

Case Based Dermoscopy:

An Algorithmic Approach to Assessing Clinically Similar Lesions

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Disclosures

- I have no financial conflict of interest with respect to dermoscopy or dermatoscopes



GOALS

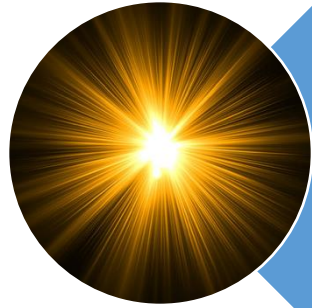
Facial Dermoscopy

Challenges to Algorithms

Incorporation of AI



How Light



- Non Polarized
- Polarized



10x Magnification



Contact
Non Contact



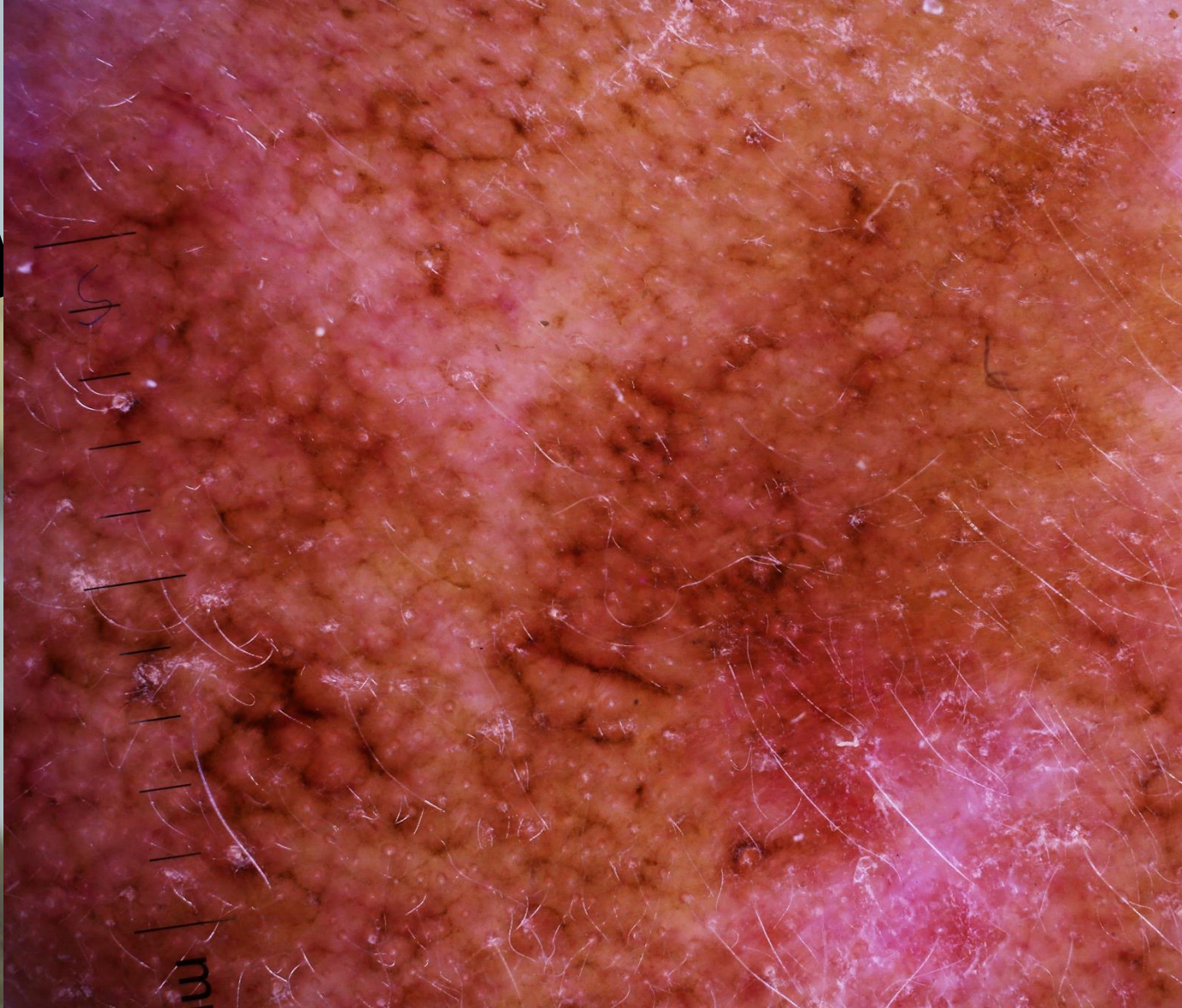
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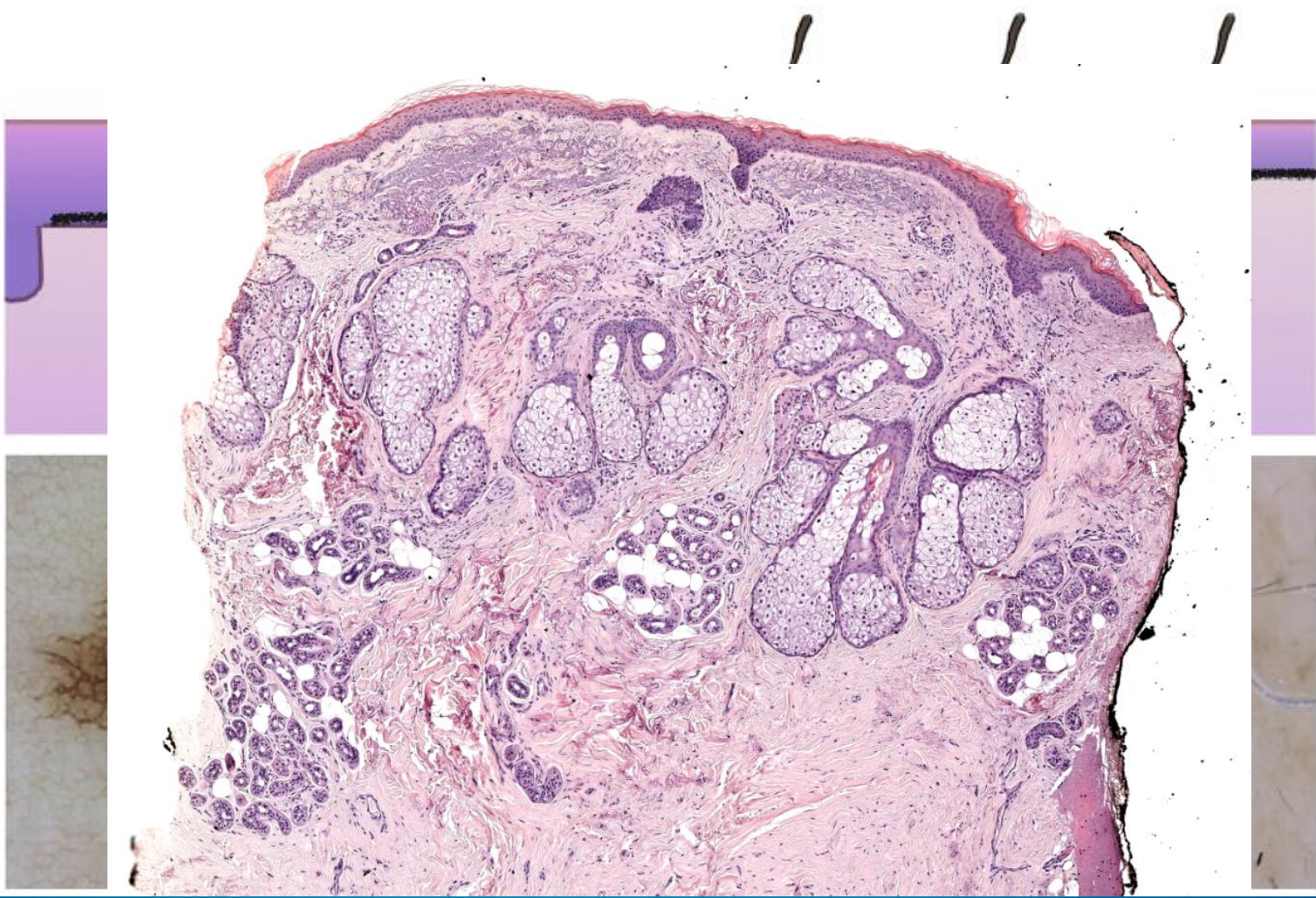
WHY

- ✓ Improves diagnostic accuracy by 10-27%
Only for experienced examiners*
- ✓ Decreased biopsy benign:malignant ratio from 18:1 to 4-5:1
- ✓ It does not take up much time
 - ✓ 70 seconds → 140 seconds





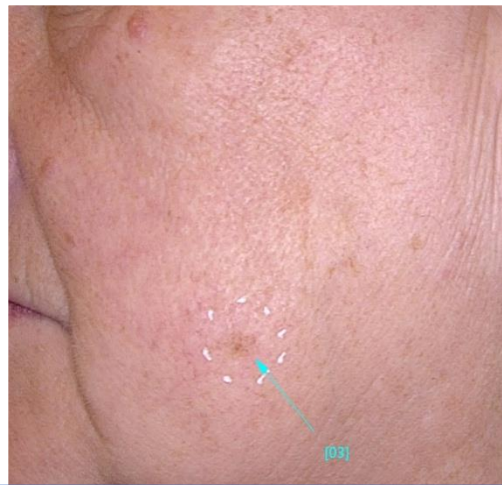
Pigment on the Face Looks DIFFERENT



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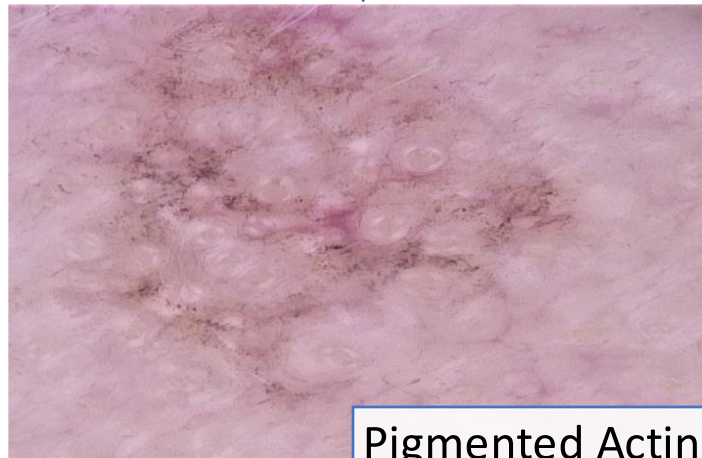
Lallas et. al. 2014



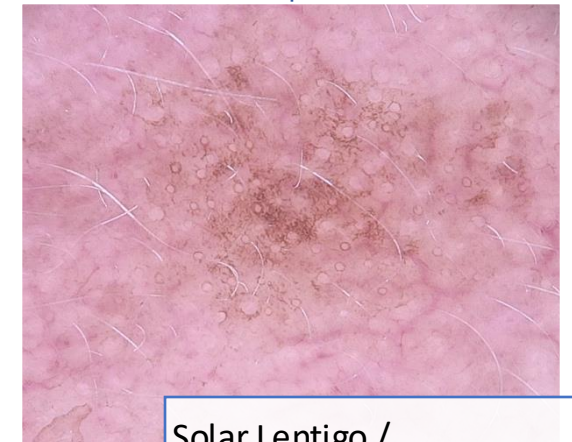
Flat Pigmented Lesion Face



Lentigo Maligna/
Lentigo Maligna Melanoma



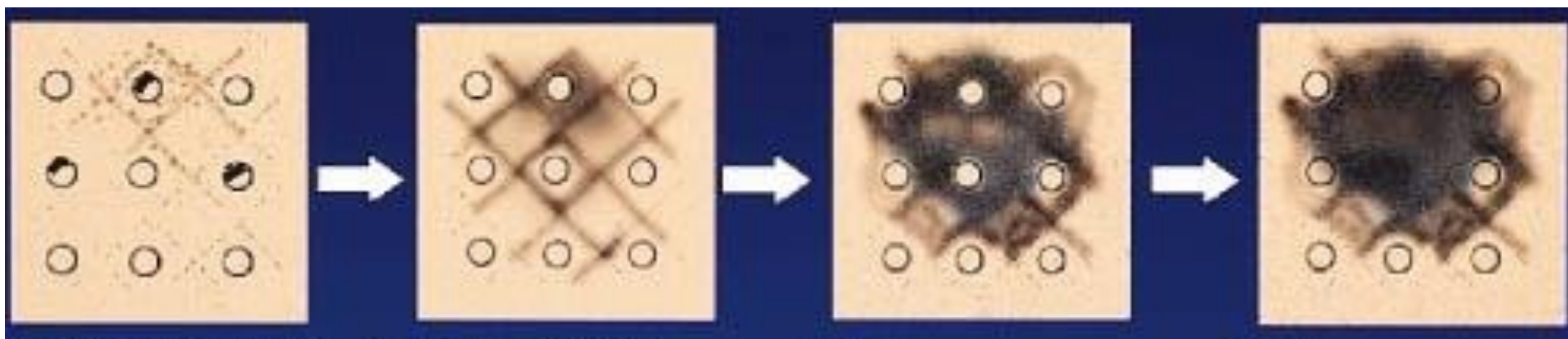
Pigmented Actinic
Keratosis



Solar Lentigo /
Flat Seborrheic Keratosis



Progression of Lentigo Maligna



Grey dots and globules → asymmetric pigmentation/annular granular pattern → rhomboid structures → obliterated follicles/classic melanoma criteria

* Individually can be seen in other pigmented facial lesions

Schiffner et. al. 2000

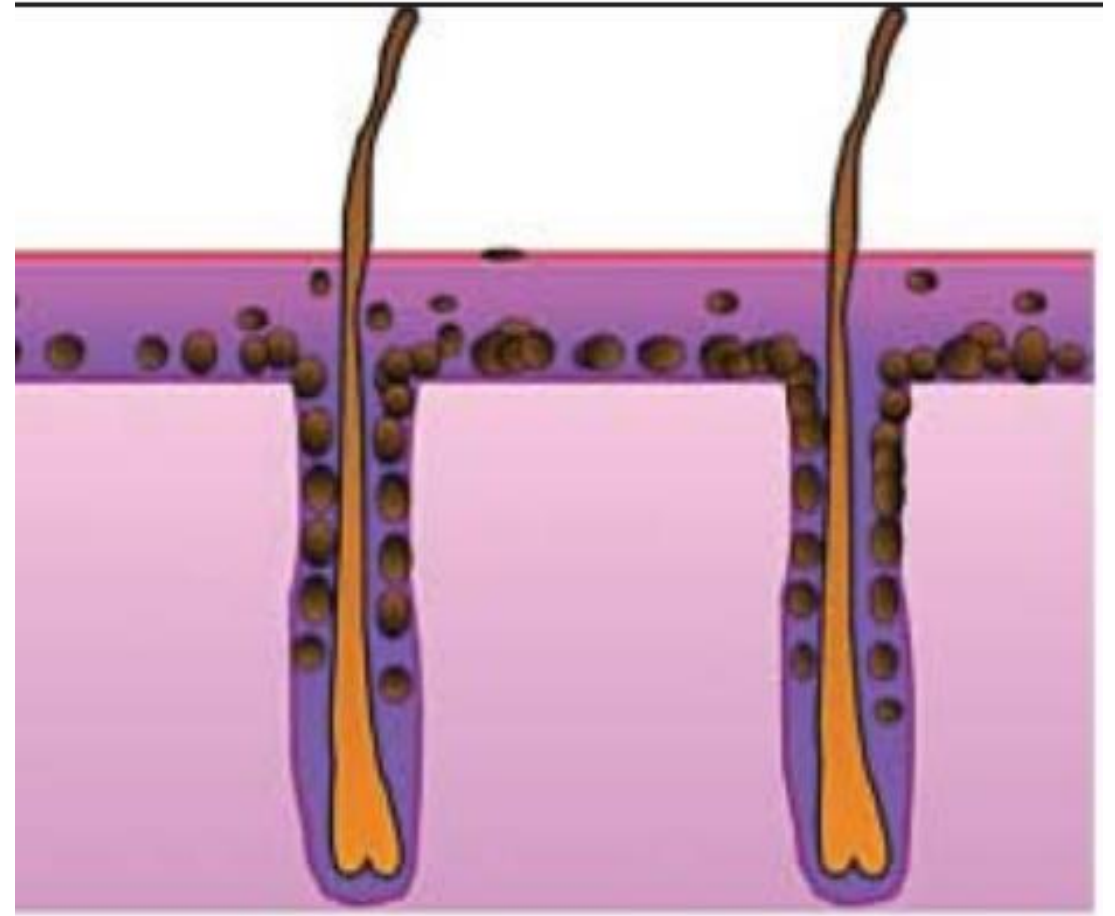


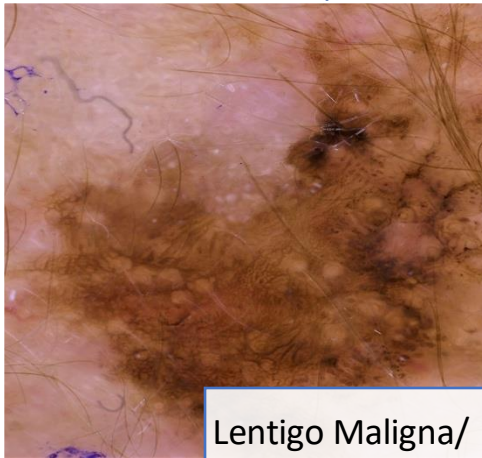
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Dermoscopy of Lentigo Maligna

- LM tracks down hair follicles
- Dermoscopic features surround follicular openings

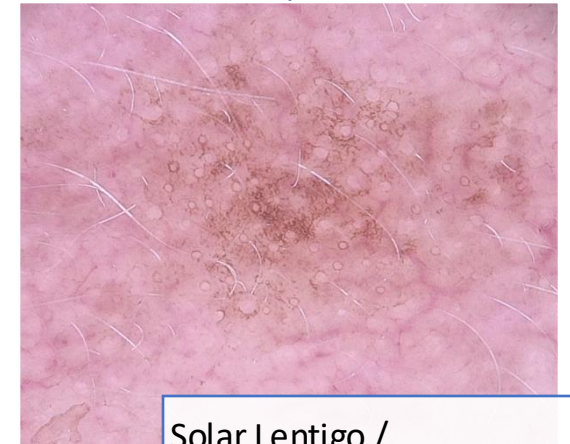




Lentigo Maligna/
Lentigo Maligna Melanoma



Pigmented Actinic
Keratosis



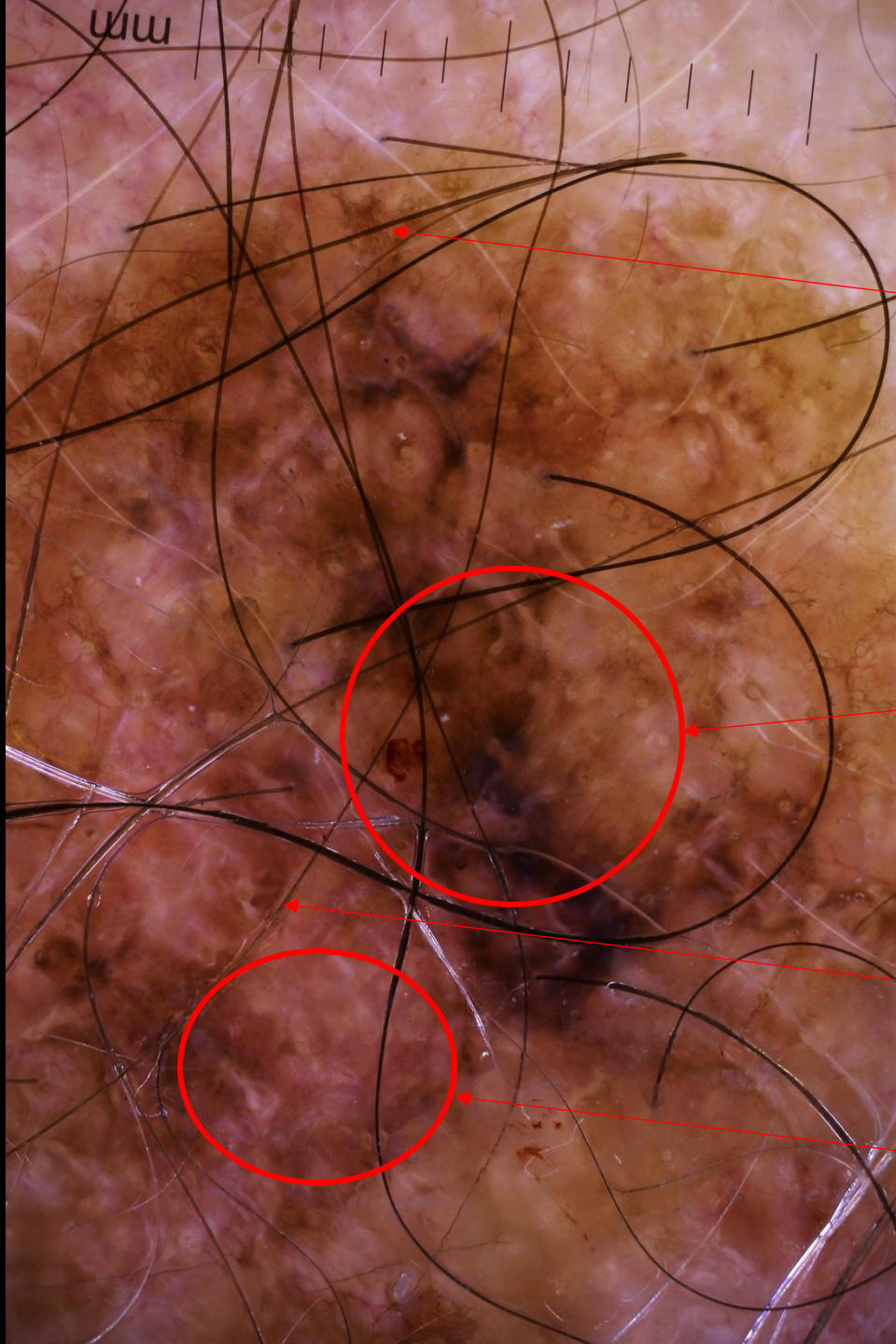
Solar Lentigo /
Flat Seborrheic Keratosis



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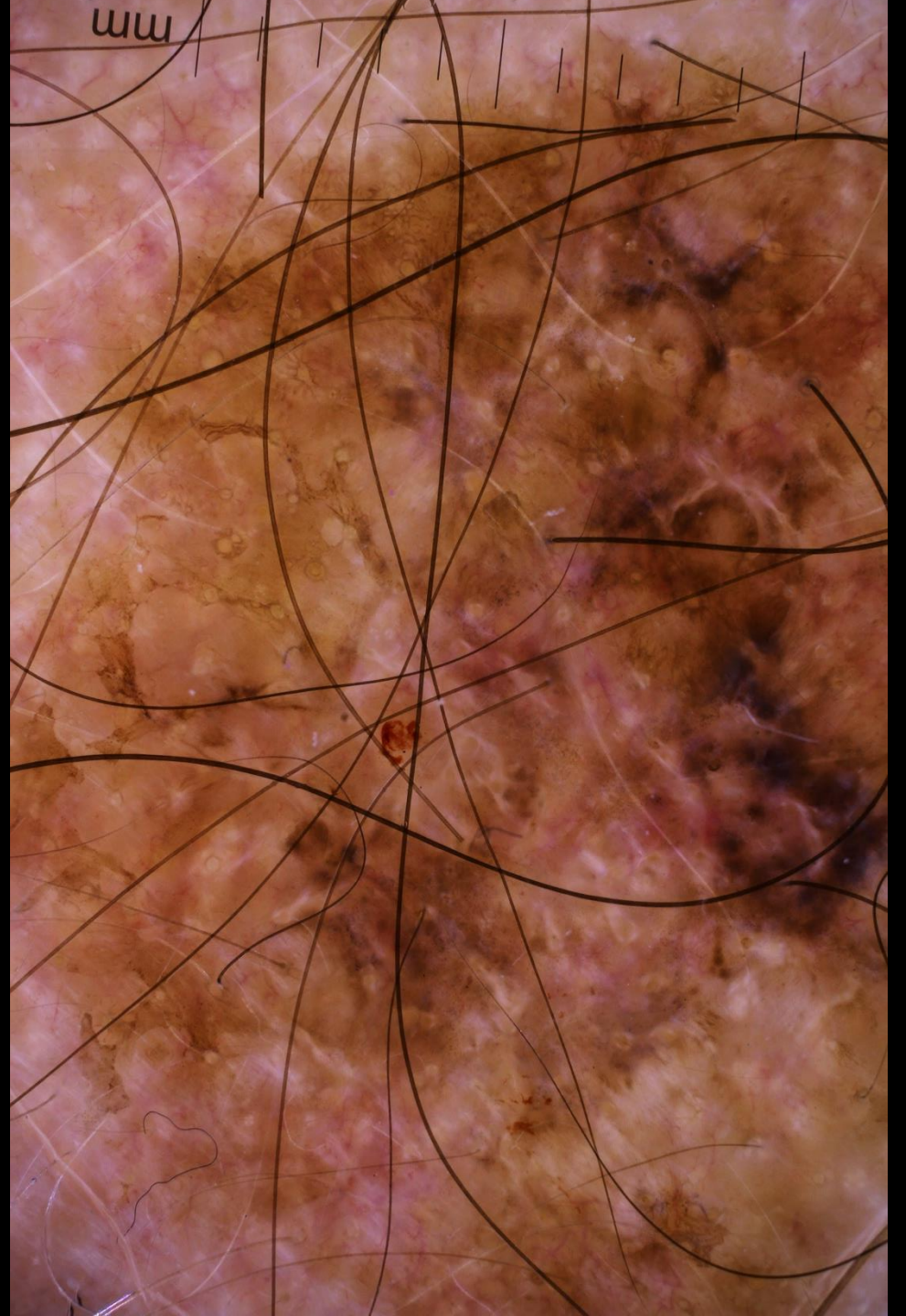


Atypical network

Atypical blotch

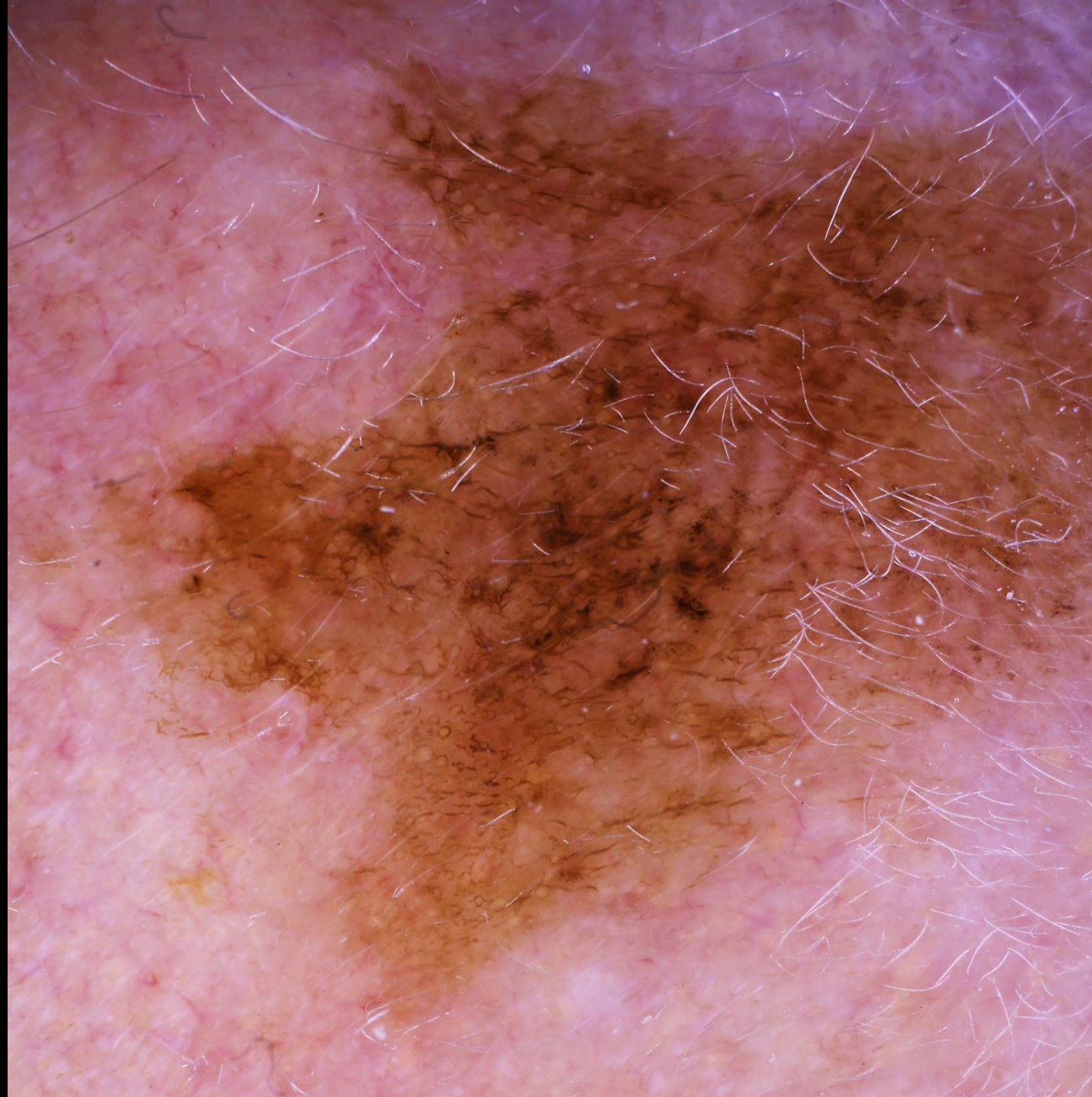
Milky red area

Shiny white lines









The dermoscopic inverse approach significantly improves the accuracy of human readers for lentigo maligna diagnosis



Mean SN for LM w/out training:51.5%
After pattern analysis training:56.7%
After learning the inverse approach:83.6%.

- 2. White and wide follicles or rosettes
 - 3. Erythema
 - 4. Reticular or parallel lines (fingerprints)
 - 5. Sharp Demarcation
 - 6. Classic SK criteria (comedo like openings, milia like cysts, sulci/gyri)
- Actinic keratosis
- Seborrheic Keratosis/Solar Lentigo

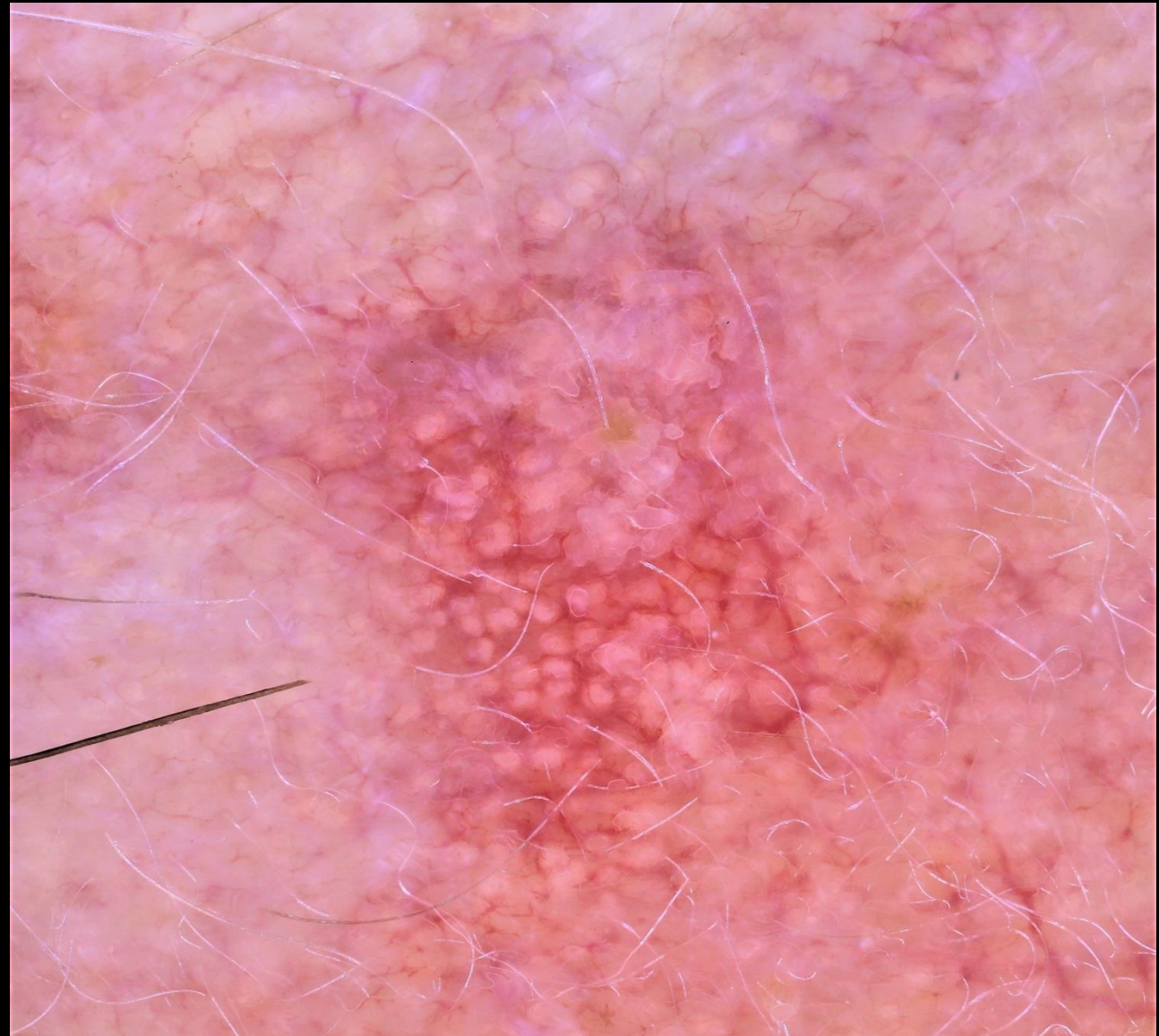
***If any of the 6 criteria are PREVALENT=okay to monitor

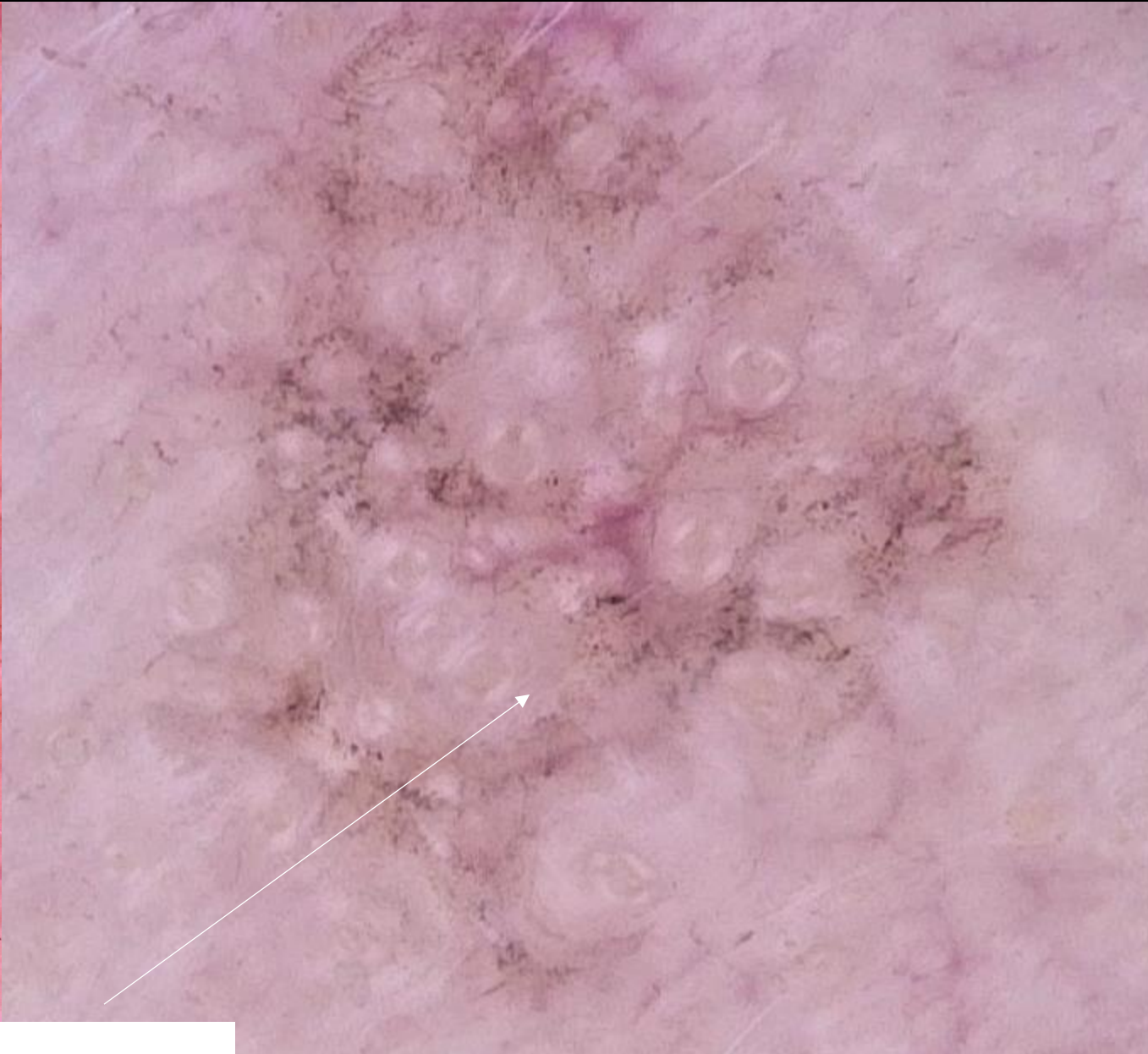
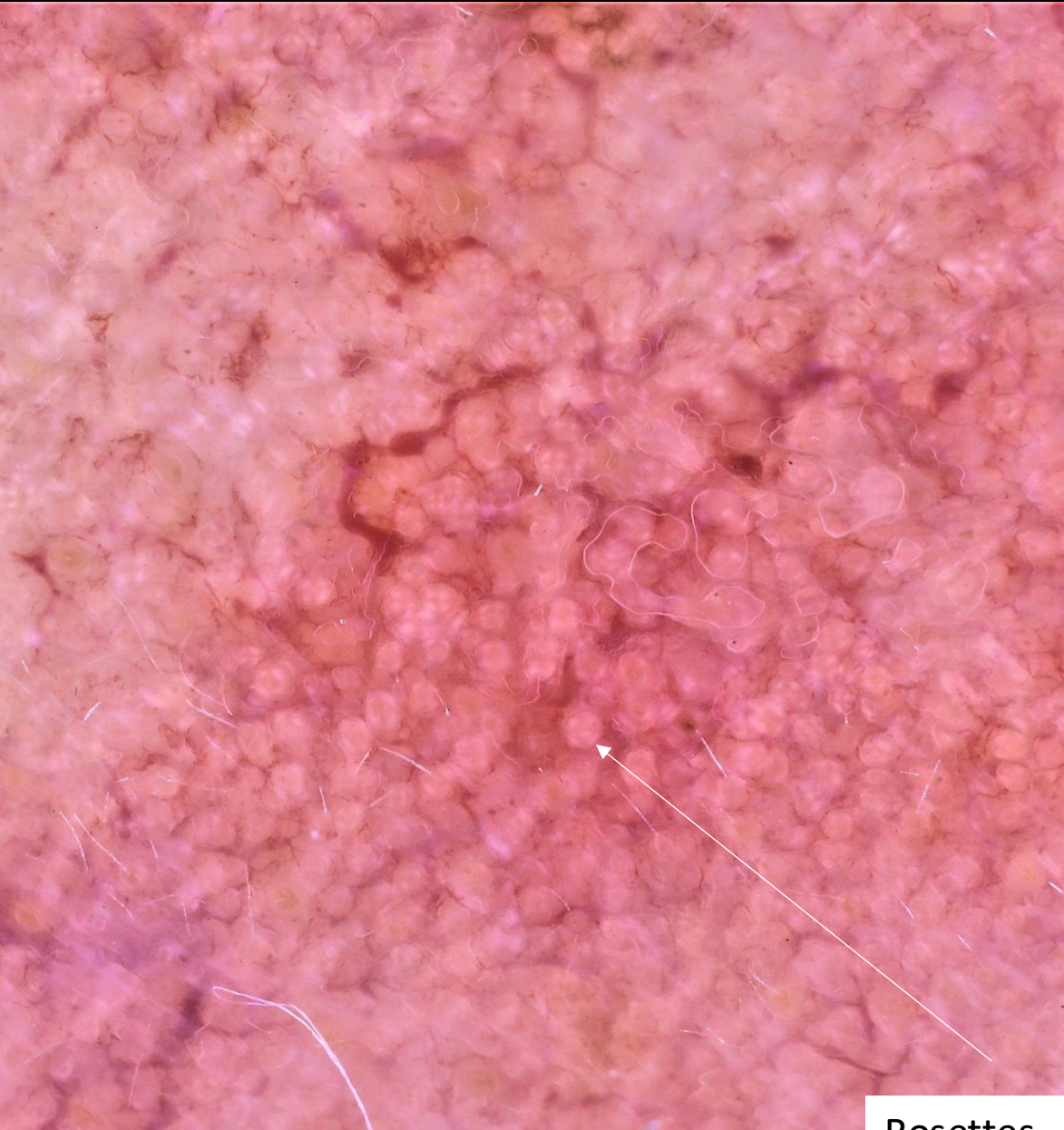
Scale





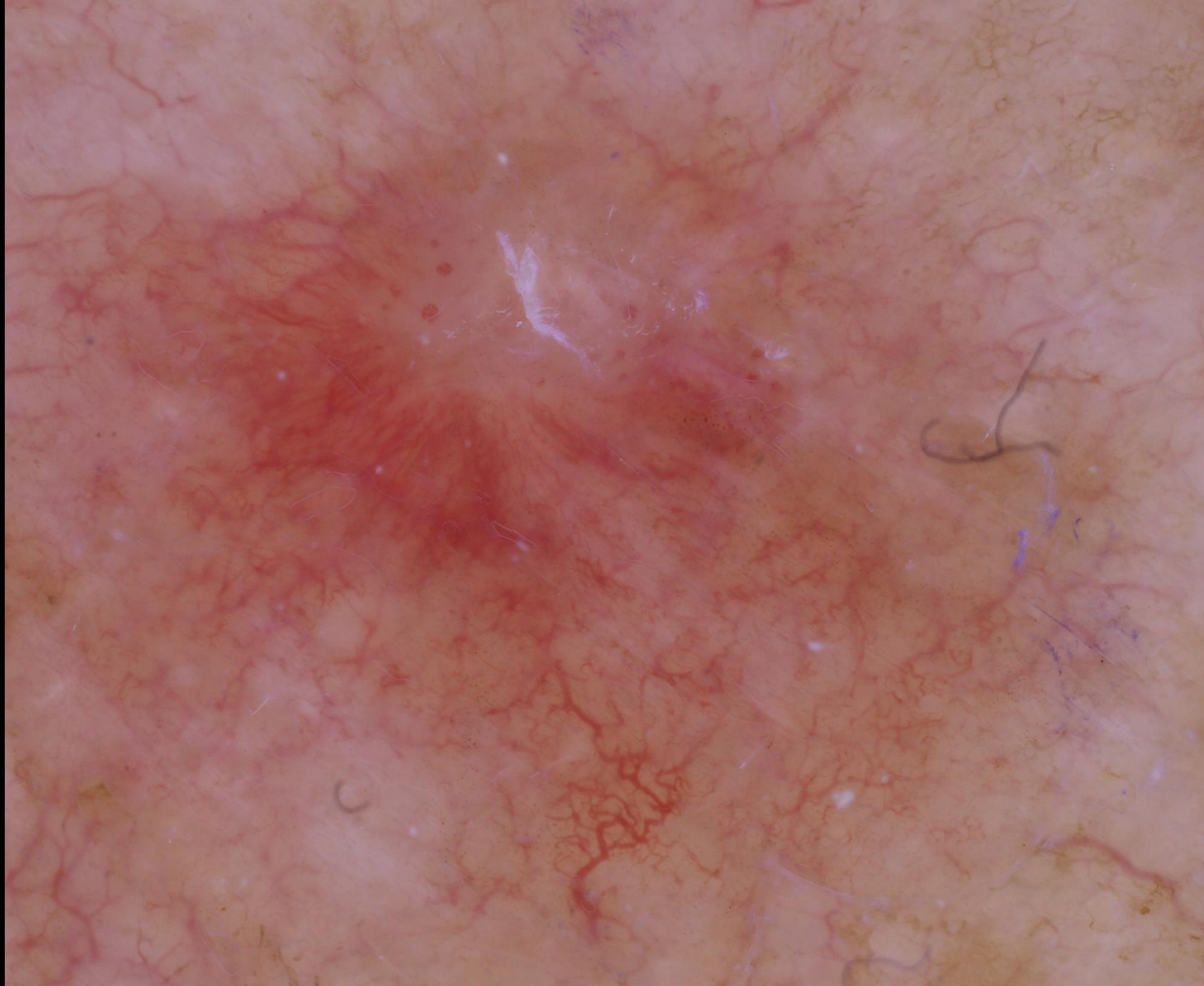
White and wide follicle





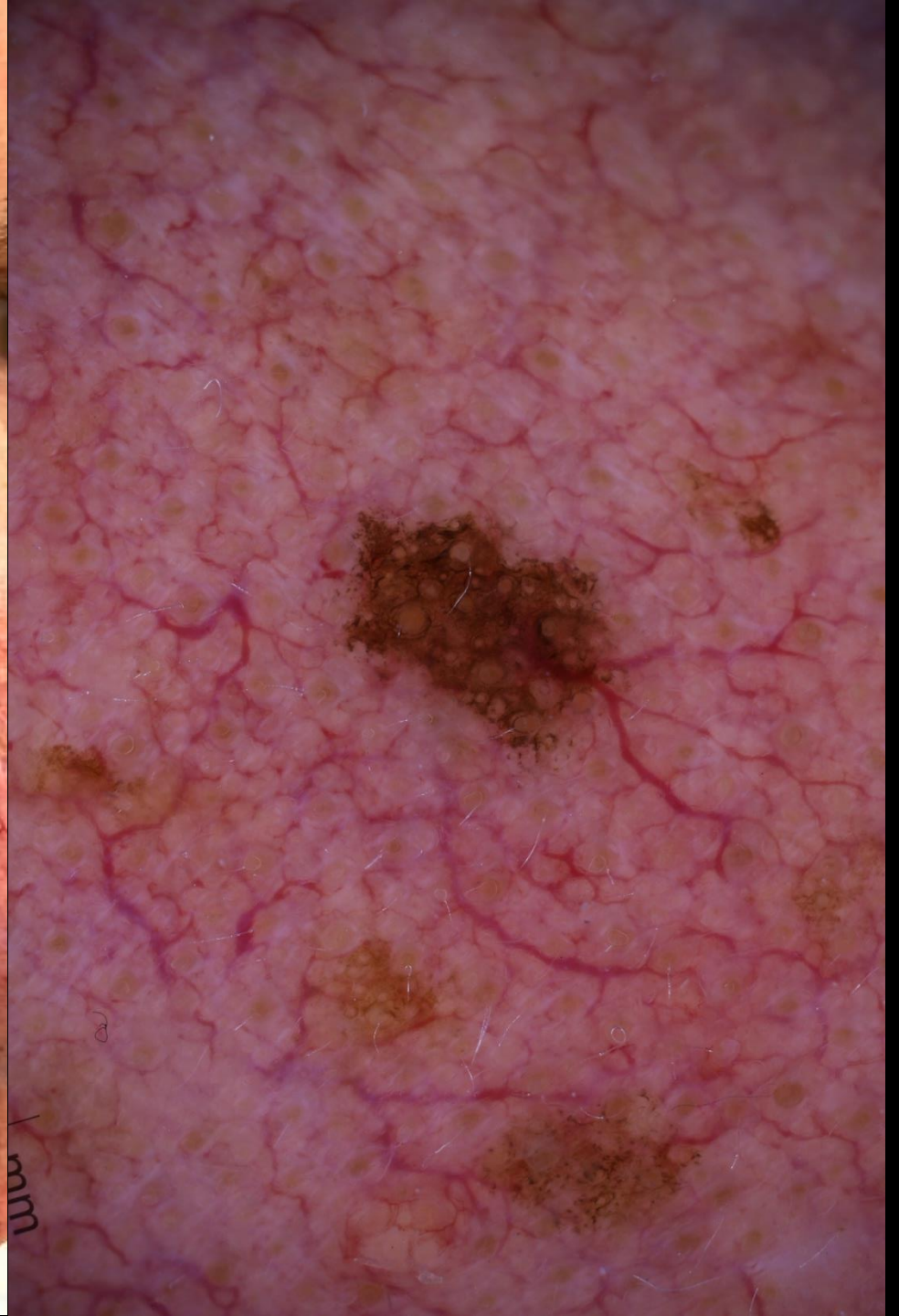
Rosettes

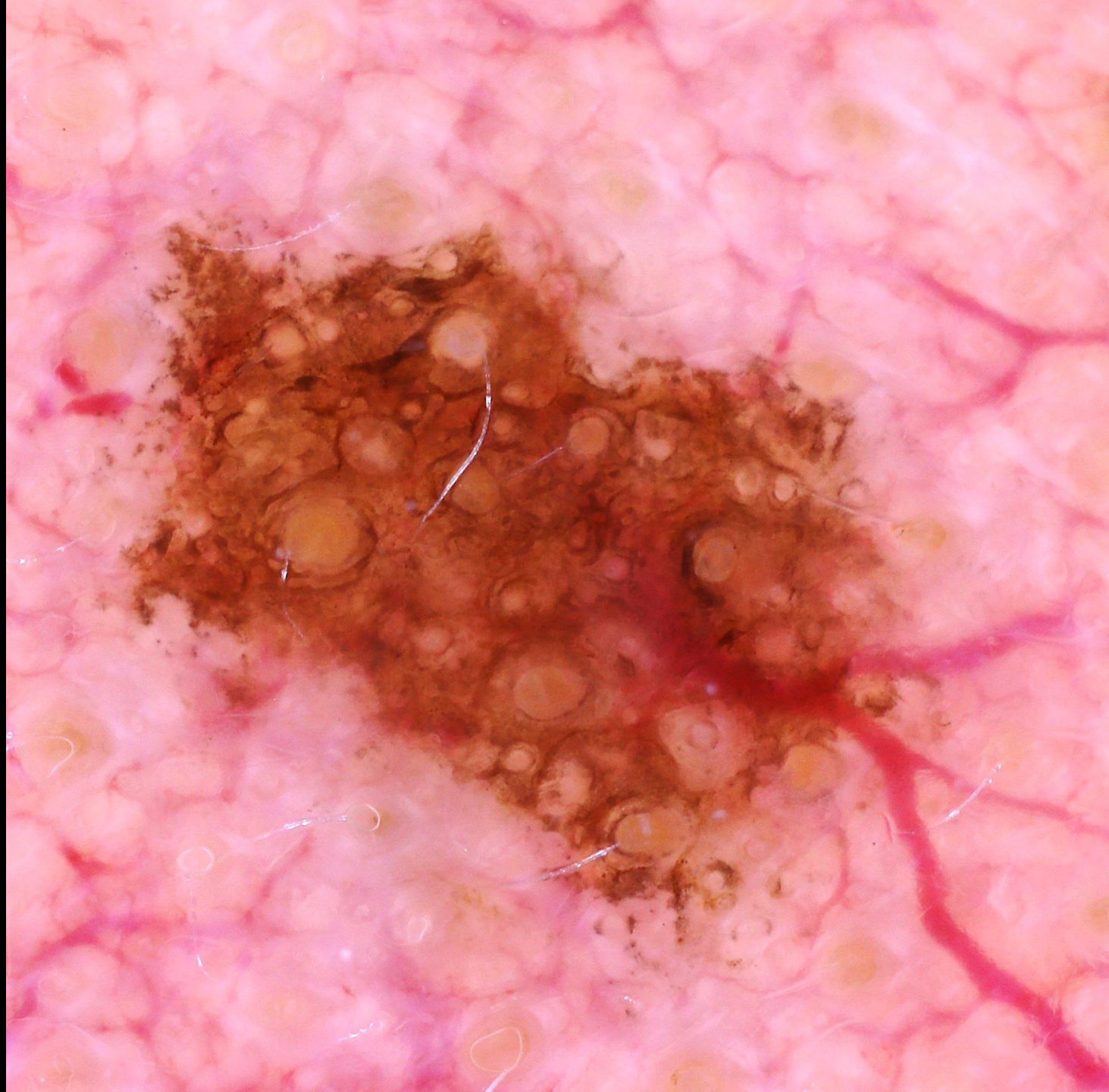
Erythema

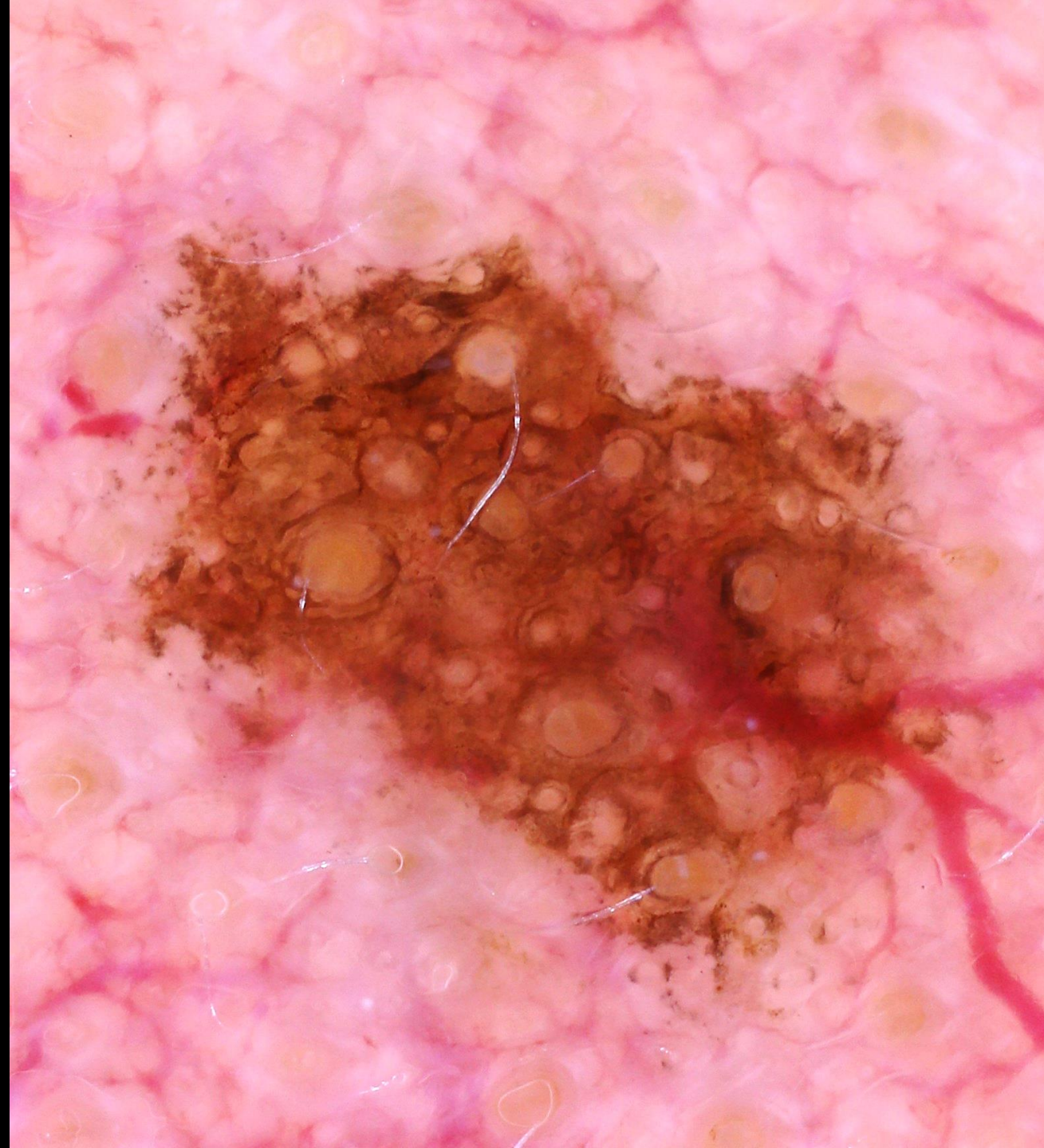




Reticular/Parallel Lines

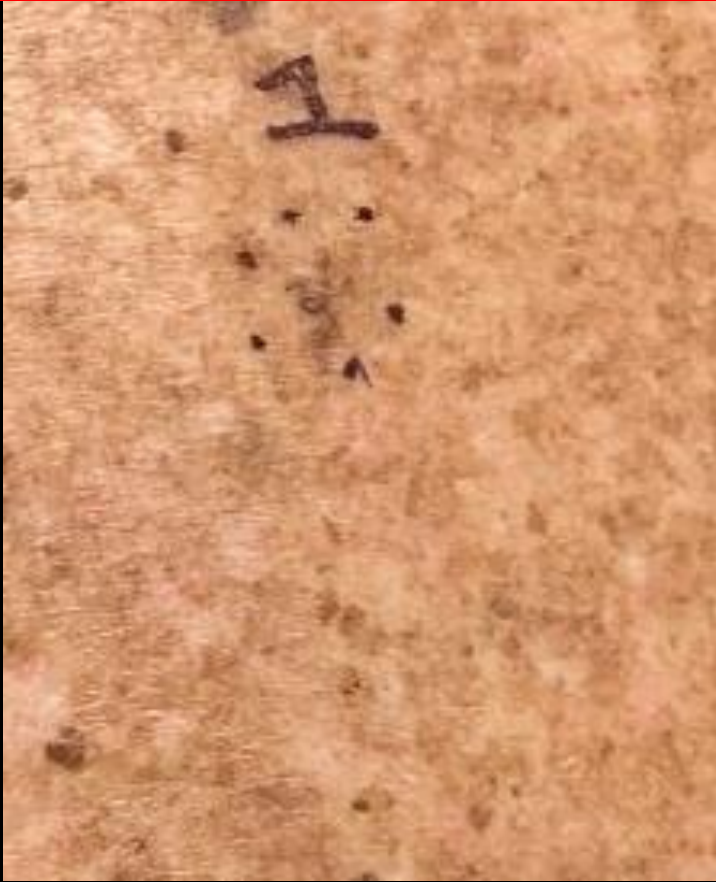








Findings must be predominant!

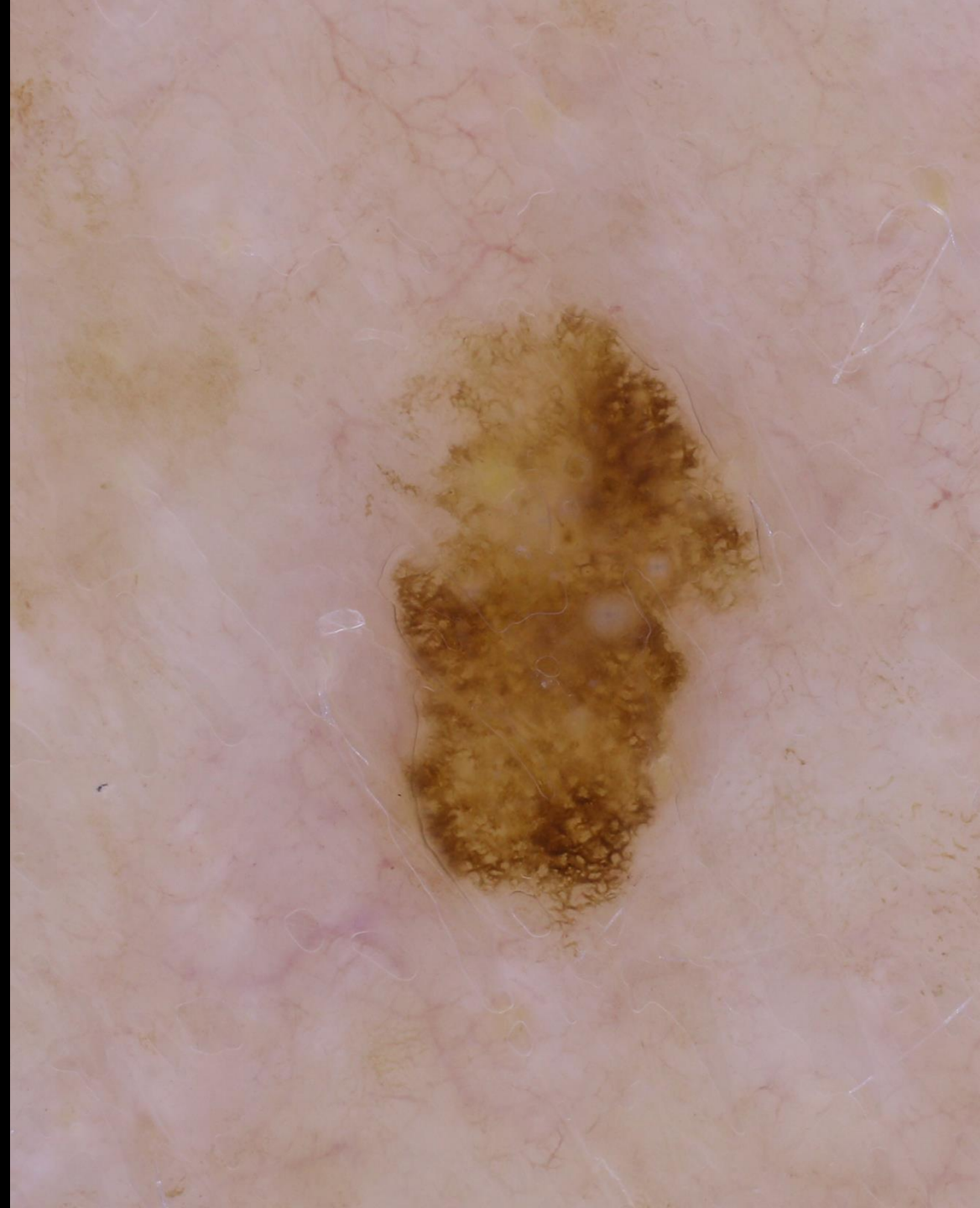


Melanoma in situ



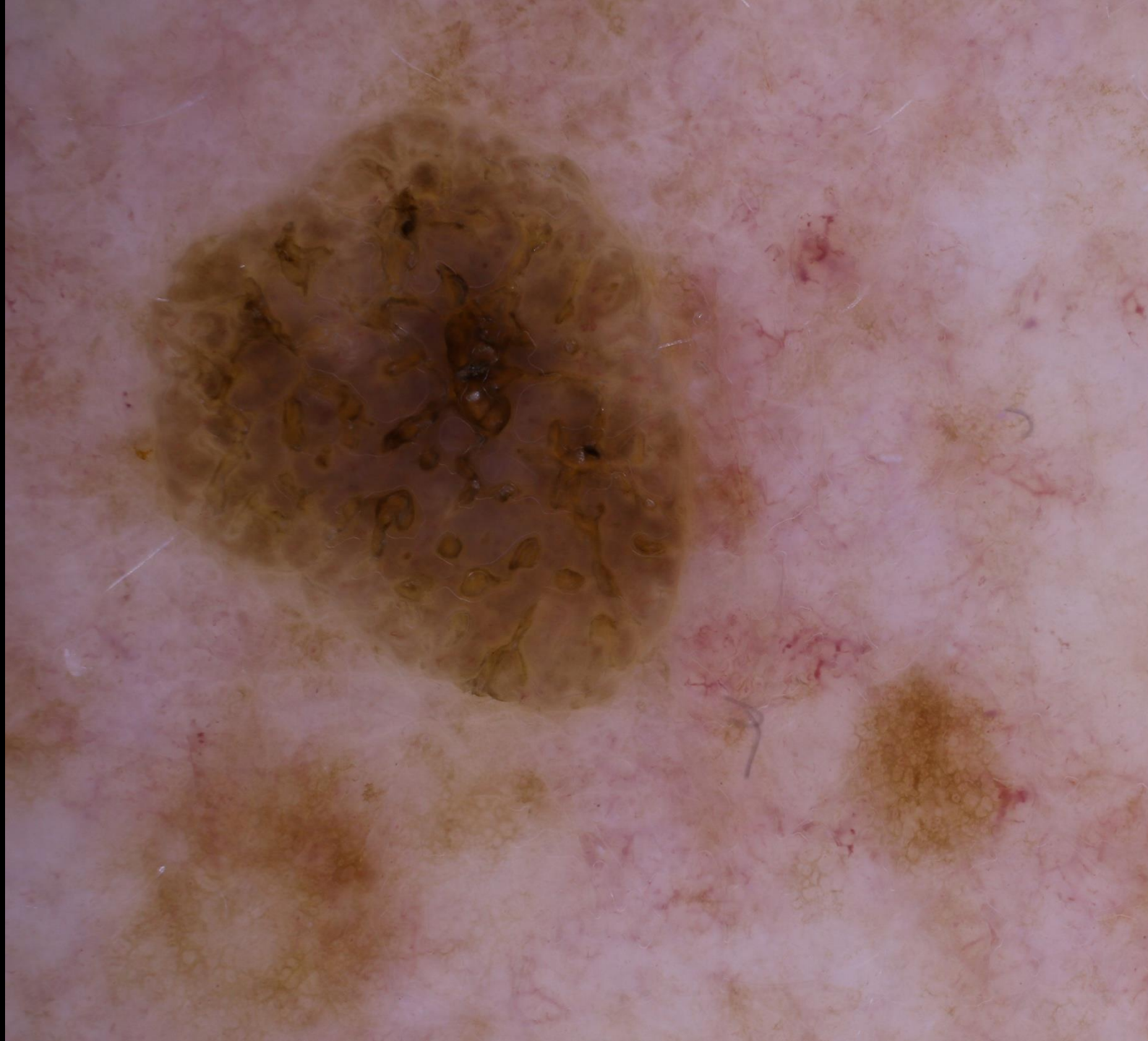
Well demarcated borders

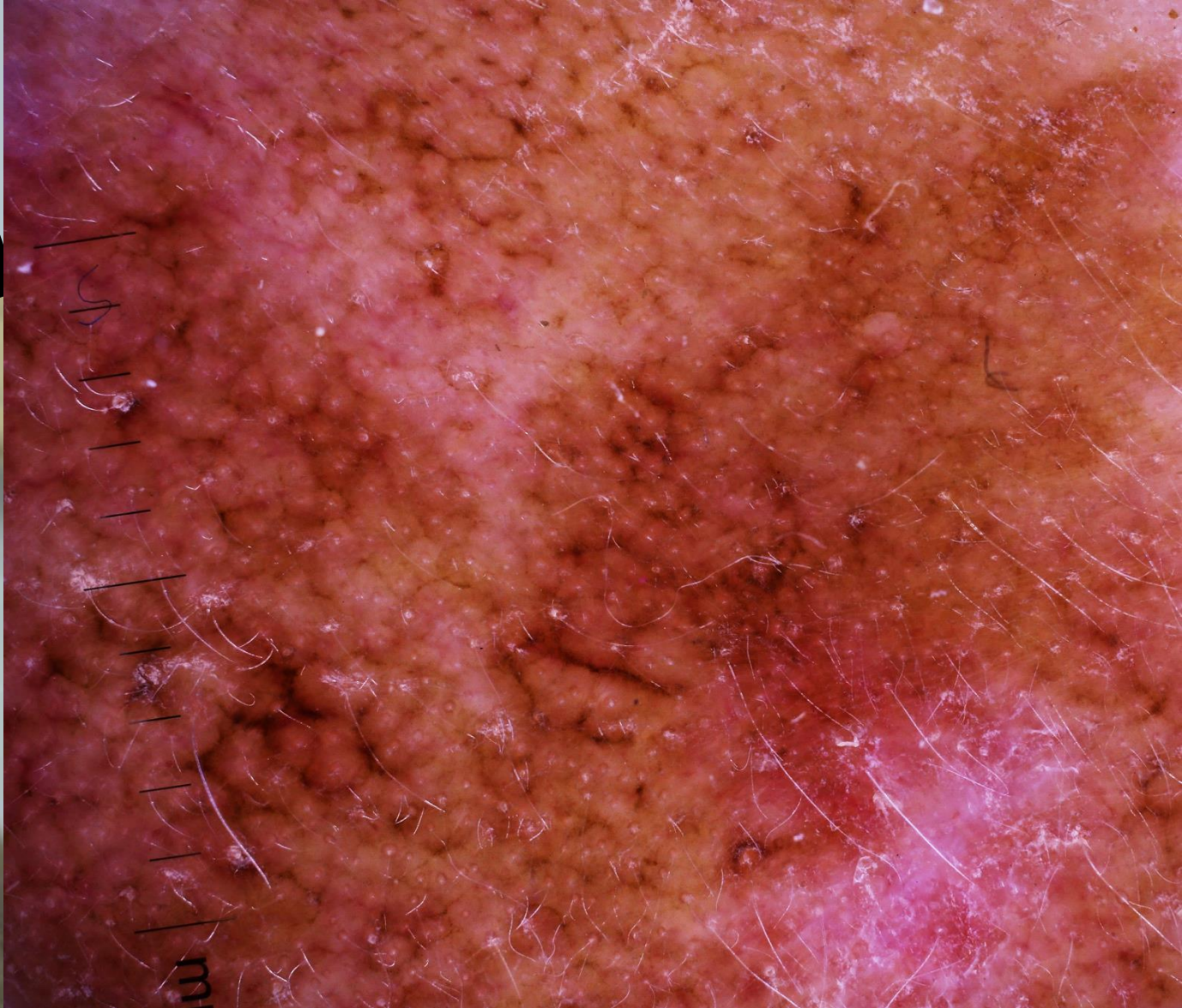


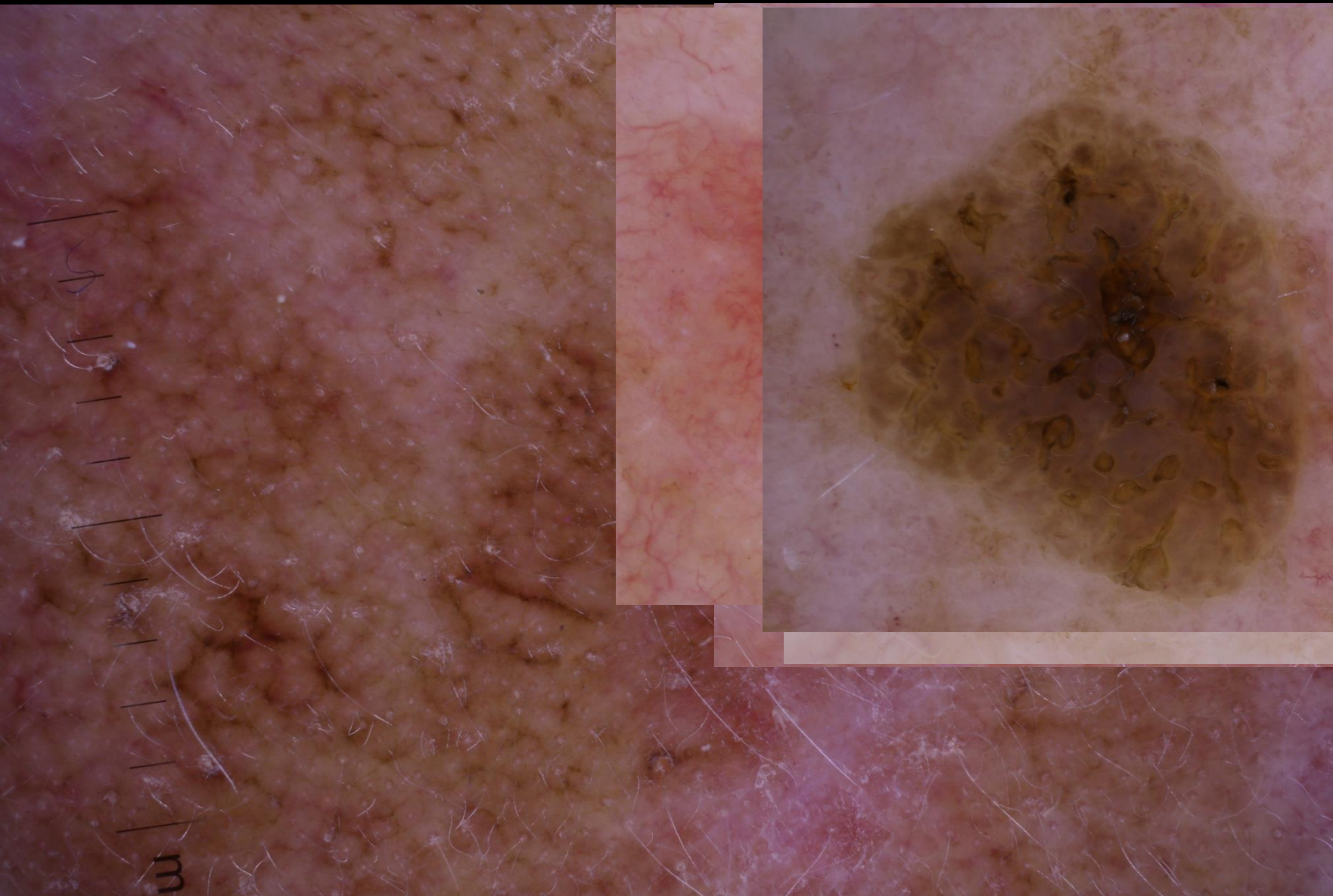


Classic SK criteria









~~Scale~~

~~White and wide follicles~~

~~Erythema~~

~~Reticular/Parallel Lines~~

~~Well Demarcated Borders~~

~~Classic SK criteria~~

BIOPSY!

Superficially Invasive Melanoma

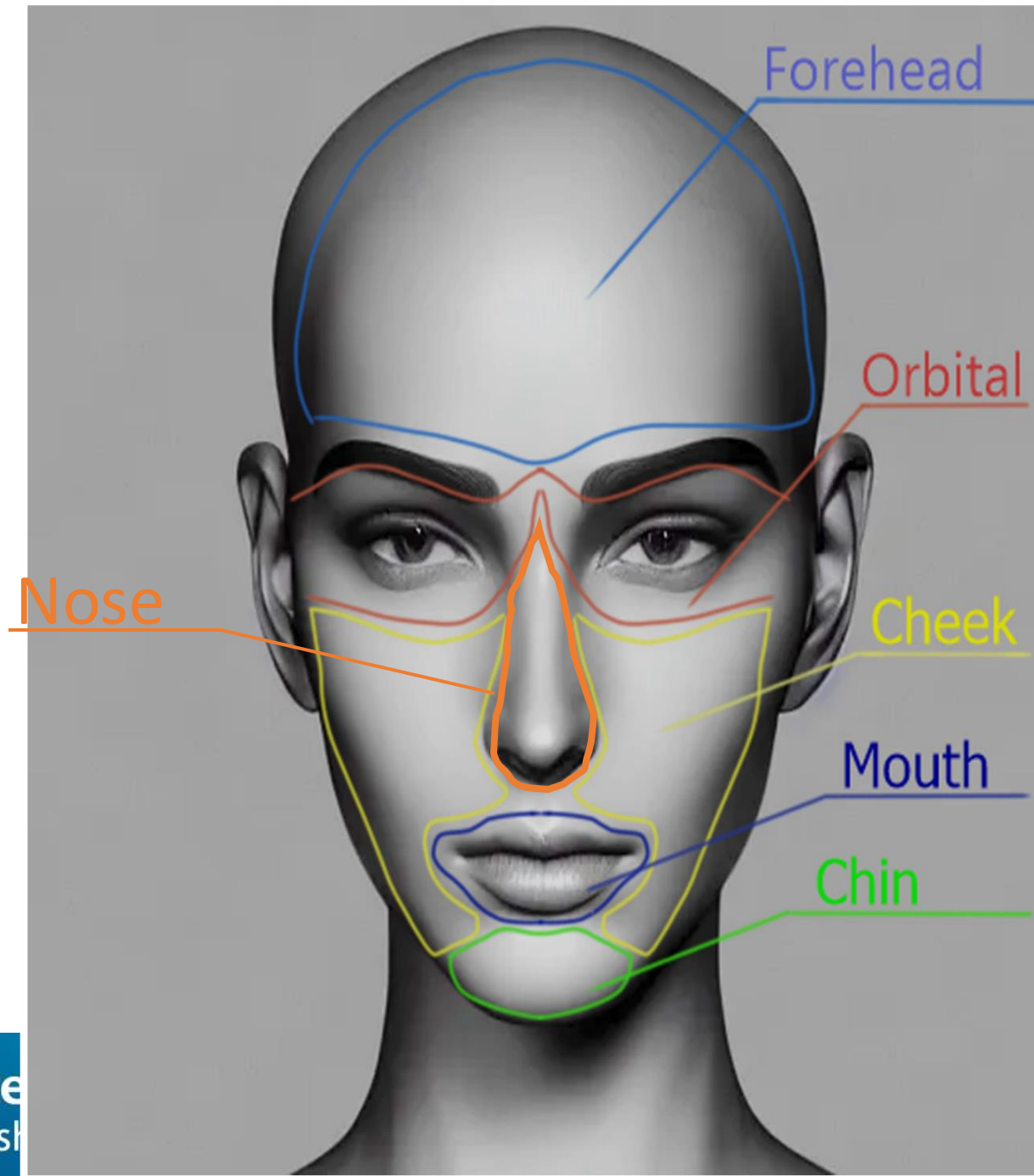
Dermoscopy of atypical pigmented lesions of the face: Variation according to facial areas

Linda Tognetti¹  | Alessandra Cartocci^{1,2} | Elisa Cinotti¹ | Martina D'Onghia¹ |
Magdalena Żychowska³ | Elvira Moscarella⁴ | Emi Dika^{5,6}  | Francesca Farnetani⁷  |
Stefania Guida^{7,8}  | John Paoli^{9,10} | Aimilios Lallas¹¹ | Danica Tiodorovic¹² |
Ignazio Stanganelli^{13,14} | Caterina Longo^{7,15} | Mariano Suppa^{16,17,18} | Iris Zalaudek¹⁹ |
Giuseppe Argenziano³ | Jean Luc Perrot²⁰ | Giovanni Rubegni²¹ | Gennaro Cataldo² |
Pietro Rubegni¹



Dermoscopic Patterns suggestive of Lentigo Maligna	Dermoscopic Patterns Suggestive of Benign facial pigmented lesions
Hyperpigmented follicular openings	Evident and regular follicular openings
Target-like pattern	Keratin plugs
Obliterated follicular openings	Light brown fingerprint
Polygonal structures	Diffuse opaque light brown pigmentation
	Comedo-like openings





FINDINGS

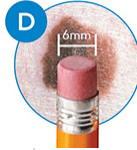
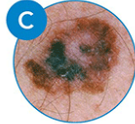
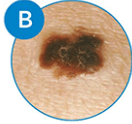
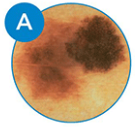
1. Four patterns varied significantly in different facial areas
 1. Obliterated follicular openings
 1. Nose, cheek > forehead
 2. Forehead and chin: more likely malignant
 2. Target-like pattern
 1. Nose > orbital, cheek
 3. Keratin plugs
 1. Nose > orbital, cheek, forehead, chin
 4. Evident and regular follicular openings
 1. Nose > orbital, cheek, forehead, chin
2. Nasal area was very challenging
 1. Some malignant: evident and regular follicular openings, keratin plugs
 2. Some Benign: target like pattern



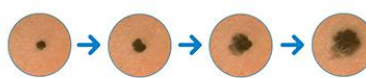
Melanoma Incidence



Pre-1980's



ABCDE criteria



Mid-1980's

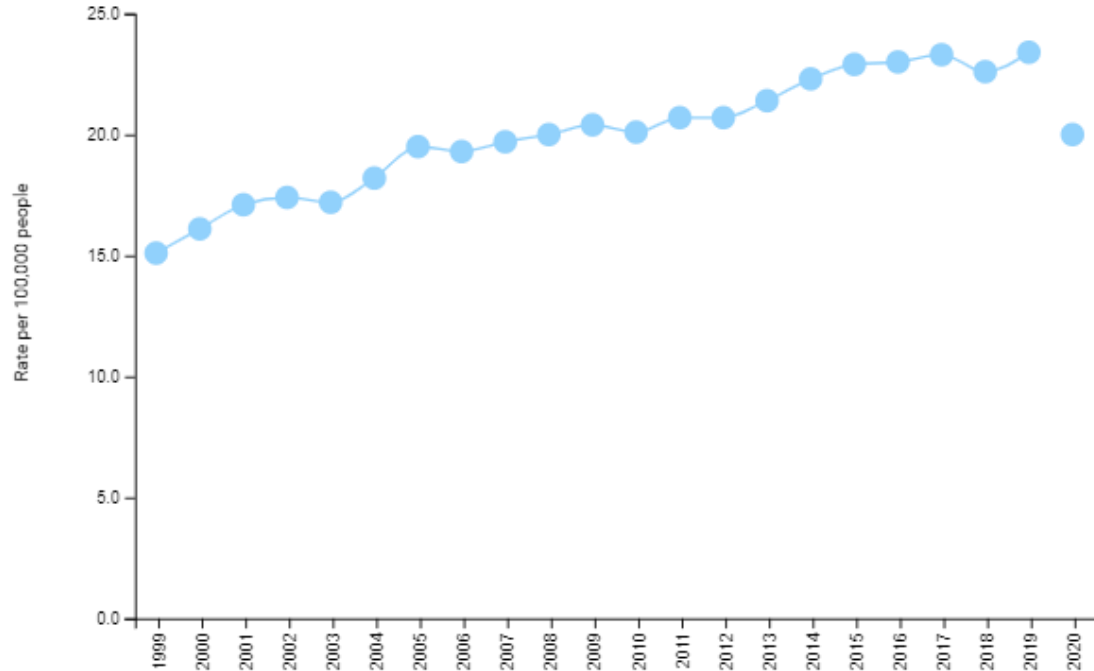


Late-1990's-
2000's

Time

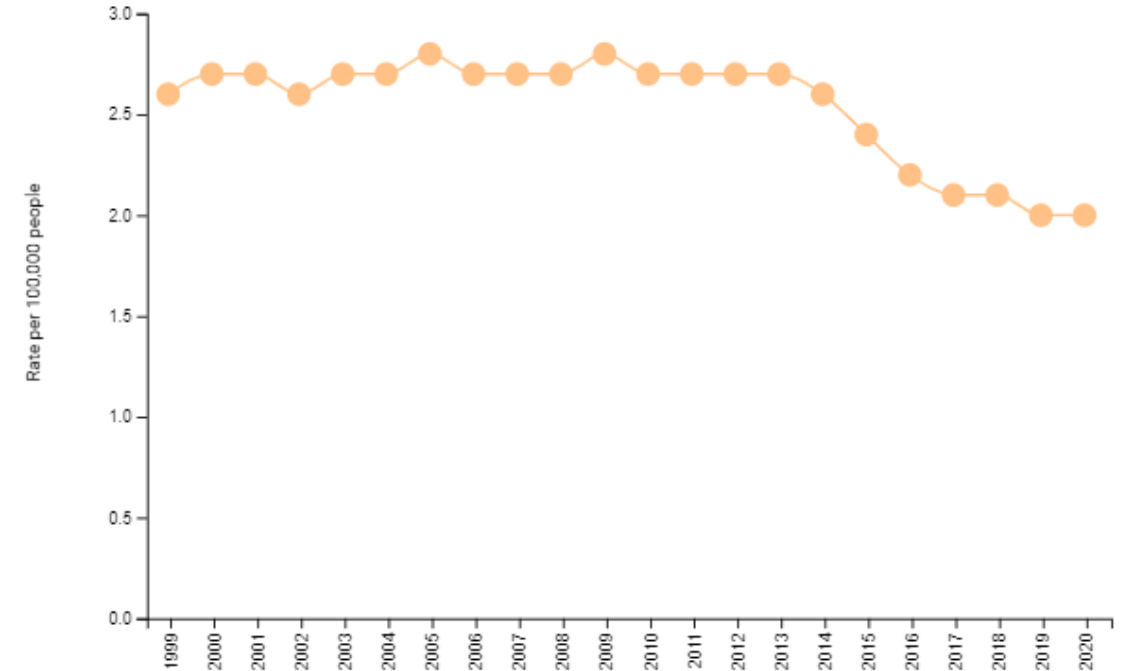
Melanoma

Annual Rates of New Melanoma, 1999-2020



Source - U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2022 submission data (1999-2020): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; <https://www.cdc.gov/cancer/dataviz>, released in November 2023.

Annual Rates of Melanoma Deaths, 1999-2020



Source - U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2022 submission data (1999-2020): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; <https://www.cdc.gov/cancer/dataviz>, released in November 2023.

MELANOMA “EPIDEMIC”

- UV exposure, aging patient population
- Increased public awareness/early recognition campaigns
- Technological innovations
 - Dermoscopy
- Overdiagnosis

Diagnostic Certainty

Static evaluation $\neq$ biologic behavior
(Histology or Dermoscopy)



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Two Step Method

- Total Body Photography (TBP) + sequential digital dermoscopy
- High risk populations: decrease excisions, increase early detection
- Improves SN/SP new/changing lesions
- 3-4 fold reduction in nevus biopsies with TBP



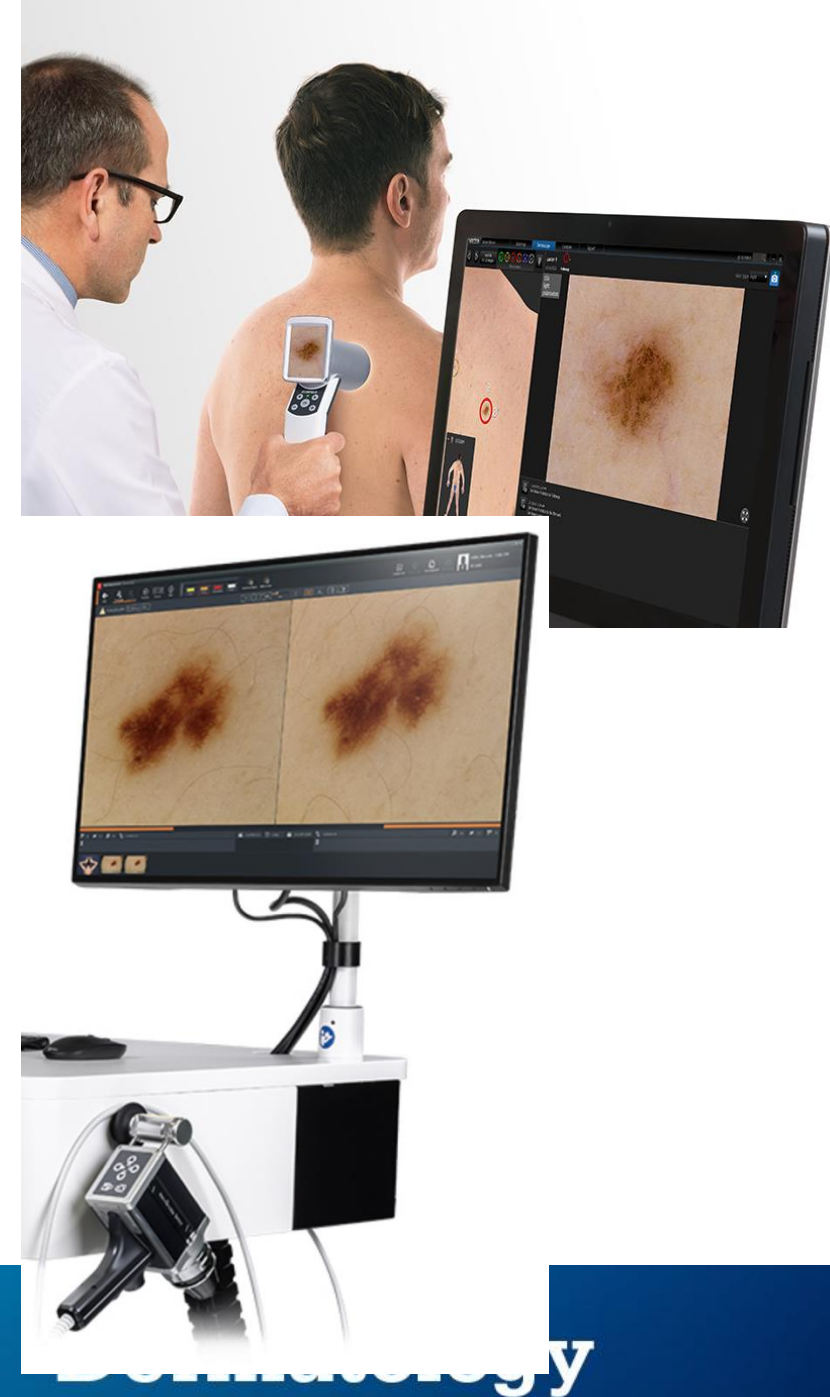
Truong A, et al. J Am Acad Dermatol. 2016



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Sequential Digital Dermoscopy

- Diagnostic advantages are greater when combined with TBP
- Short term follow up (3-4 months): improves compliance
- 3.3-fold reduction in unnecessary biopsies
- Melanomas at follow up were MIS/Stage 1 disease



Argenziano G, et al. Br J Dermatol. 2008 Aug;159(2)

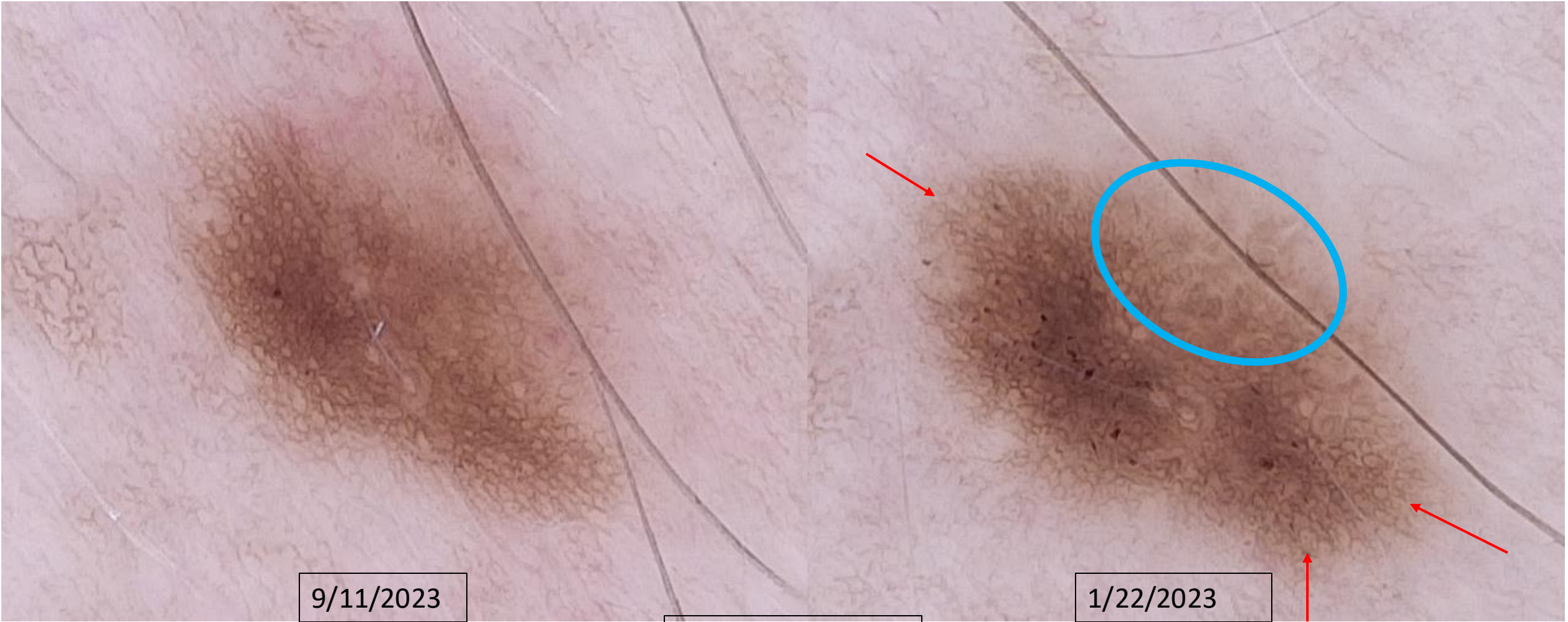


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9/11/2023

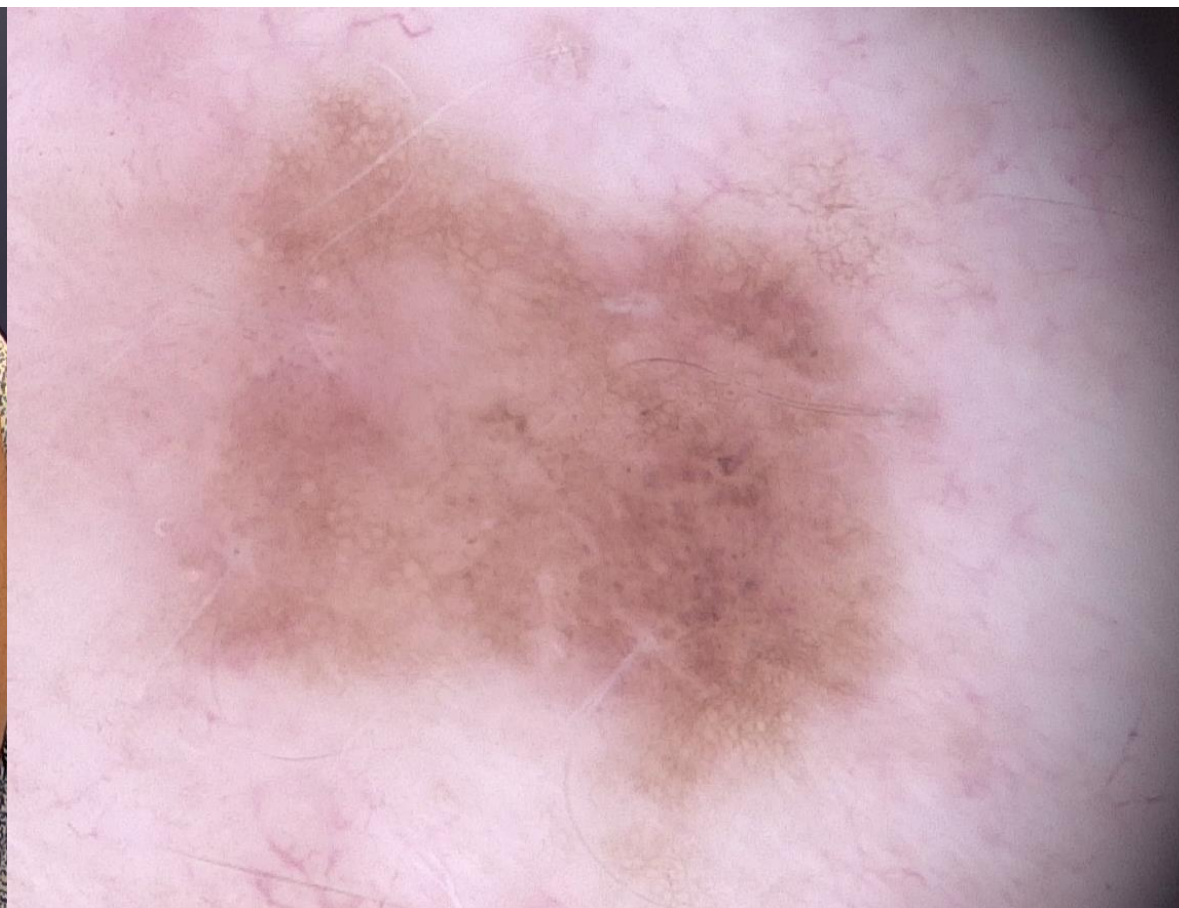
0.2 mm melanoma

1/22/2023



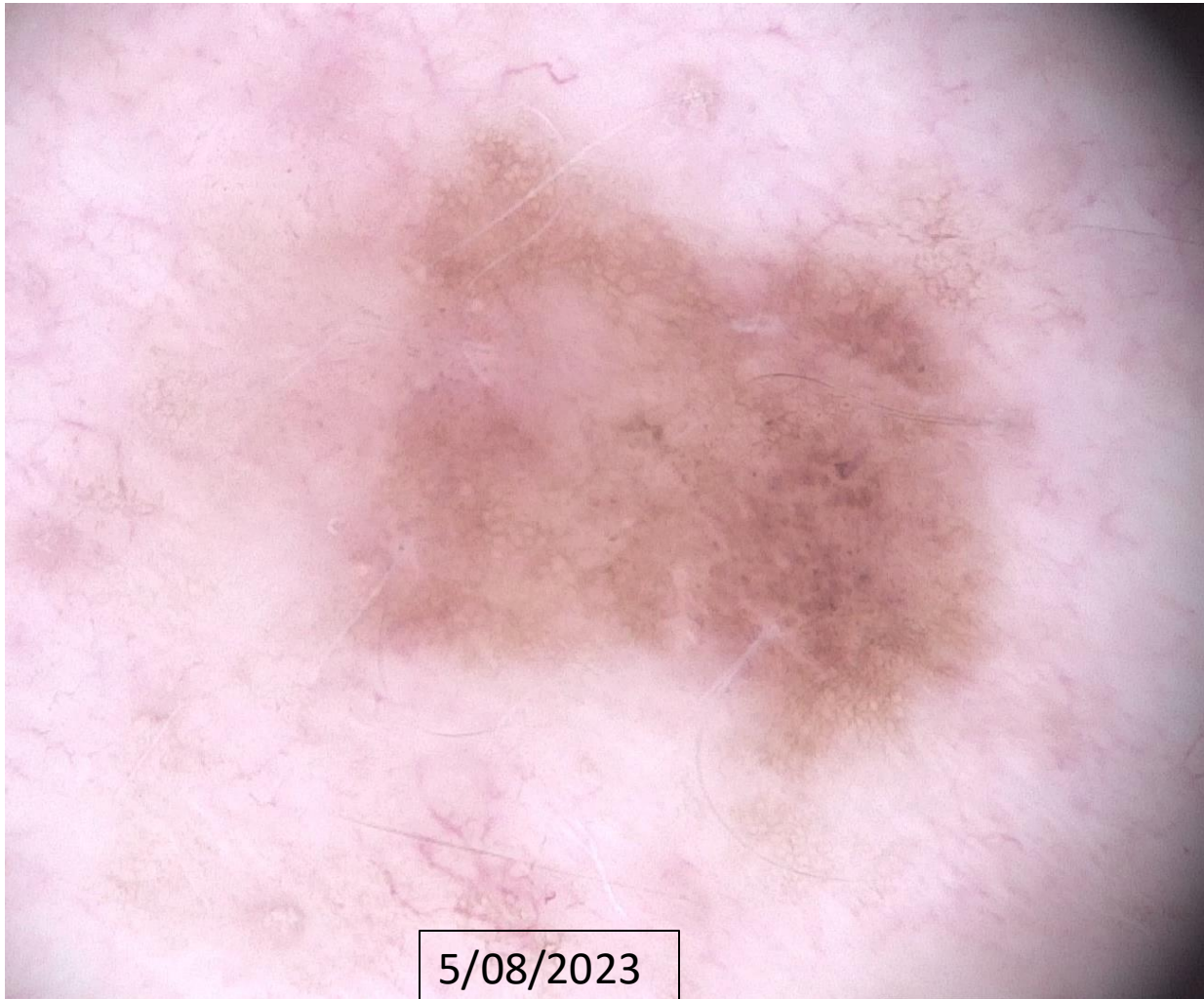
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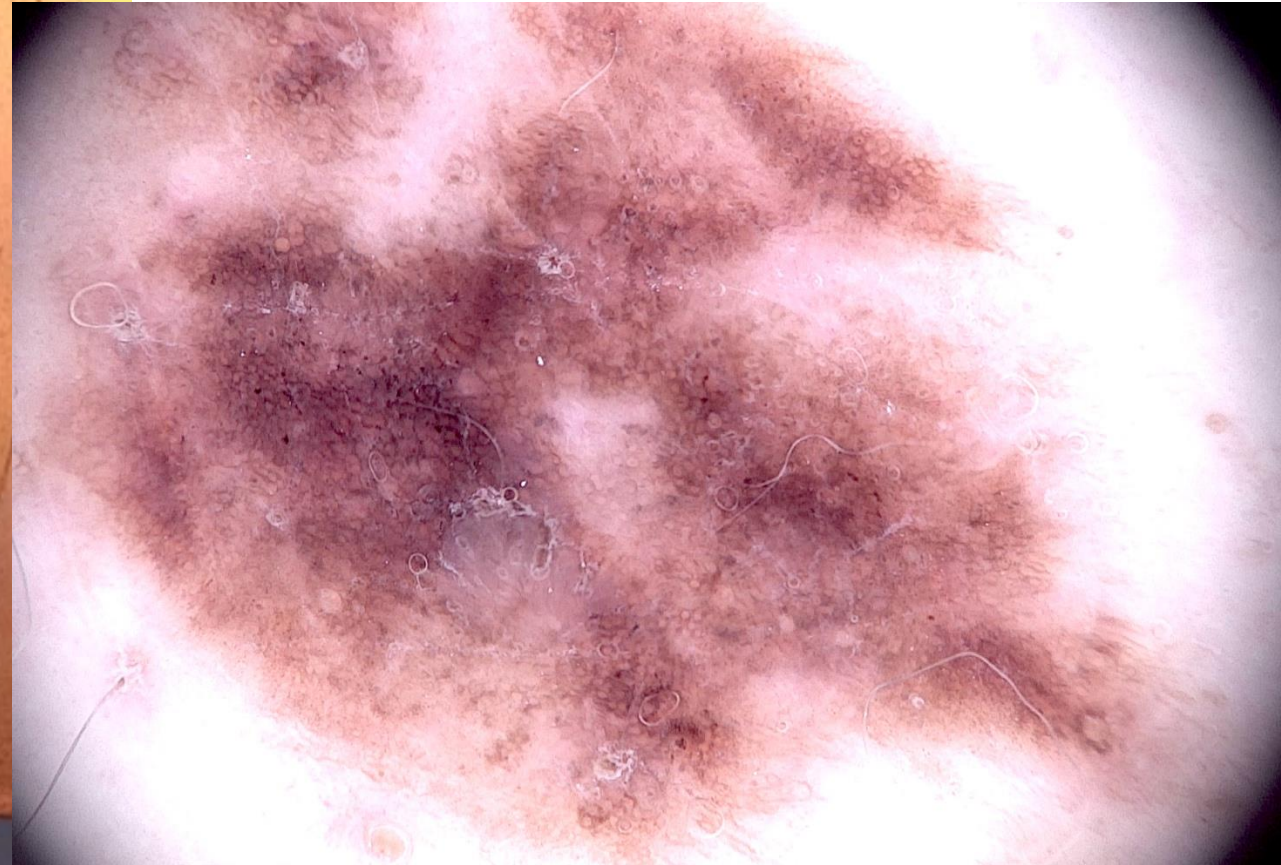


Melanoma in Situ



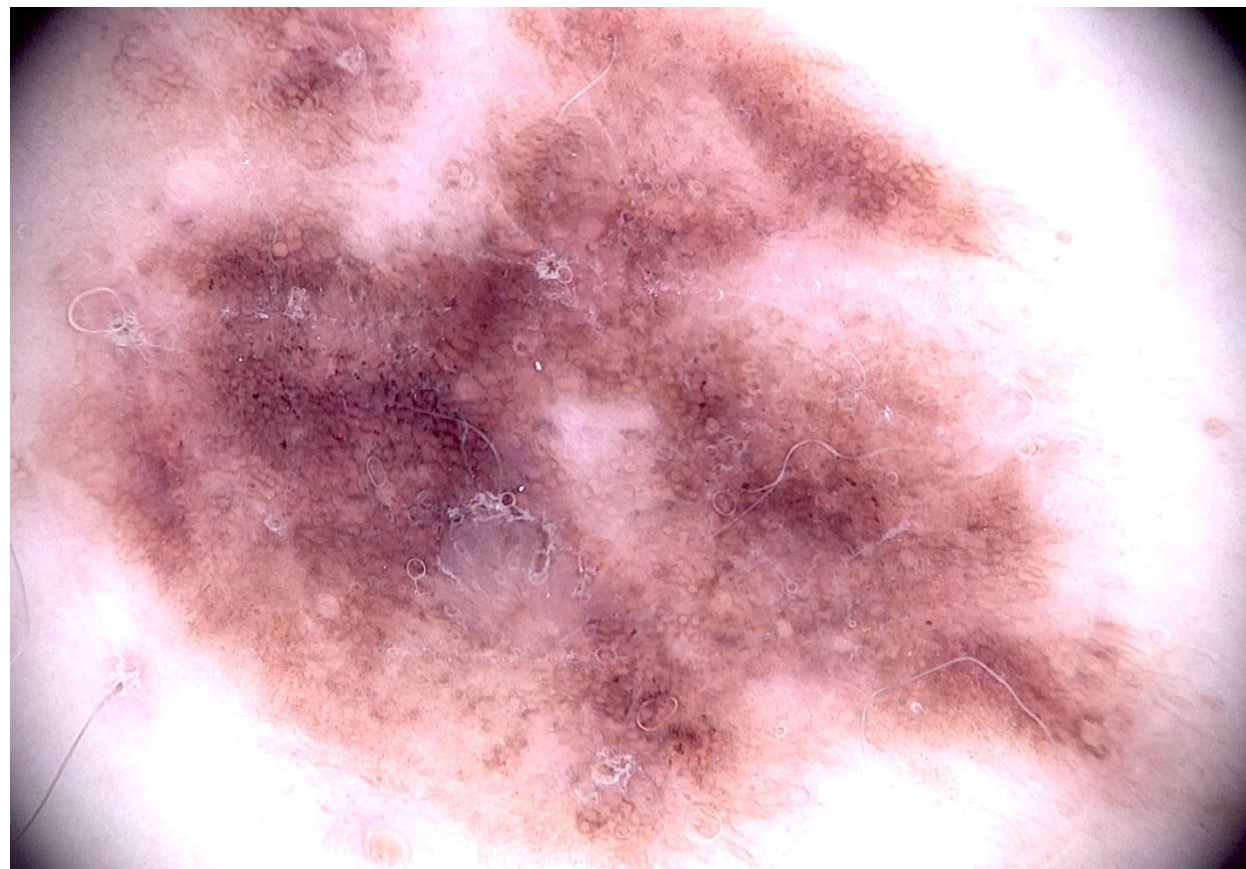
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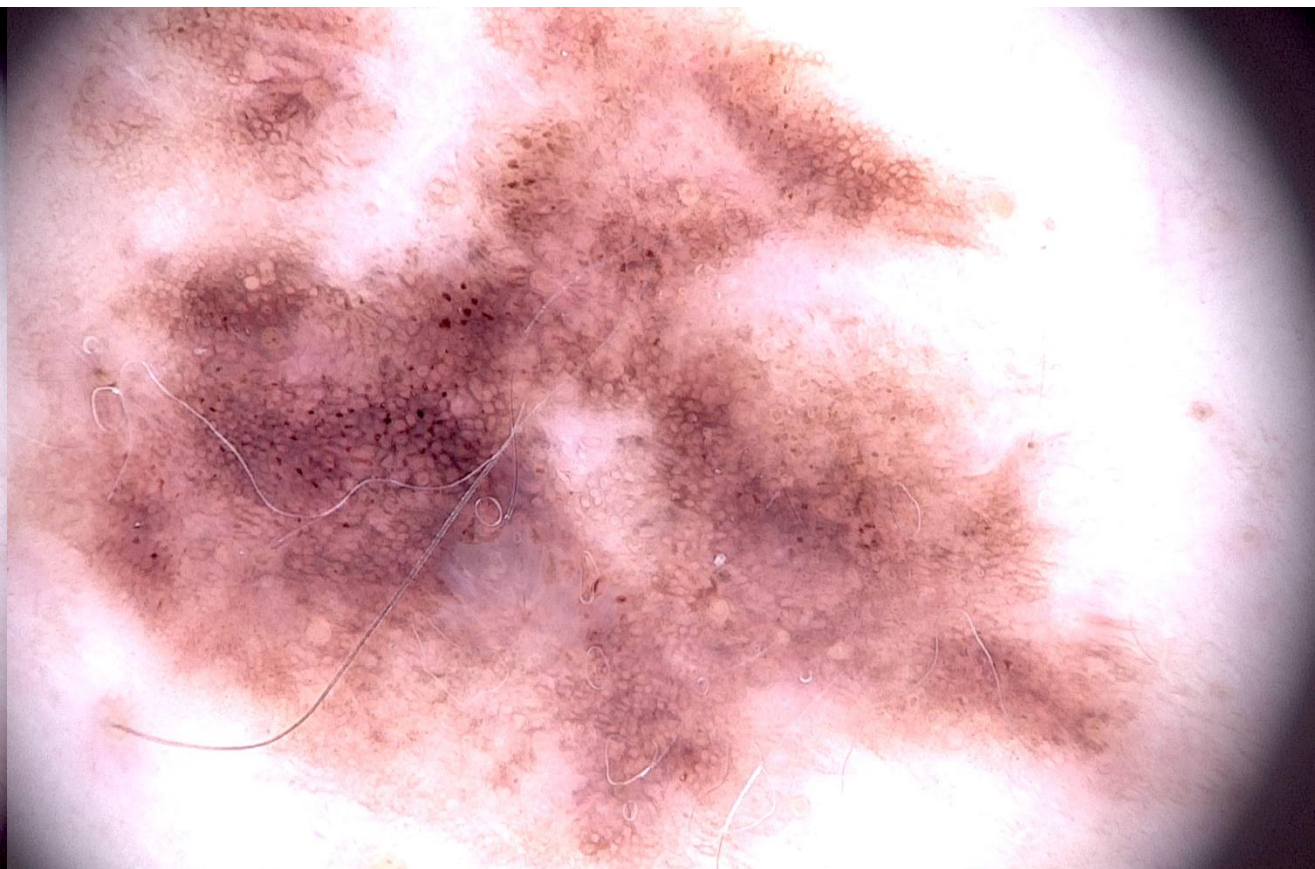


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5/15/2023



10/23/2023



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Take Home

- Inverse approach for facial pigmented lesions improves accuracy
- Despite well studied algorithms, facial pigmented lesions can be challenging
- Total Body Photography and Sequential Digital Dermoscopy: early detection of melanoma with decrease unnecessary biopsies



References

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