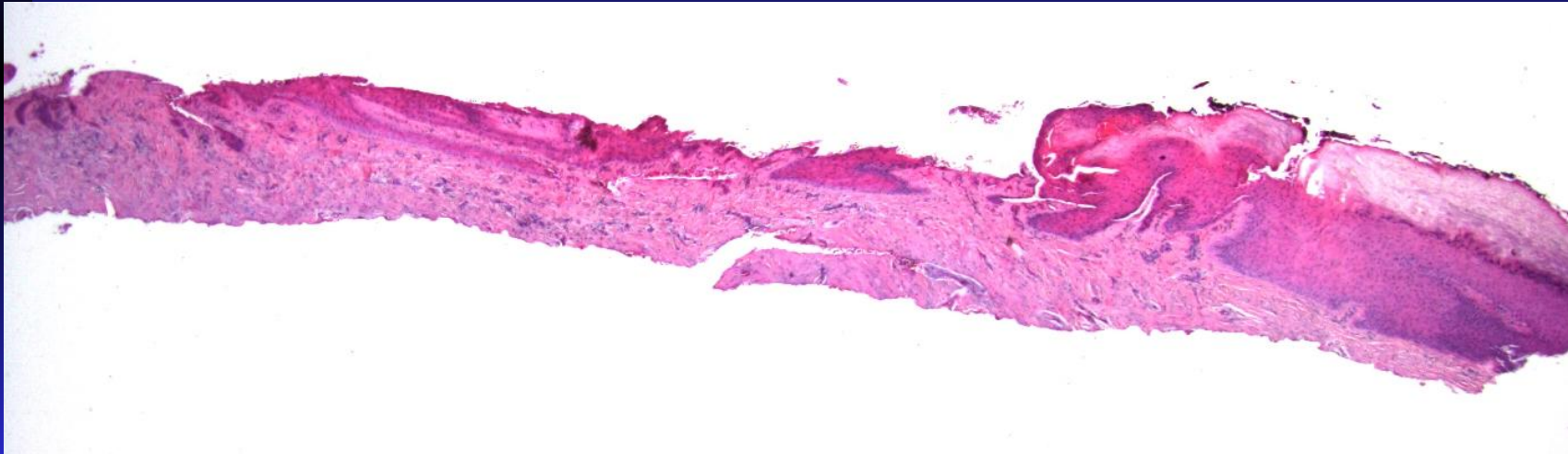
## ■ Clinical

- ◆ Longitudinal erythronychia (redness)
- ◆ Distal nail split



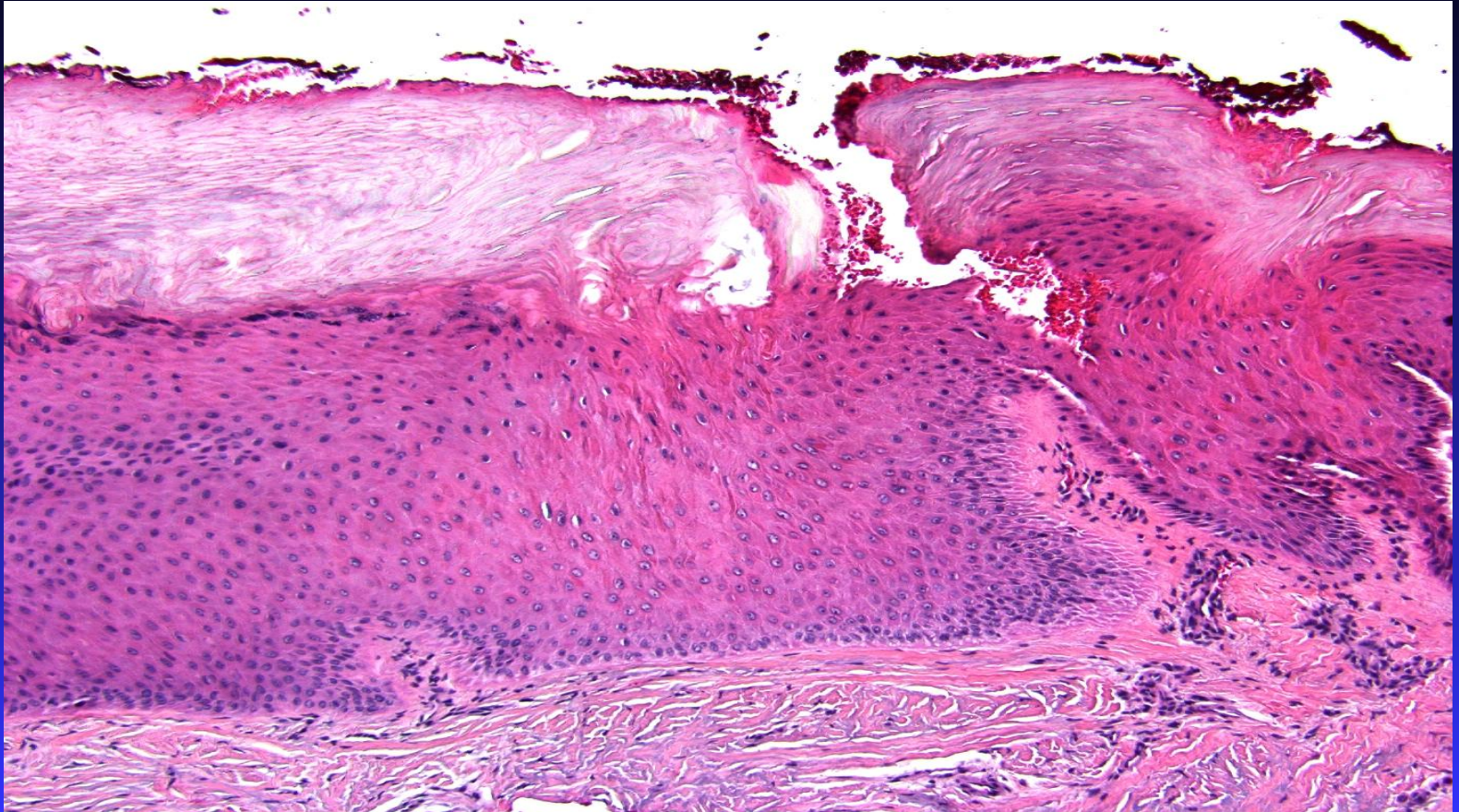
Figure 1

# Onychopapilloma—Keratin Producing

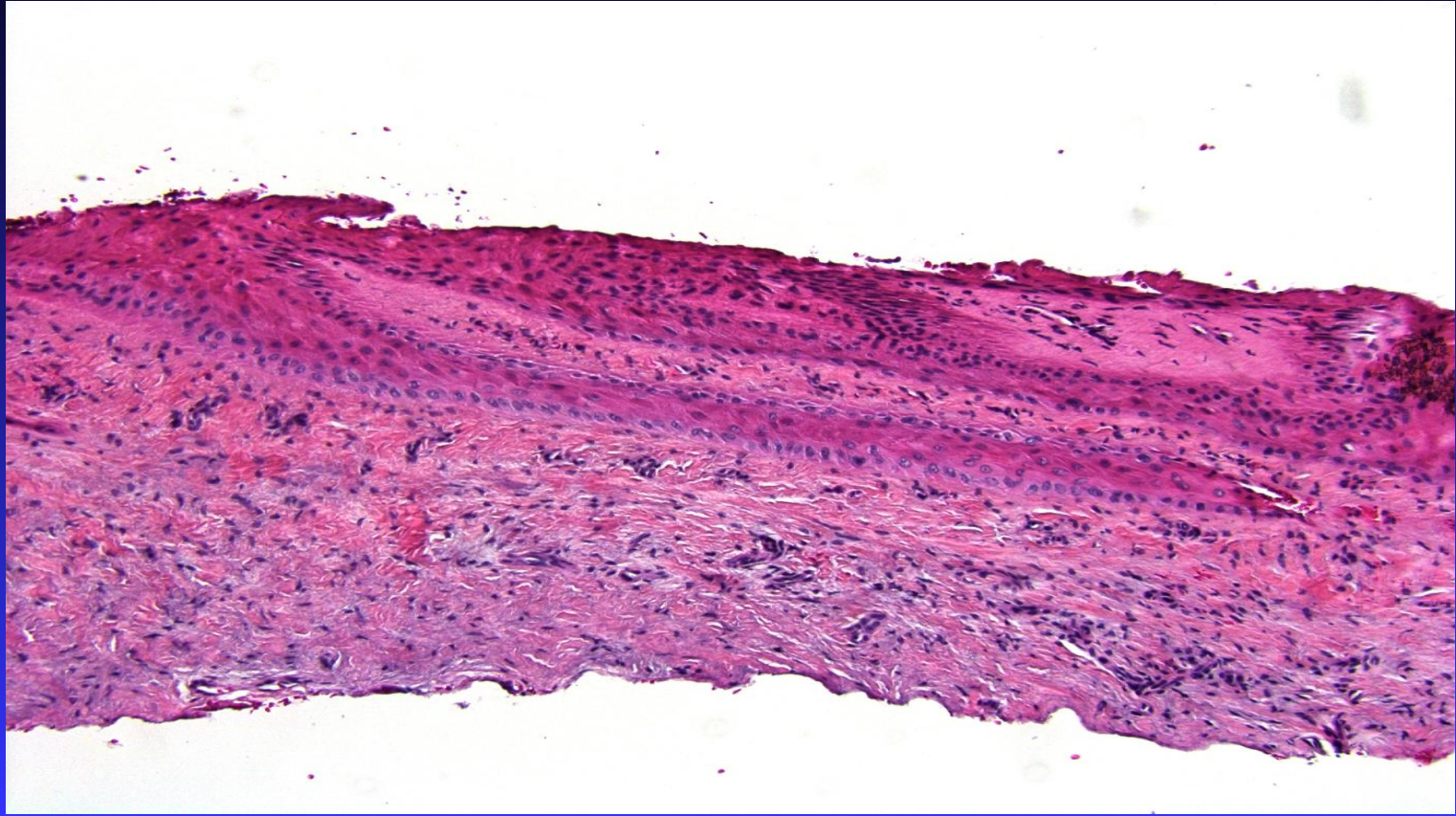




# Onychopapilloma—Keratin Producing

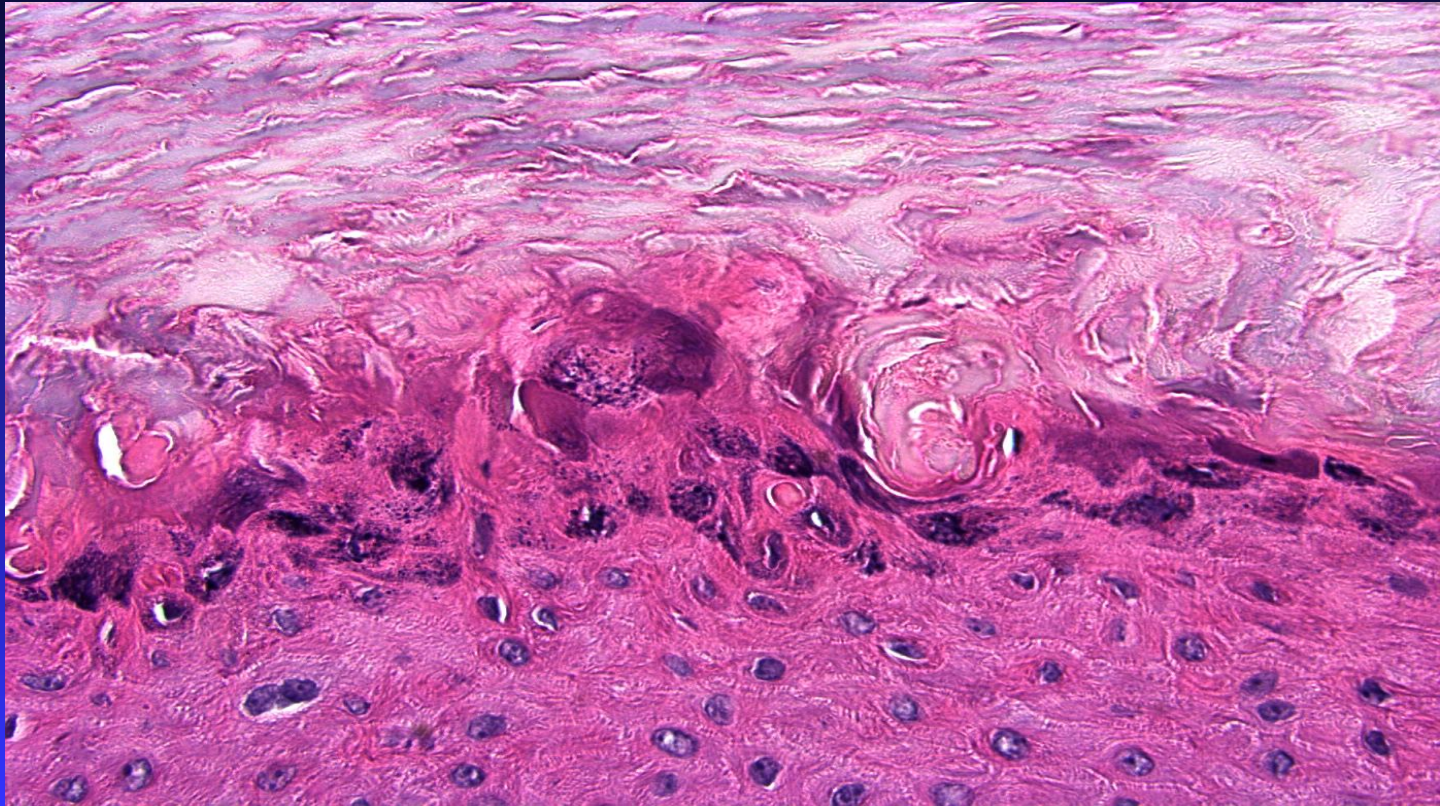


# Onychopapilloma





# Onychopapilloma—Not a wart

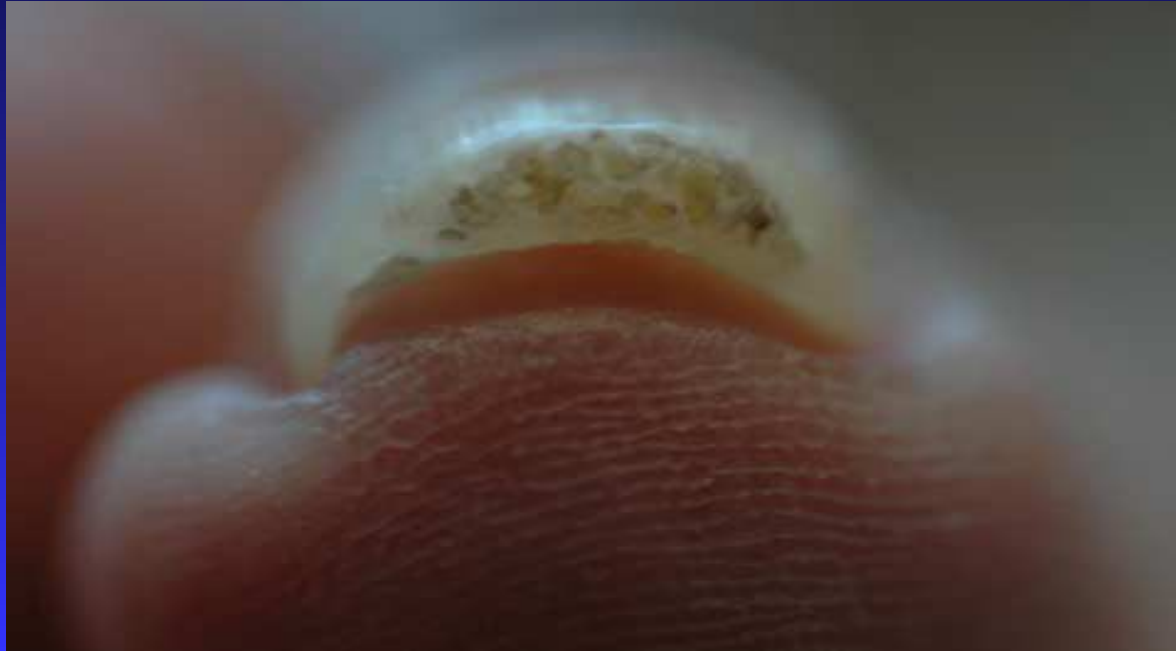


# Onychomatricoma



# Onychomatricoma

- Examine nail for holes—Transverse sections of dystrophic nail



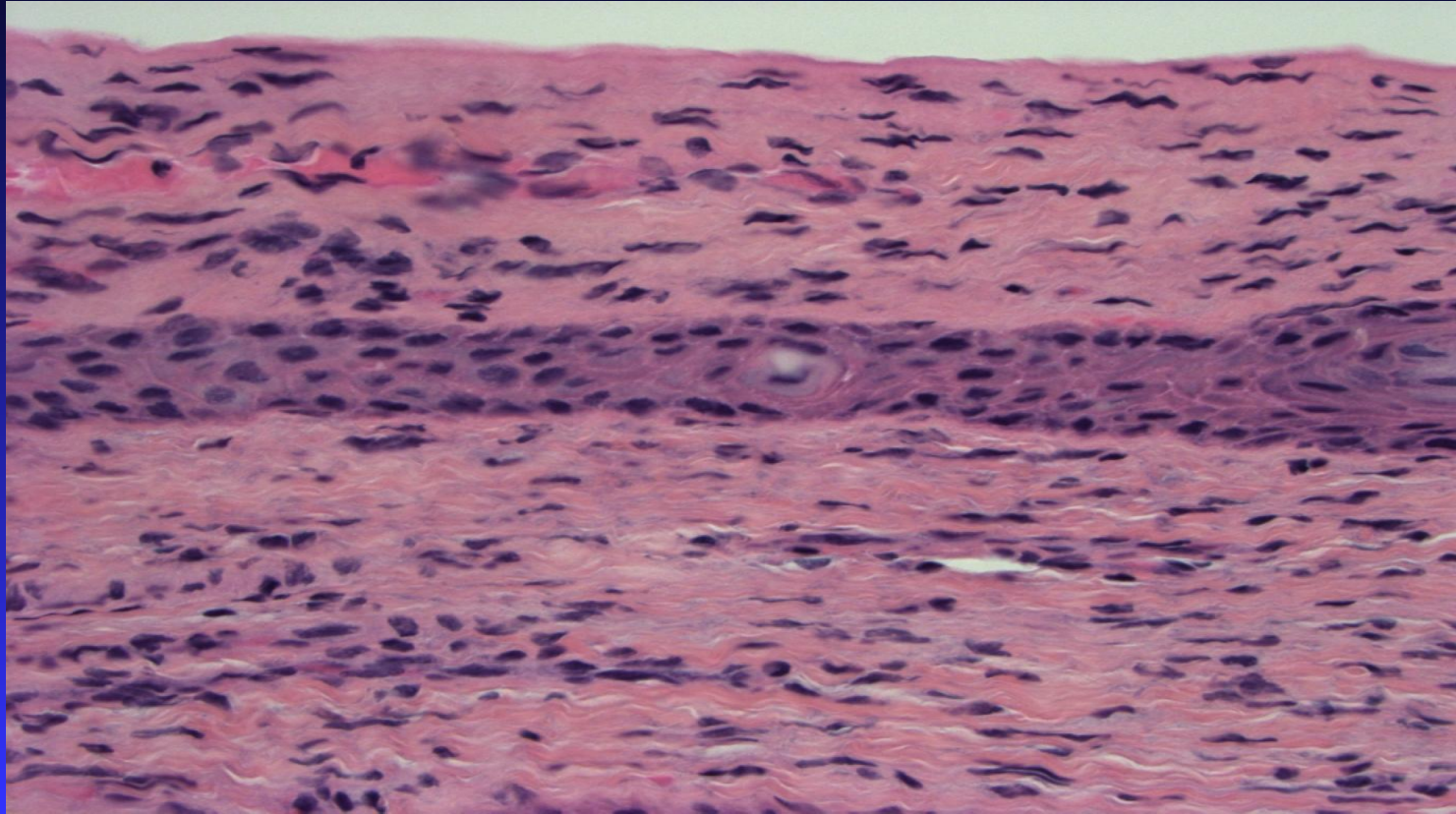


# Onychomatricoma

Epithelial and dermal components



# Onychomatricoma



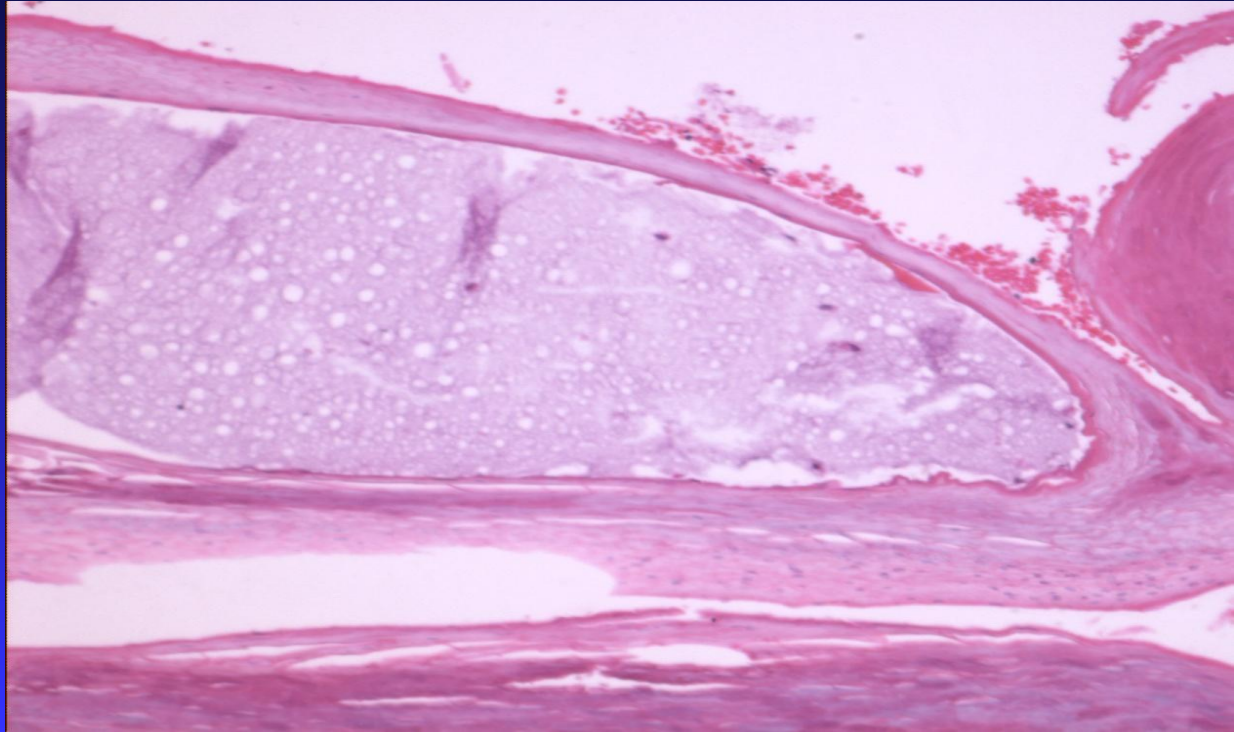
# Digital Myxoid/Mucous Cyst



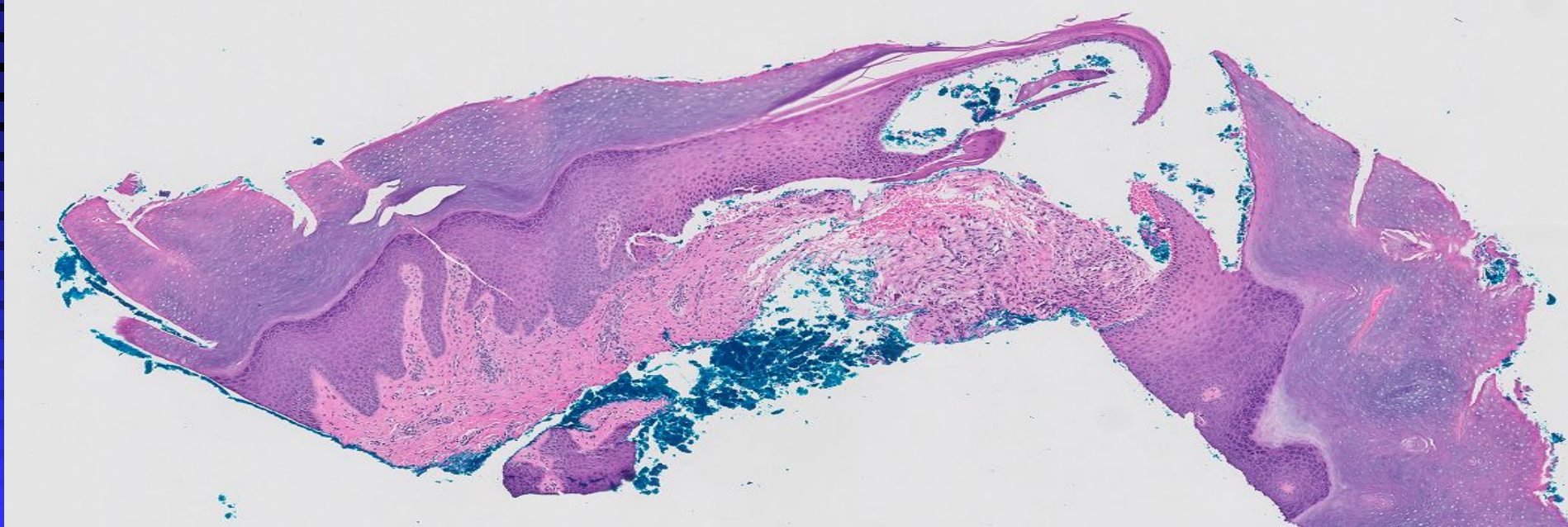


# Digital Myxoid/Mucous Cyst

- Mucin may be anywhere

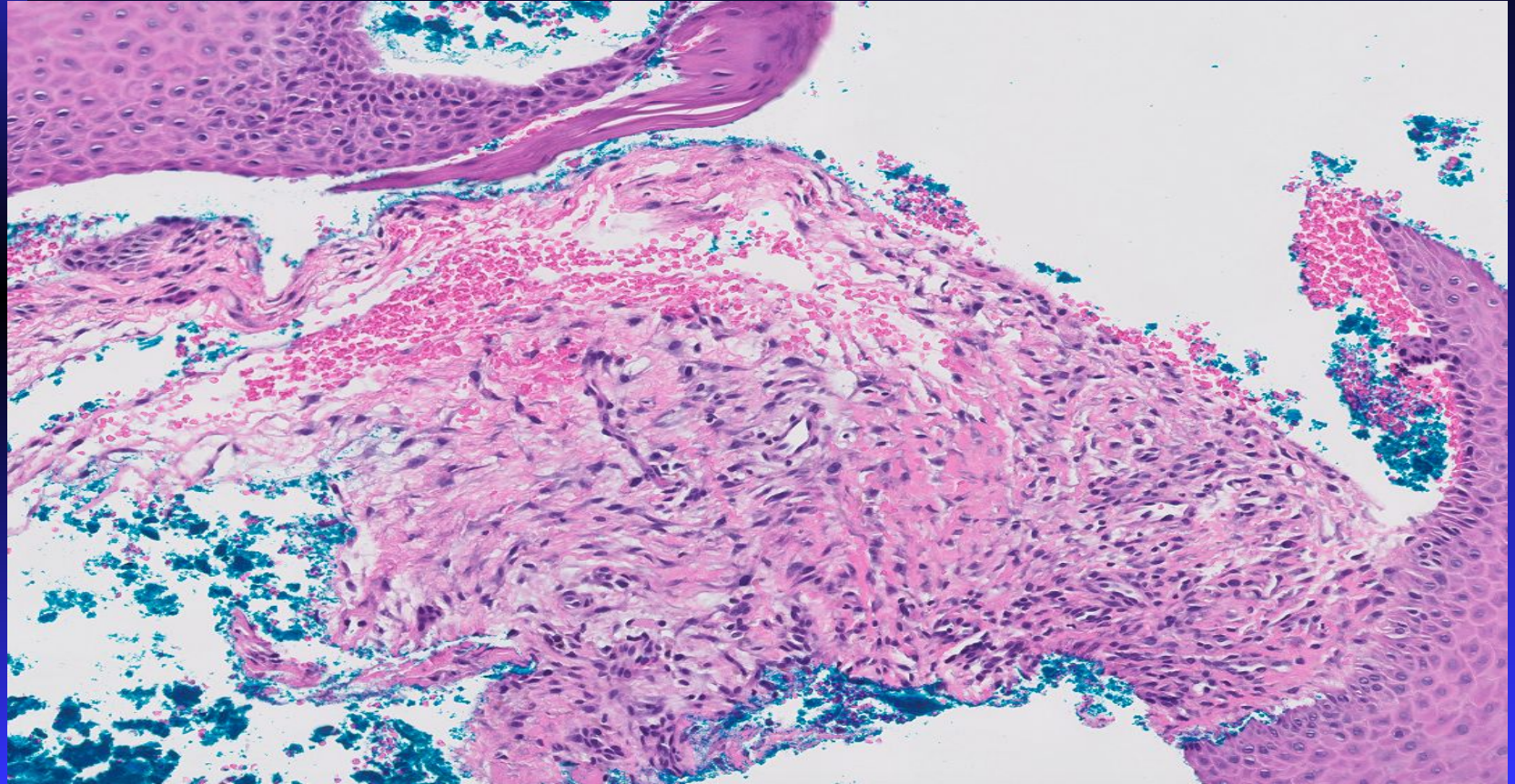


H&E may show only scar and  
reactive change

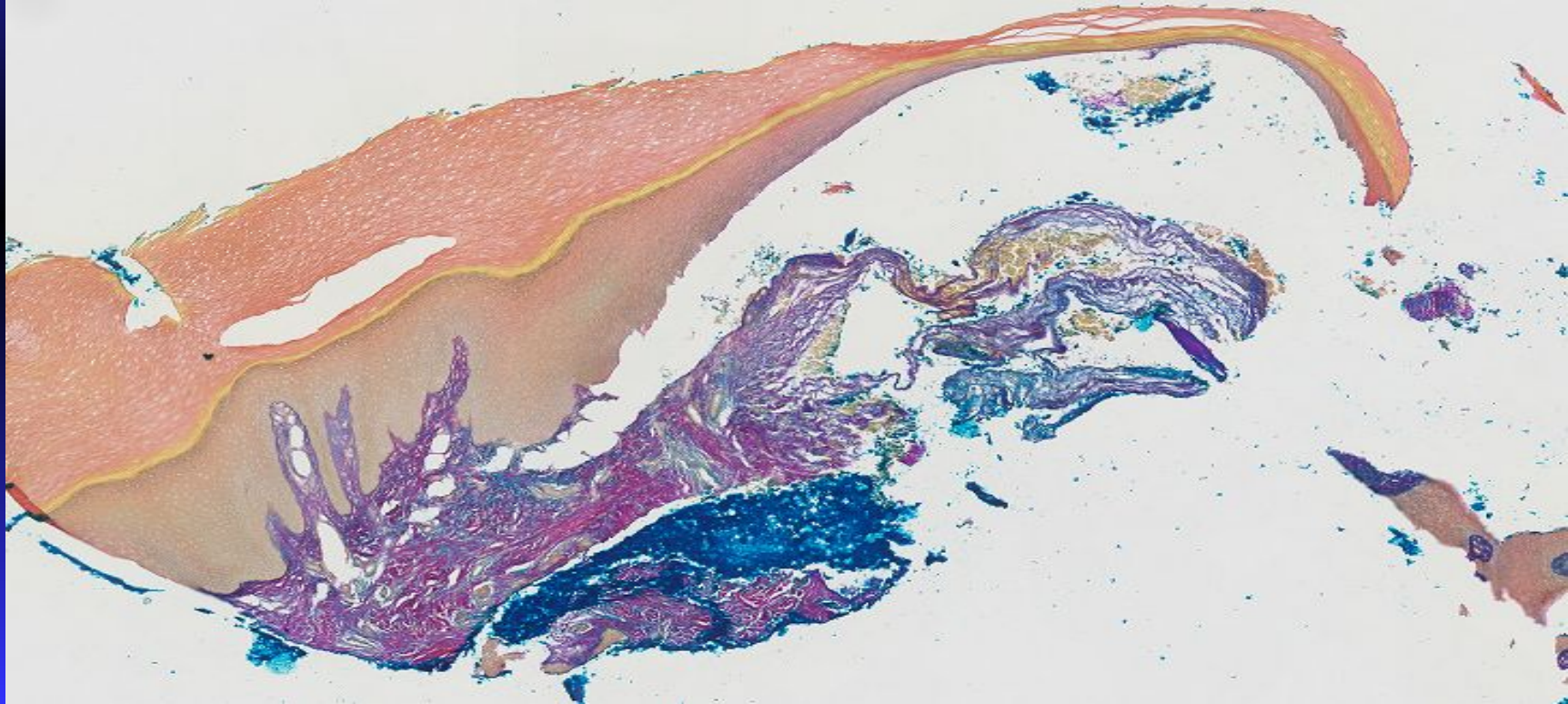




H&E may not show mucin



# Mucin stain often required



# Think about the diagnosis when grossing

- Squamous cell carcinoma
  - ◆ Sampling
  - ◆ HPV-Verruca etiology

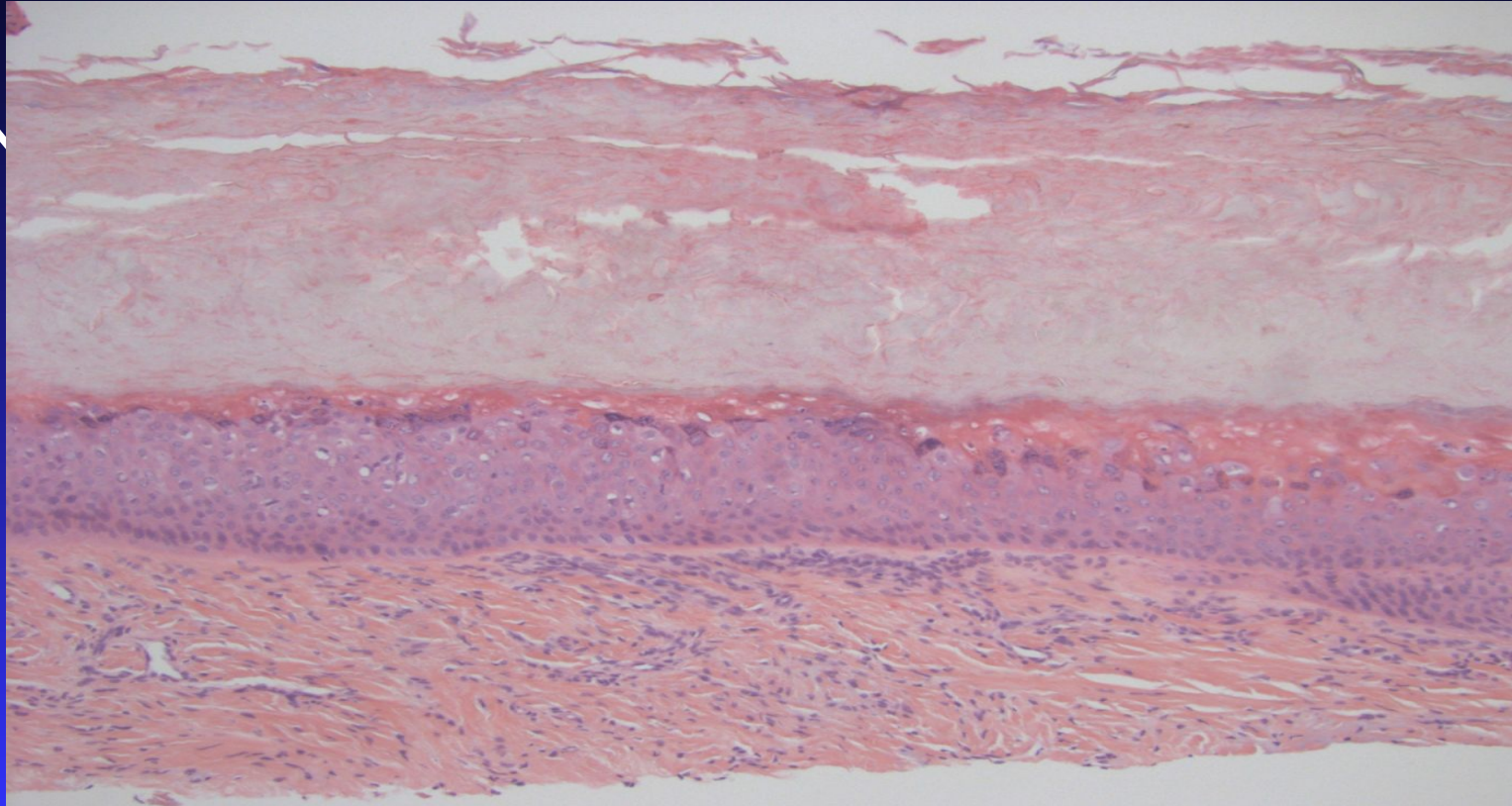


# Squamous cell carcinoma



# Squamous cell carcinoma

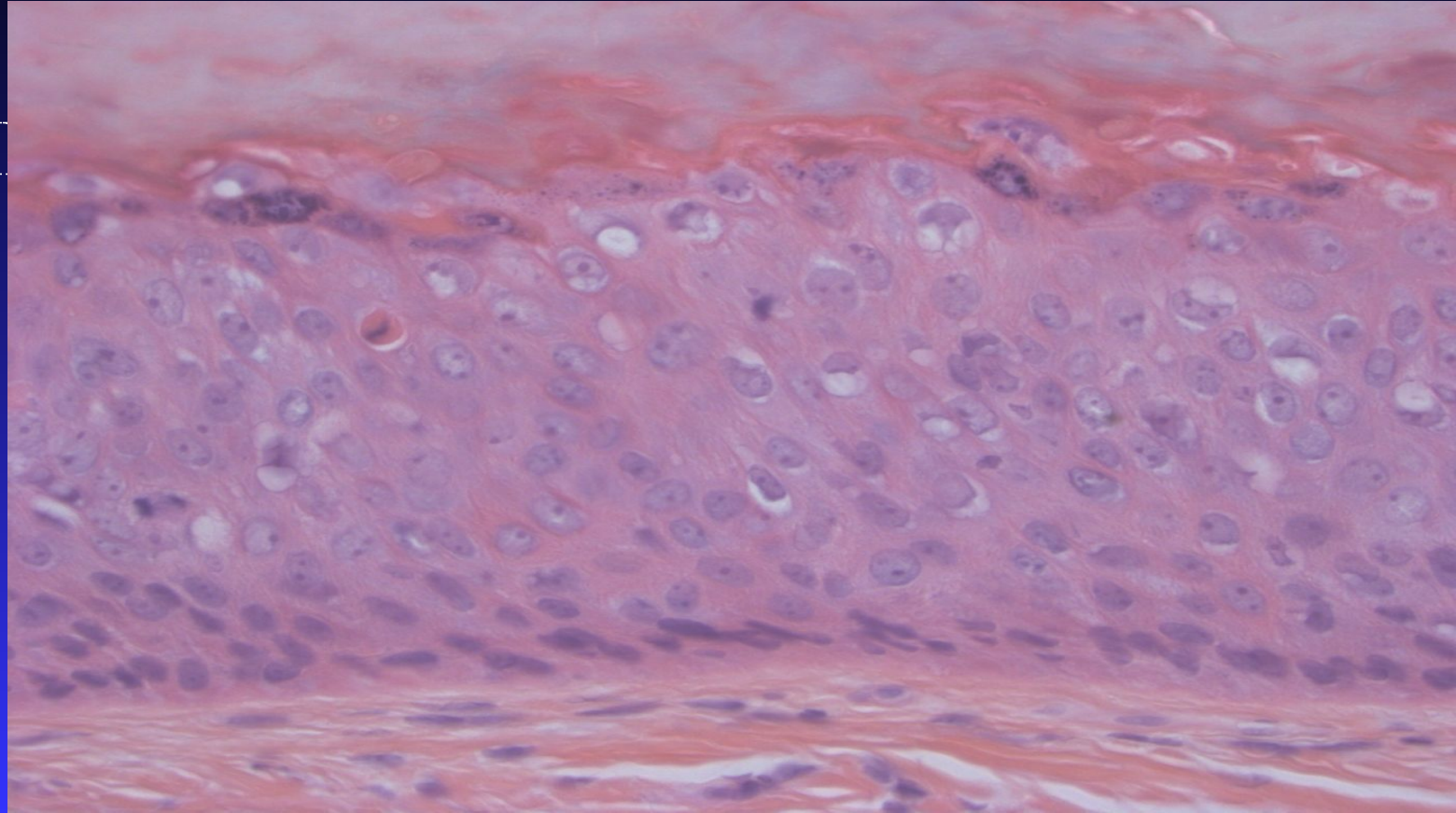
■ IN





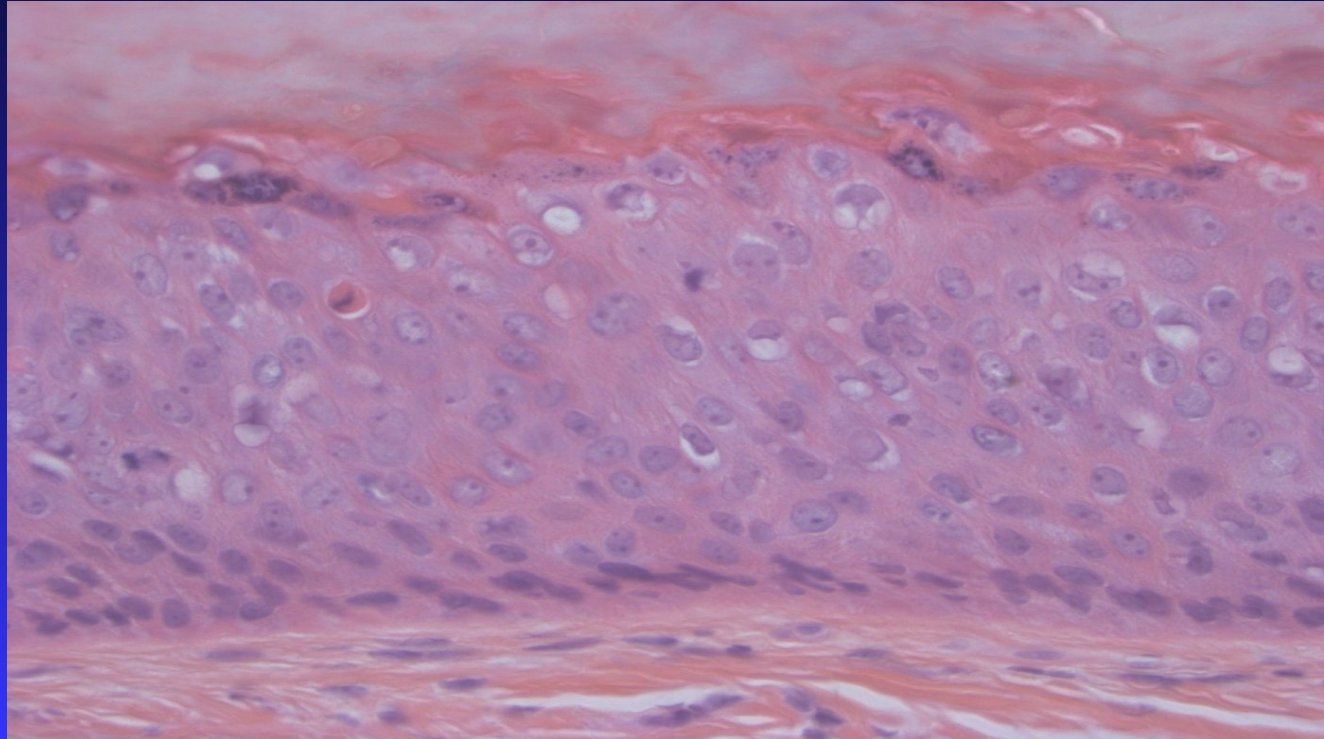
# Squamous cell carcinoma in-situ

- I

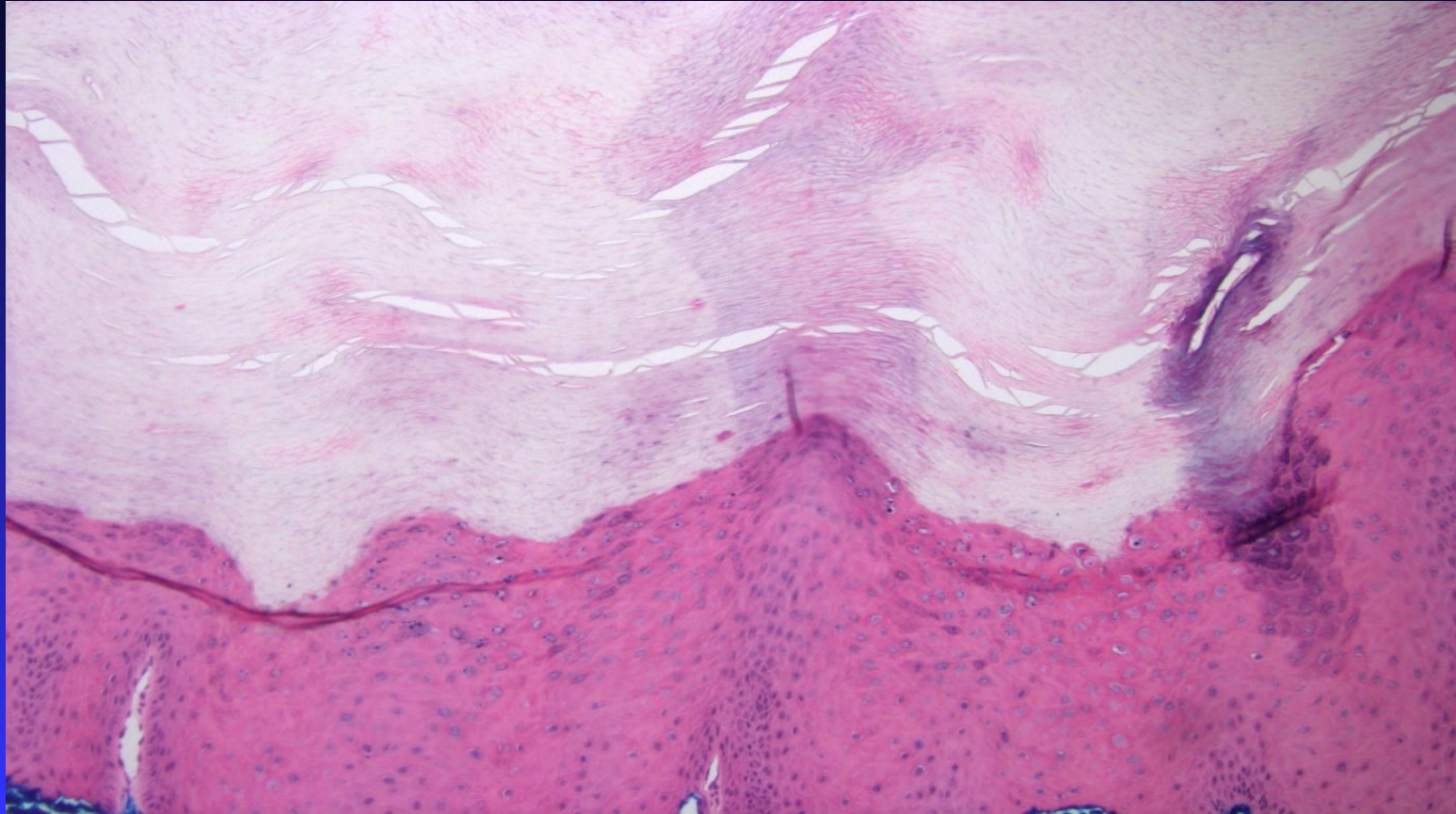


# Squamous cell carcinoma in-situ

- Human Papillomavirus (HPV) features



# SCC versus Wart/Verruca





# SCC versus Wart/Verruca

- Clinical correlation often necessary
  - ◆ Immunosuppression (esp HIV)
  - ◆ If it is destroying bone, it is not benign!
  - ◆ Sample more if suspicious



# HPV In-situ Hybridization (ISH)

- HPV Subtypes—Same as cervical
  - ◆ Low risk--Verruca
  - ◆ High risk—Squamous cell carcinoma
  - ◆ Pan HPV test—Benign and malignant

# Think about the diagnosis when grossing

- Longitudinal melanonychia
  - ◆ Identify source of clinical pigmentation



# Benign activation of junctional melanocytes

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

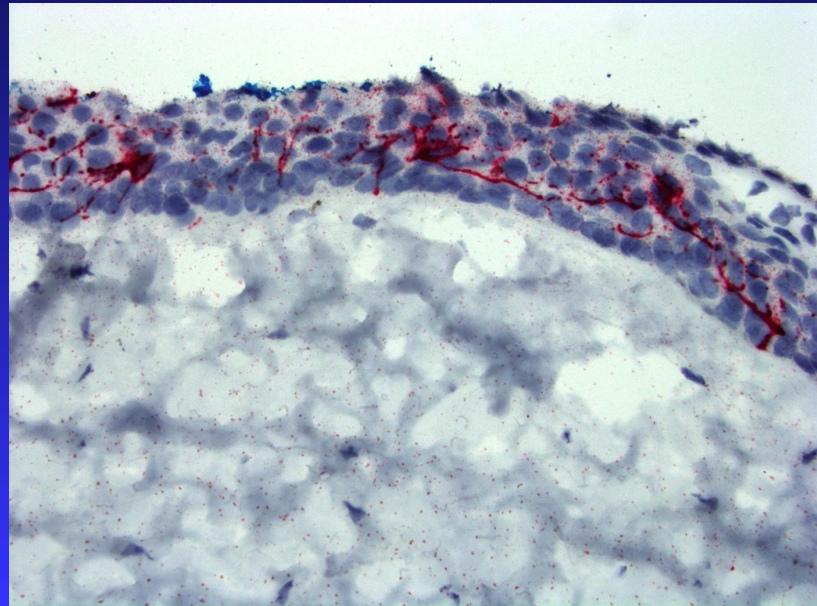


# Features of melanotic macule can be subtle.

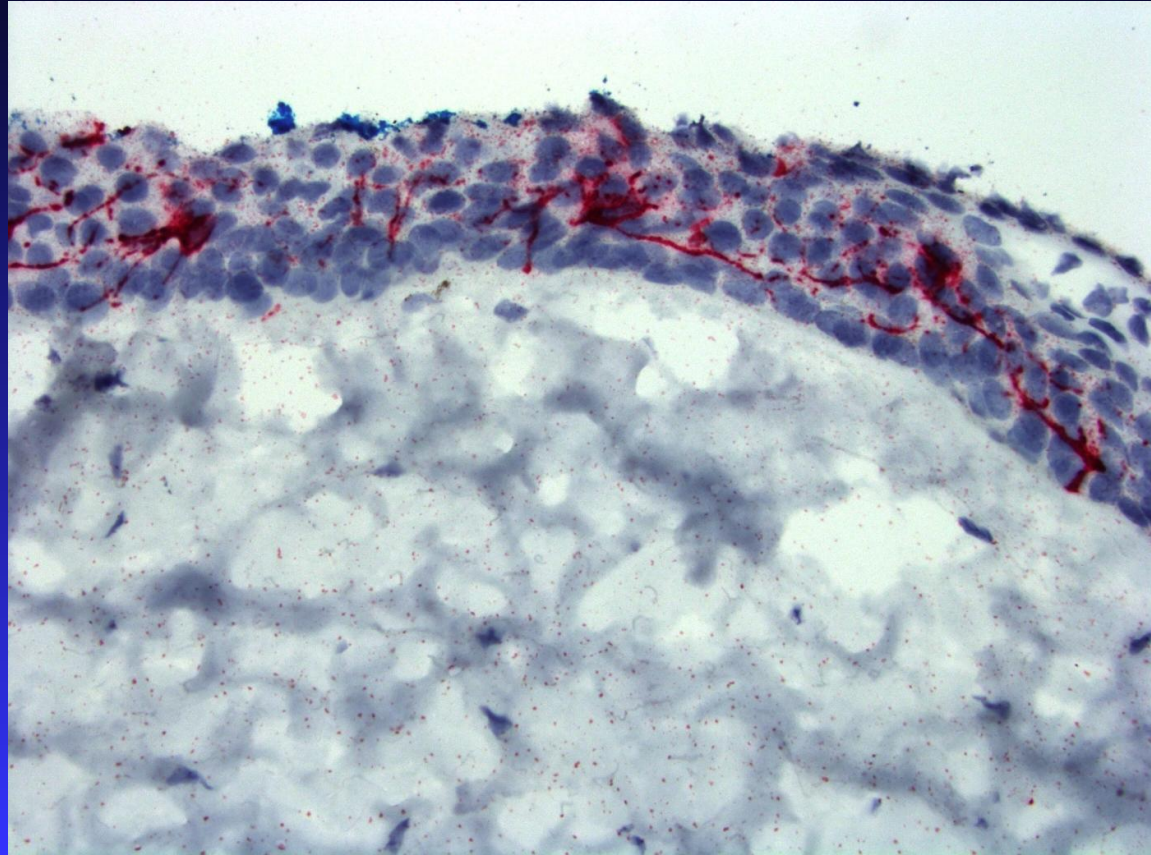
- H&E with initial levels
- MelanA IHC
- Fontana-Masson
- PAS fungus
- Unstained slides

# MelanA/Mart1 for melanonychia

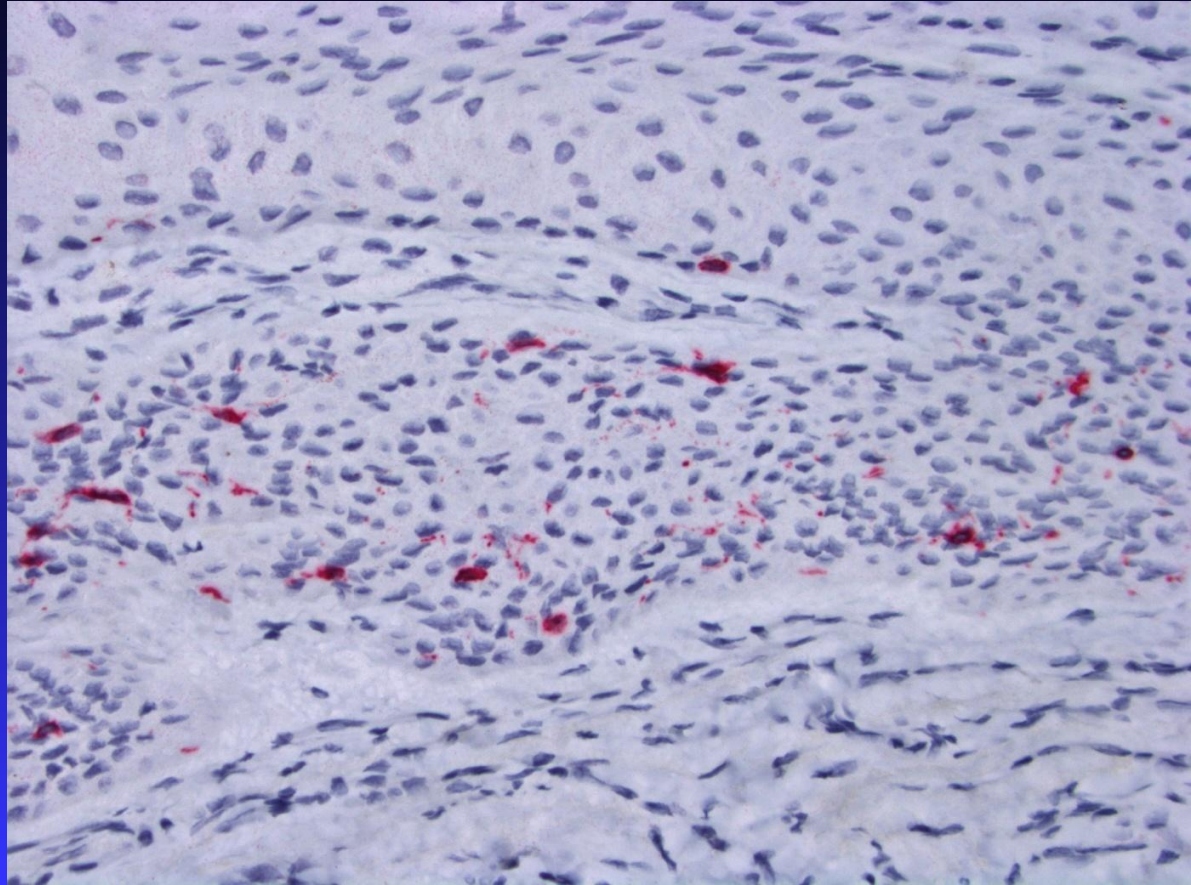
- Melanocytes density may vary highly, especially in melanoma in-situ
- Use a red chromogen



MelanA/Mart is better than  
SOX/Mitf

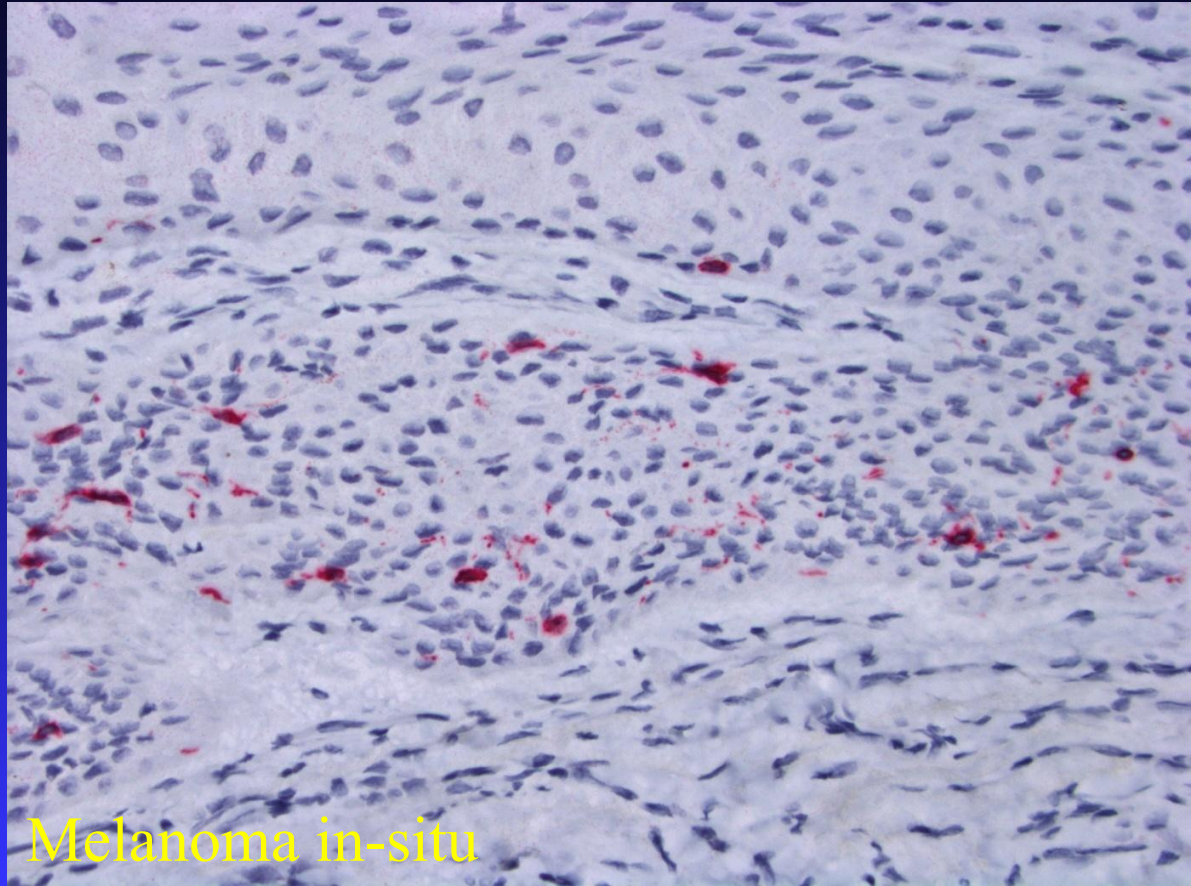


# Variable density of melanocytes





# Variable density of melanocytes



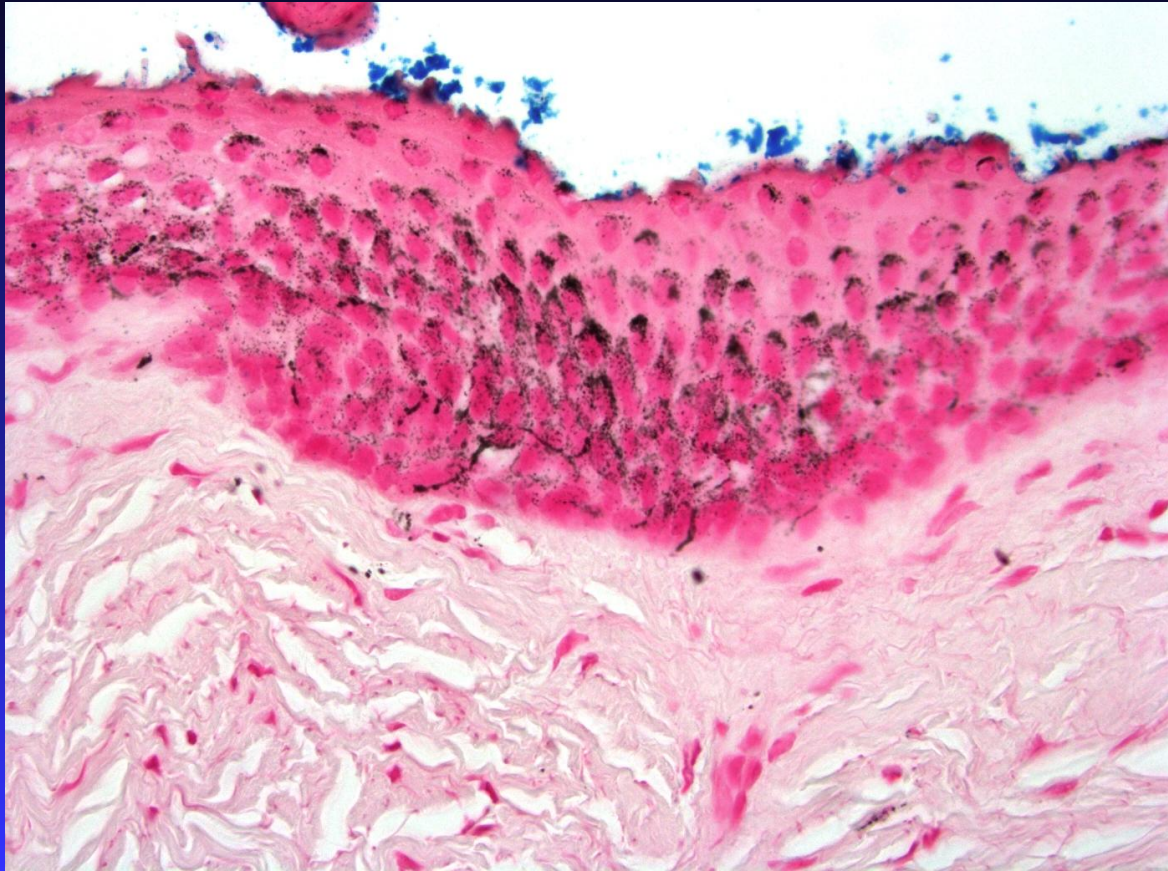
Melanoma in-situ

# Special stains for pigment do not work in nail plate

- Fontana-Masson—must dilute



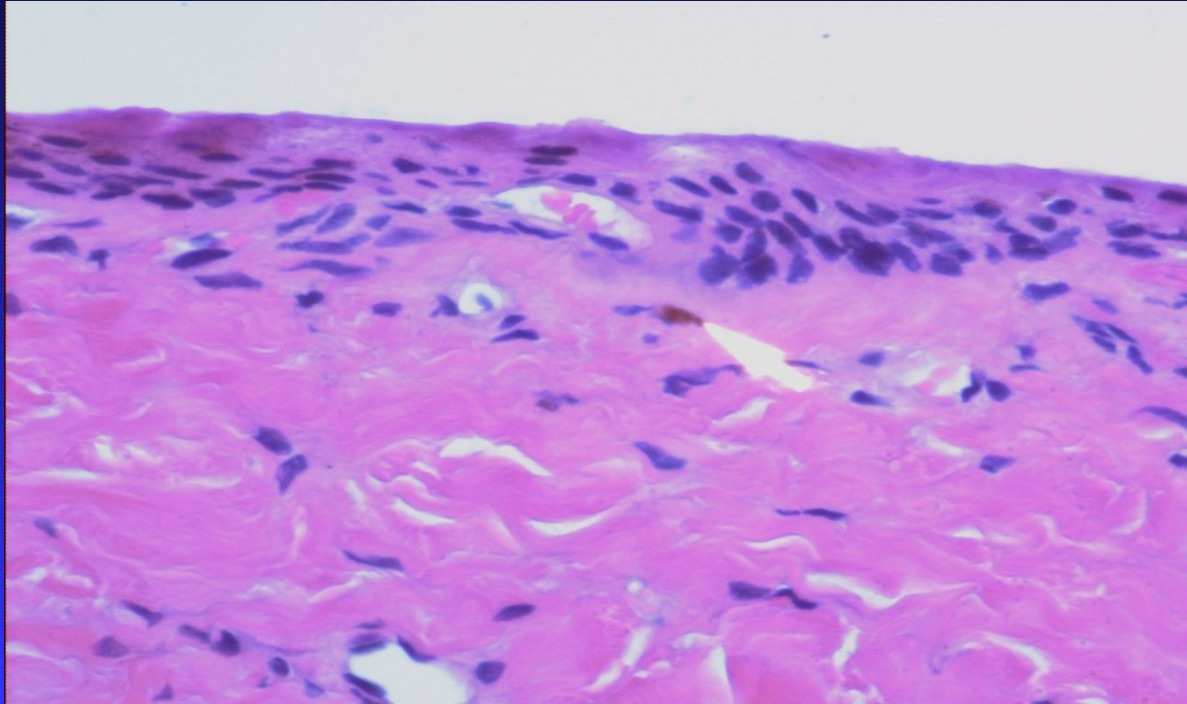
# Fontana-Masson for melanonychia





# Single melanophages

May be the only diagnostic findings in benign activation



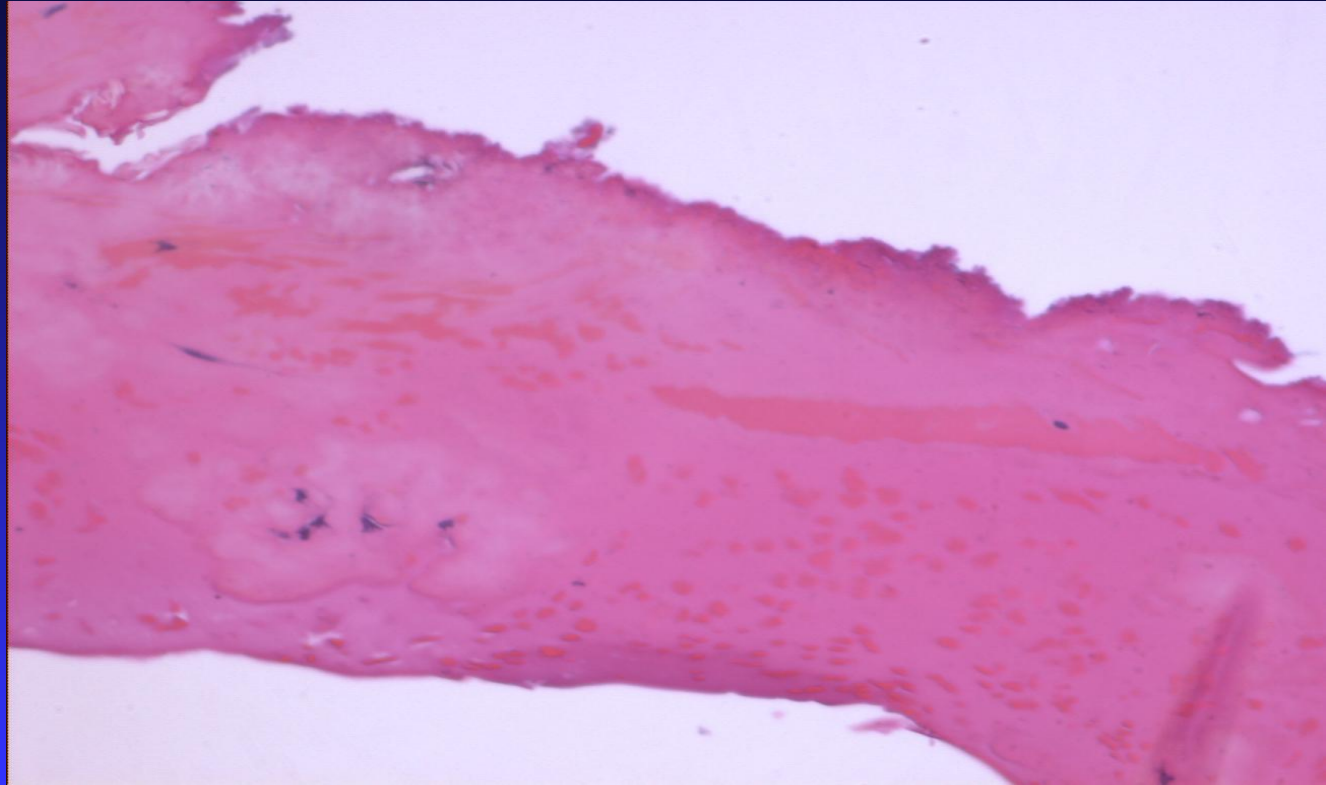


# H&E for melanonychia

- H&E level sections
  - ◆ Blood
  - ◆ Exogenous material
  - ◆ Medication deposition

# Blood in nail plate

Perl's iron stain does not work



# Pediatric nail nevi

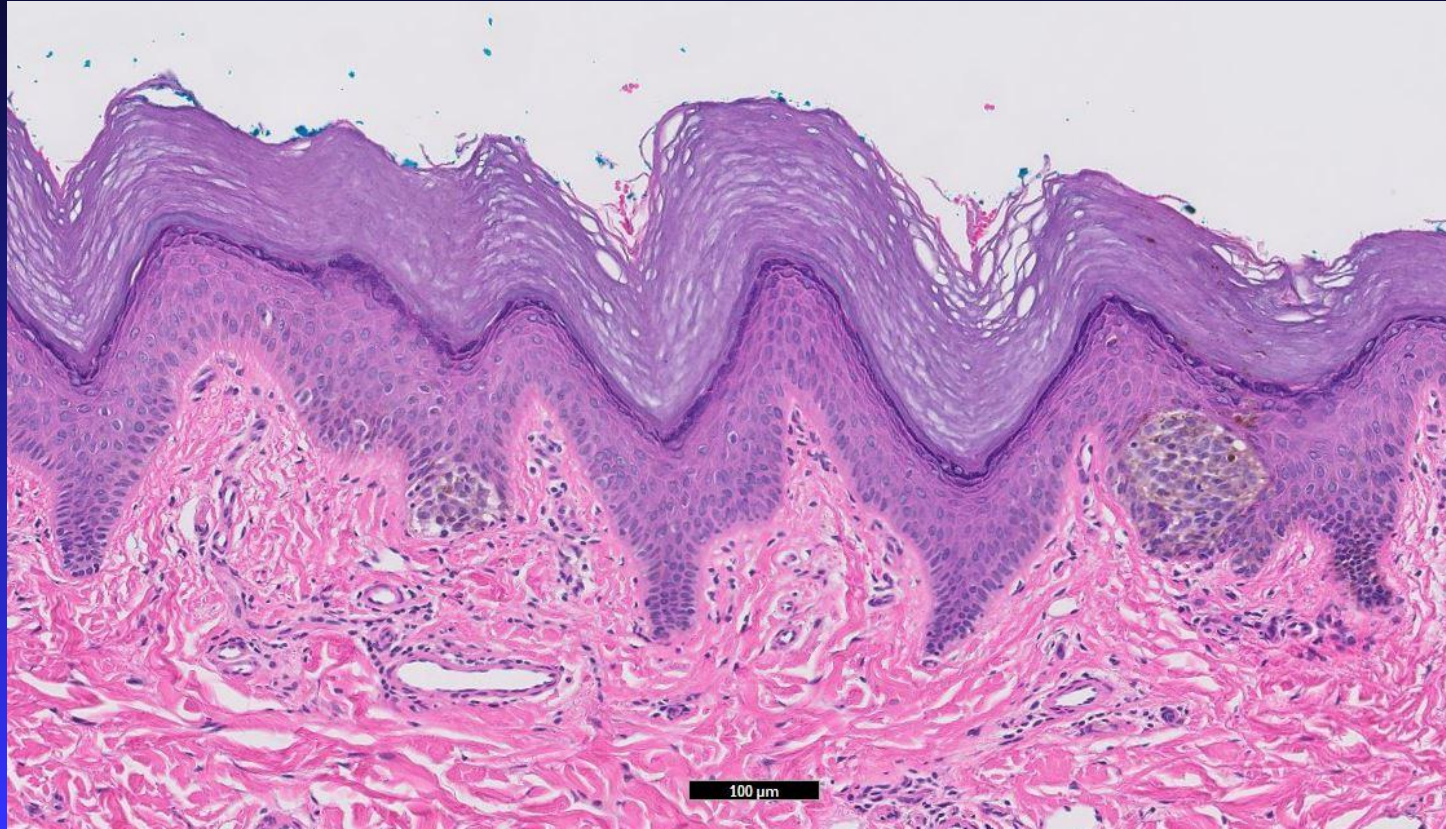
- Few pediatric melanocytic tumors sampled—nail experts do not sample
- Traditional criteria for benign vs atypical vs malignant do not apply

# 10 y/o Left great toe

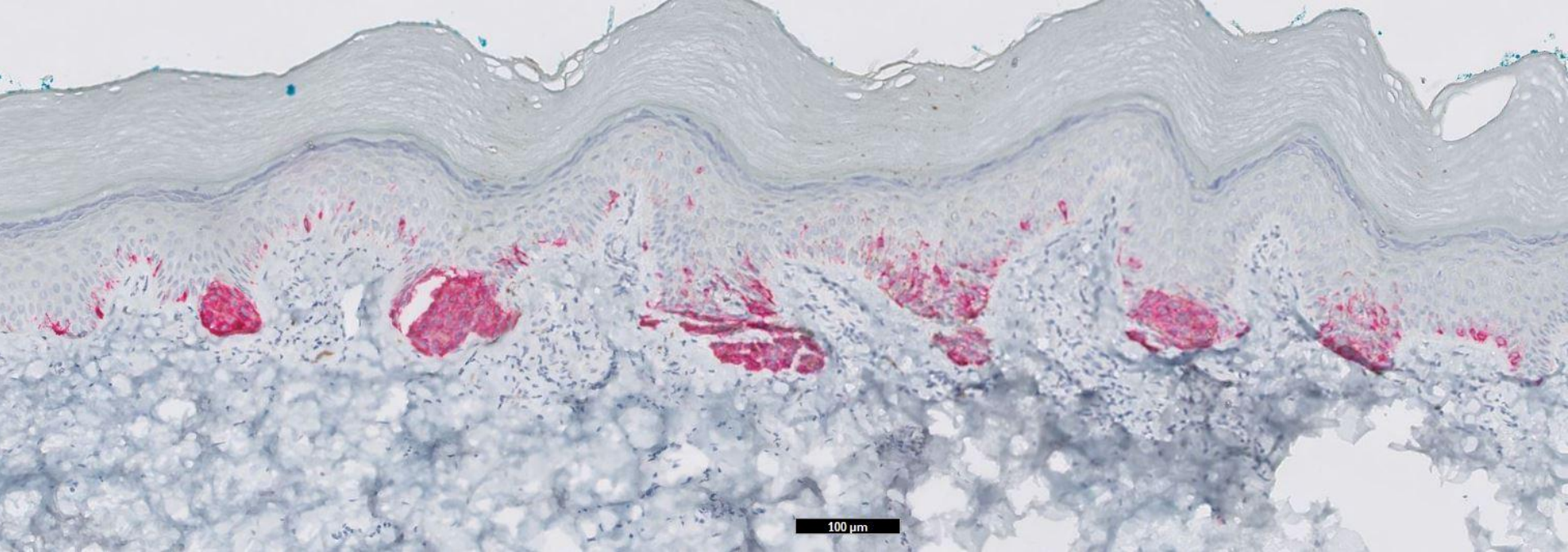




# Proximal nail fold

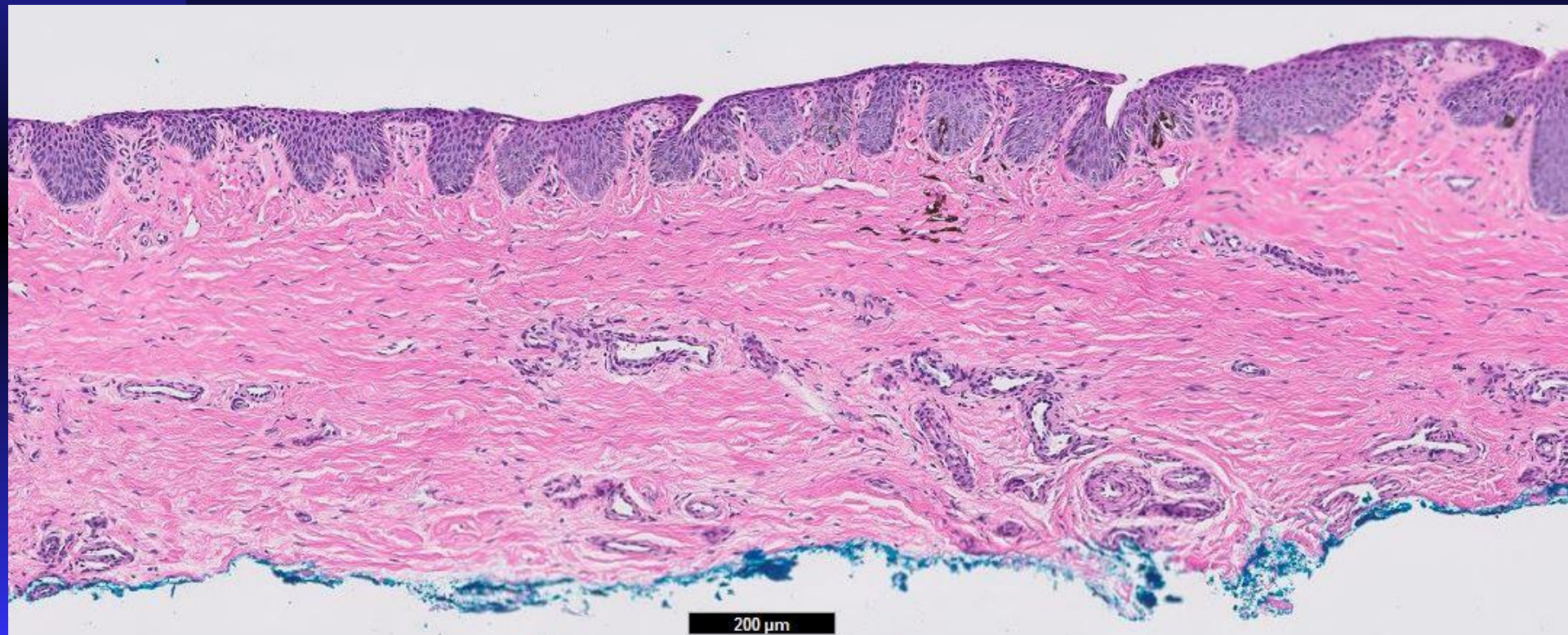


# Proximal nail fold



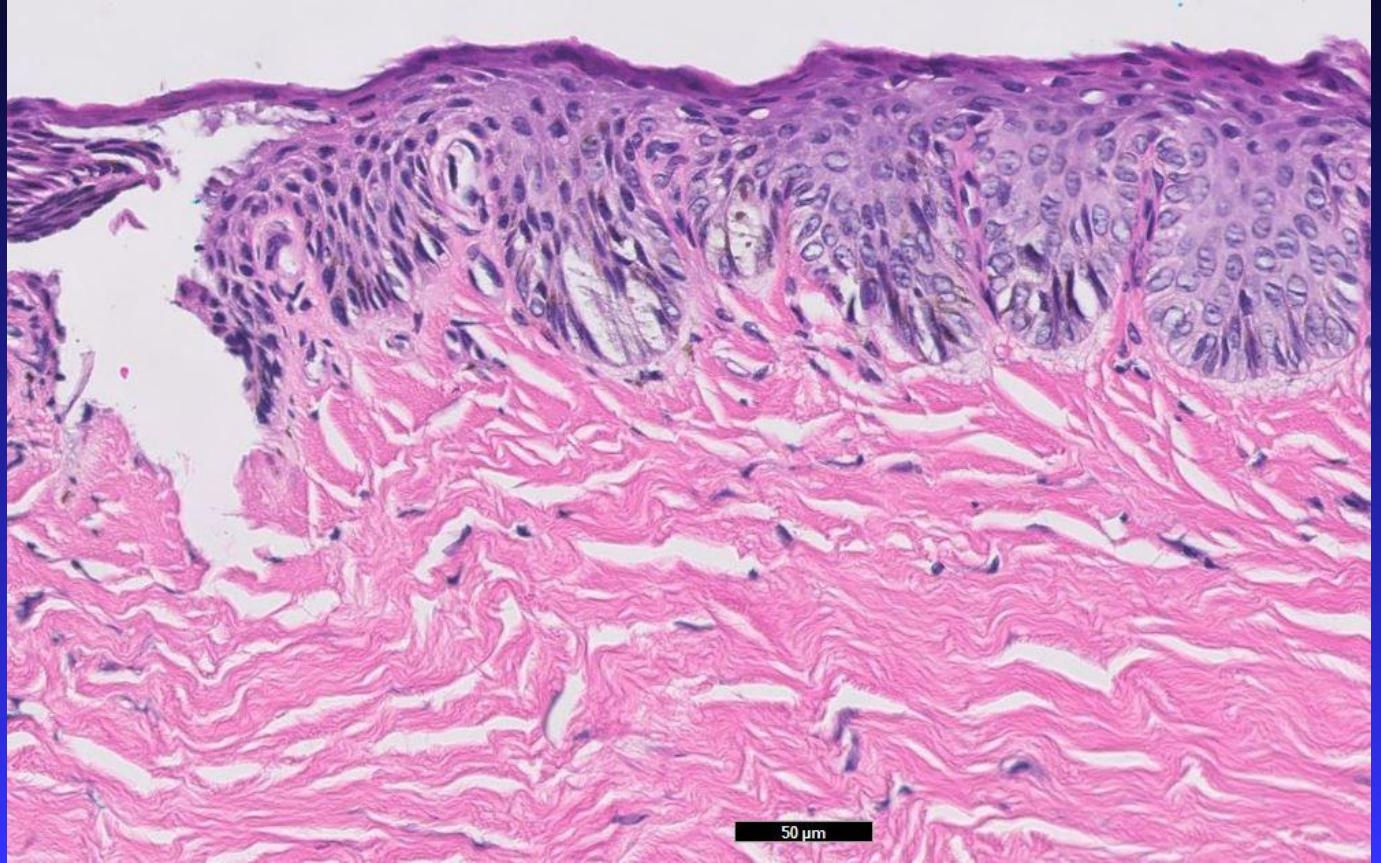


# Nail bed/matrix



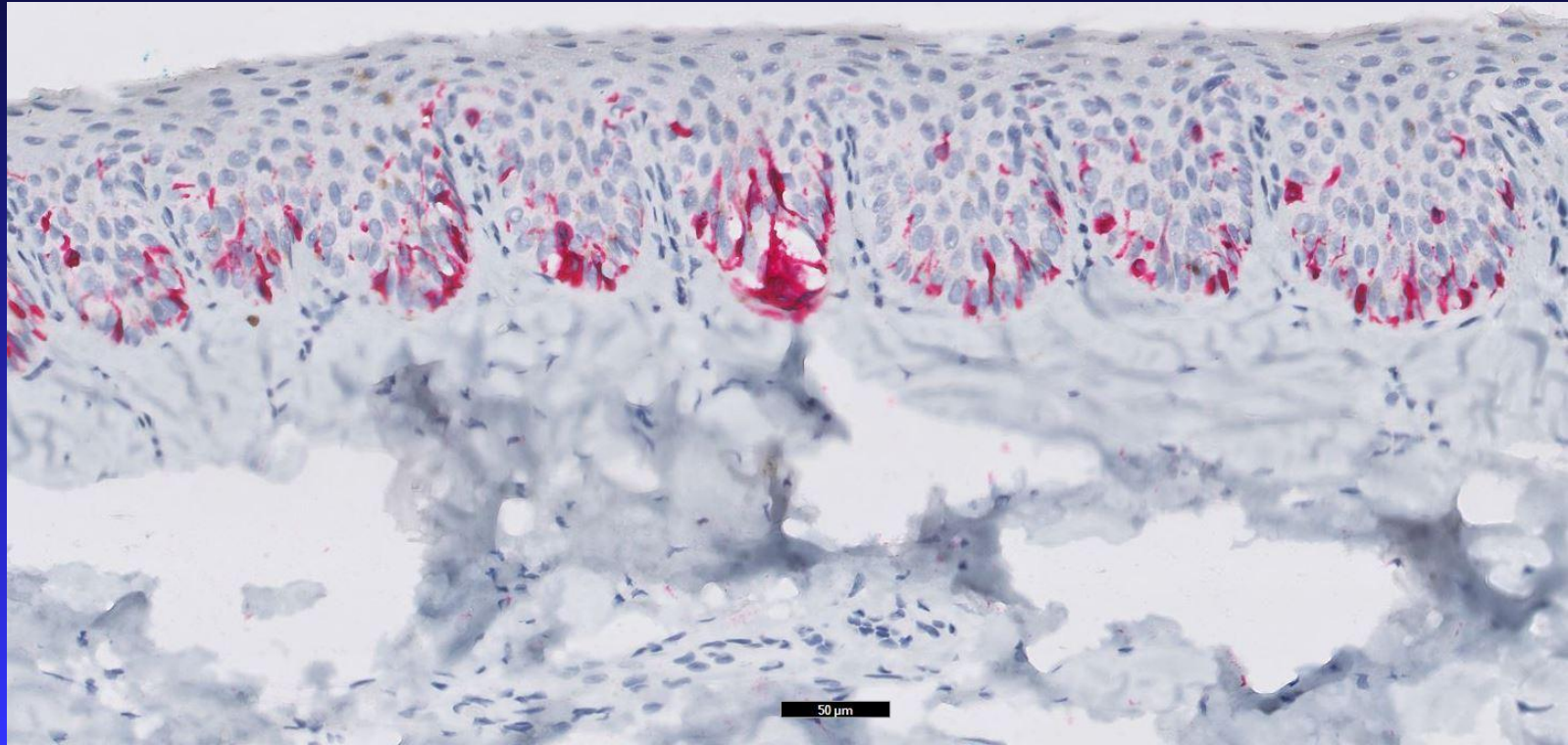


# Case Nail bed/matrix

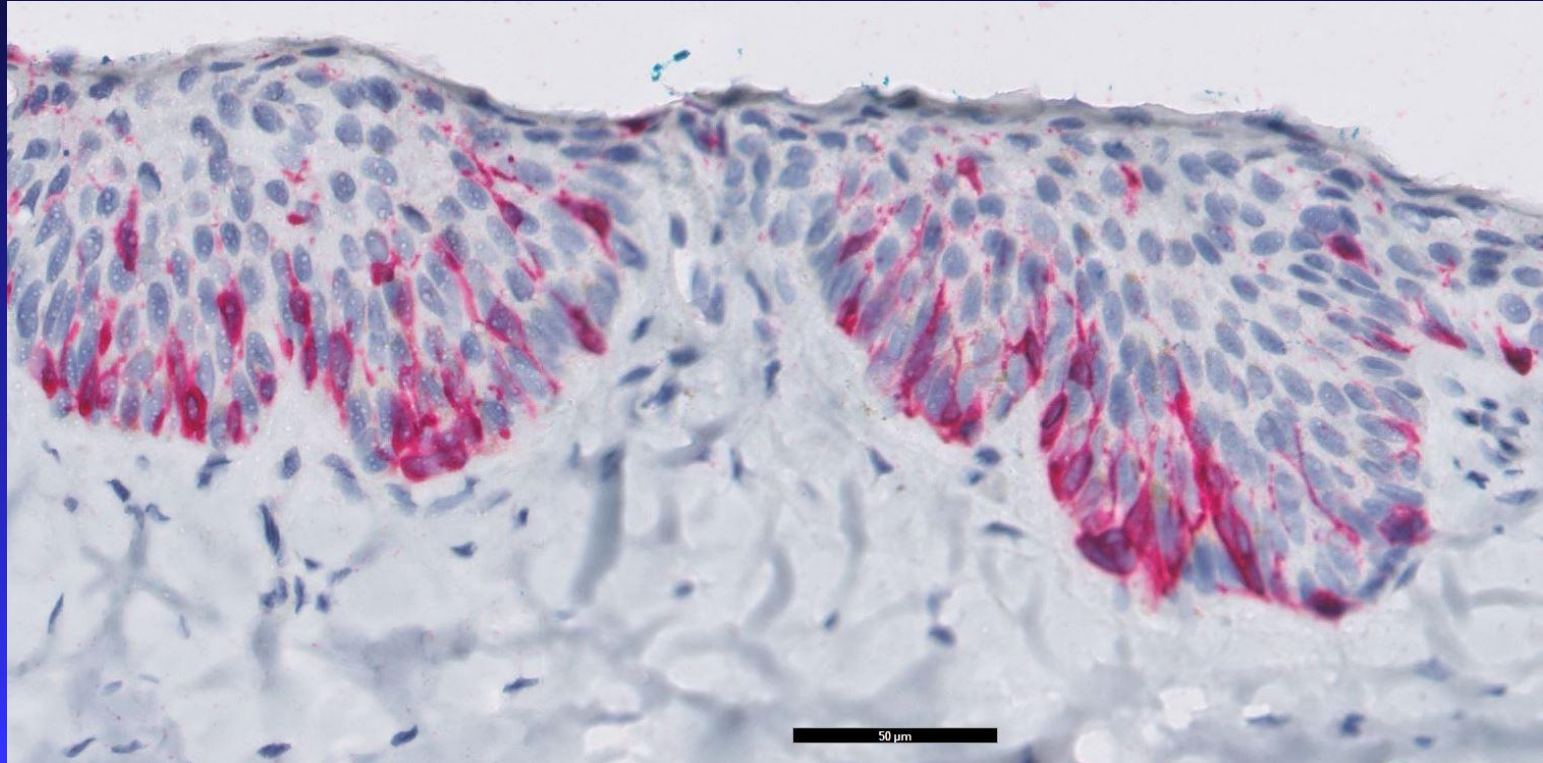




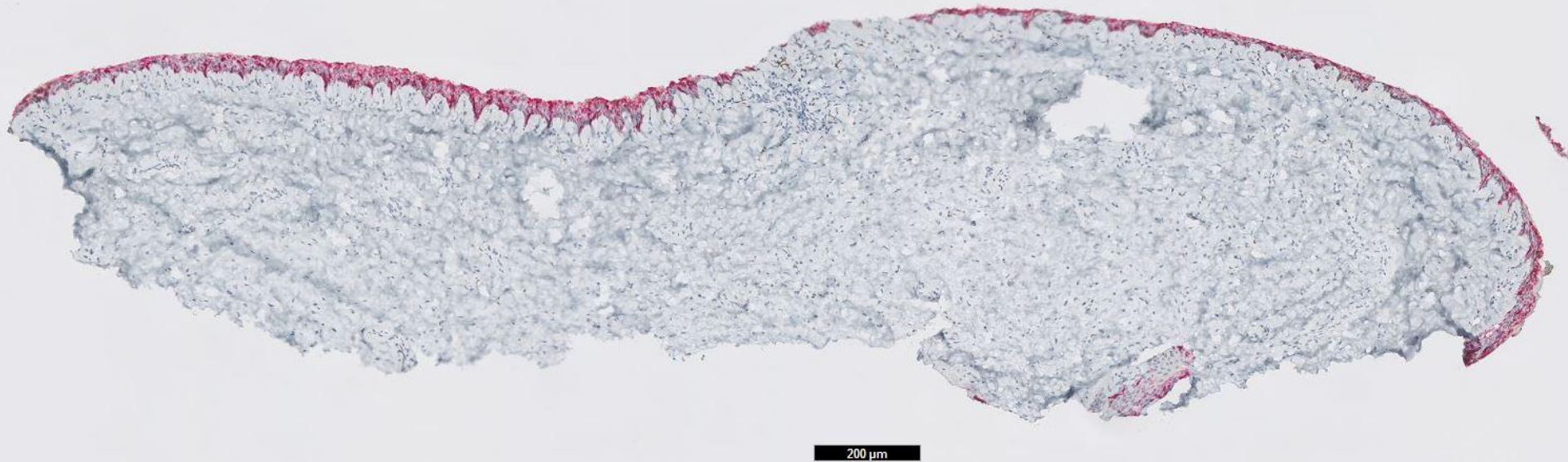
# Nail bed/matrix



# Nail bed/matrix

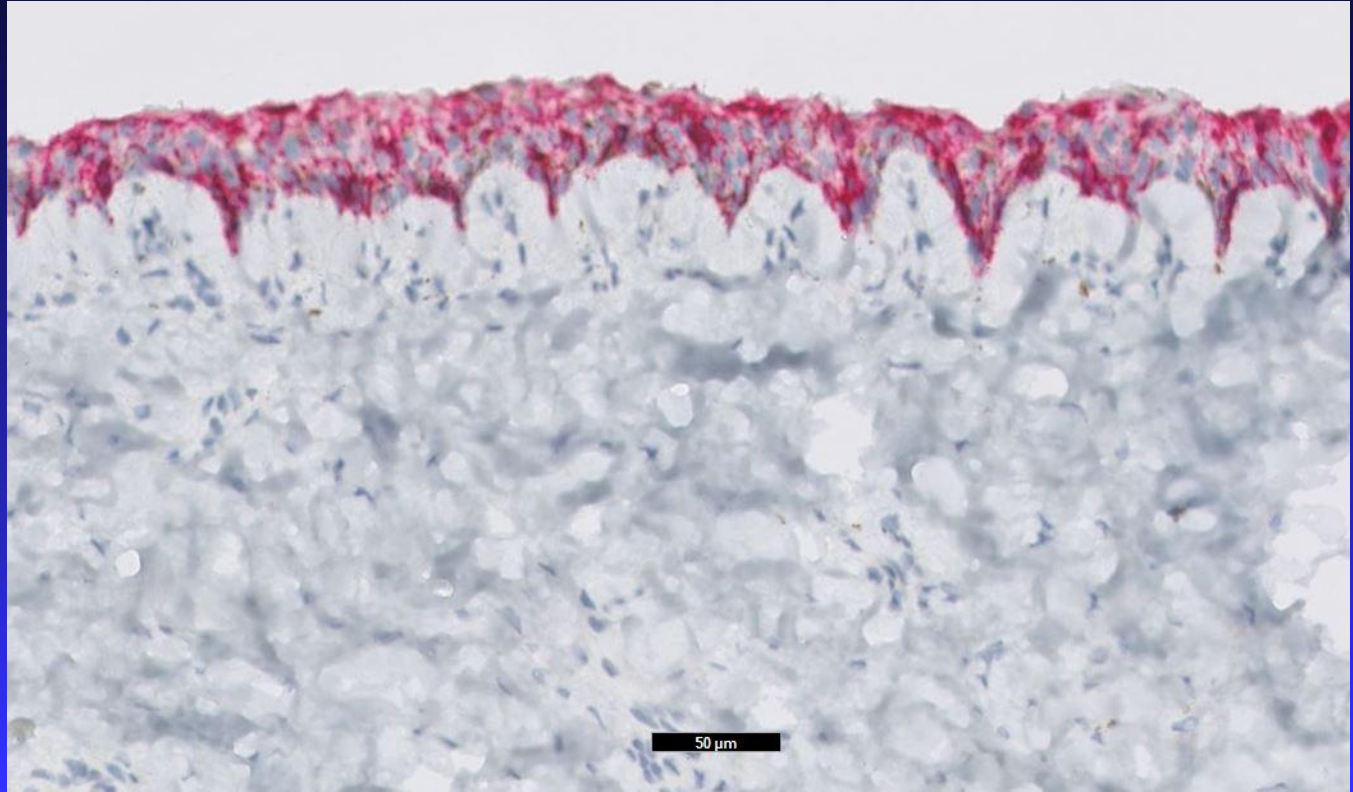


13 y/o nailbed



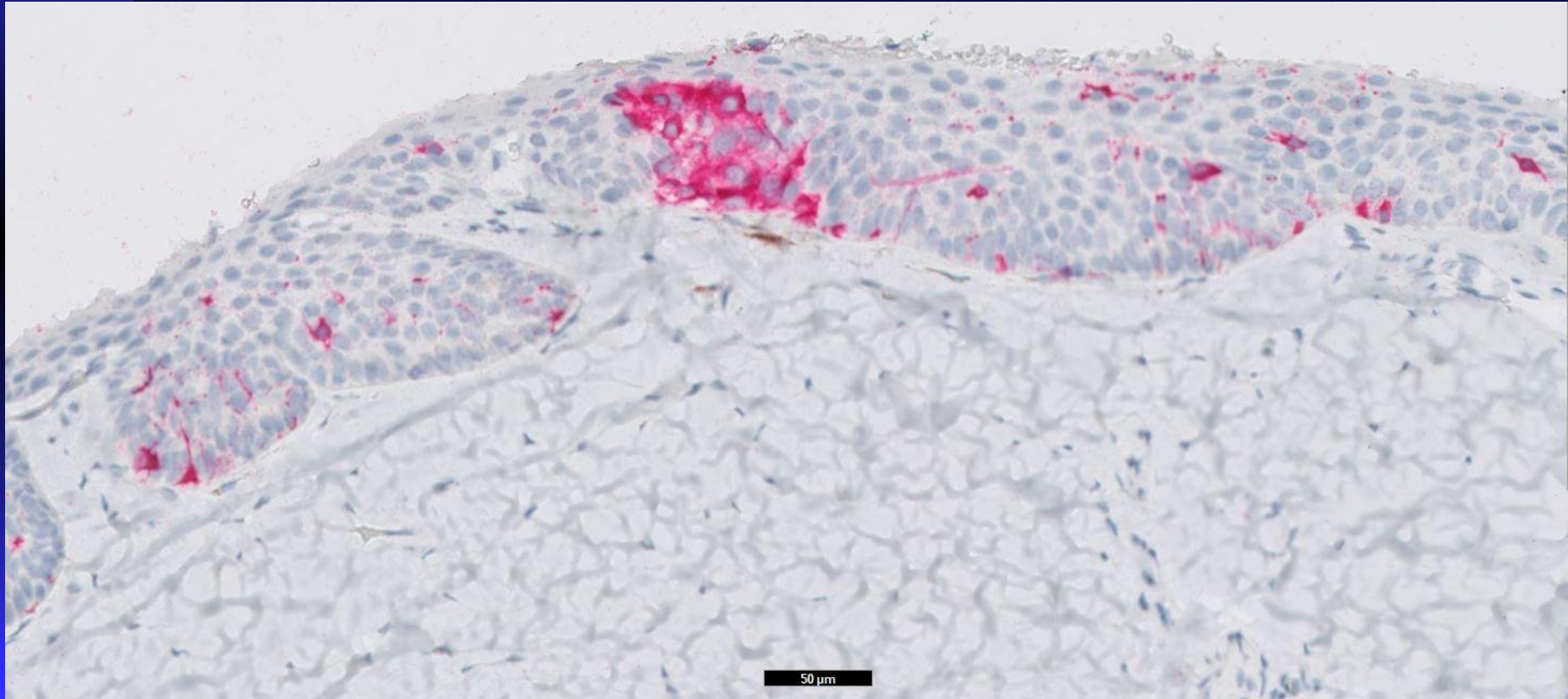


13 y/o nailbed

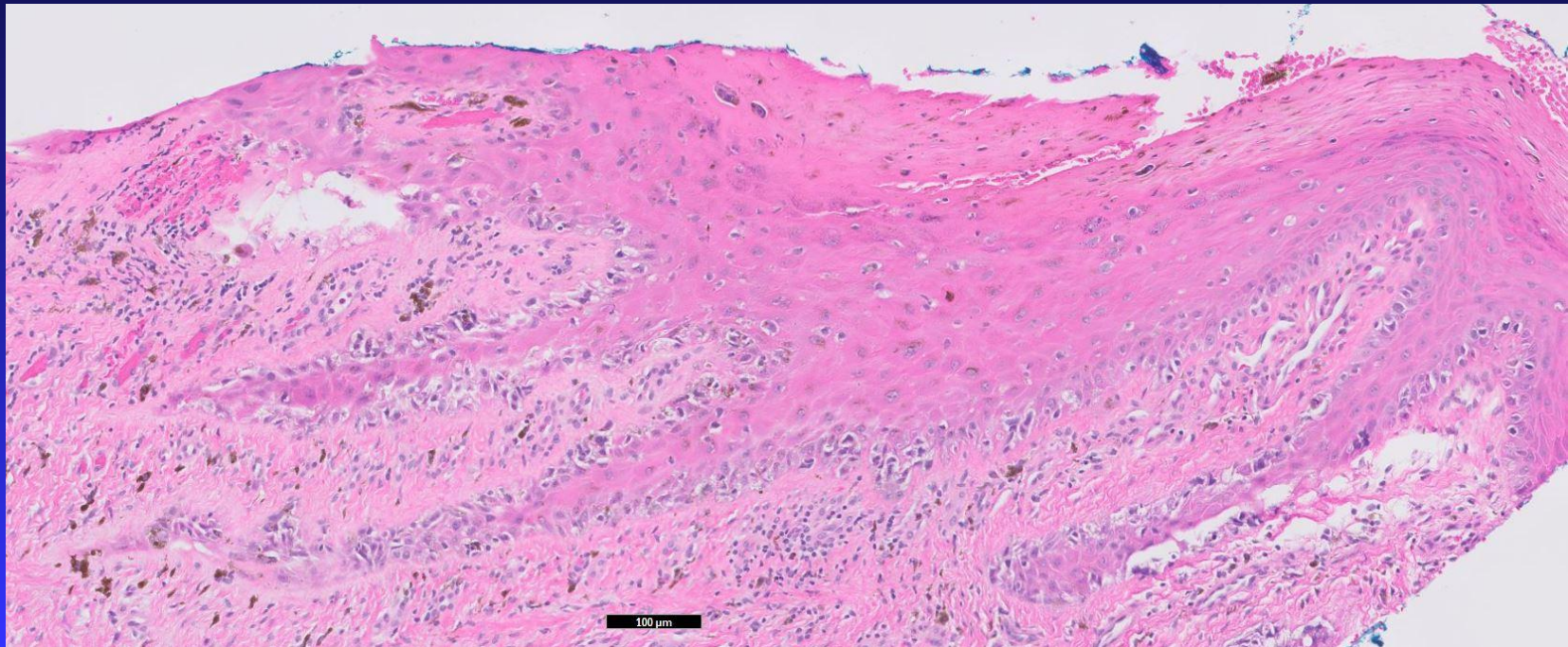




18 y/o nail

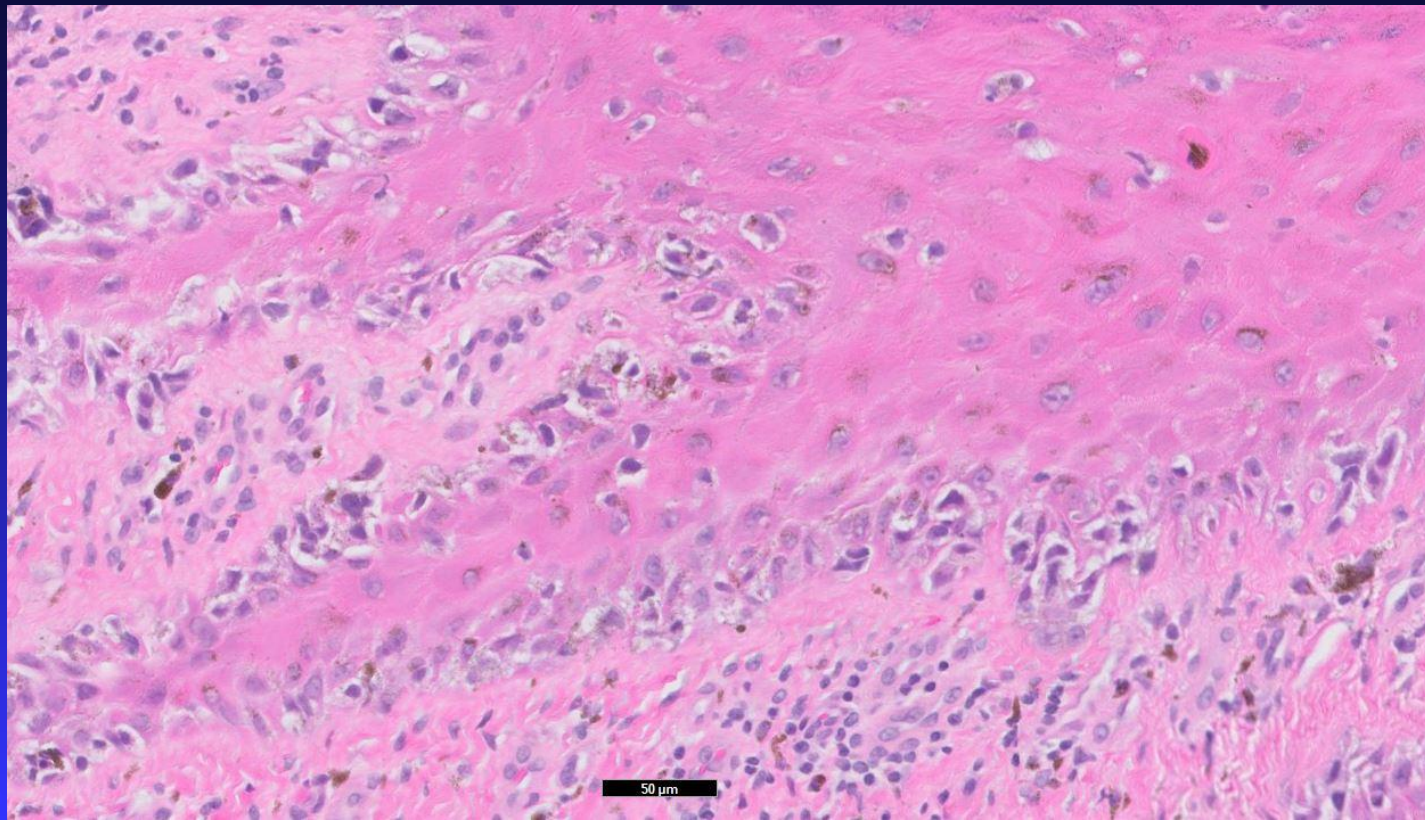


# Case

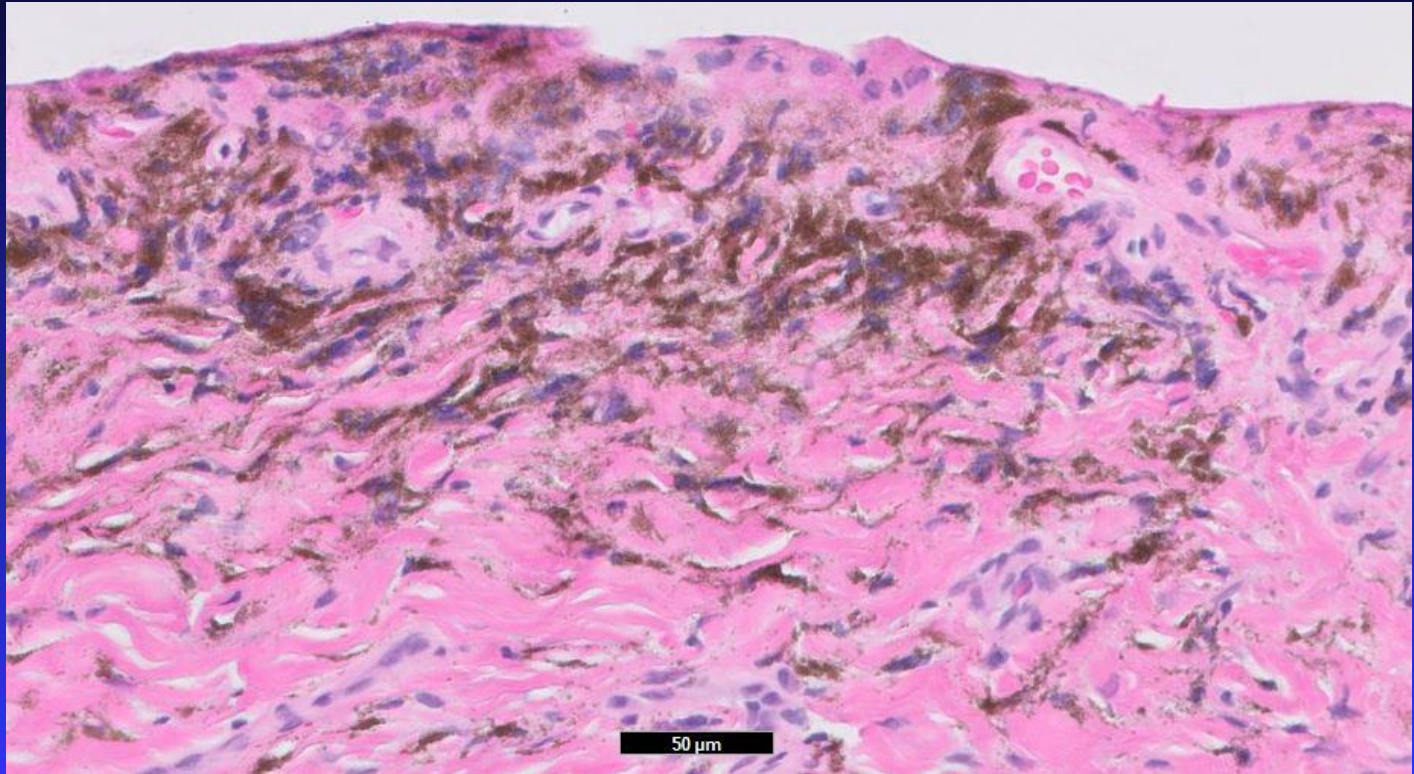




# Case

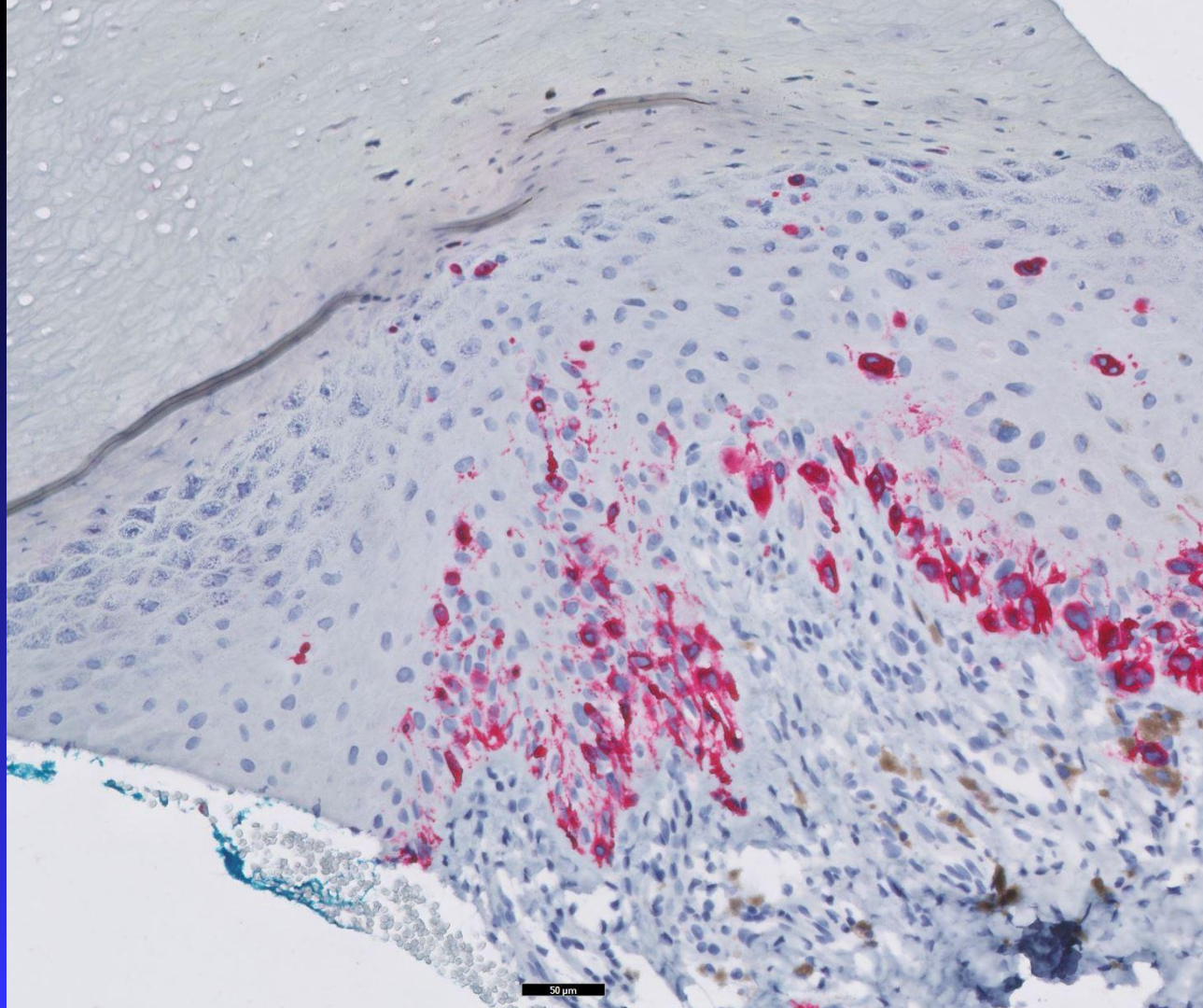


# Case

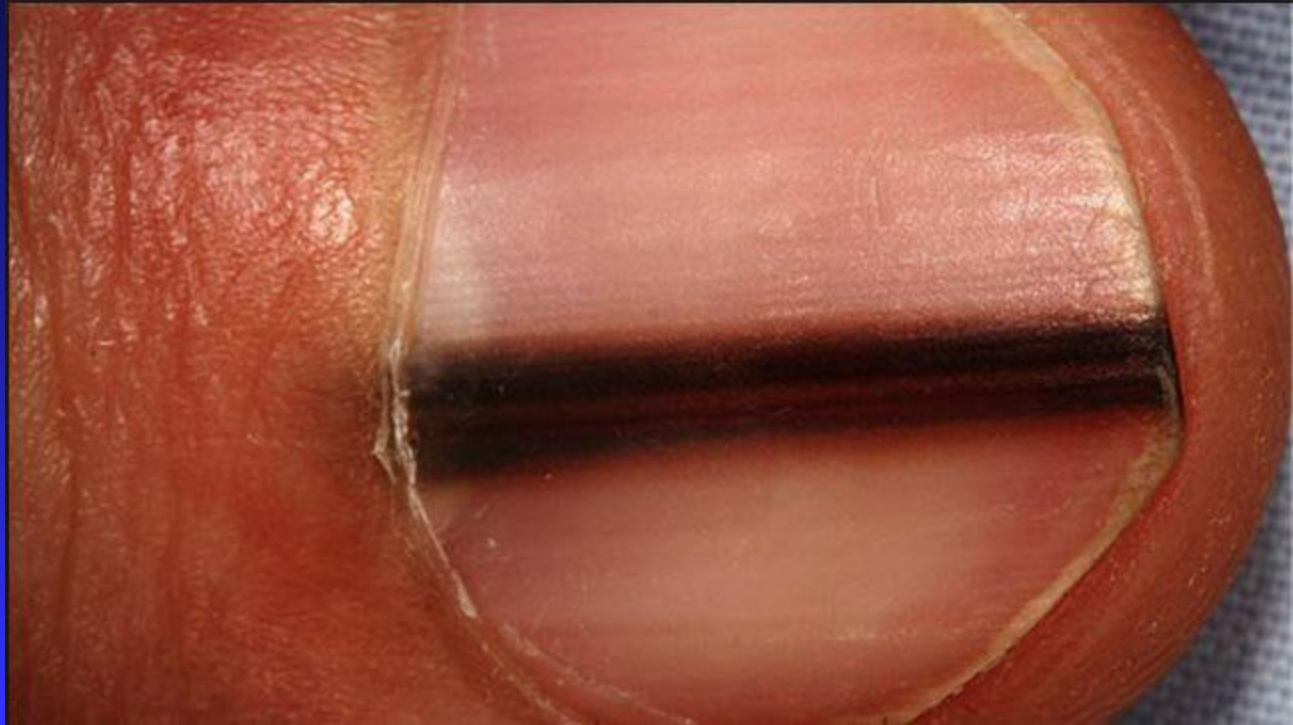




# Case

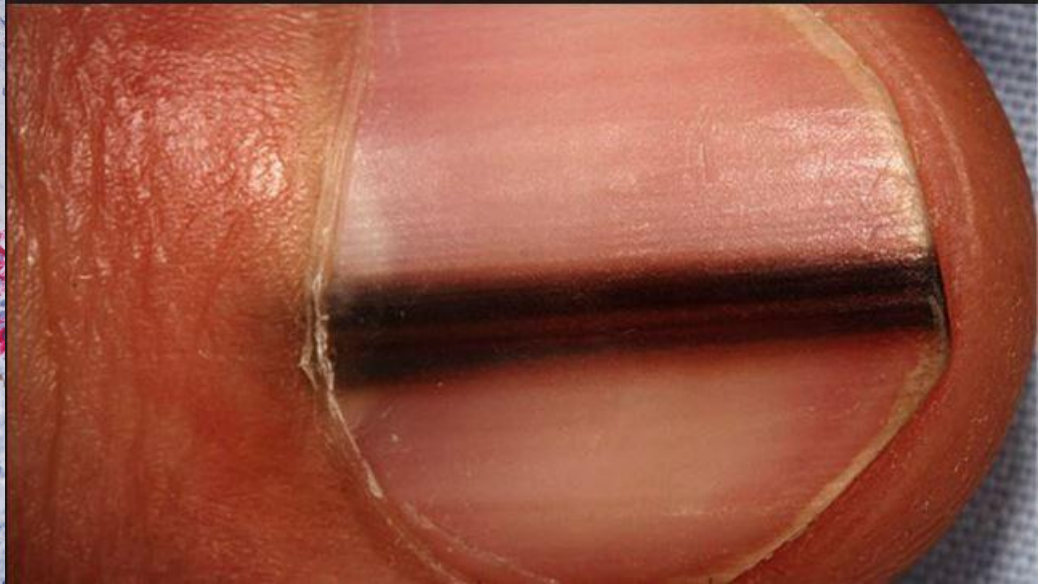
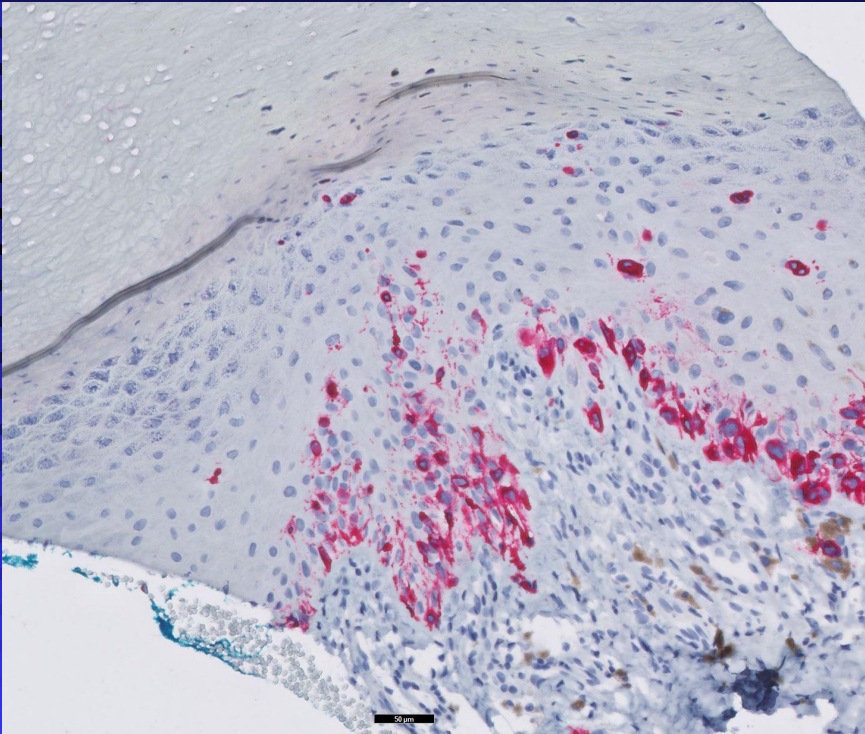


# Case 60 y/o Left thumbnail

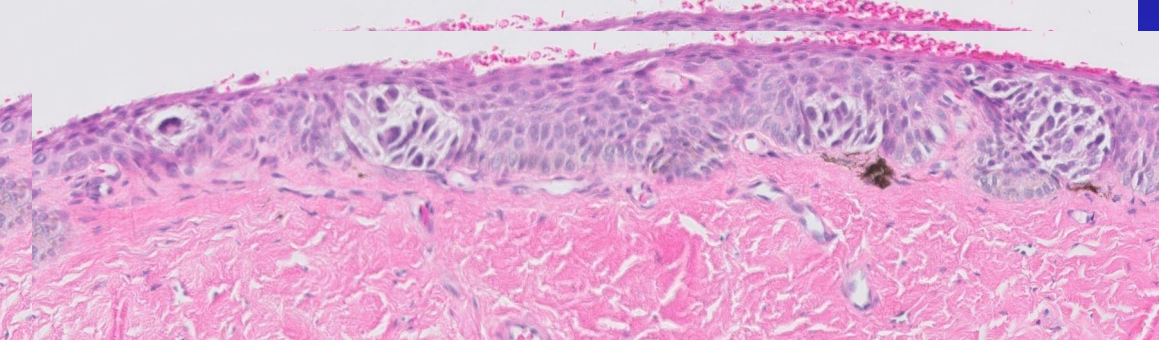
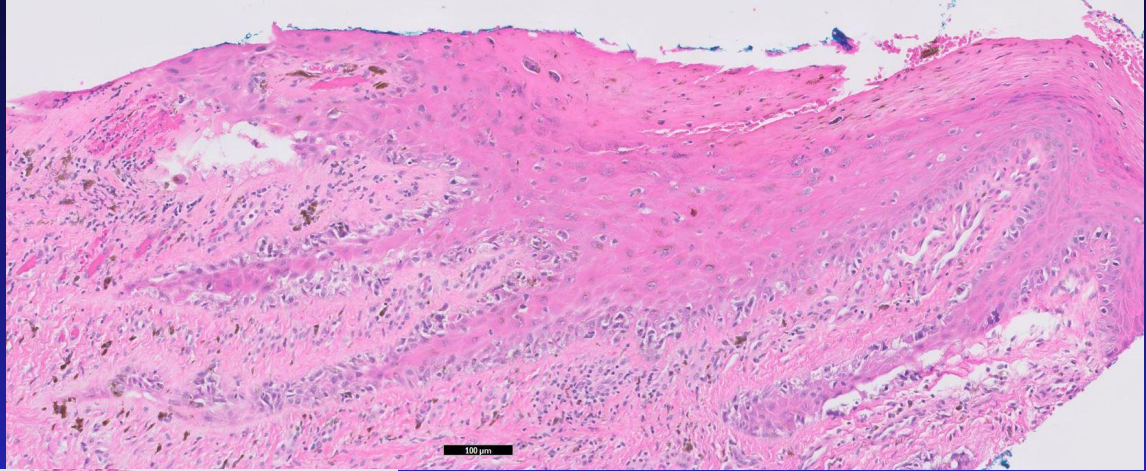




# Case Melanoma in-situ

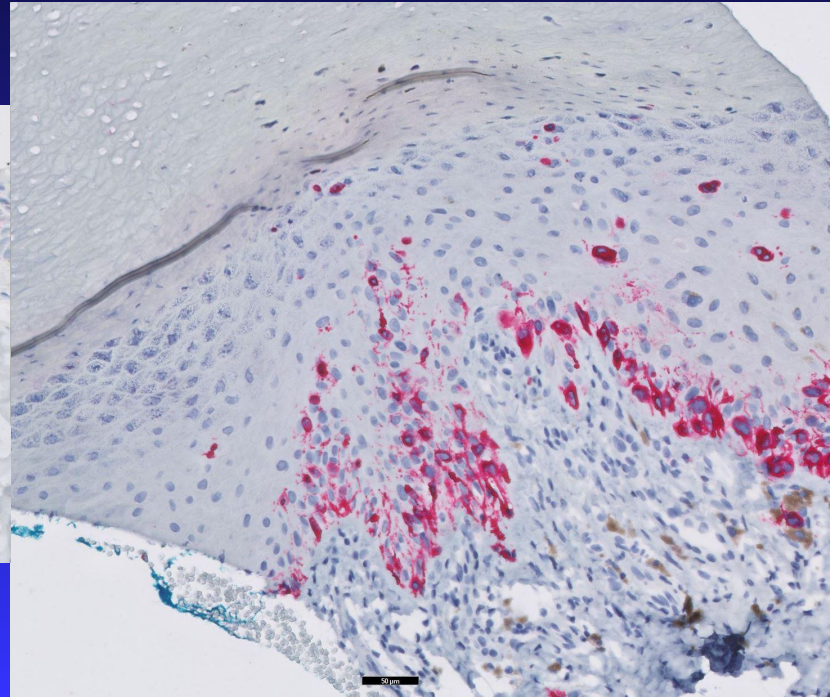
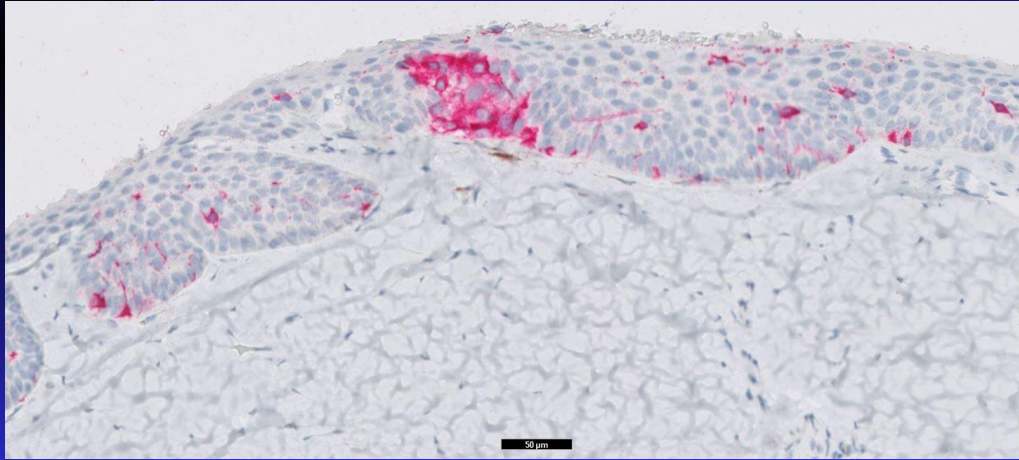


# Benign? Atypical? Malignant?

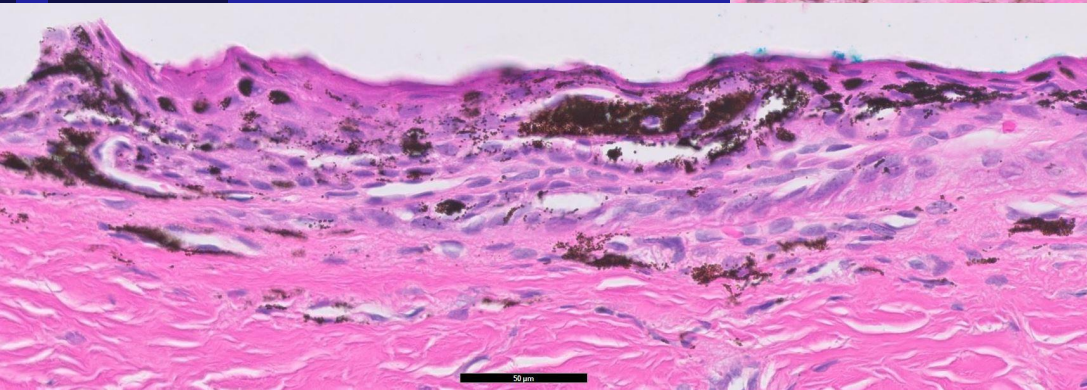
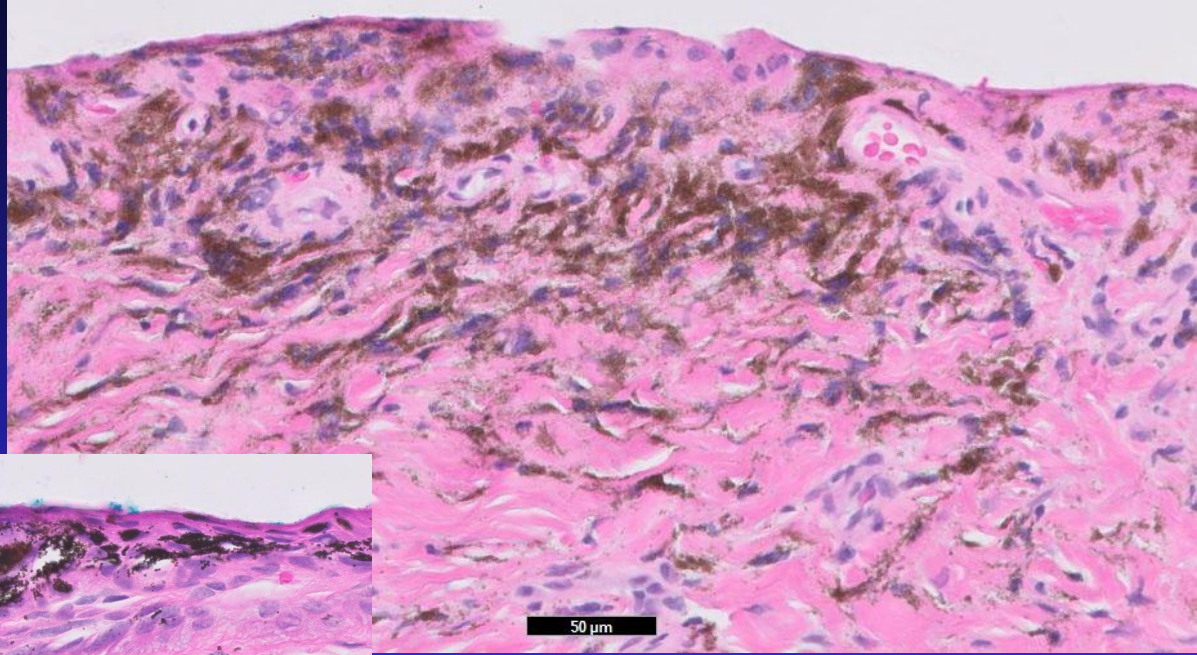




# Benign? Atypical? Malignant?



# Benign? Atypical? Malignant?

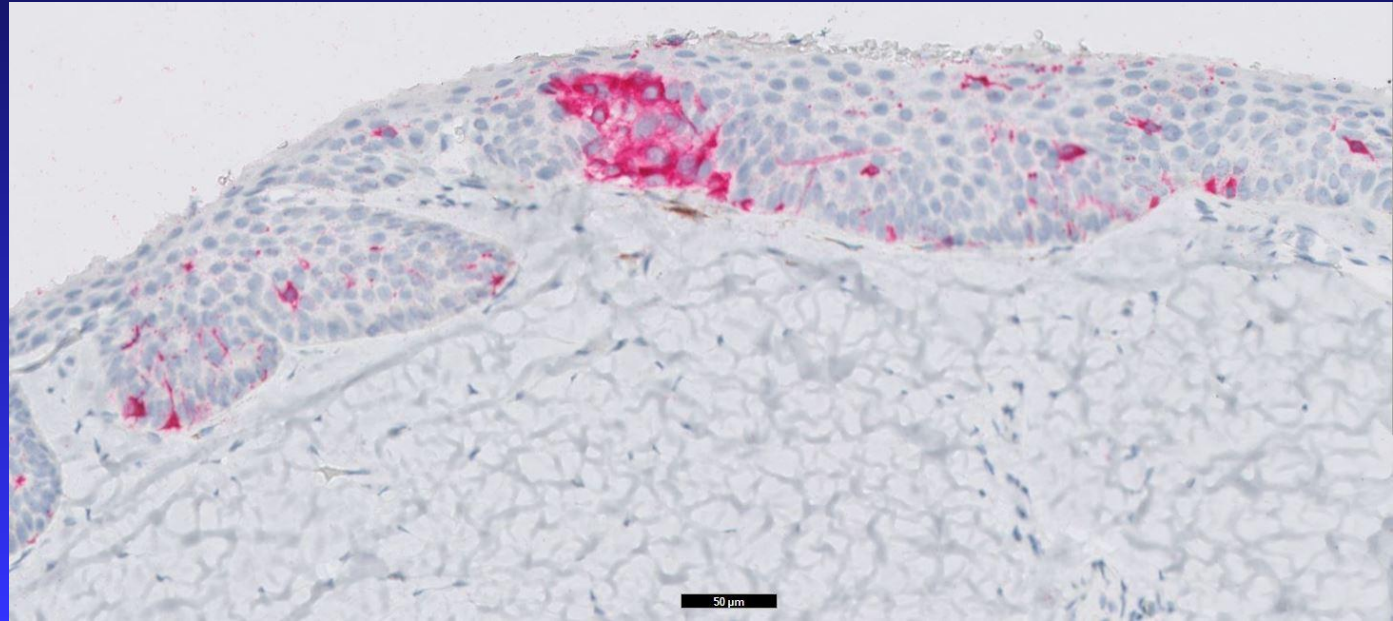


# Current histopathology assessment is of limited utility.

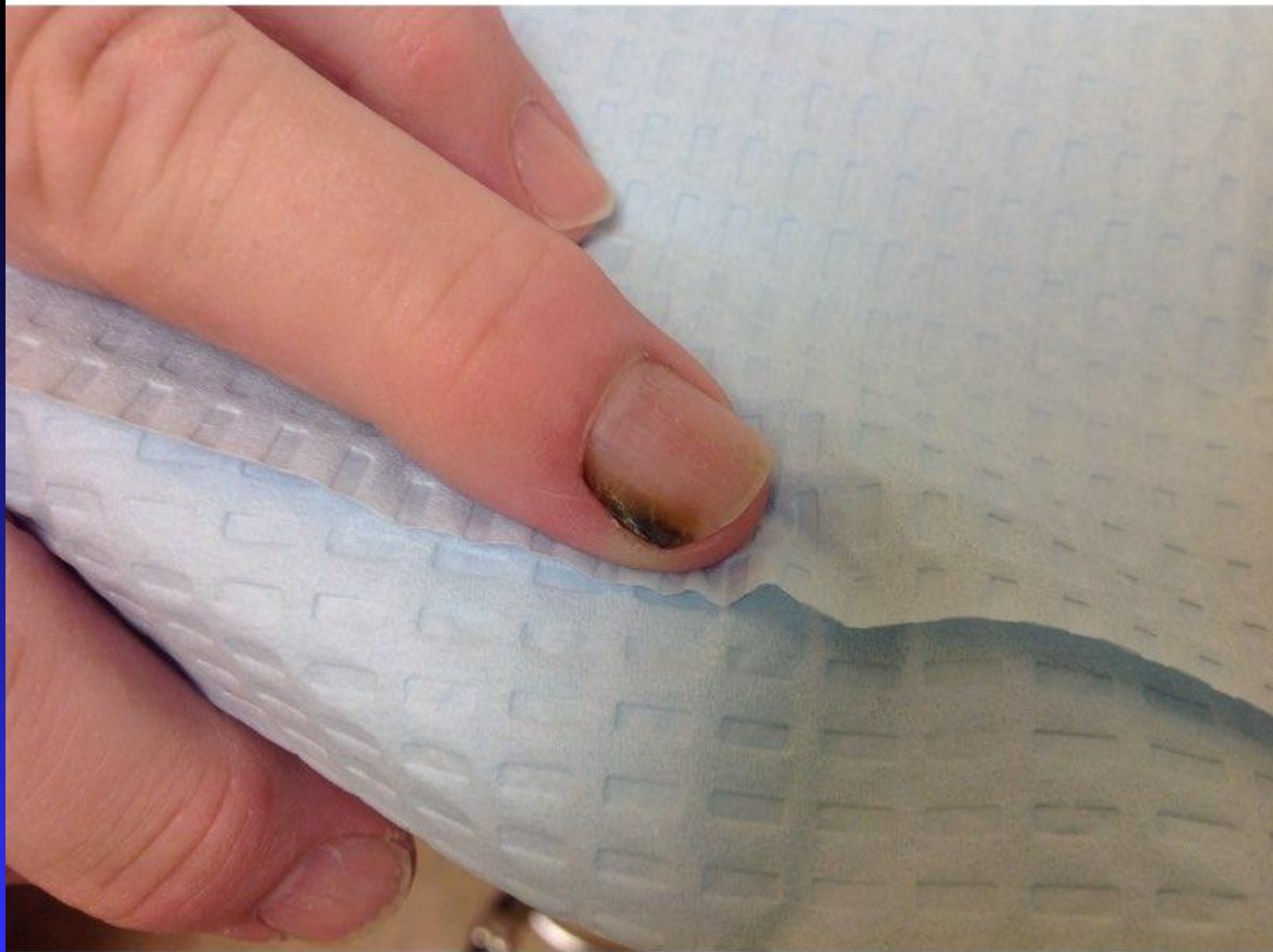
- H&E
- Immunohistochemistry
- Genetic analysis—not yet possible



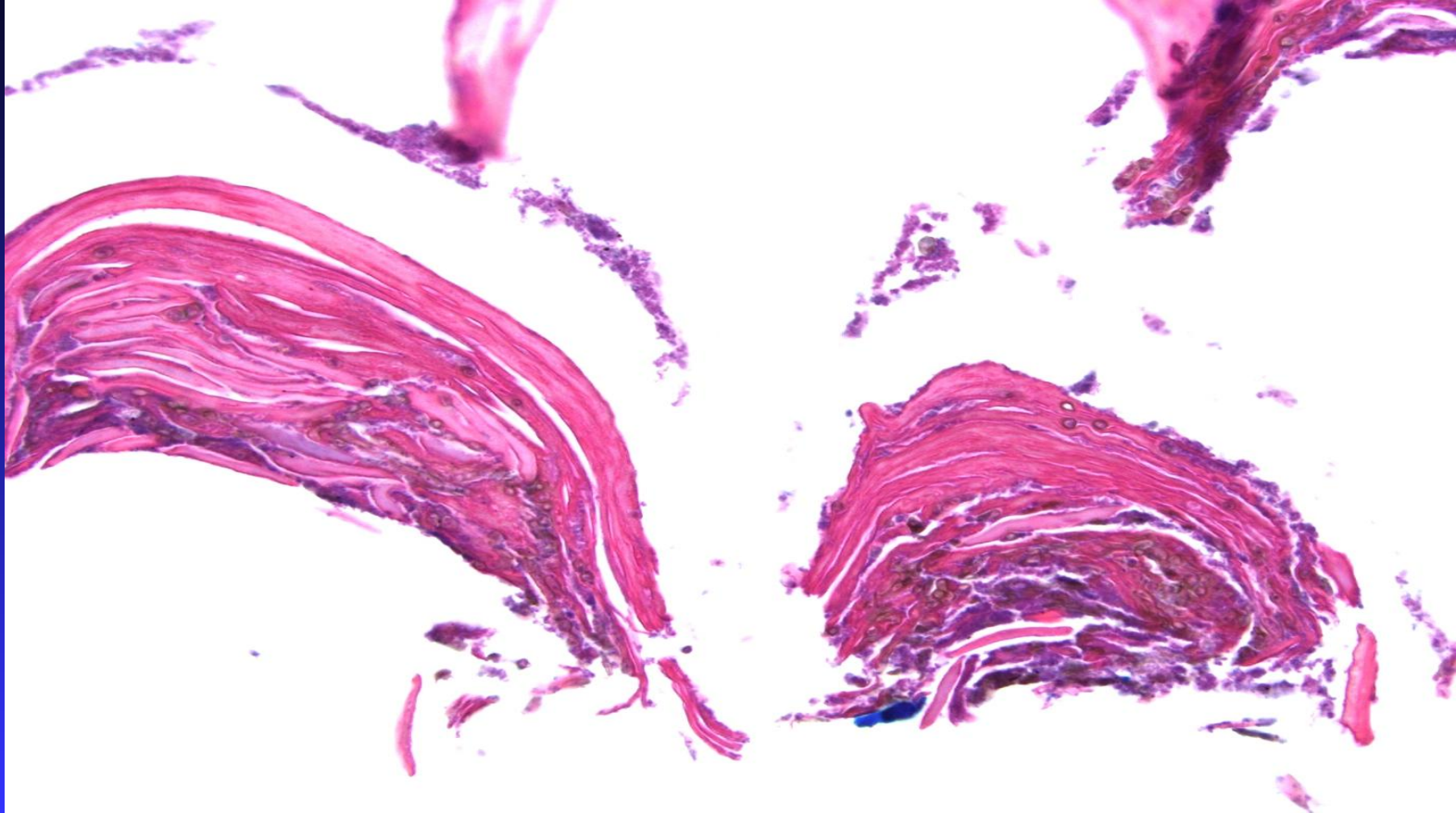
- Immunohistochemistry  
Currently only highlights melanocytes







# Pigmented fungus



# Nail Fungus Diagnostics

- Sampling is an issue
  - ◆ Subungal debris is better than nail plate for sampling.

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## Subungual debris cytopathology increases sensitivity of fungus detection in onychomycosis

[Christian S. Jordan](#), MD, PhD, [Brandon Stokes](#), CHT, [Curtis T. Thompson](#), MD  



# Centrifuge

(Cytospin, Fisher HealthCare)



# Centrifuge with slide



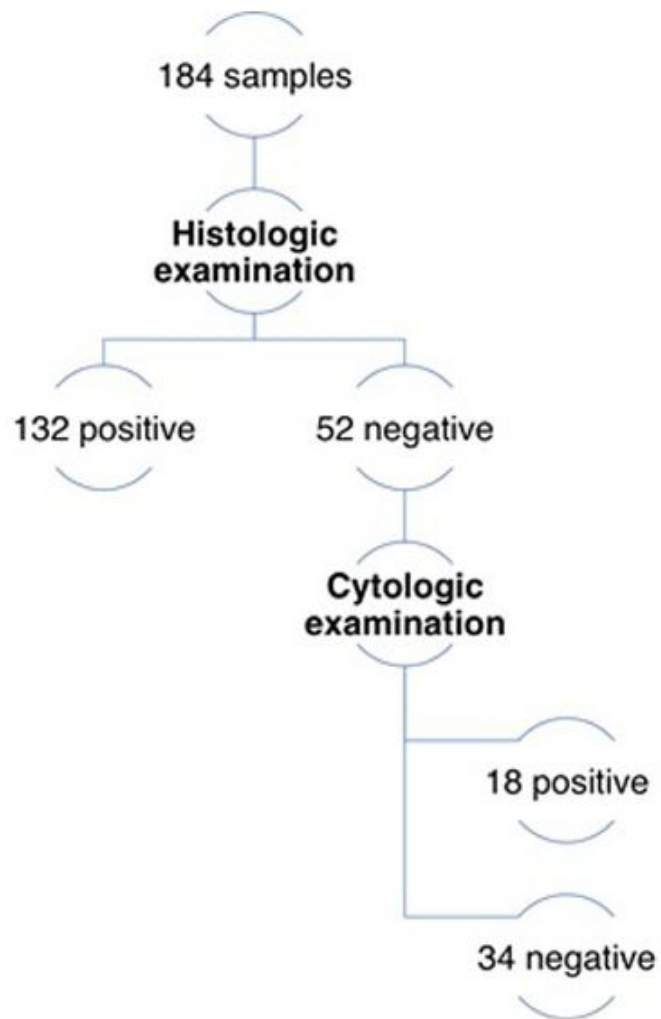
# Centrifuge with slide





**Fig 1.** Onychomycosis. Microscopic examination of PAS-stained subungual debris. (Original magnification:  $\times 400$ .) Subungual debris was collected by centrifugation of the formalin in which nail clipping specimens were submitted. Microscopic examination of a thin-layer preparation of PAS-stained subungual debris reveals multiple darkly staining fungal forms associated with a single keratin aggregate.



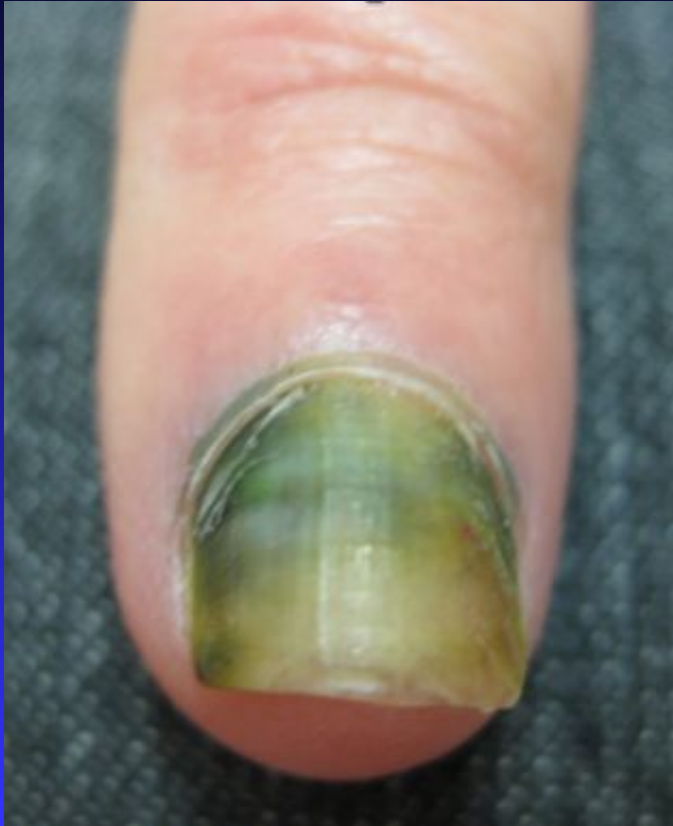


# Submit specimen dry in a small envelope

- Test nail plate first
- If plate negative, then centrifuge and PAS

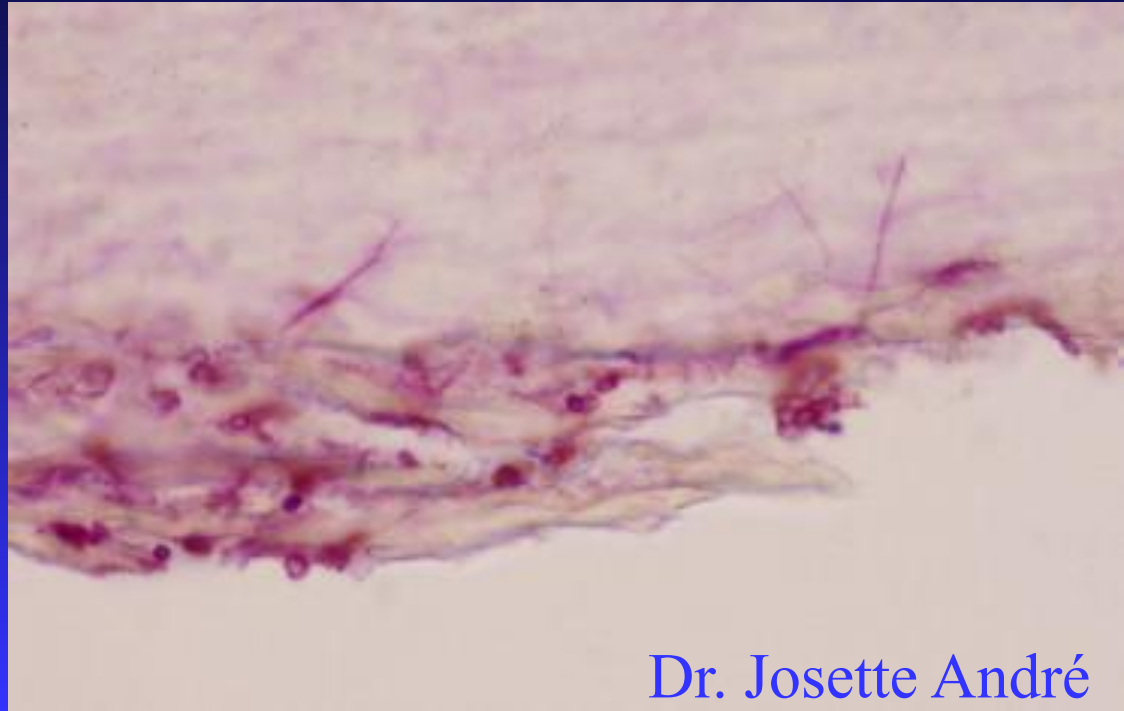


# Mold



# Mold vs Dermatophyte

- Invades vertical to nail plate.



Dr. Josette André



# Mold vs dermatophyte speciation

- PCR—only to identify a mold or speciate a dermatophyte (tinea)
- PCR less sensitive than PAS stain

# Acknowledgements

- Phoebe Rich, Antonella Tosti and Martin Zaiac
- Josette André and Bertrand Richert—Brussels
- Brandon Stokes--Portland

Thanks!

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