

Dermoscopy and Photodocumentation

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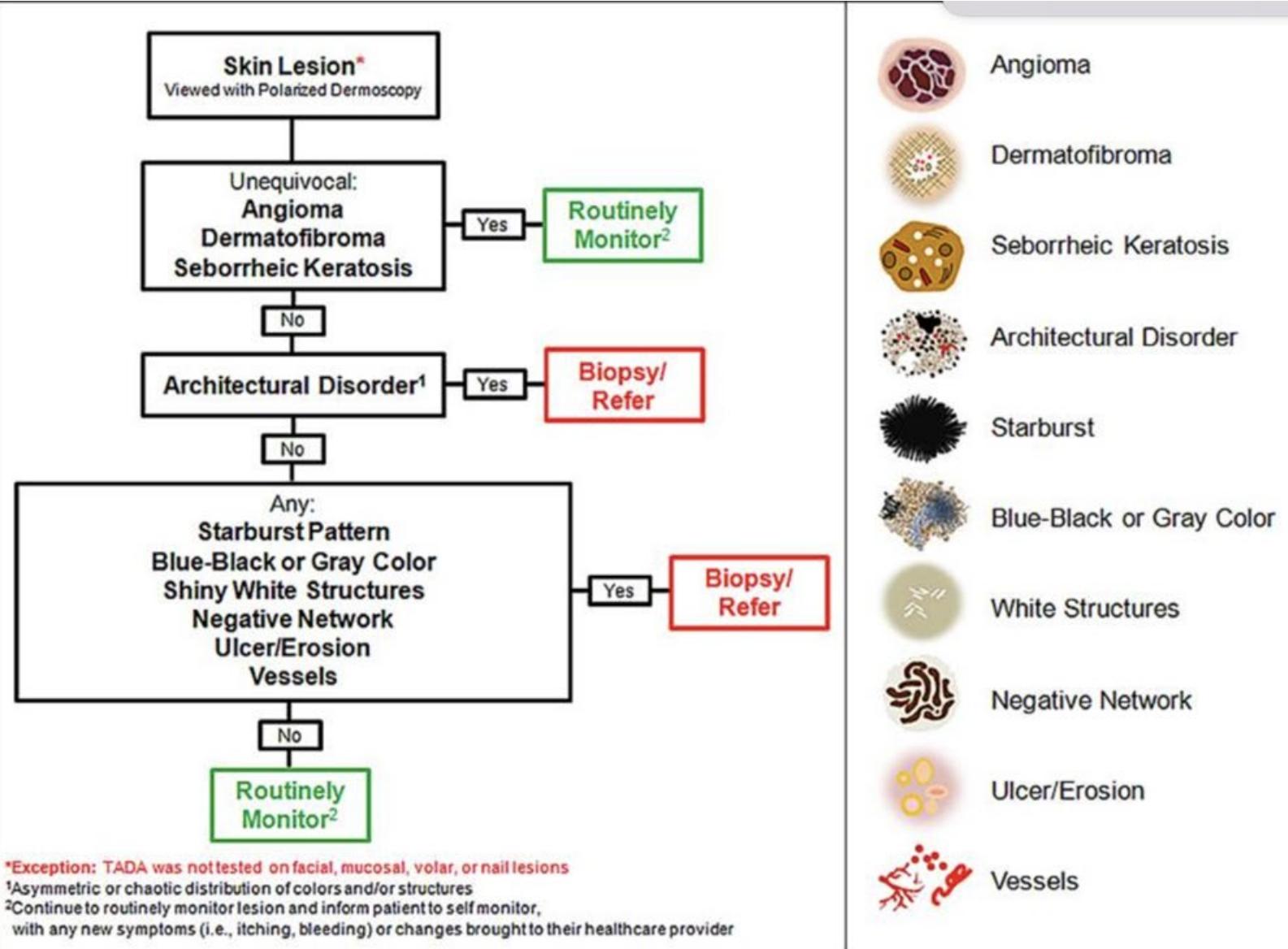
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George Washington University School of Medicine & Health Sciences,
Washington, DC, USA





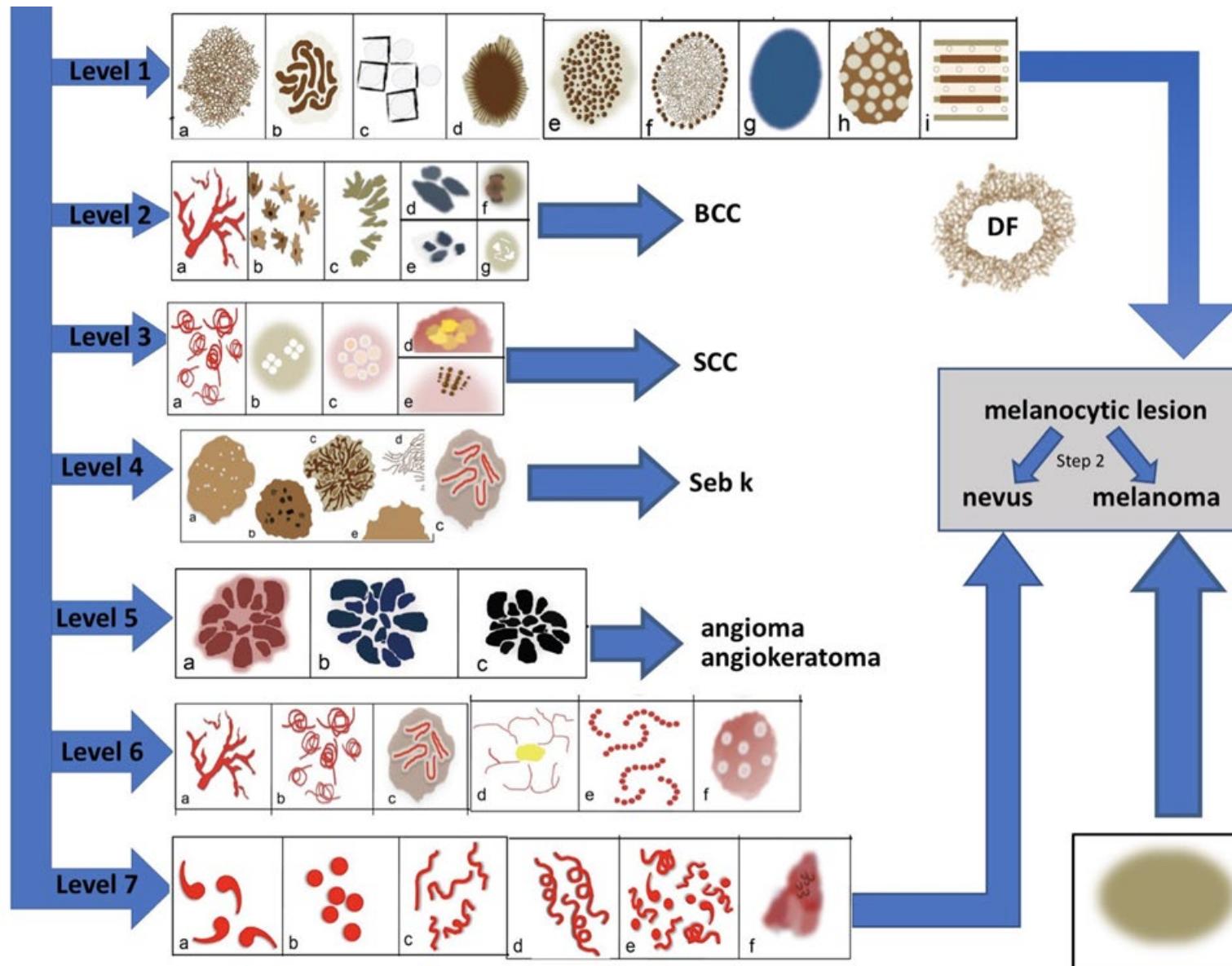
Pattern analysis algorithms

- ABCD→TDS
- Glasgow 7 point checklist
- CASH
- Menzies
- Chaos and Clues
- TADA
- PASS

Polychromy, Asymmetry, and Specific Structures: a new simplified algorithm

- Retrospective multicenter study involving dermoscopic images and review of images by dermatologists from 3 different dermatology departments
- Based on polychromia, asymmetry of color or structure, and some melanoma specific structures
 - >3 colors (1 point)
 - Asymmetry in colors or structures (1 point)
 - One melanoma specific structure (1 point)
 - Two or more melanoma specific structure (1 point)
- PASS score ≥ 3 had a 91.9% sensibility, 87% specificity, and 88.4% diagnostic accuracy for melanoma

TADA

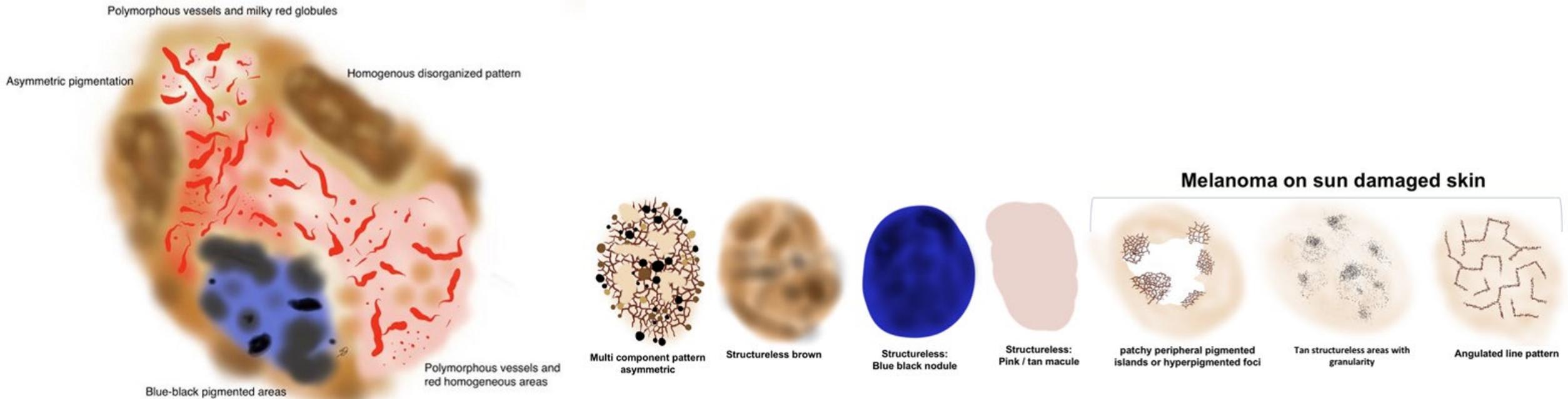


Is it melanocytic?

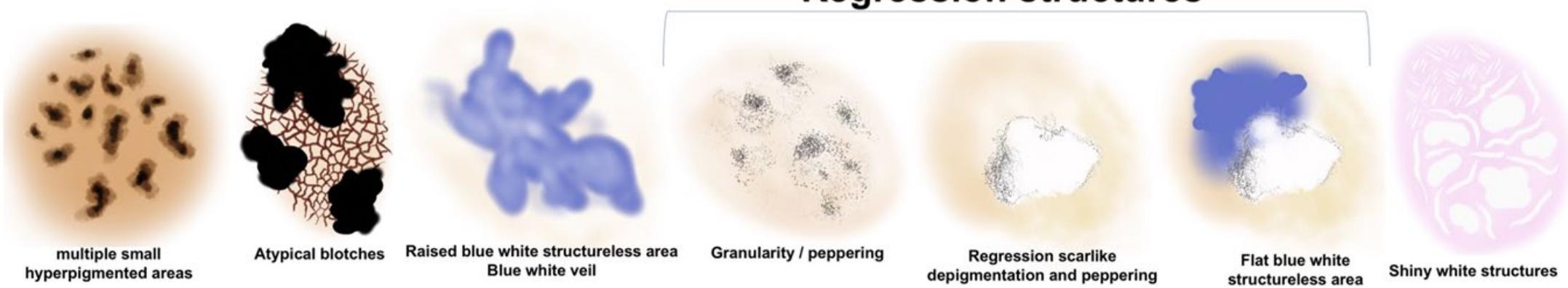
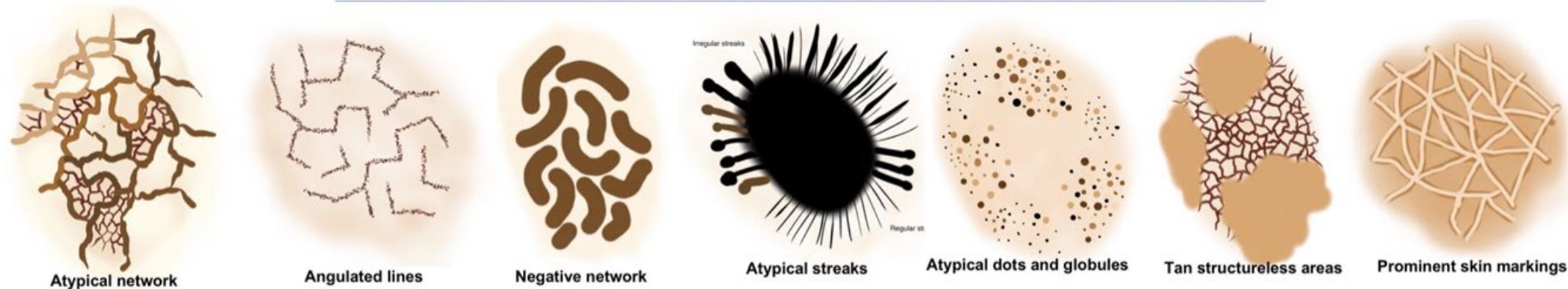
- Network
- Dots and globules
- Streaks/pseudopods
- Homogenous



Melanoma global patterns



Melanoma structures





Atypical network

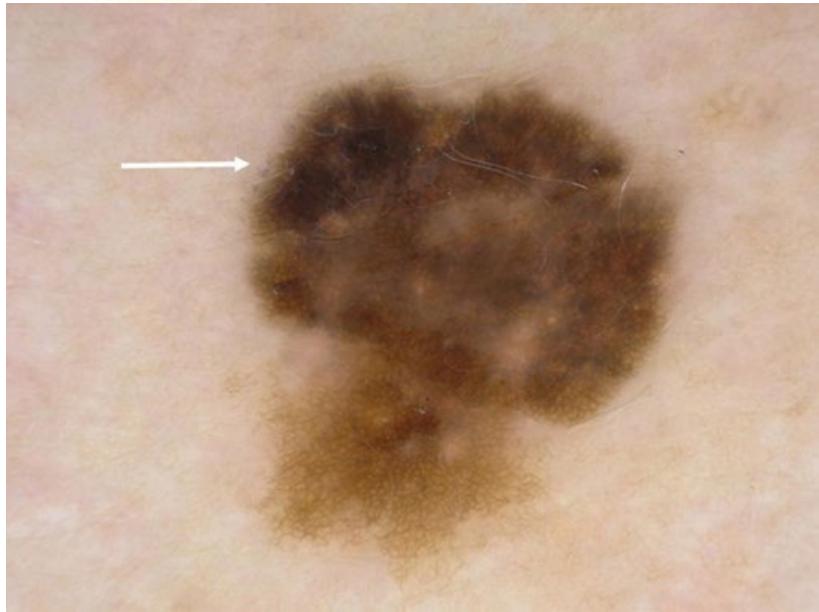
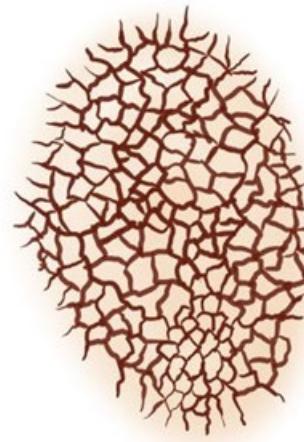


Photo from Cabo et al



Typical Network

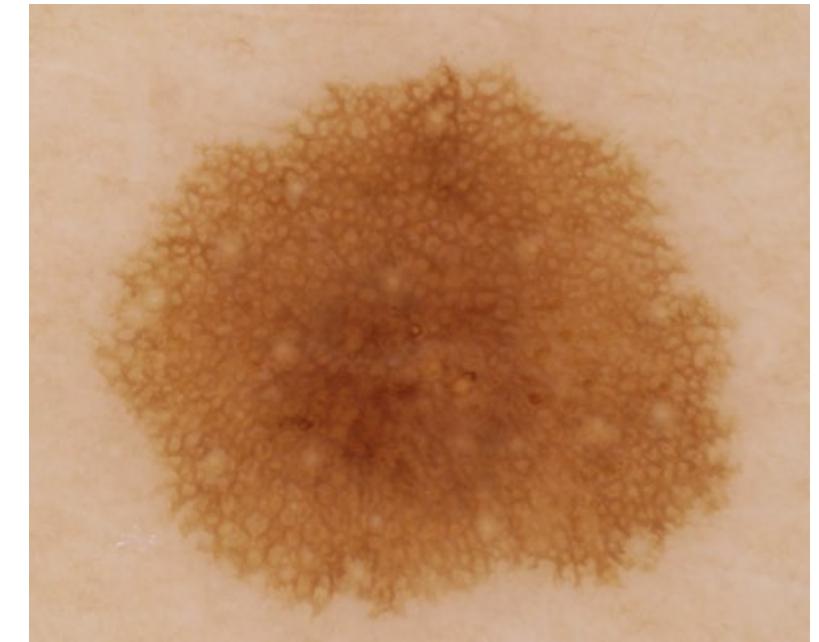


Photo by Ralph P Braun, MD

- Lines vary in thickness
- Isolated islands of pigment with irregular holes

- Meshwork of lines that are relatively uniform in width and homogenous in color

Angulated lines

- Zig zags, polygons, and rhomboids
- Common on sun damaged skin

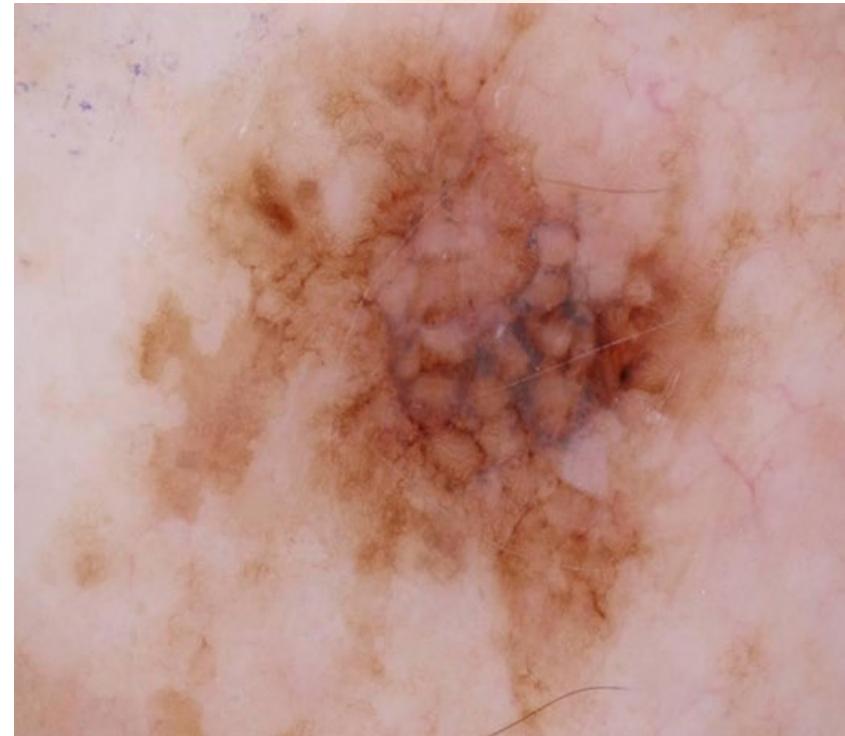
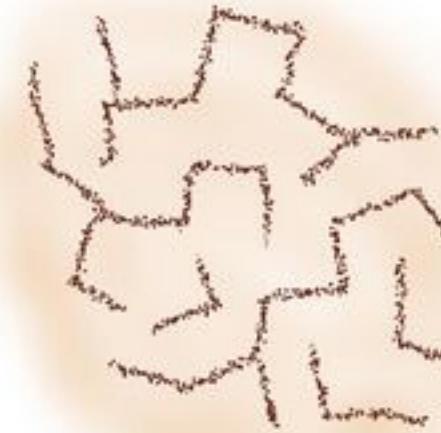
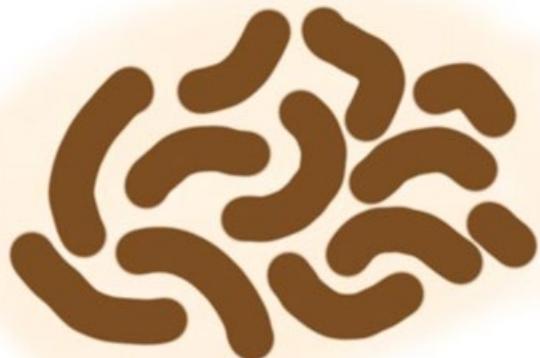
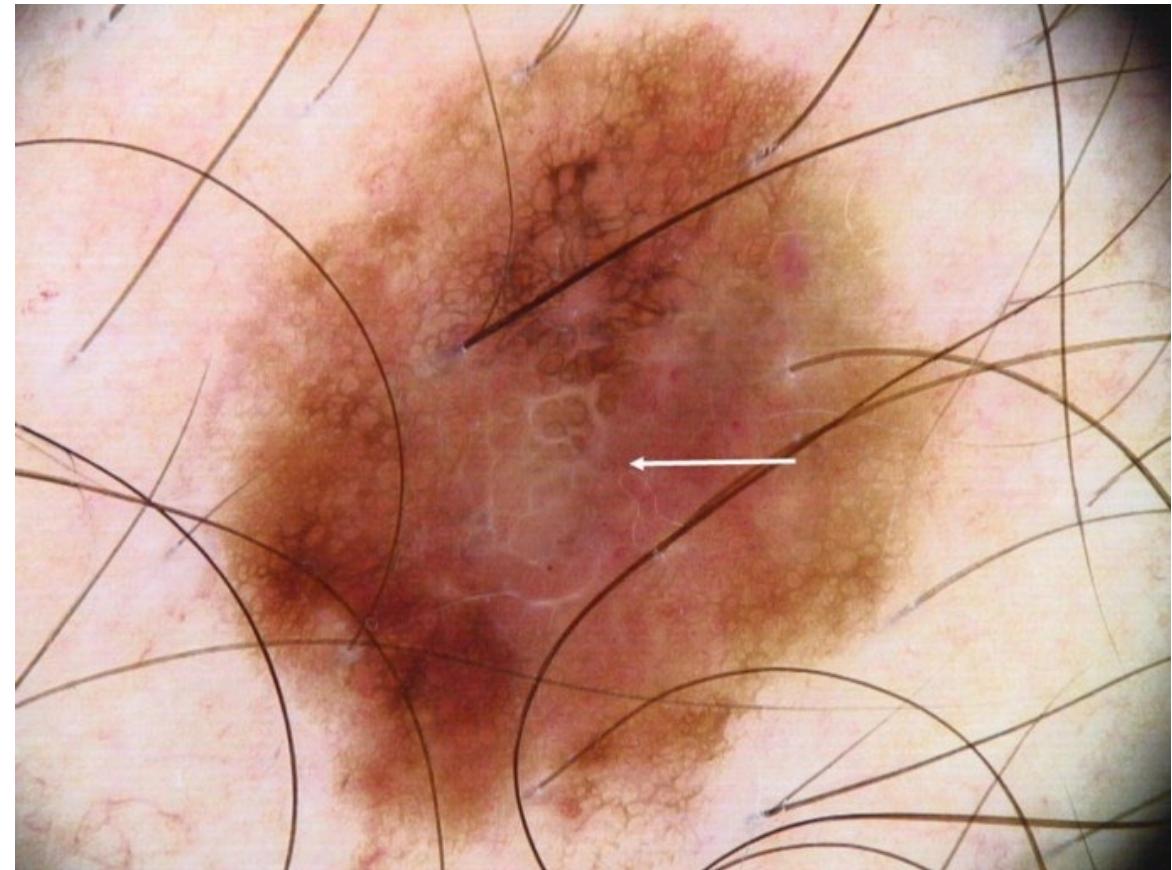


Photo by Ofer Reiter, MD from Dermoscopy

Negative network

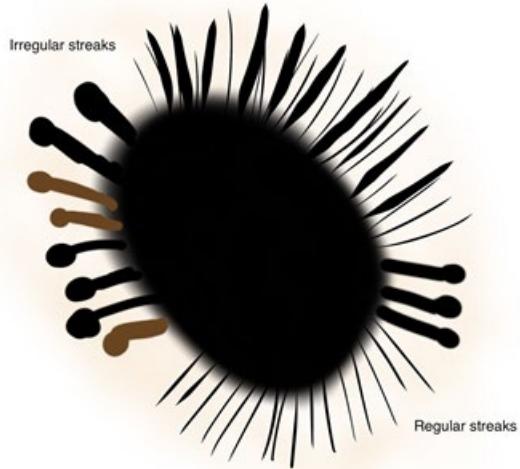


- Curvilinear brown globular structures
- Interconnecting hypopigmented lines

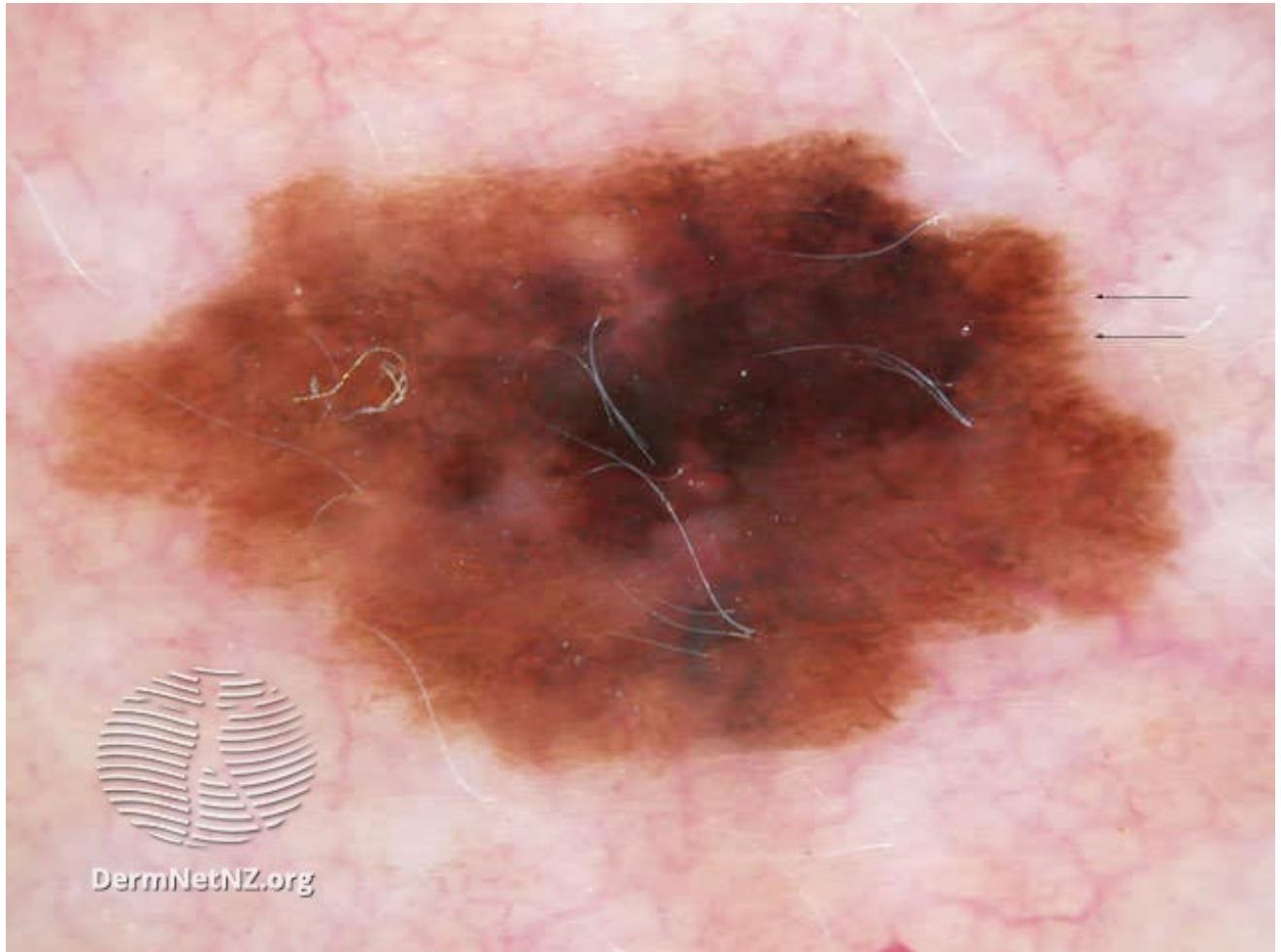


Cabo, H., Lallas, A. (2018). Melanoma. In: Cabo, H., Lallas, A. (eds) Comprehensive Atlas of Dermatoscopy Cases. Springer, Cham. https://doi.org/10.1007/978-3-319-76932-5_3

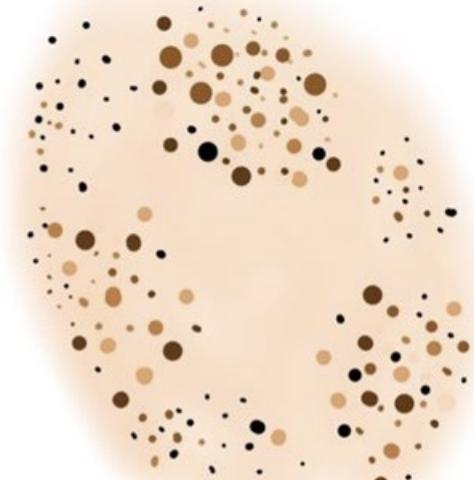
Irregular streaks



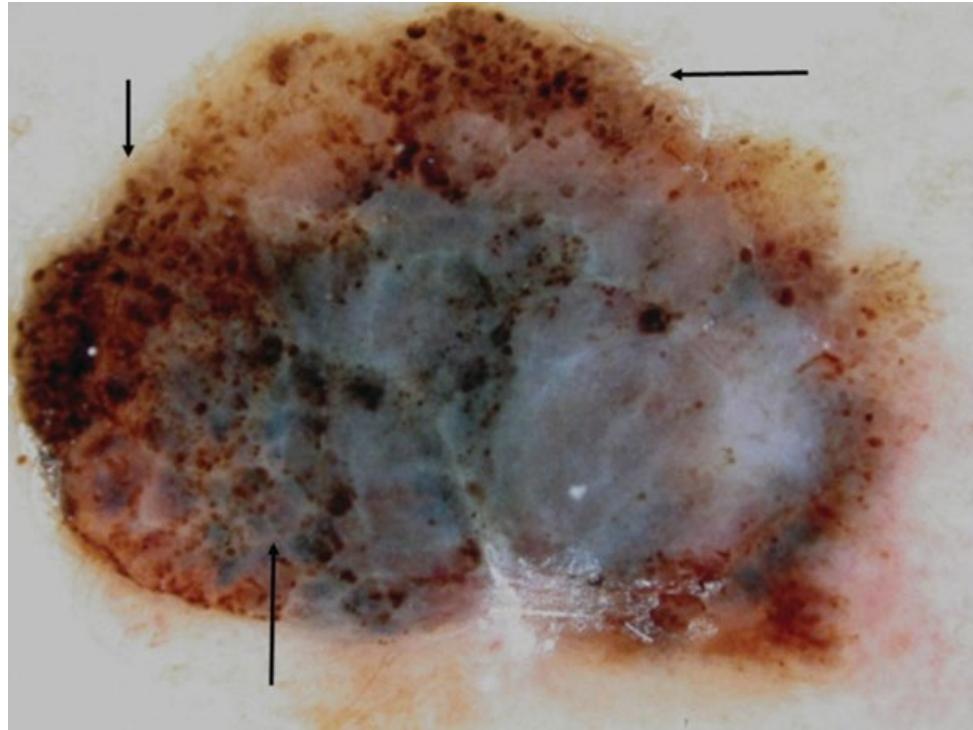
- Irregular radial outward projections around periphery



Atypical dots and globules



Atypical dots and globules



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- Irregular dots- asymmetric distribution, along periphery, associated with atypical network
- Irregular globules-variation in size, color, and distribution pattern

Tan structureless areas

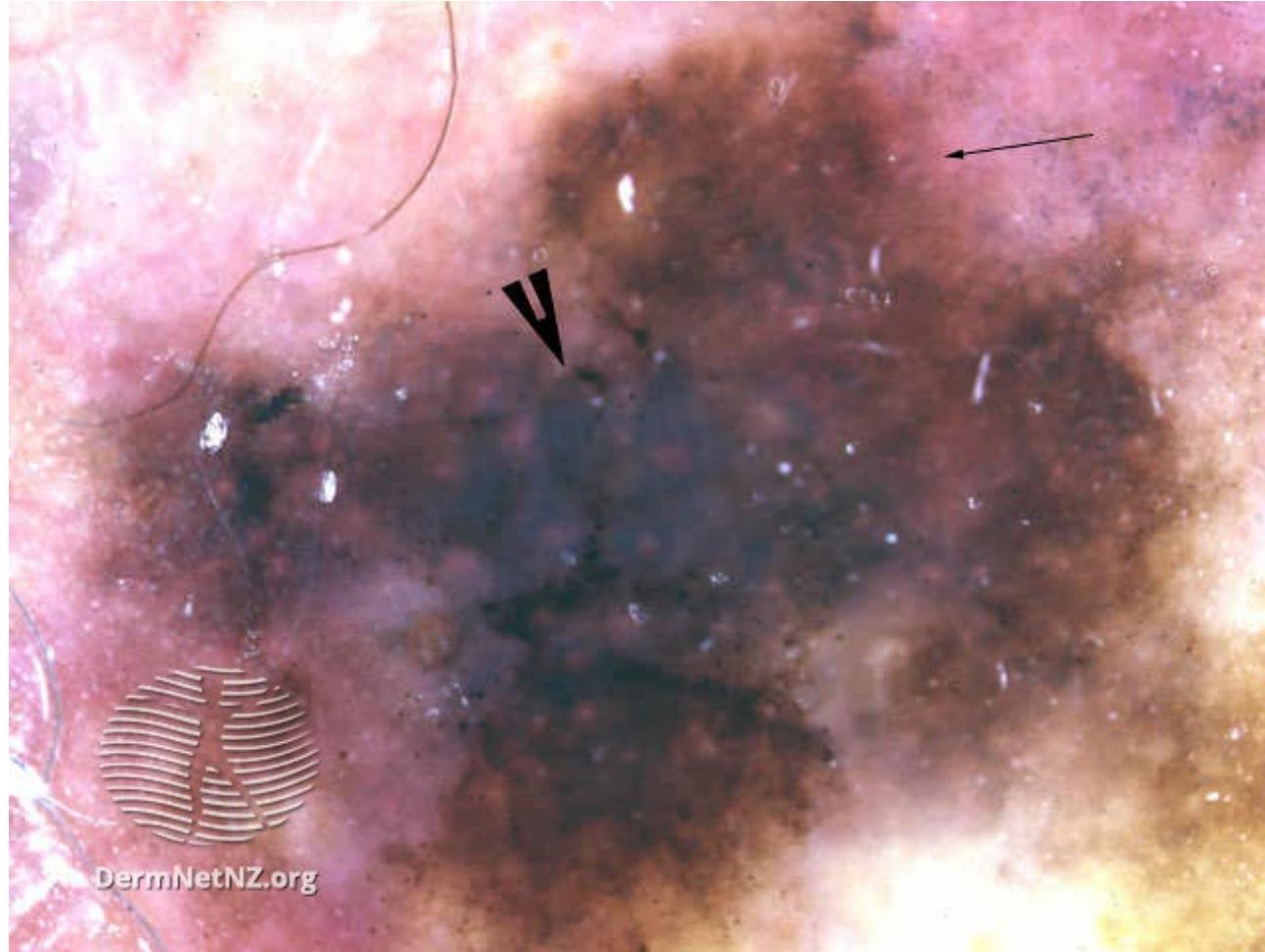
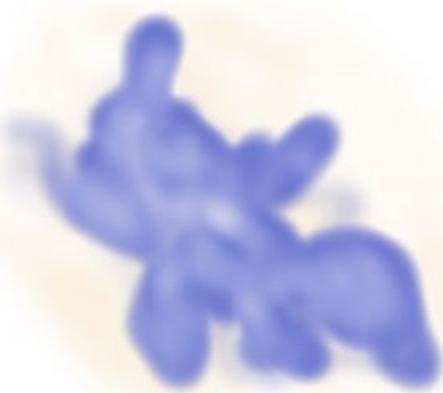


Tan structureless areas

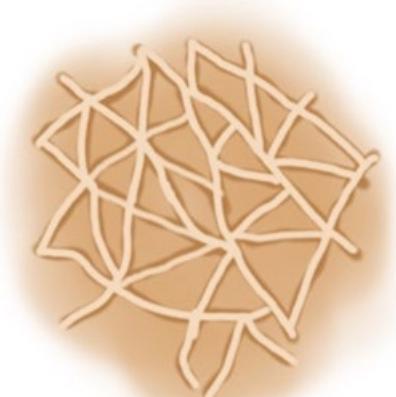


Photo by Ofer Reiter, MD from Dermoscopedia

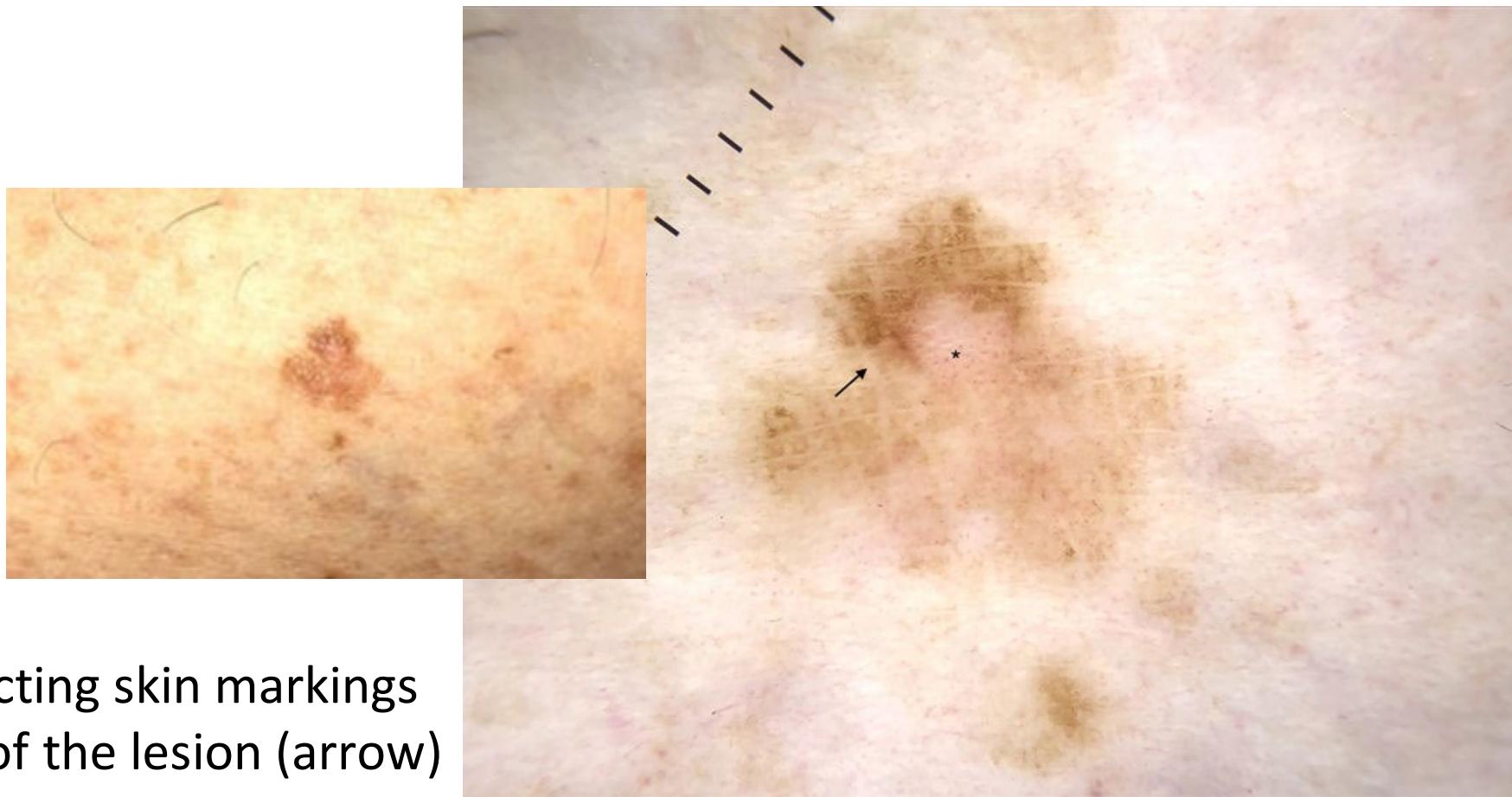
Blue white veil



Prominent skin markings



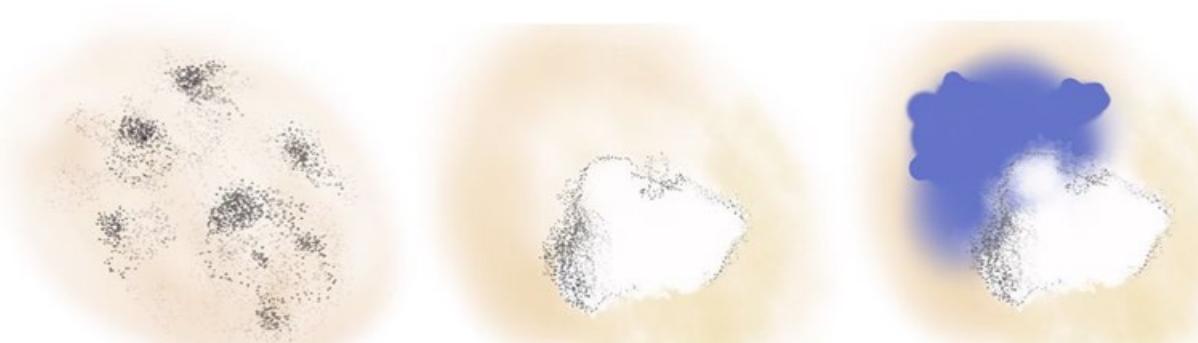
Prominent skin markings



Note the prominent intersecting skin markings
paler in color than the rest of the lesion (arrow)

Álvarez-Salafranca, M., et al. (2021). "Prominent Skin Markings: A New Reason to Suspect Melanoma." *Actas Dermo-Sifiliográficas* **112**(5): 451-452.

Regression structures

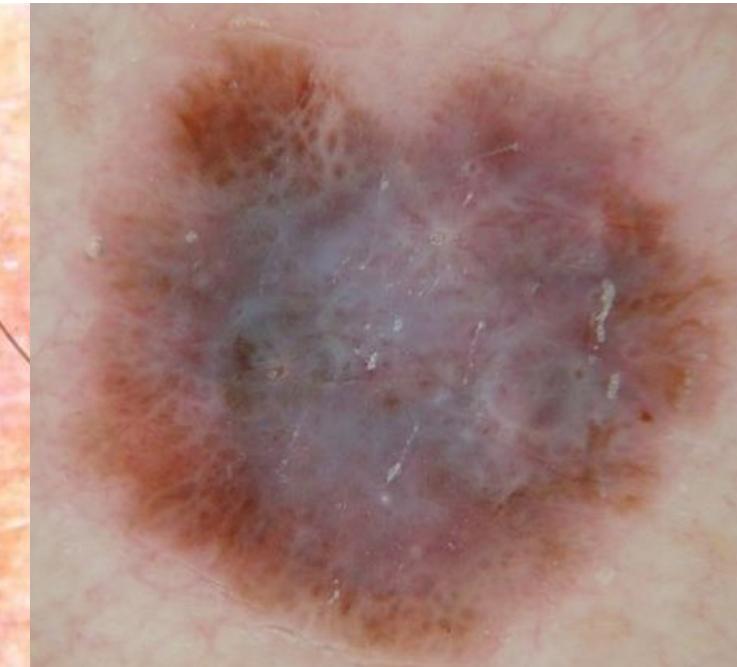
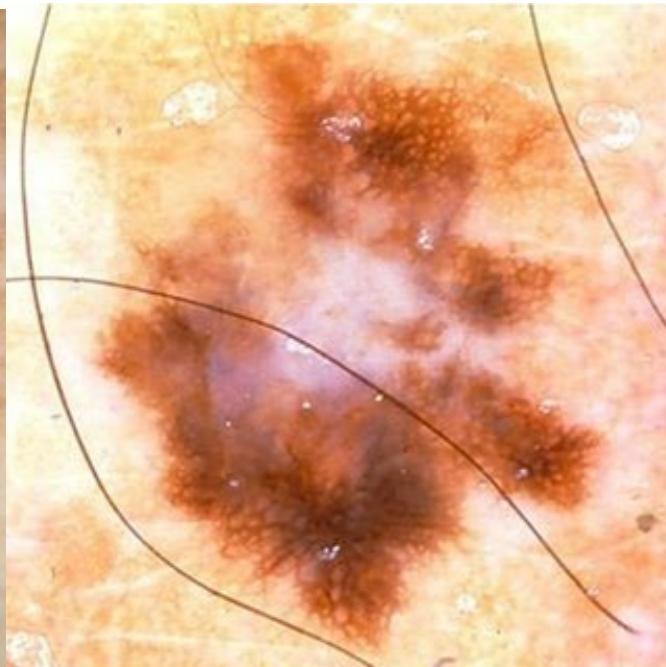


Granularity / peppering

Regression scarlike
depigmentation and peppering

Flat blue white
structureless area

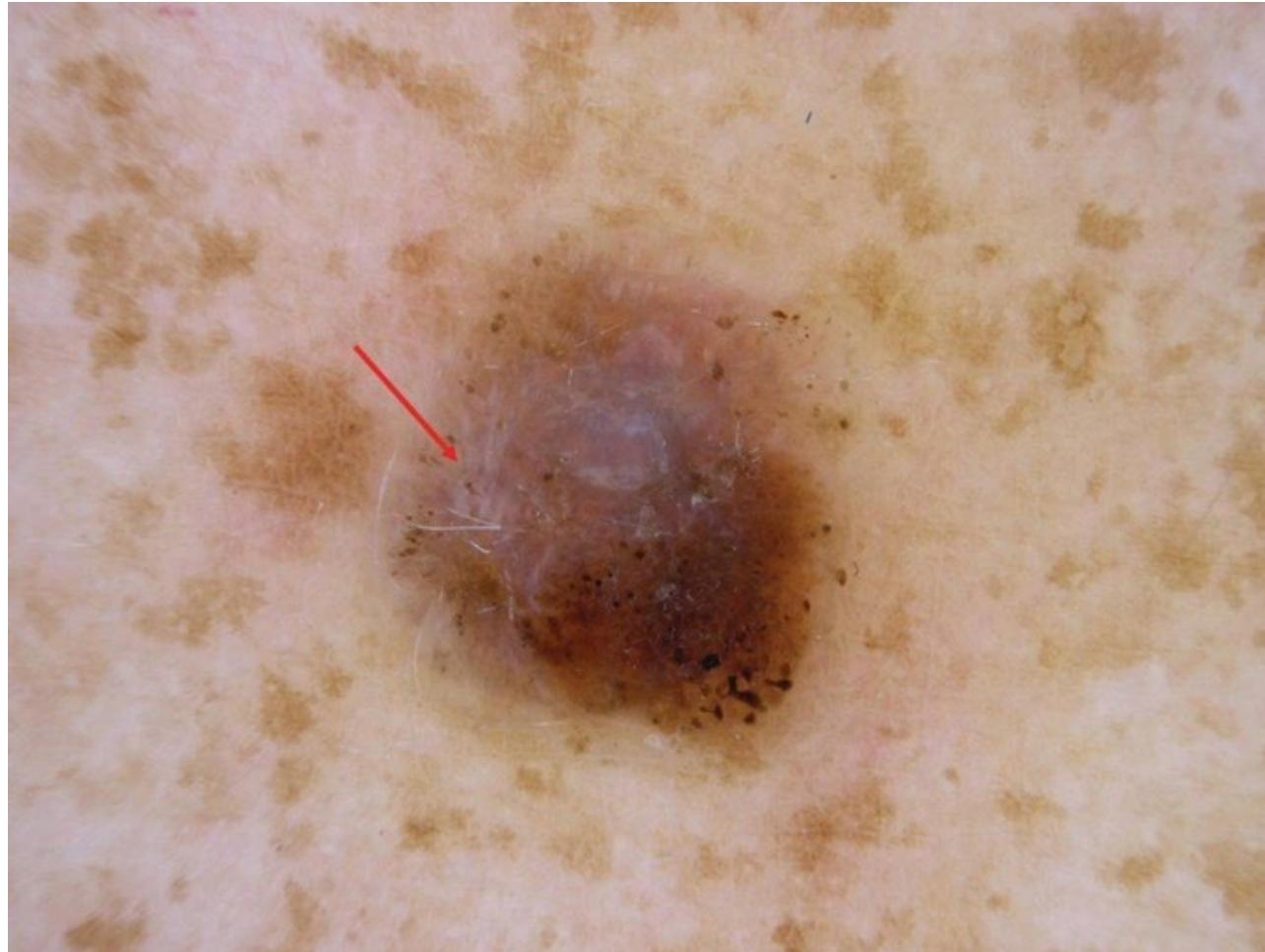
Images by Ofer Reiter, MD Dermoscopy



Shiny white structures



Shiny white structures

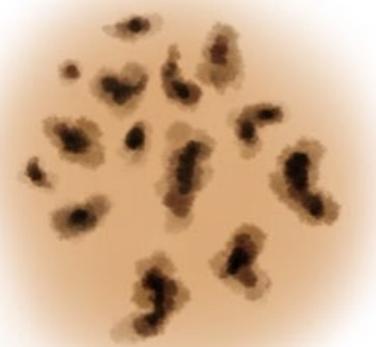


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Atypical Blotches



Atypical blotches



multiple small
hyperpigmented areas

- Off center or multiple blotches with irregular shapes and colors

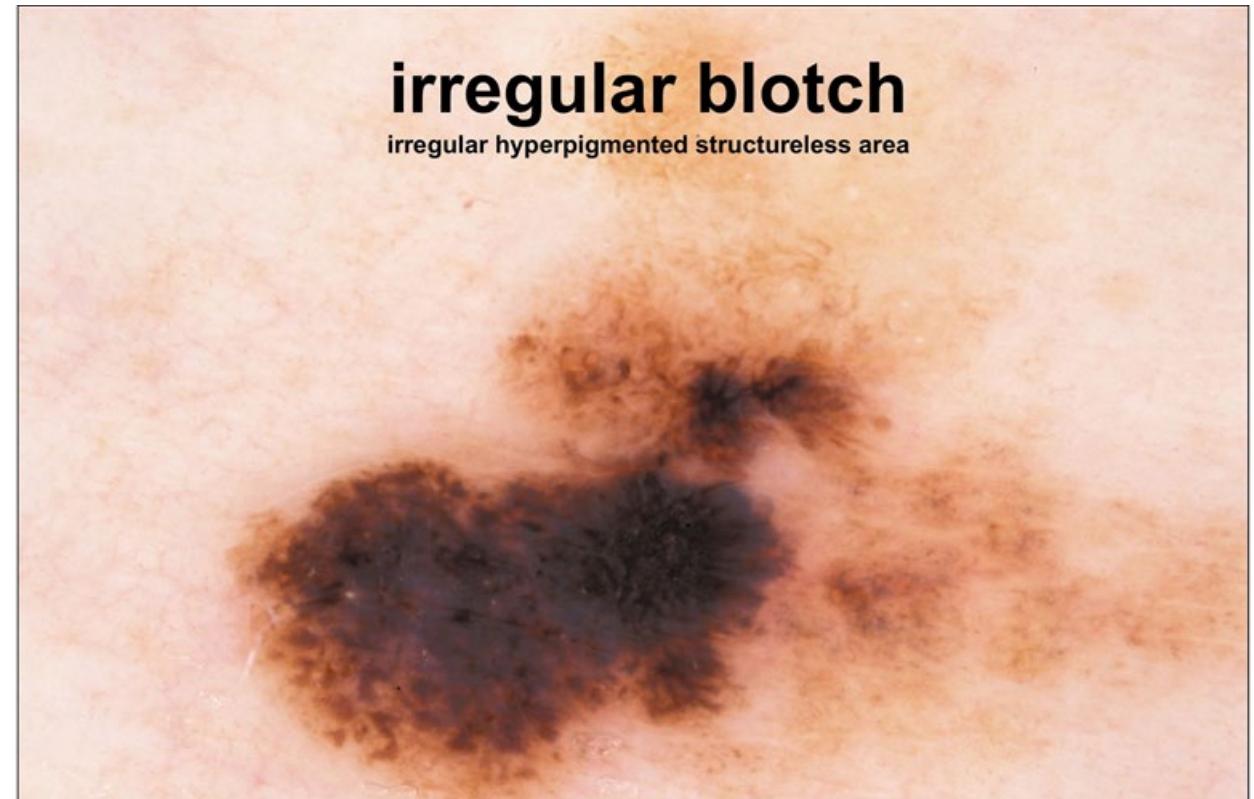
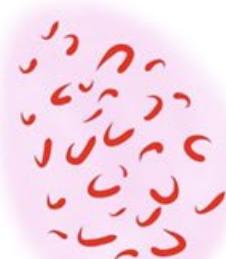
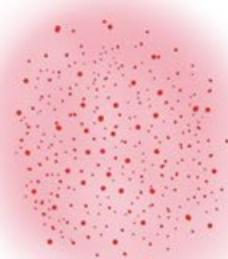


Photo by Ralph P Braun, MD from Dermoskopedia

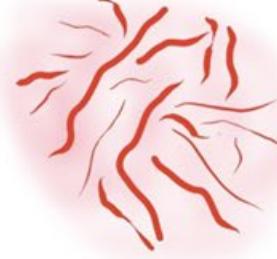
Atypical vascular patterns



Comma / curved vessels



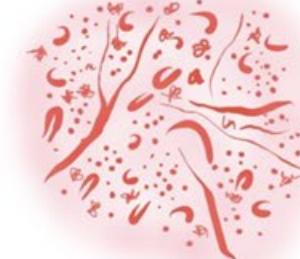
Dotted vessels



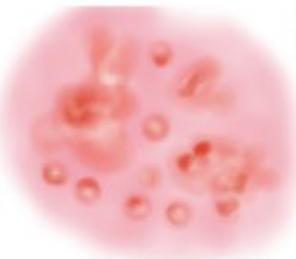
Serpentine vessels



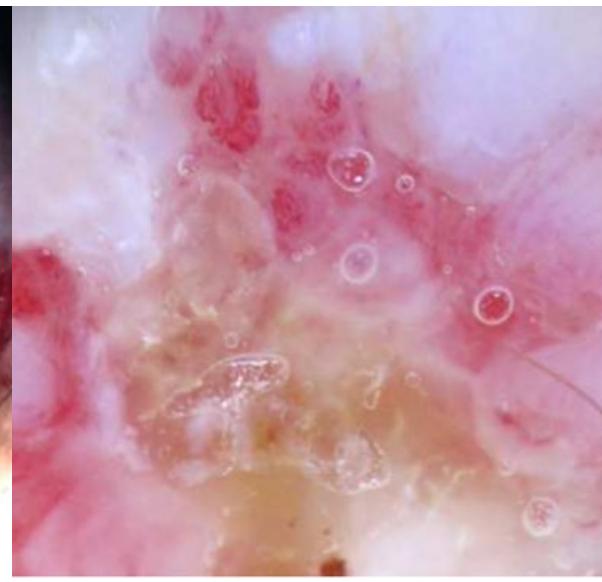
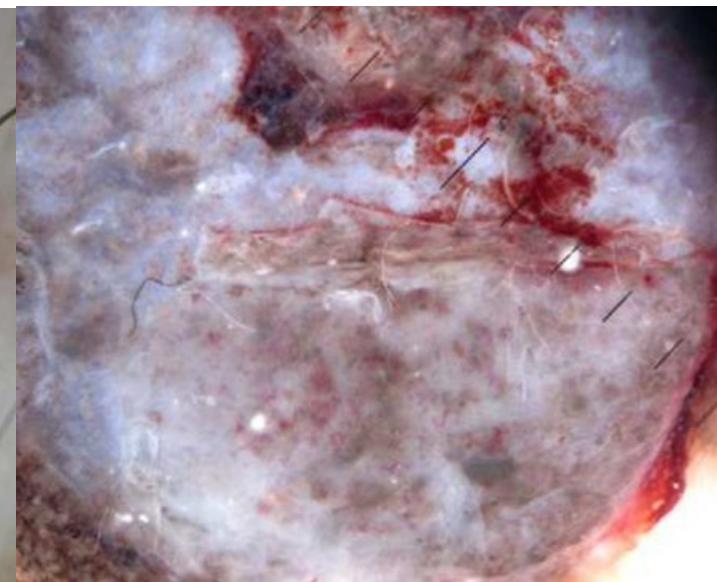
Corkscrew vessels



Polymorphous vessels



Milky red areas /
milky red globules



Important predictors of “mini-melanoma”

- Lesions ≤5 mm
- Five dermoscopic predictors: atypical network, blue-white veil, pseudopods, peripheral radial streaks and more than one color

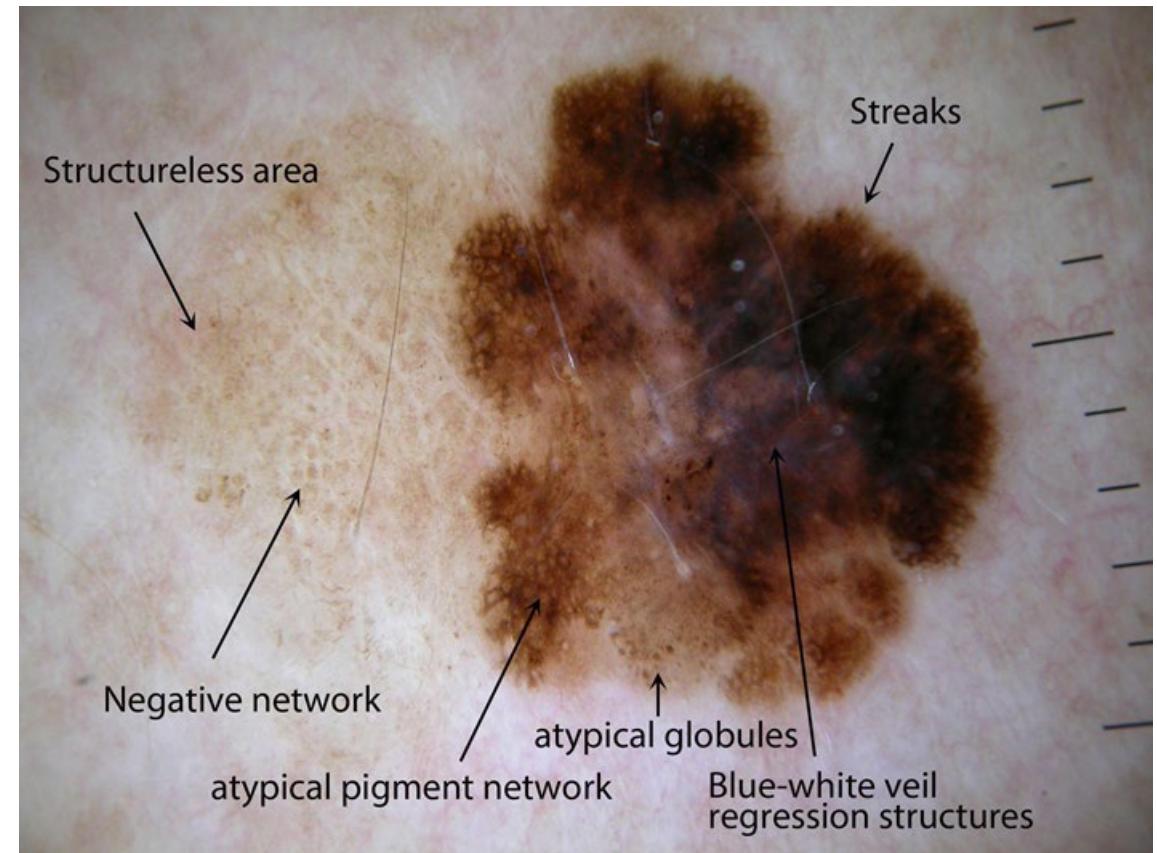
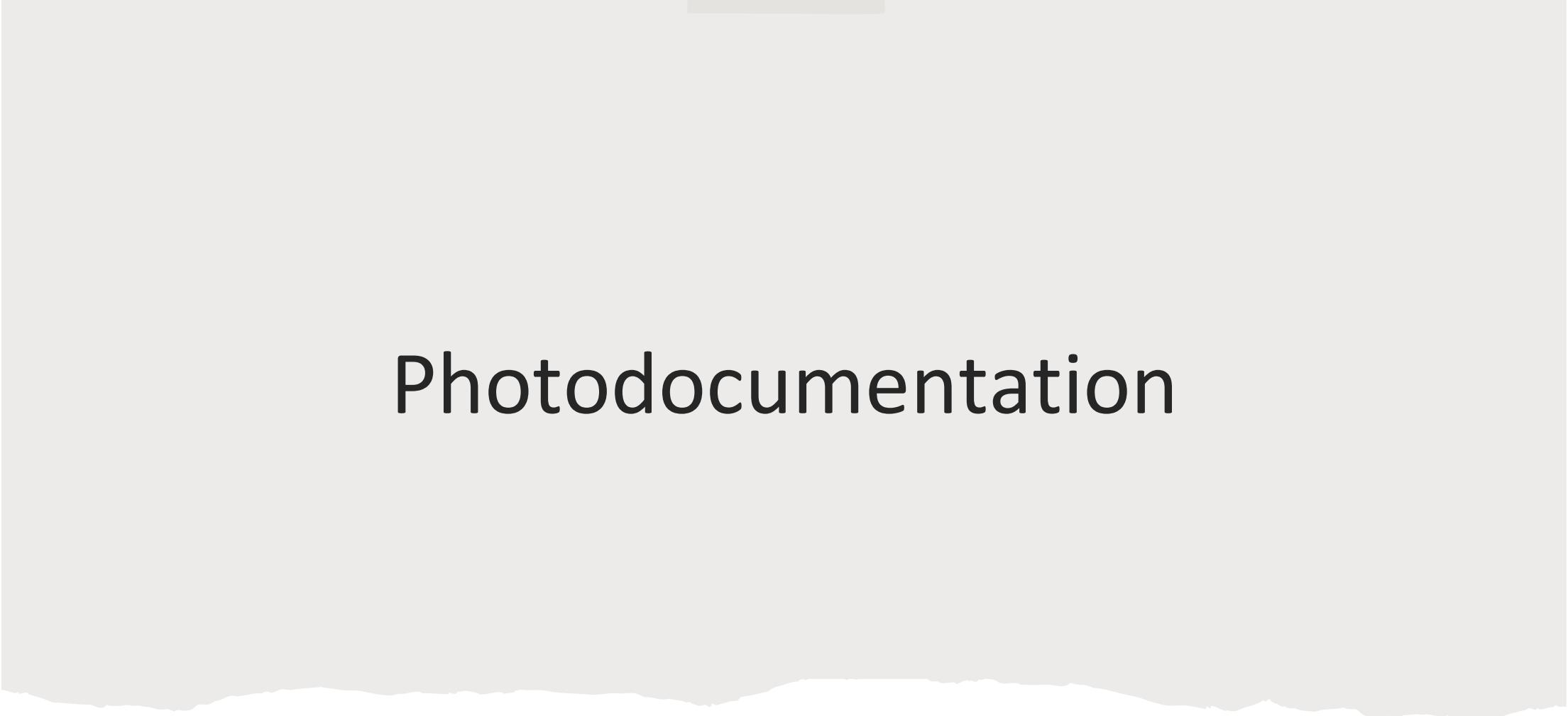


Image from Richard Usatine, MD on
Dermoskopedia

Nazzaro, G., Maronese, C.A., Casazza, G., Giacalone, S., Spigariolo, C.B., Rocuzzo, G., Avallone, G., Guida, S., Brancaccio, G., Broganelli, P., Pellacani, G., Farnetani, F., Passoni, E., Lallas, A., Argenziano, G. and Marzano, A.V. (2023), Dermoscopic predictors of melanoma in small diameter melanocytic lesions (mini-melanoma): a retrospective multicentric study of 269 cases. Int J Dermatol, 62: 1040-1049. <https://doi.org/10.1111/ijd.16710>



Photodocumentation

Mole mapping technology

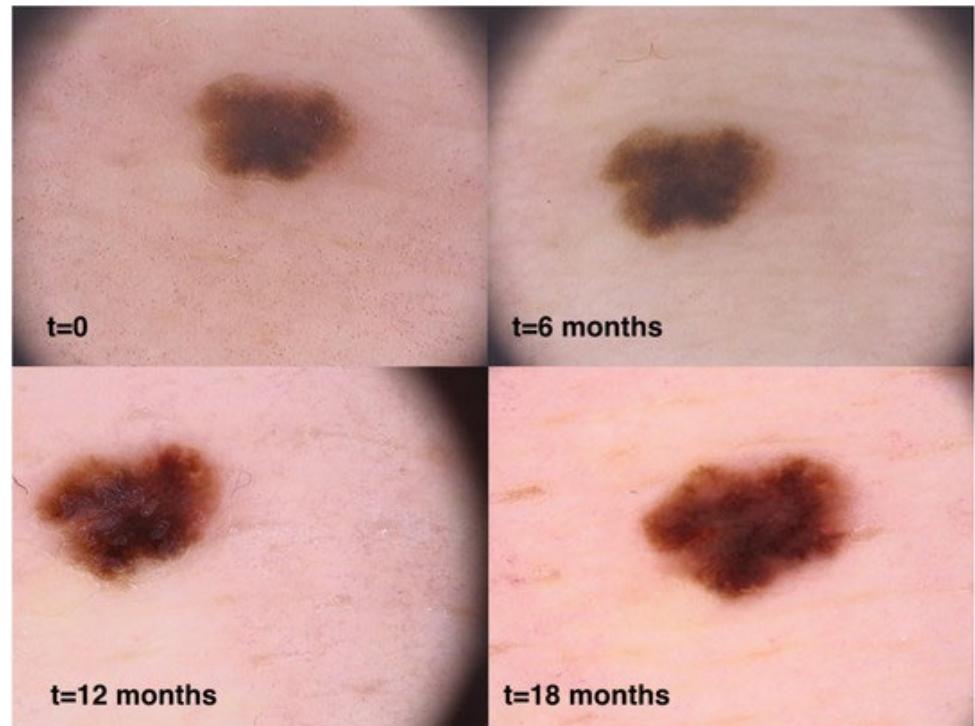
- Fotofinder
 - Full body mapping of lesions on avatar
 - Able to monitor high risk lesions over time
 - **ATBM master 4th Generation**

Why?

- Individuals with more than 100 common nevi are at 7 fold higher risk than those with less than 15 common nevi of developing malignant melanoma
- Individuals with atypical nevi have a 6 times higher risk of malignant melanoma than those with no atypical nevi

Digital dermoscopy

- Two steps: Total body photography and sequential digital dermoscopy
- Invasive melanomas had a tumor thickness of less than 0.6mm and number needed to excise was 4.6 thus reducing unnecessary biopsies



Malignant melanoma (tumor thickness 0.5 mm)

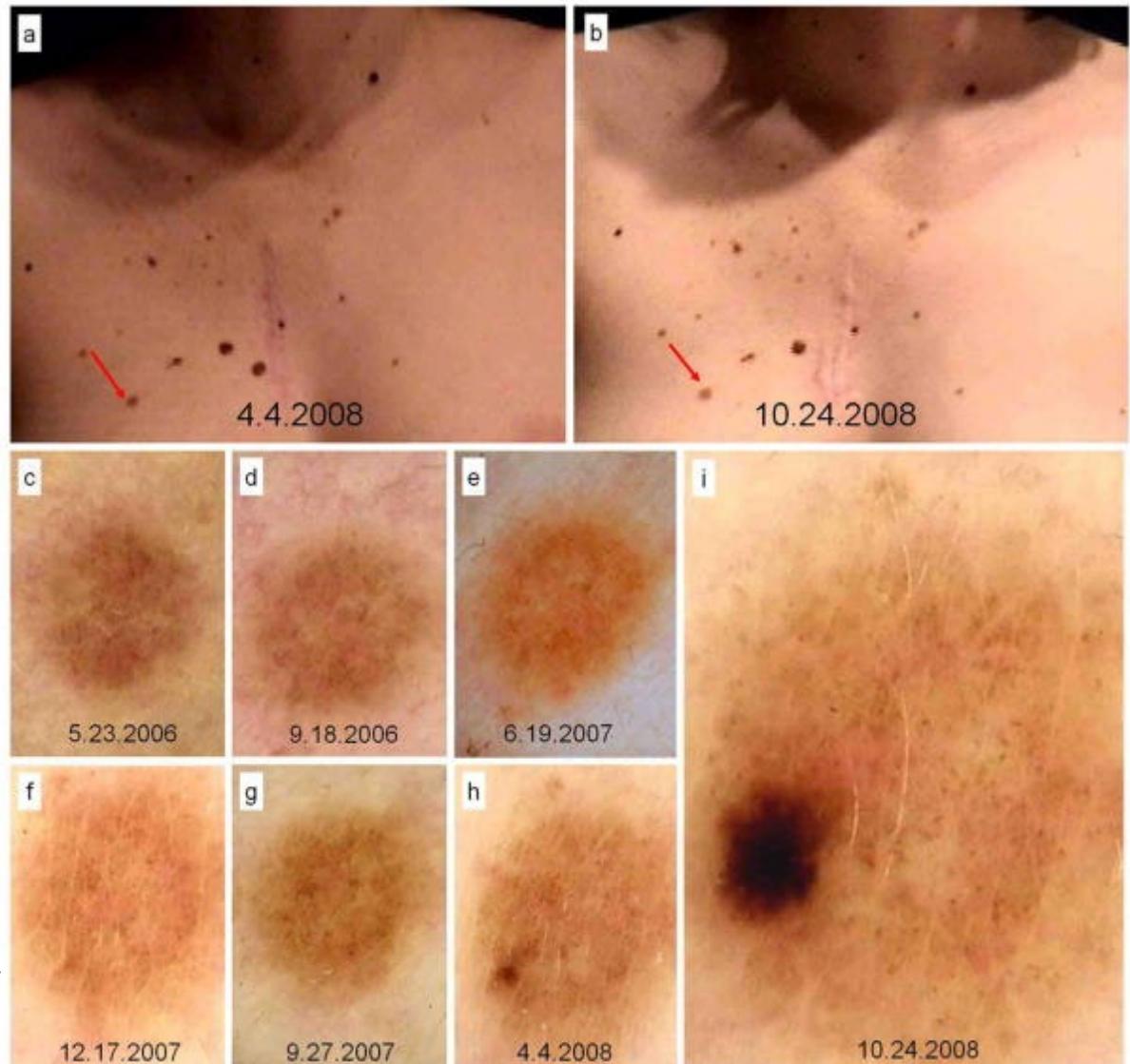
Deinlein T, Michor C, Hofmann-Wellenhof R, Schmid-Zalaudek K, Fink-Puches R. The importance of total-body photography and sequential digital dermatoscopy for monitoring patients at increased melanoma risk. J Dtsch Dermatol Ges. 2020 Jul;18(7):692-697. doi: 10.1111/ddg.14158. Epub 2020 Jun 29. PMID: 32597015; PMCID: PMC7496451.

Who should be surveilled?

- A total nevus count of at least 60 (RR >3)
- More than 40 nevi (with a RR between 2 and 3) were considered to deserve this follow-up procedure only if presenting with additional risk factors
- History of organ transplantation and more than 40 nevi
- Red hair phenotype
- Personal history of melanoma
- CDKN2A and MC1R variants

Two step method of digital follow-up

- Analysis of 618 patients at high risk for melanoma over 9 years
- During follow up, 98 melanomas were found in 78 patients. 53 of these were in situ and 45 were invasive with a Breslow index of less than 1 mm
- Over time we observe in situ melanoma development over a melanocytic nevus in a period of 29 months in a 23 year old female in chronological order from A to I

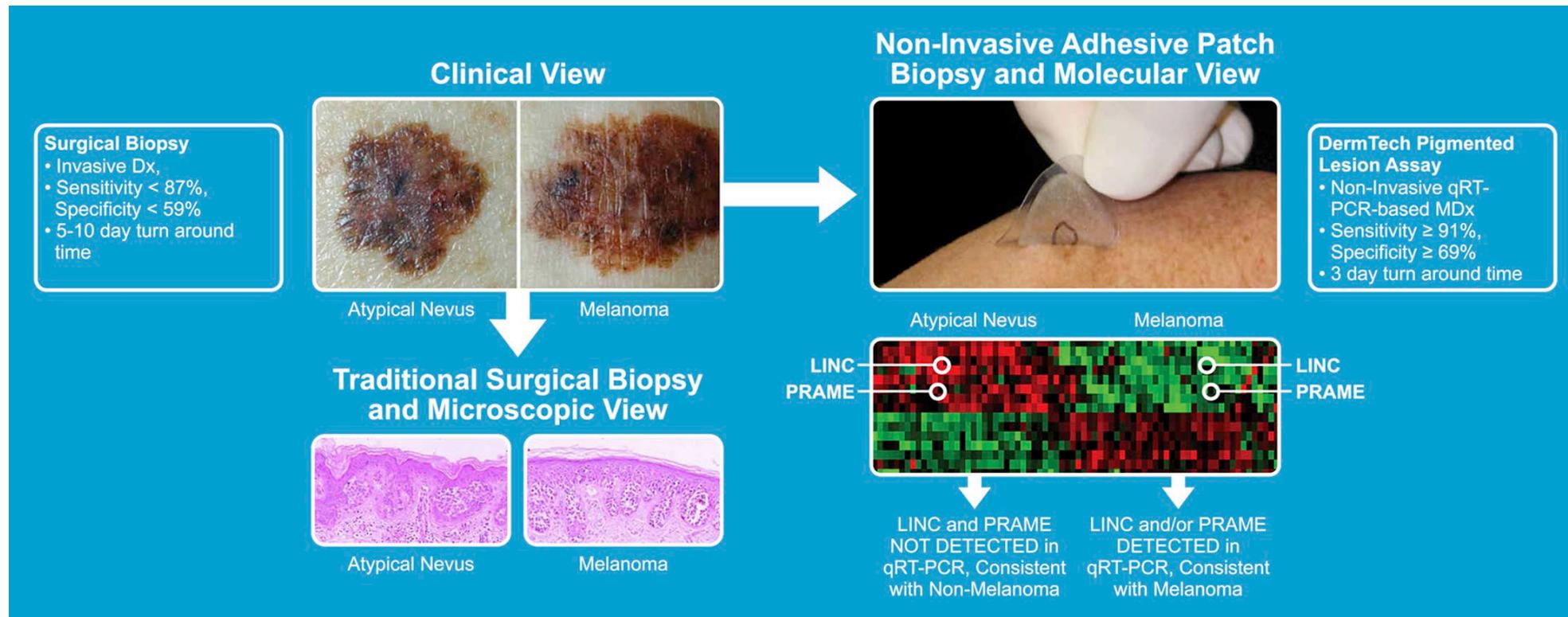


Salerni G, Carrera C, Lovatto L, Puig-Butille JA, Badenas C, Plana E, Puig S, Malvehy J. Benefits of total body photography and digital dermatoscopy ("two-step method of digital follow-up") in the early diagnosis of melanoma in patients at high risk for melanoma. *J Am Acad Dermatol.* 2012 Jul;67(1):e17-27. doi:10.1016/j.jaad.2011.04.008. Epub 2011 Jun 16. PMID: 21683472; PMCID: PMC3215791.

Digital Follow Up

- DFU in high risk populations resulted in early detection of melanomas with a low excision rate
- Recommend DFU maintenance over time
 - Every 3 months for single suspicious lesions
 - Every 6-12 months for multiple lesions in patients with numerous lesions

Will Genomic Analysis Supplement/Enhance Dermoscopy?



Thank you

References

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A special thanks to Dermoscopedia!