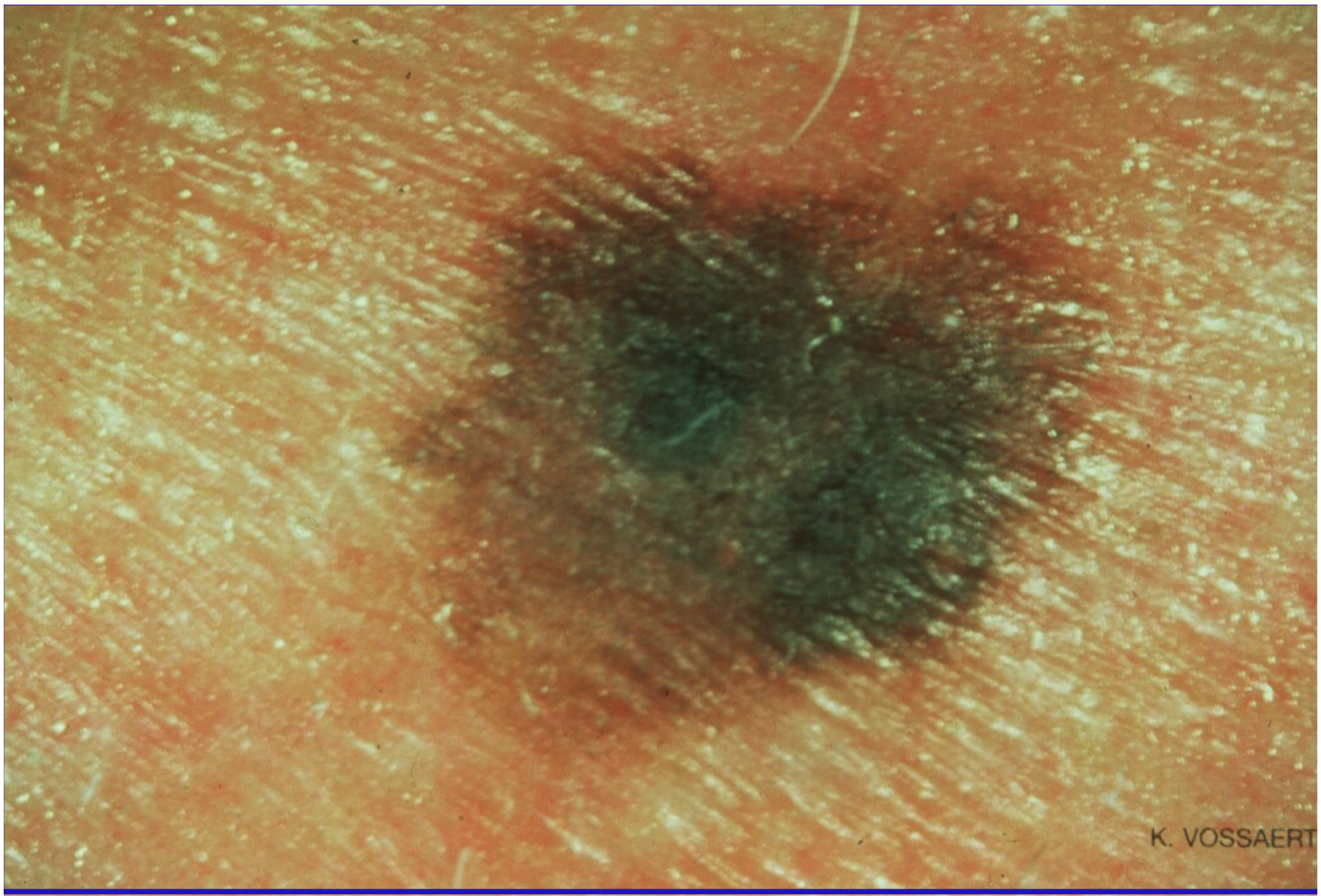
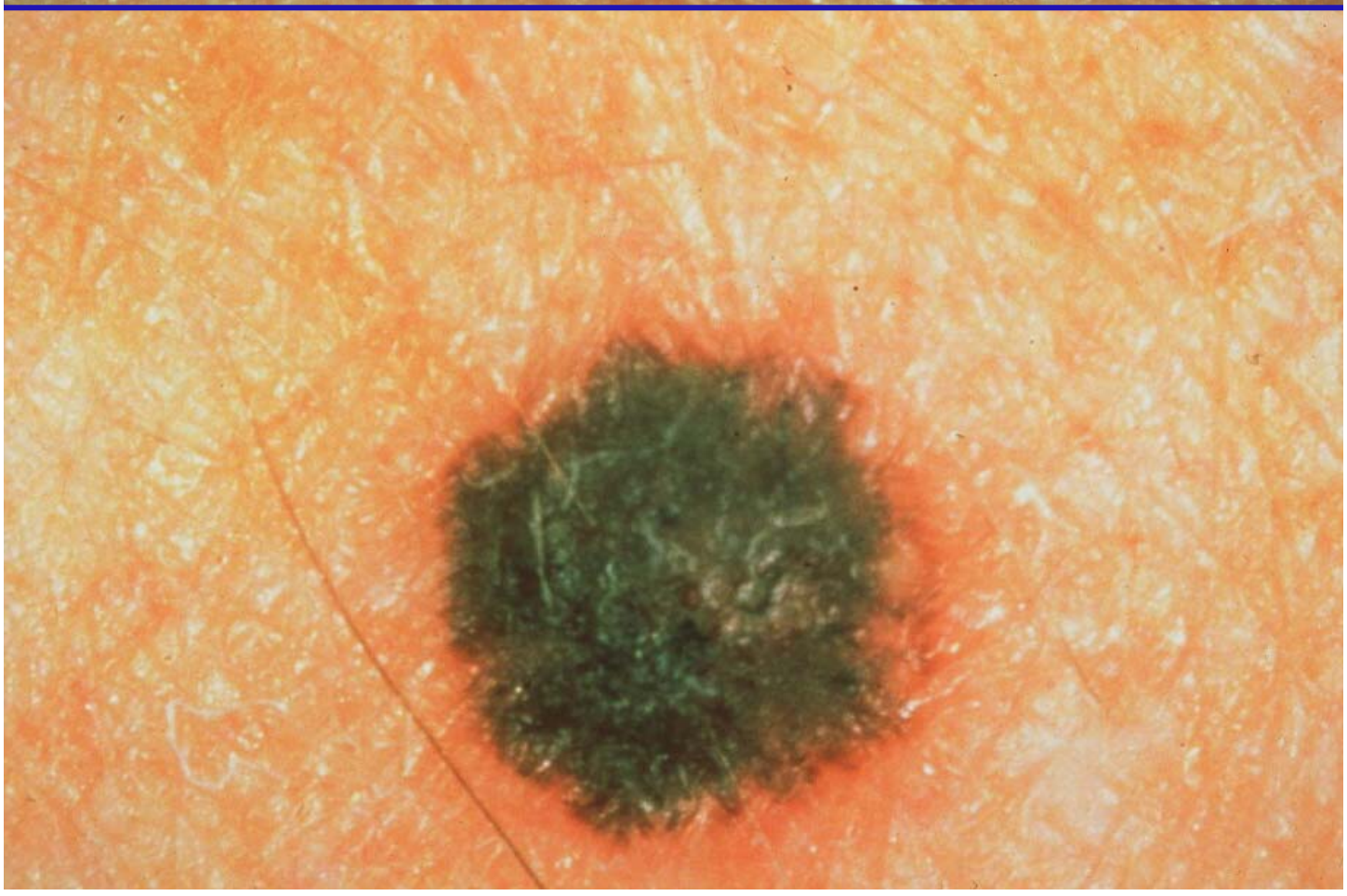
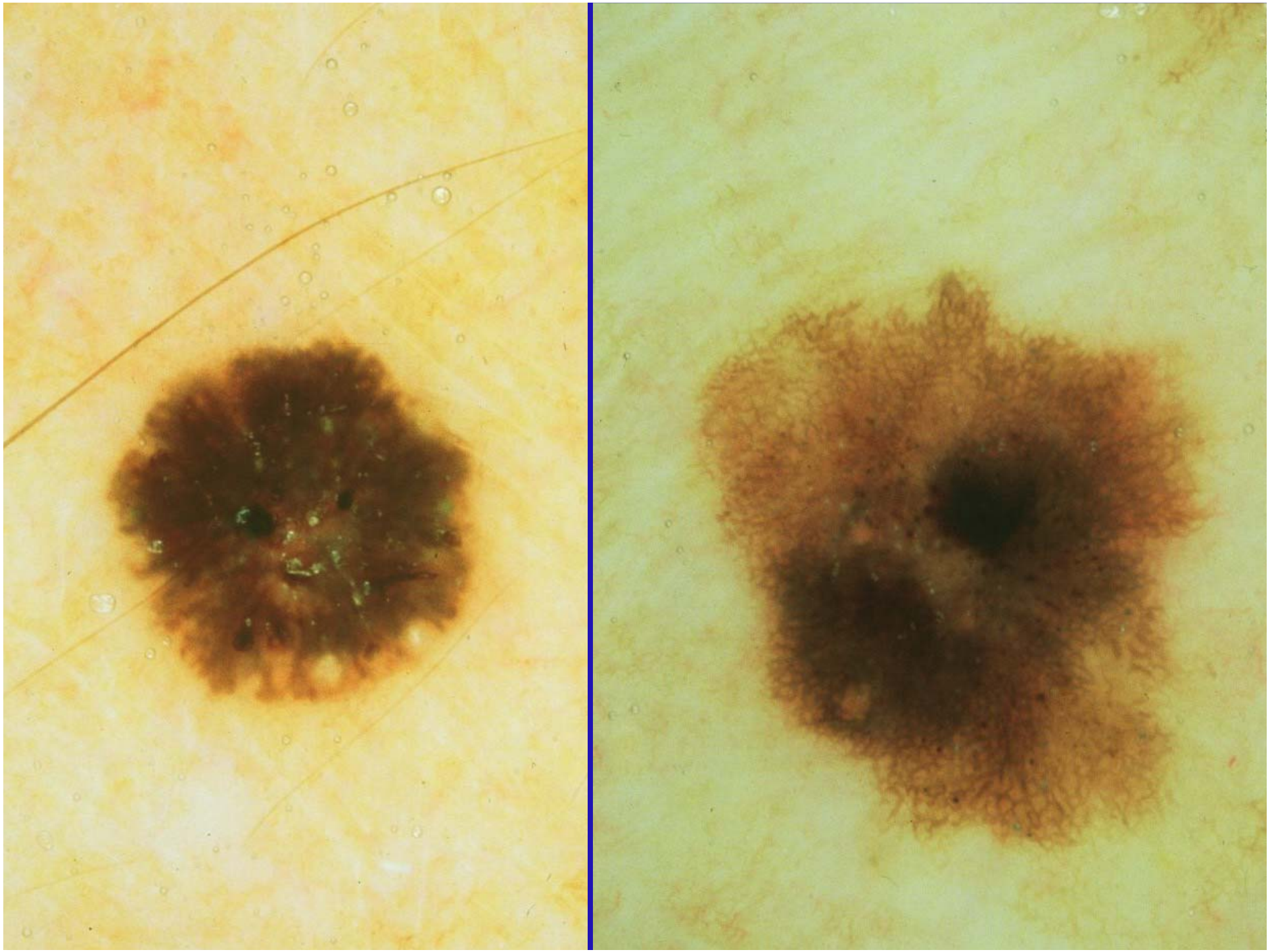
DERMATOSCOPIE

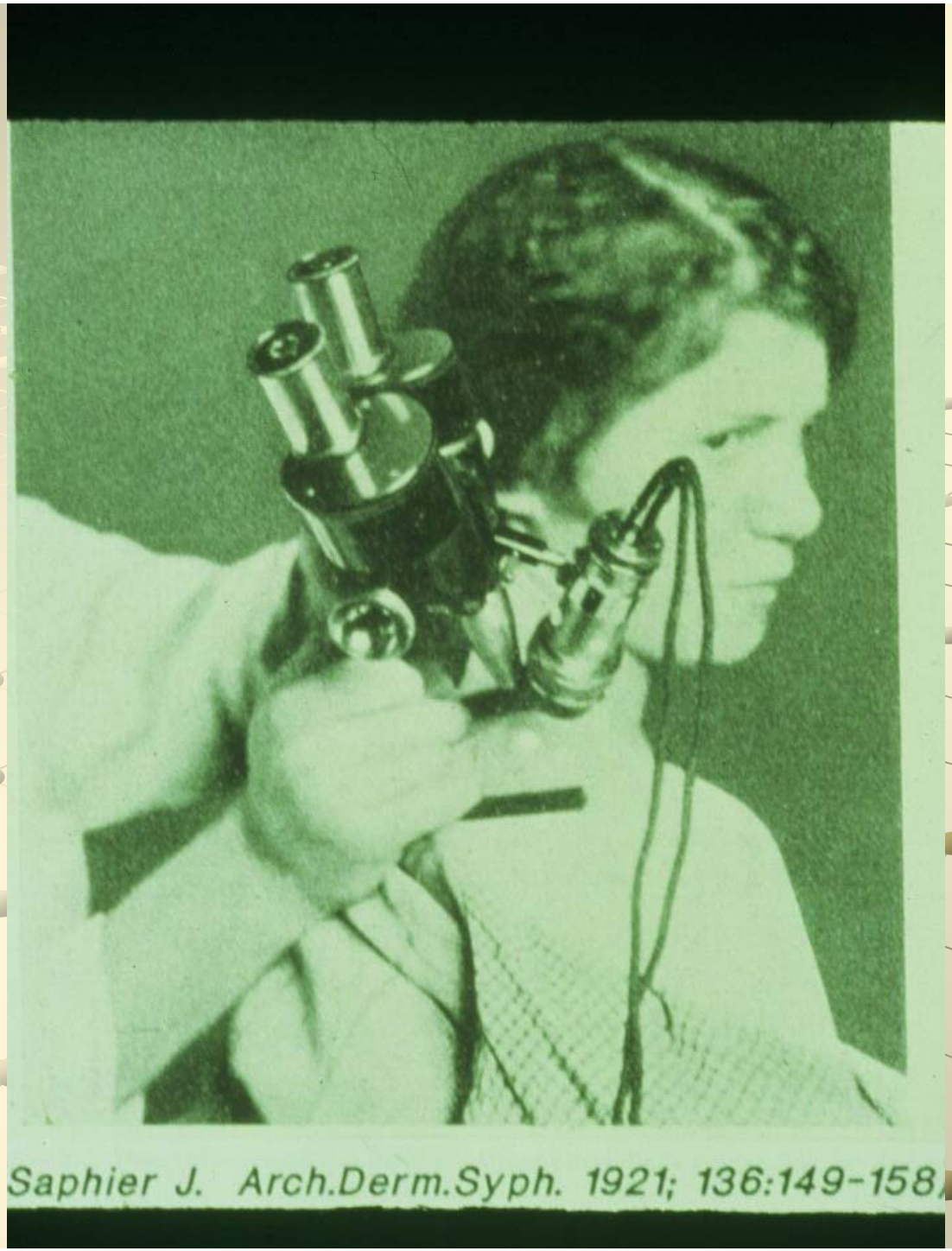
Prof Dr L BROCHEZ
Dermatologie UZ Gent

Inwooncursus domus medica april 2008

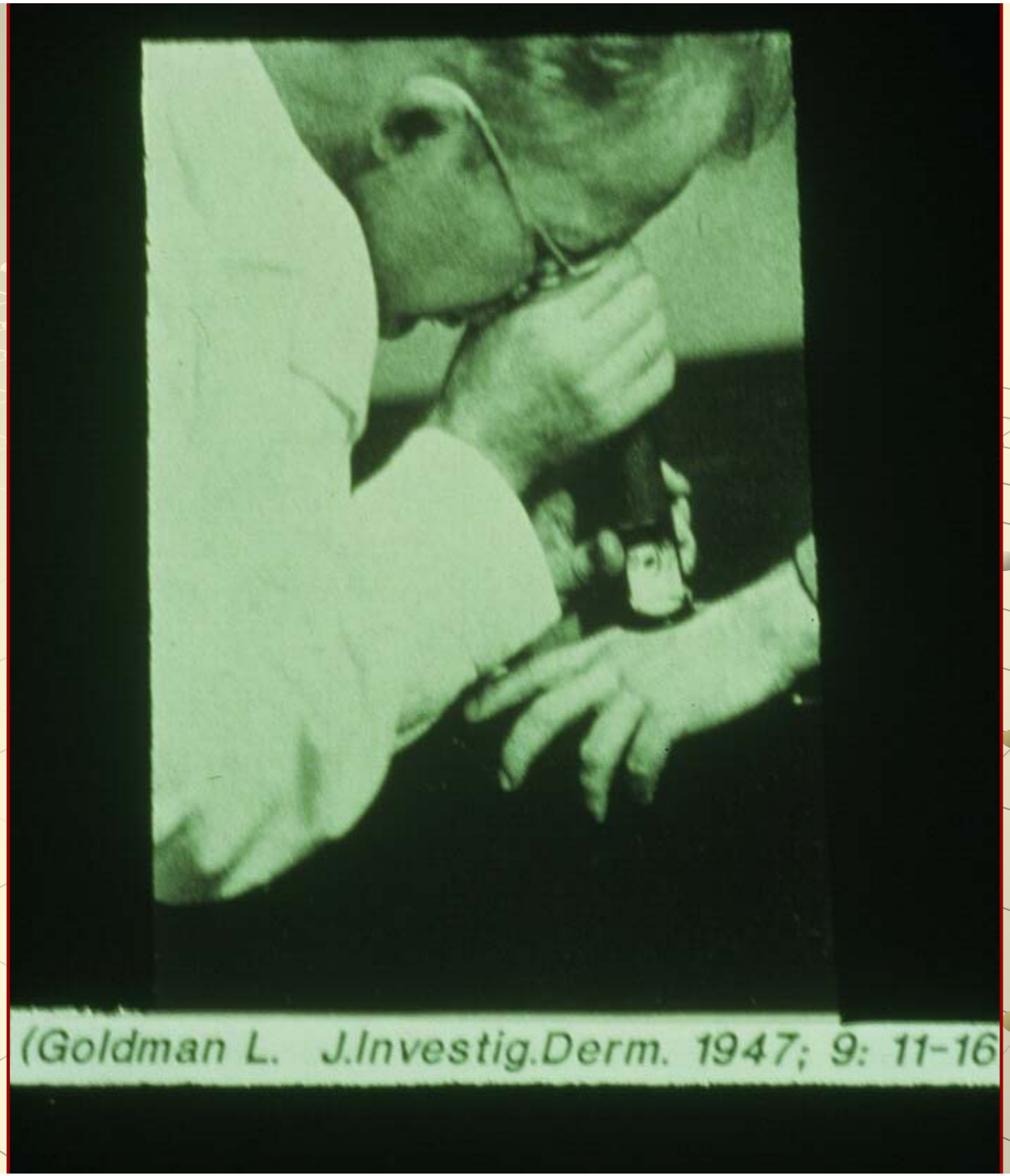

K. VOSSAERT

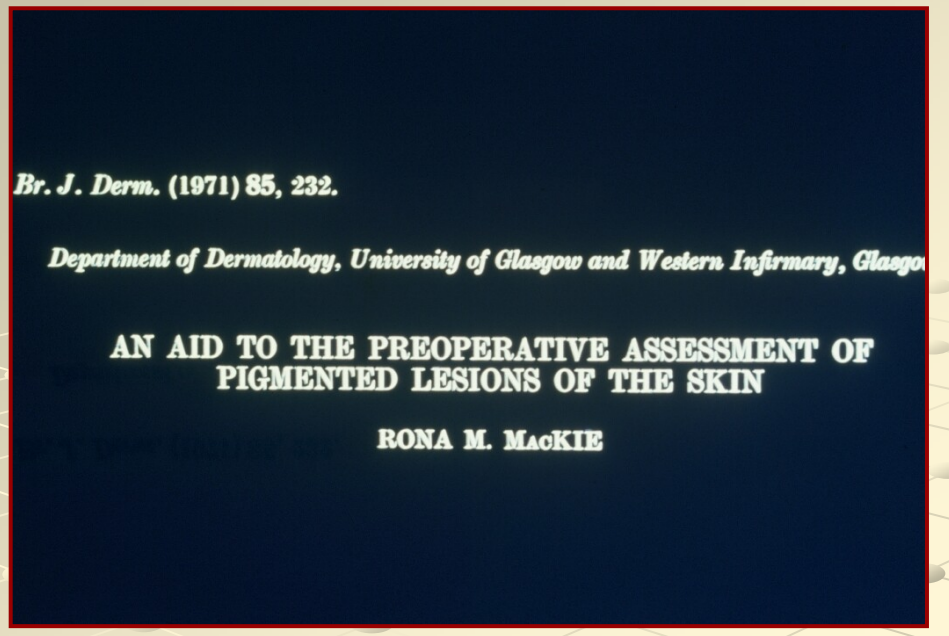






Saphier J. Arch.Derm.Syph. 1921; 136:149-158.

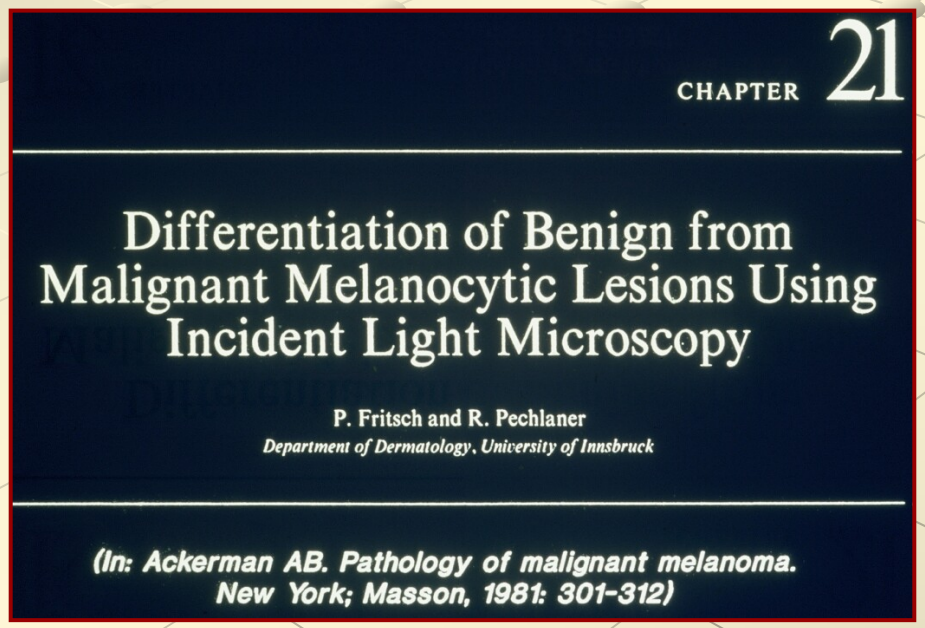

(Goldman L. J.Investig.Derm. 1947; 9: 11-16

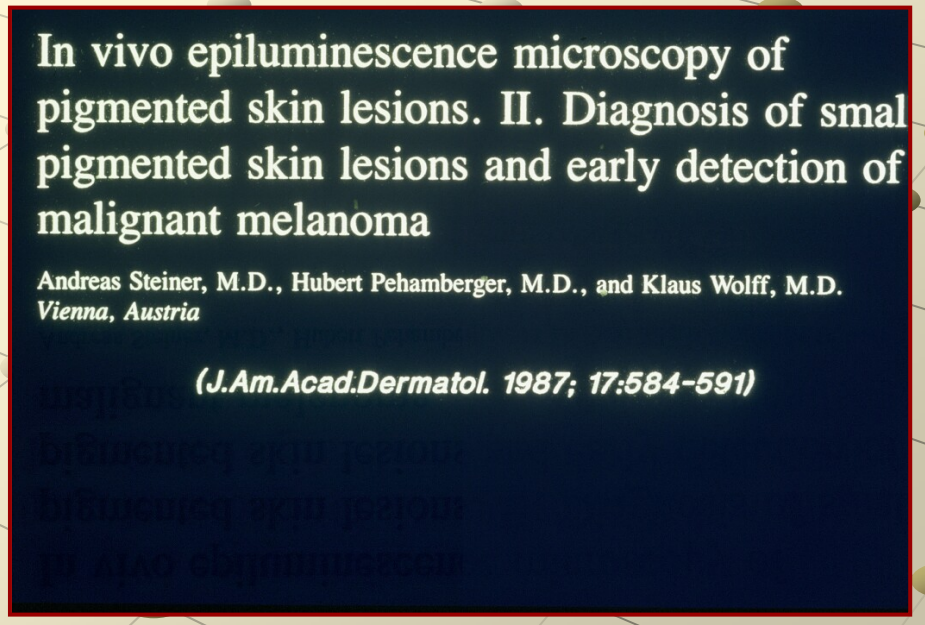


DOEL

betere DD van pigmentletsels:

- *niet melanocytair/ melanocytair*
- *naevus/melanoom*





In vivo diagnosis is important to decide on management:

- Excision or not ?
- Cryotherapy ?
- Curettage ?
- Margin of excision ?

INCREASE OF DIAGNOSTIC ACCURACY USING DERMATOSCOPY

histological diagnoses	correct diagnoses macroscopy	correct diagnoses dermatoscopy
junctional nevi	73%	83%
blue nevi	65%	88%
Spitz nevi	56%	93%
dysplastic nevi	59%	76%
Lentigo maligna / melanoma	70%	80%
MM in situ	50%	83%
seborrheic keratosis	62%	77%
basal cell carcinoma	58%	84%
angioma	83%	100%

Pehamberger et al., JID 100: 356S-362S, 1993

50der1e

Binder M, Schwarz M, Winkler A, Steiner A, Kaider A, Wolff K, Pehamberger H.

Epiluminescence microscopy. A useful tool for the diagnosis of pigmented skin lesions for formally trained dermatologists.

Arch Dermatol. 1995 Mar;131(3):286-91.

BACKGROUND AND DESIGN: Epiluminescence microscopy (ELM) is a noninvasive technique that, by employing the optical phenomenon of oil immersion, makes subsurface structures of the skin accessible for in vivo examination and thus provides additional criteria for the clinical diagnosis of pigmented skin lesions. At present, almost all studies about the value and clinical importance of ELM are based on data derived from ELM experts (ie, dermatologists specifically trained in this technique). In the present study, we attempt to determine whether the clinical diagnosis of pigmented skin lesions is significantly improved using ELM and whether ELM-trained individuals and dermatologists not trained in this technique profit equally from this technique. Randomly selected histologically proven pigmented skin lesion specimens, photographed with (ELM) and without oil immersion (surface microscopy) were presented by slide projection to **six ELM experts and 13 ELM nonexperts** (ie, dermatologists not formally trained in ELM) for diagnosis. To evaluate the diagnostic performance of ELM experts and nonexperts with and without the oil immersion technique (ie, ELM vs surface microscopy), the following parameters were obtained: intraobserver and interobserver agreement by kappa statistics and sensitivity and specificity of diagnostic performance.

RESULTS: Our results show that by using the ELM technique the ELM experts reach a substantially better intraobserver agreement than nonexperts (median kappa, 0.56 vs 0.36). The interobserver agreement was markedly increased in the ELM experts group (average gain, 7%) but decreased in the ELM nonexperts group (average loss, 6%). **The sensitivity of diagnosis was significantly increased in the ELM experts group (average gain, 10%), but decreased in the nonexperts group (average loss, 10%).** Finally, the specificity of diagnosis was excellent in the ELM experts group, both with and without oil immersion (0.91) and was somewhat improved by ELM in the nonexperts group (0.77 vs 0.85).

CONCLUSIONS: **We conclude that the ELM technique increases sensitivity in formally trained dermatologists, but may decrease the diagnostic ability in dermatologists not formally trained in the ELM technique.** Consequently, formal broad-based training in ELM should be offered to the dermatologic community.

Binder M, Puespoeck-Schwarz M, Steiner A, Kittler H, Muellner M, Wolff K, Pehamberger H.

Epiluminescence microscopy of small pigmented skin lesions: short-term formal training improves the diagnostic performance of dermatologists.

J Am Acad Dermatol. 1997 Feb;36(2 Pt 1):197-202.

BACKGROUND: Epiluminescence microscopy (ELM) makes subsurface structures of the skin accessible for in vivo examination and provides additional criteria for the clinical diagnosis of pigmented skin lesions (PSLs). We demonstrated that ELM increases diagnostic sensitivity in dermatologists formally trained in the use of this technique but decreases diagnostic ability in dermatologists not formally trained in its application.

OBJECTIVE: Our purpose was **to determine the effects of short formal ELM training on the diagnostic performance of 11 previously untrained dermatologists.**

METHODS: One hundred image-pairs of randomly selected histologically proven PSLs, photographed with (ELM) and without oil immersion (surface microscopy), were presented by slide projection to the testees. To evaluate the effects on diagnostic performance before and after short-term training, we used the receiver-operator characteristics technique.

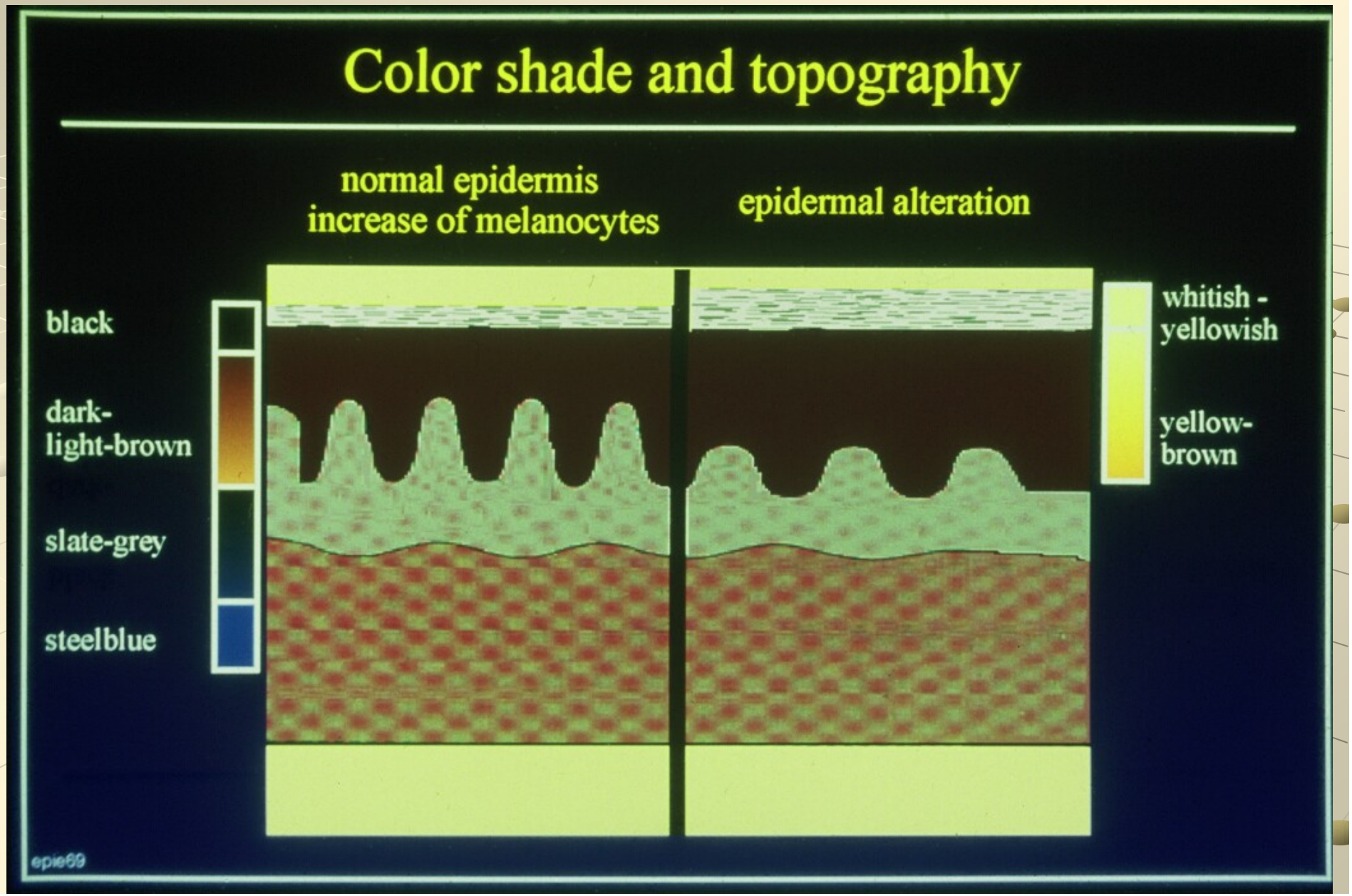
RESULTS: **Without training the use of ELM did not enhance diagnostic accuracy, but rather decreased it in 8 of 11 testees. In contrast, after 9 hours of formal training in ELM the diagnostic performance of the testees was significantly enhanced with an average gain of 8.4%.**

CONCLUSION: Our data confirm that formal training is required for the useful application of the ELM technique.

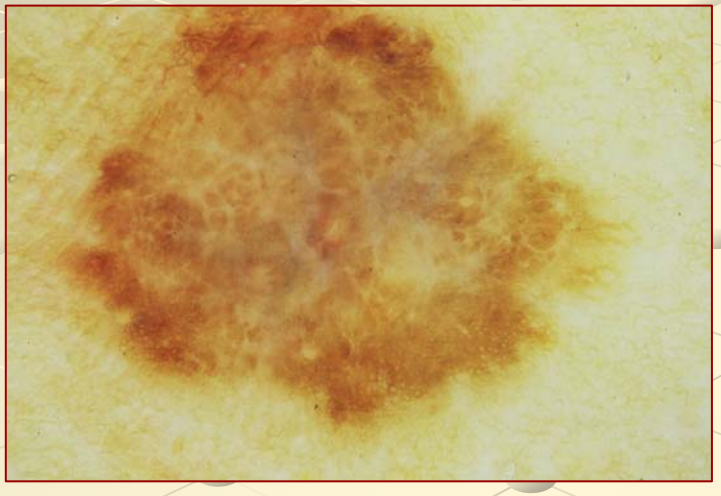
Dermoscopic diagnosis is based on:

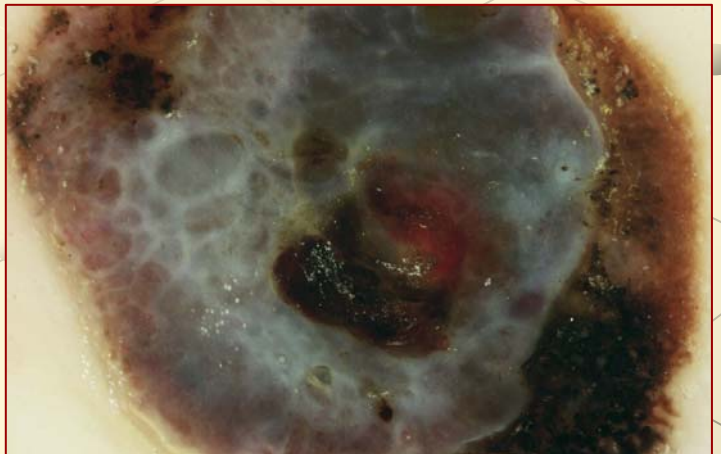
- Colors and structures
- Diagnostic algorithms

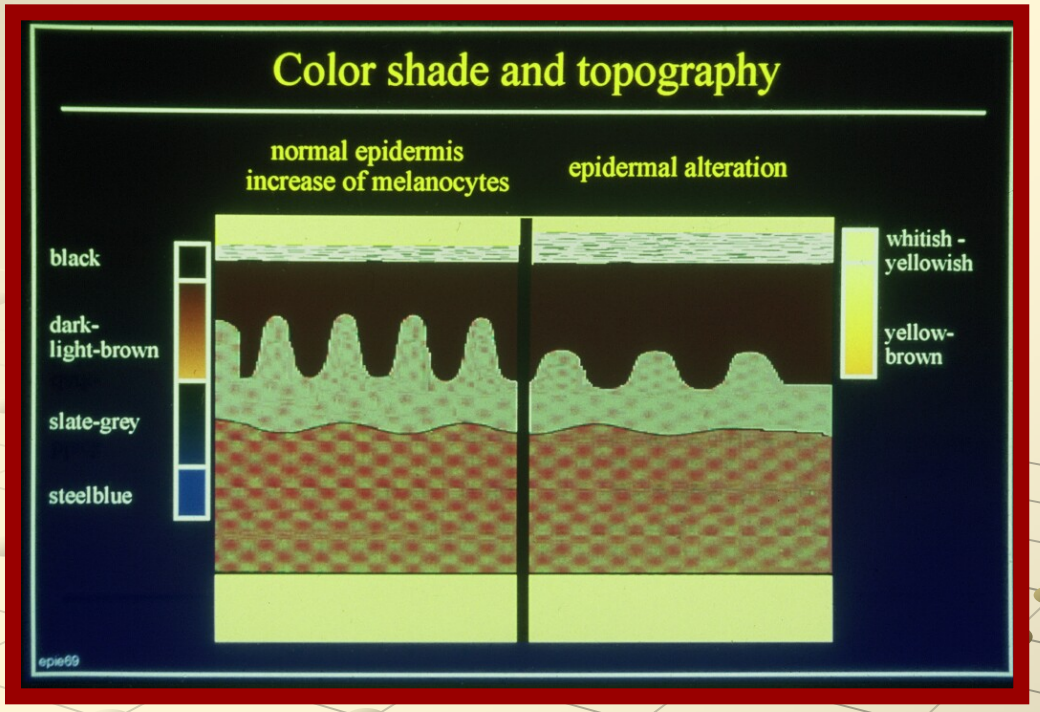
- Colors


Color shade and topography
normal epidermis
increase of melanocytes
epidermal alteration
black
dark-
light-brown
slate-grey
steelblue
whitish -
yellowish
yellow-
brown
epie69


K. VOSSAERT



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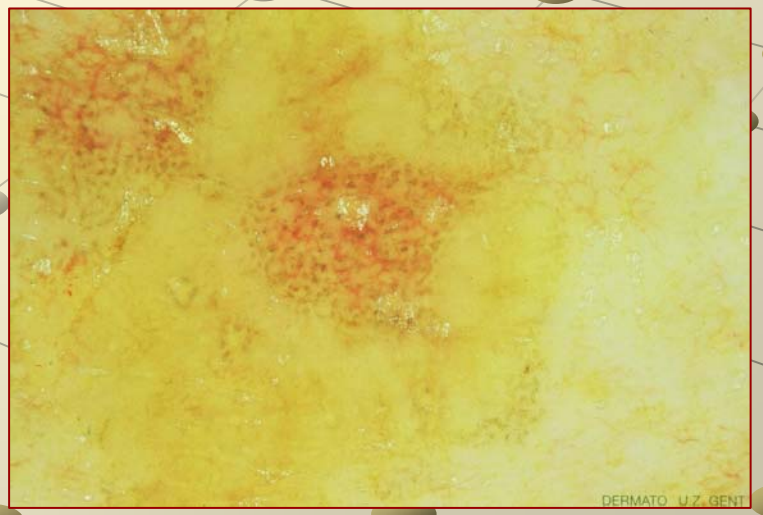
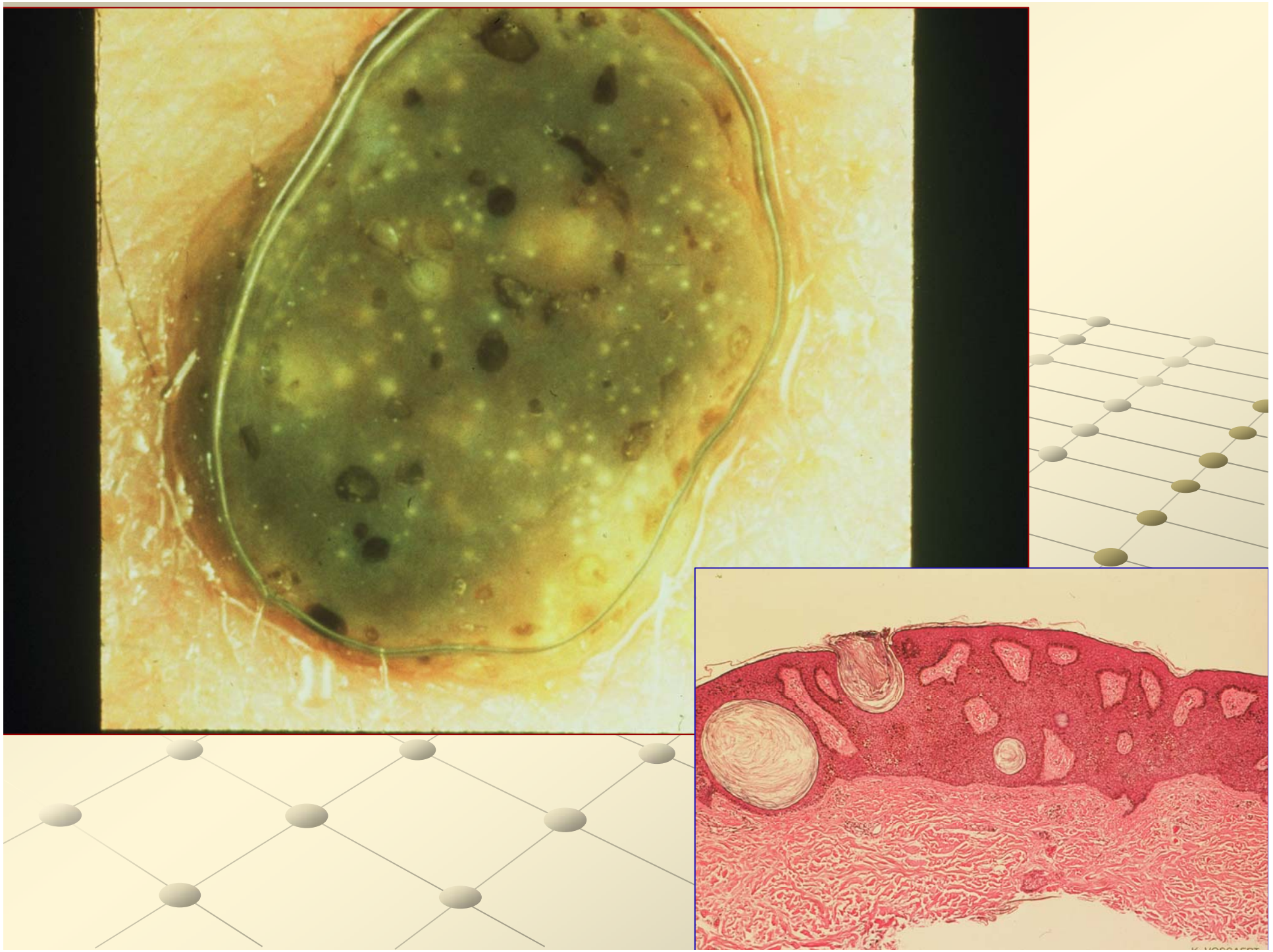
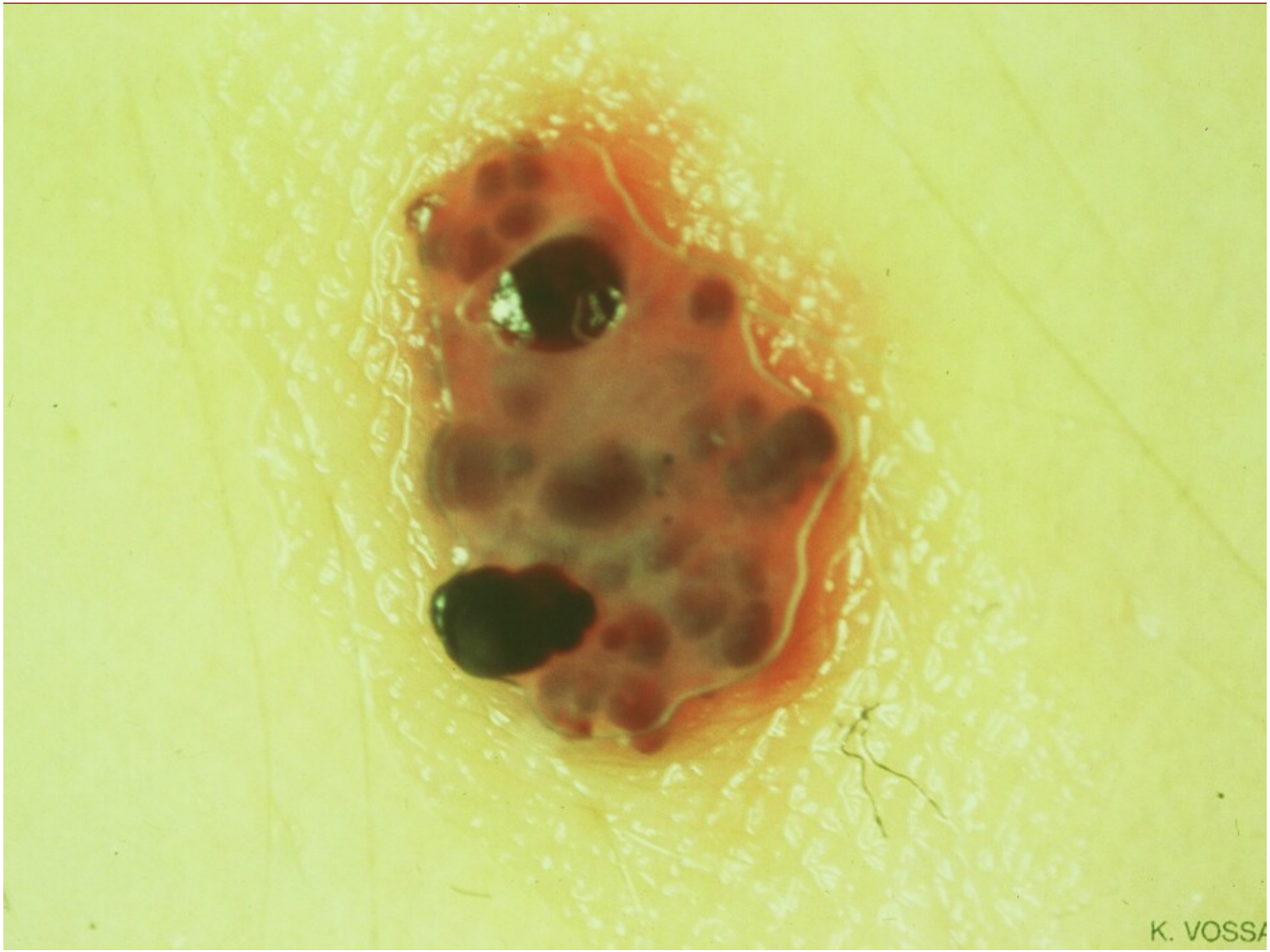

DERMATO U.Z. GENT

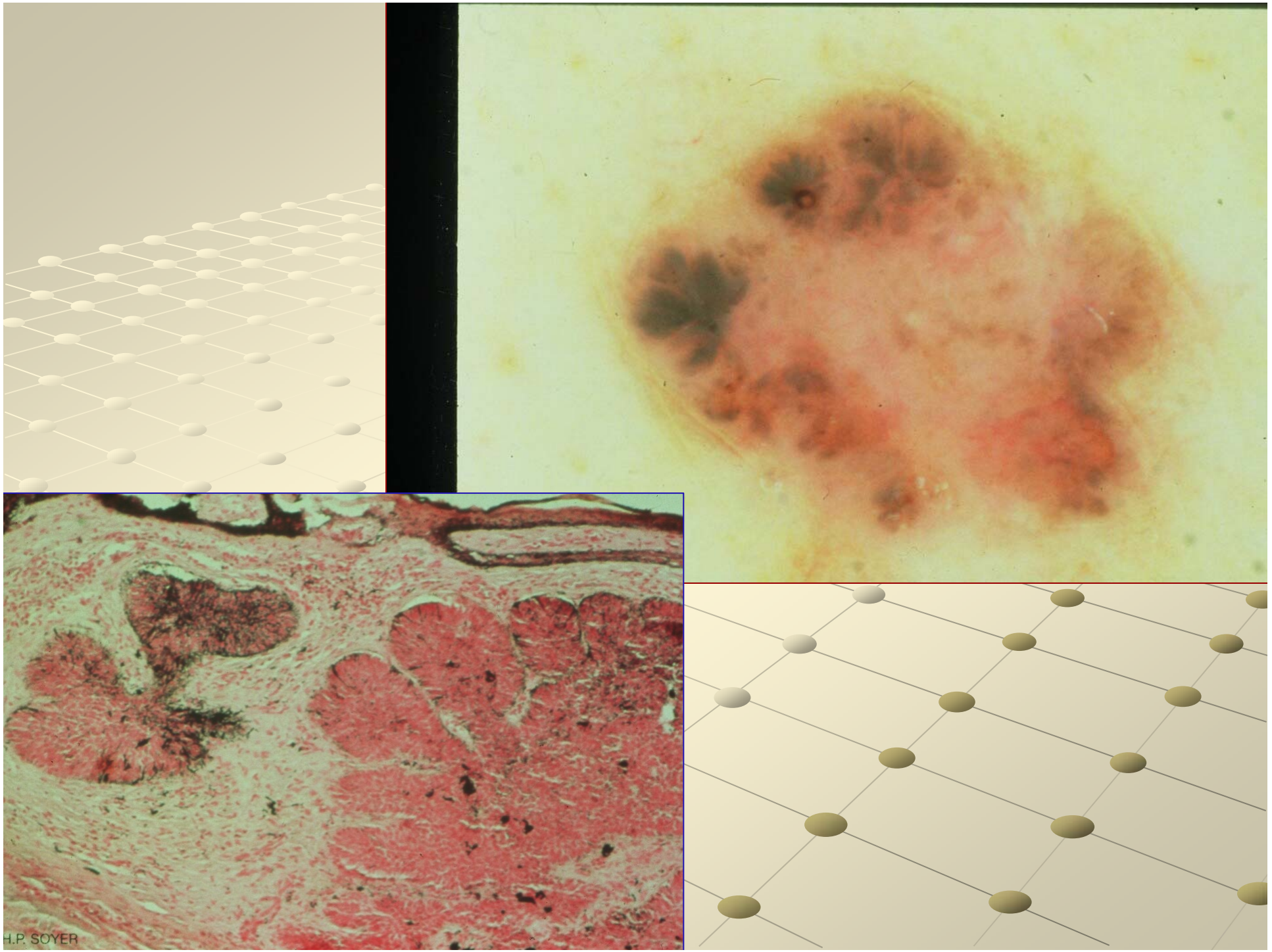
Structures

in non-melanocytic lesions:

pseudo-follicular openings
milia-like cysts
red-blue lagoons
maple leaf-like structures




K. VOSSA

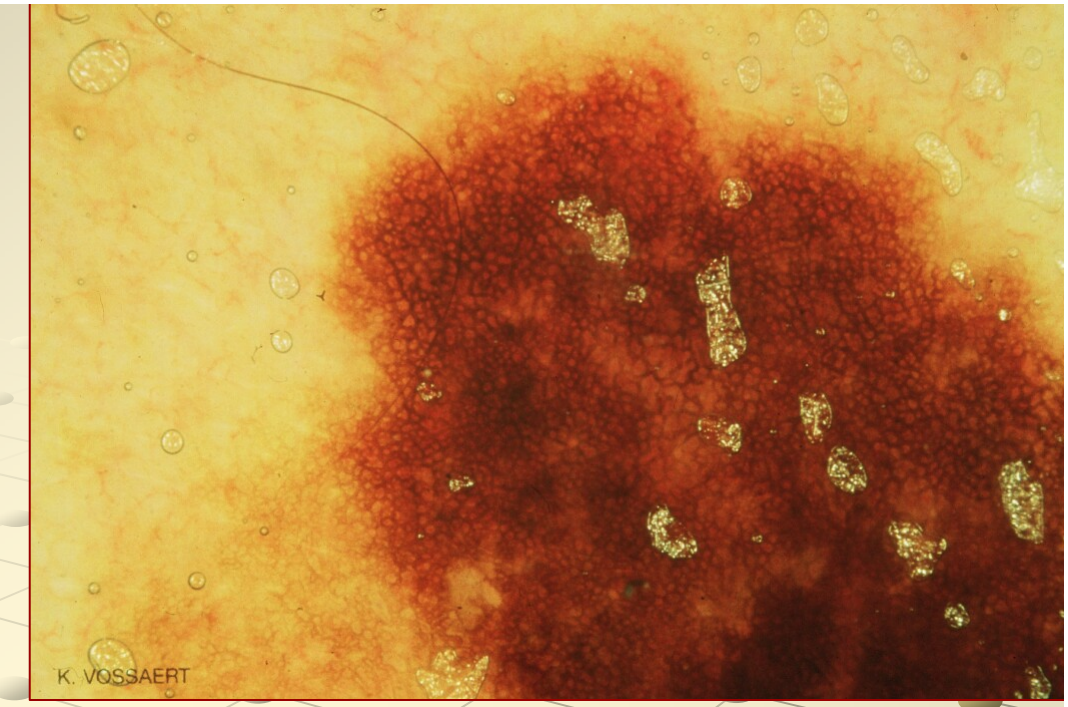

H.P. SOYER

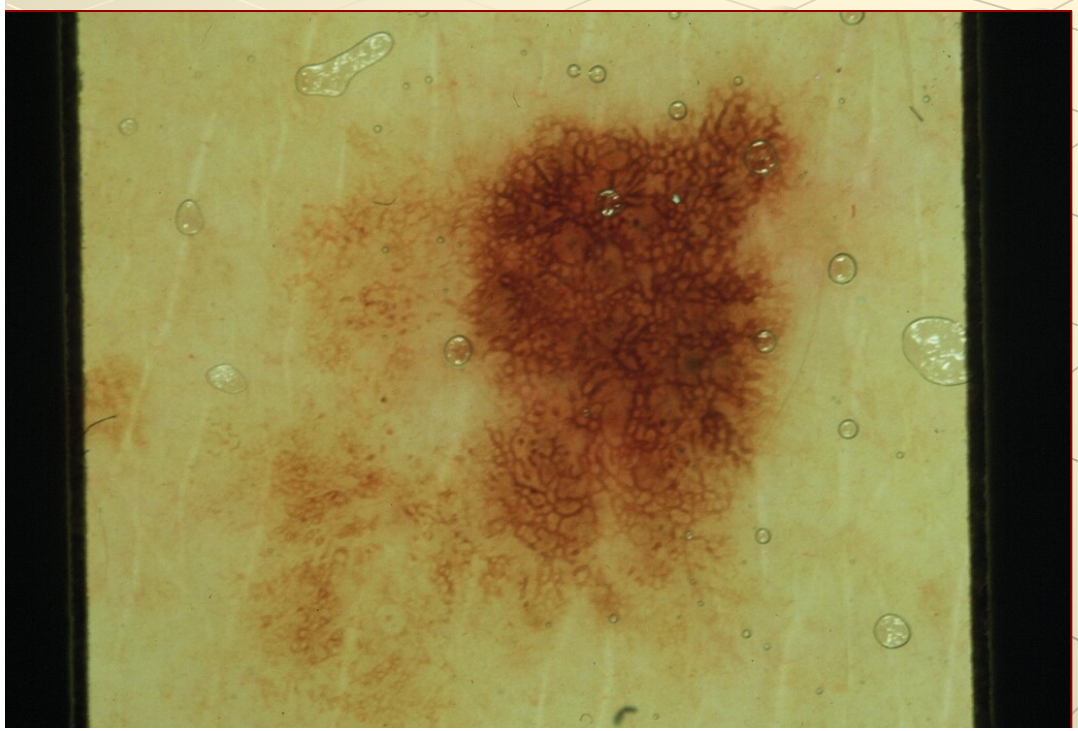
Structures

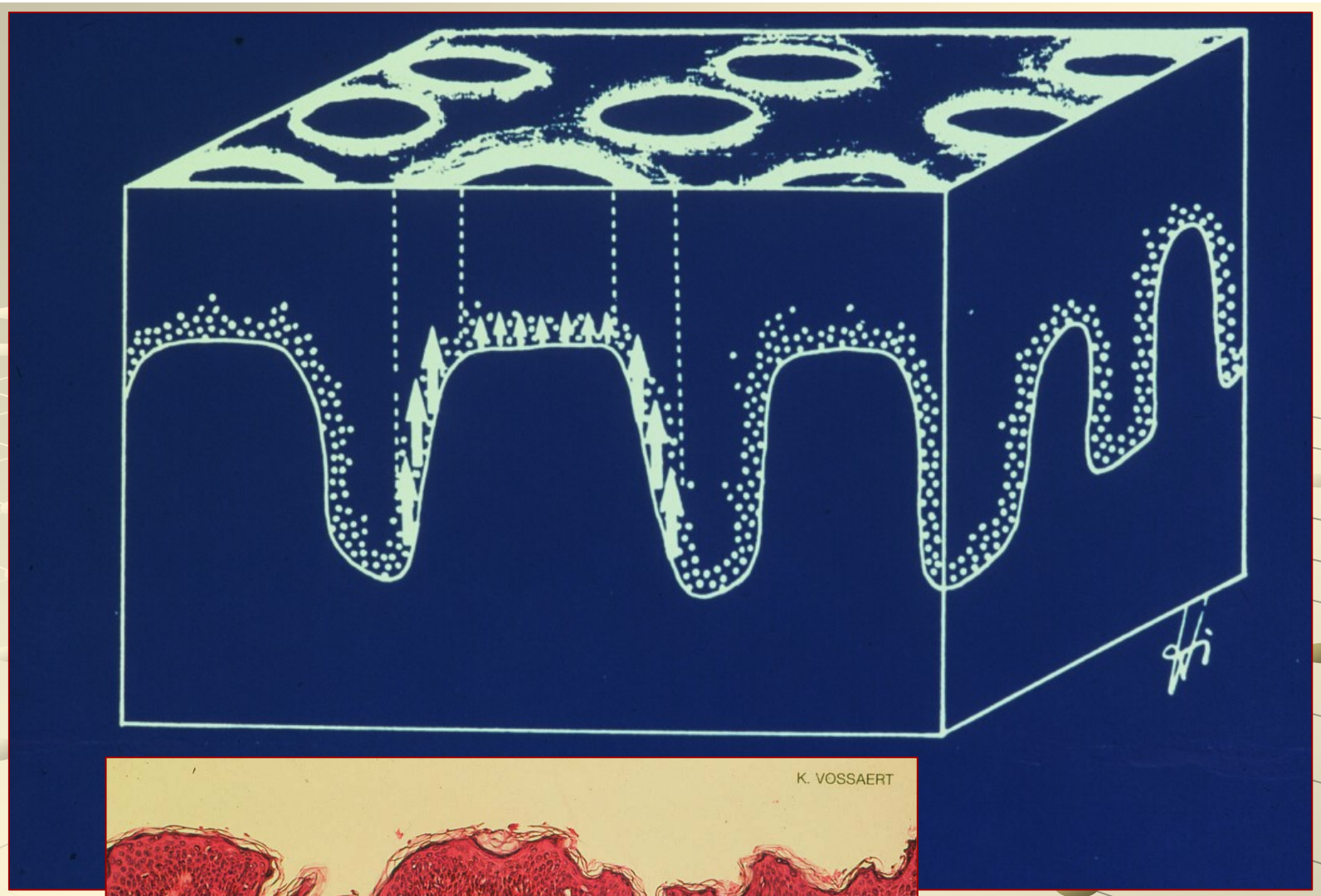
in melanocytic lesions:

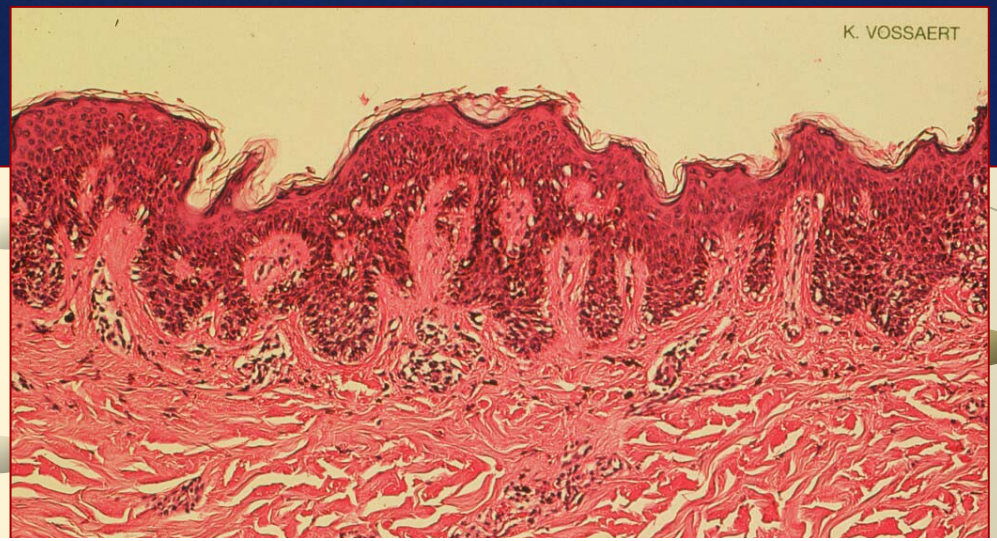
Pigment network
Branched streaks
Brown globules
Black dots
Structureless areas:

Pigment network

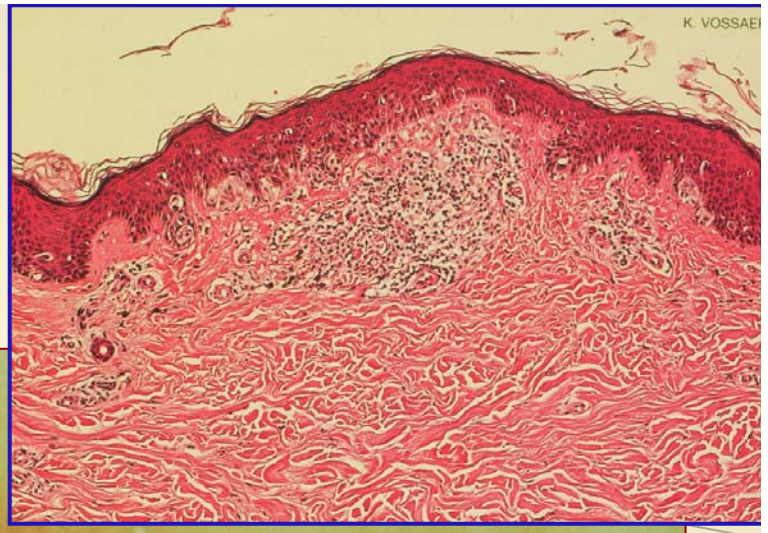


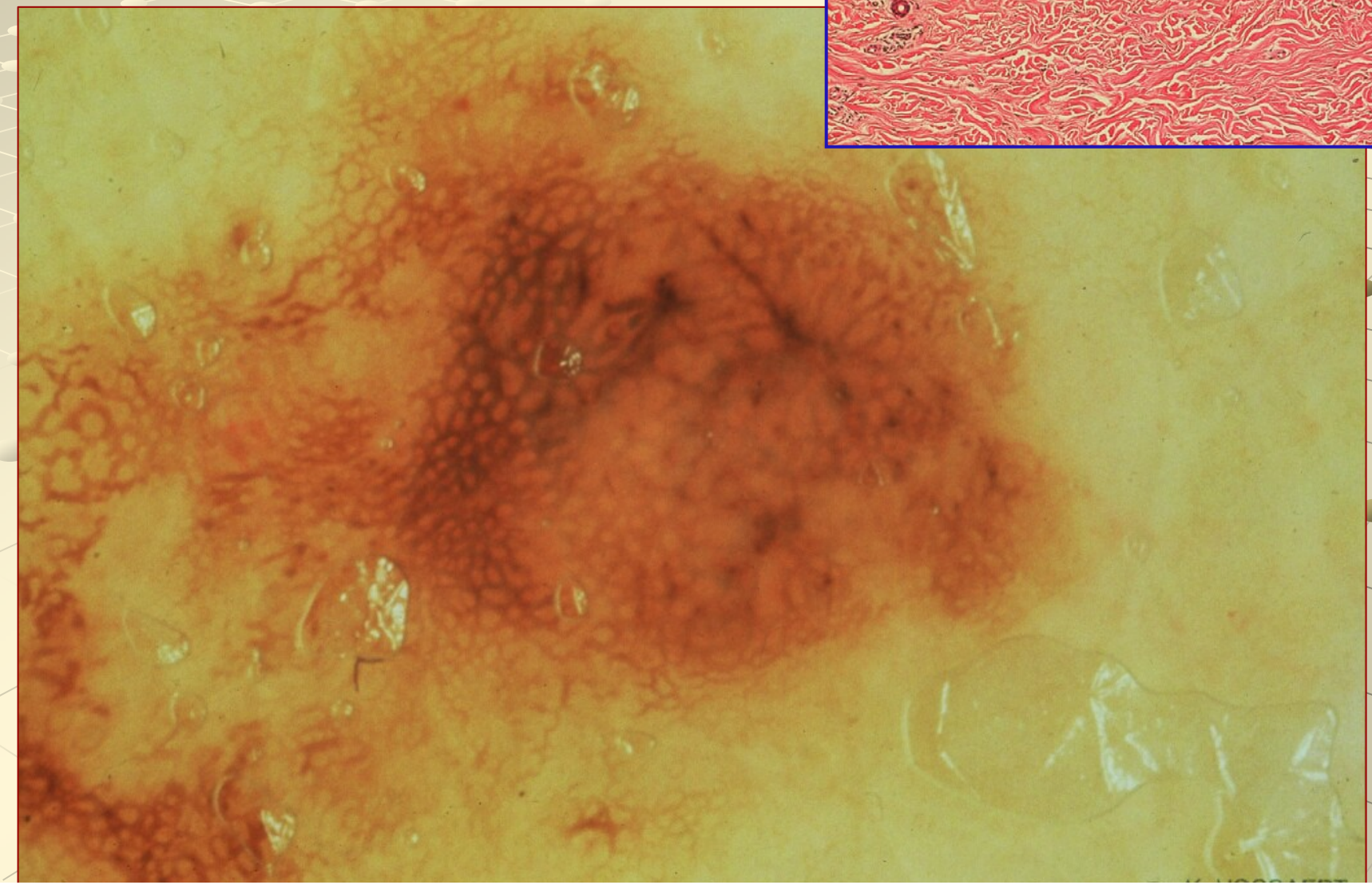


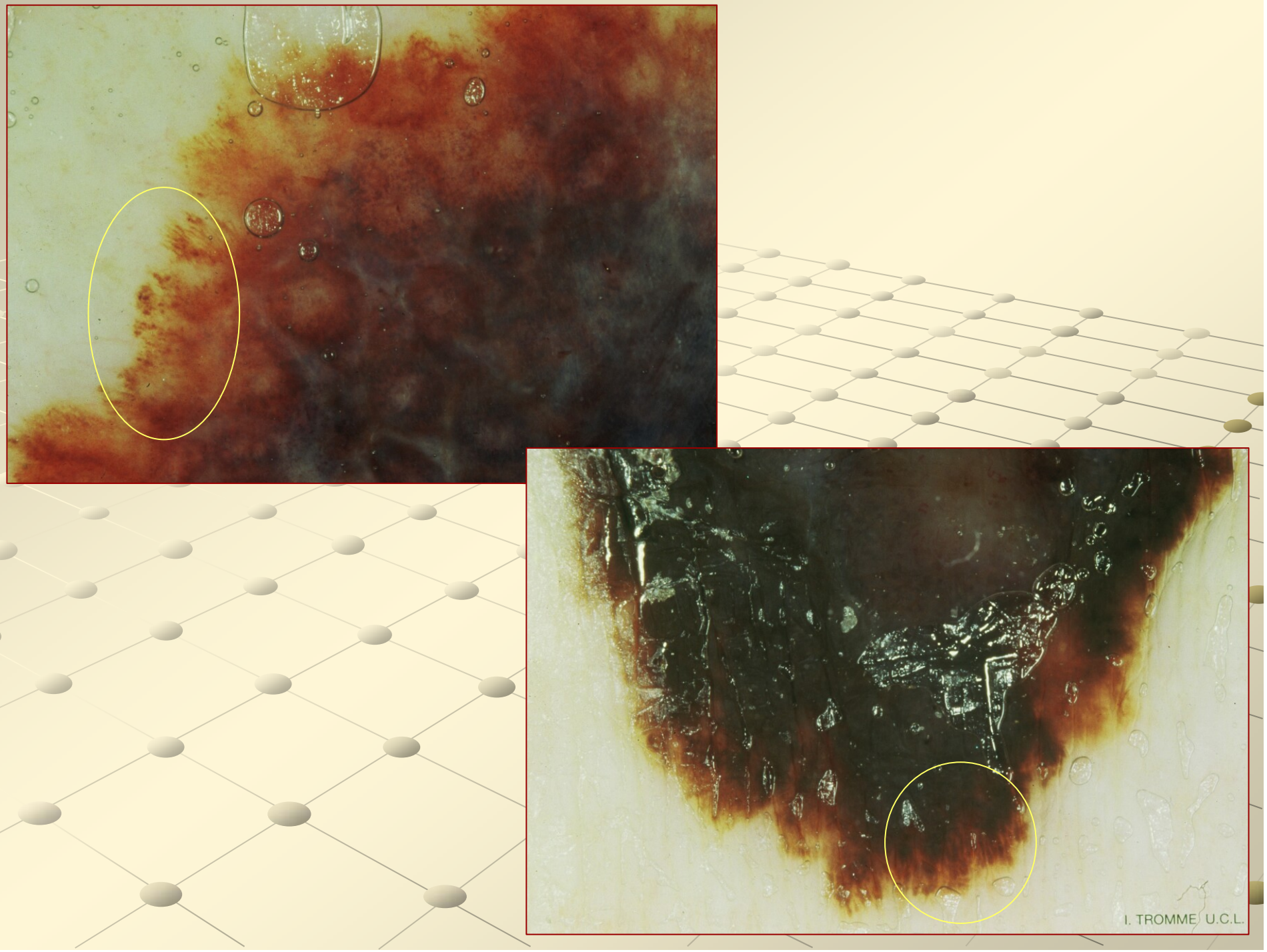



K. VOSSAERT

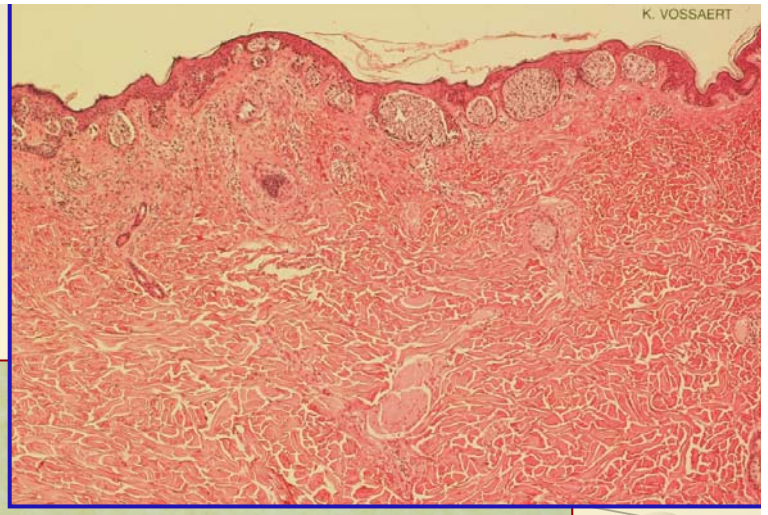
Branched streaks

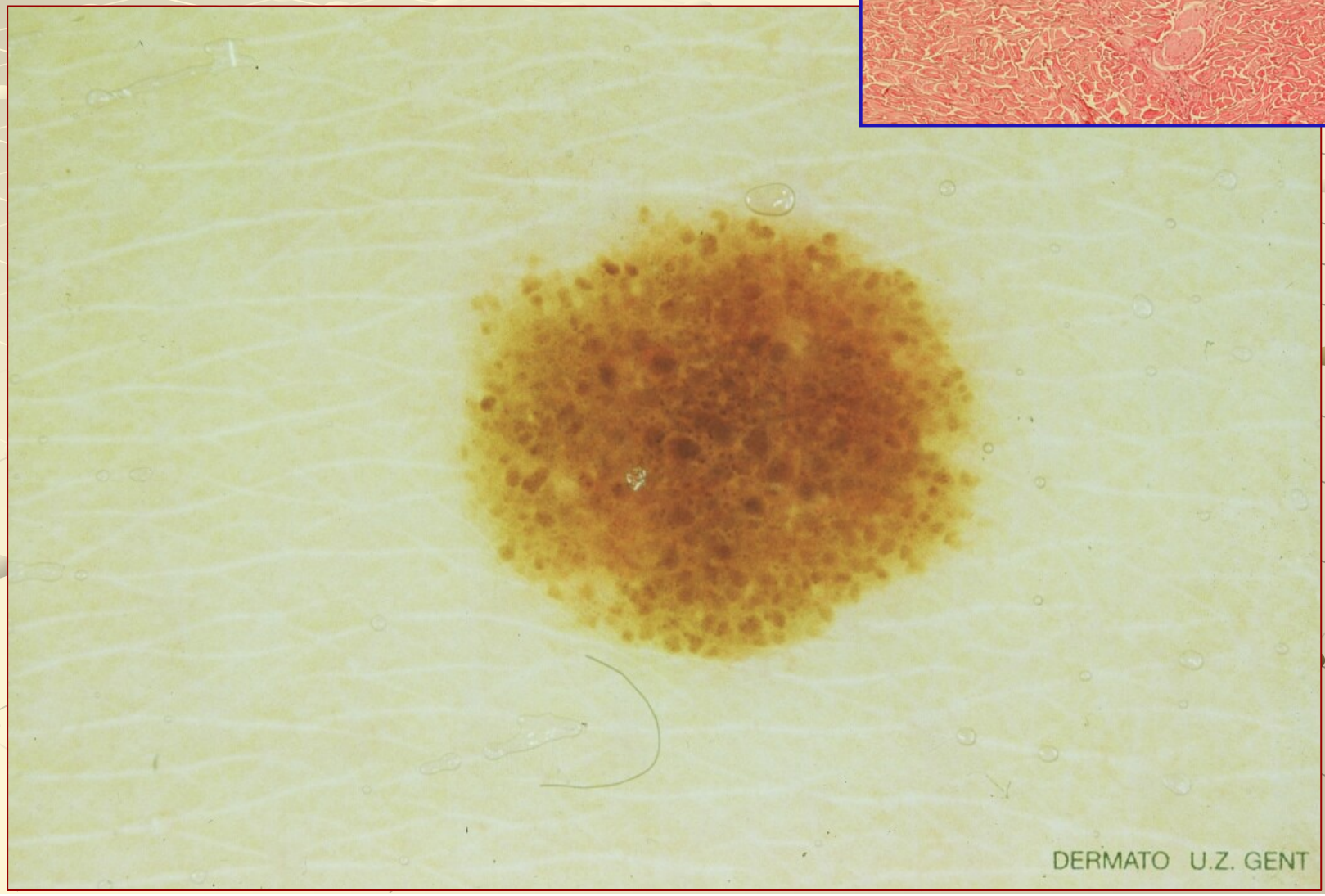




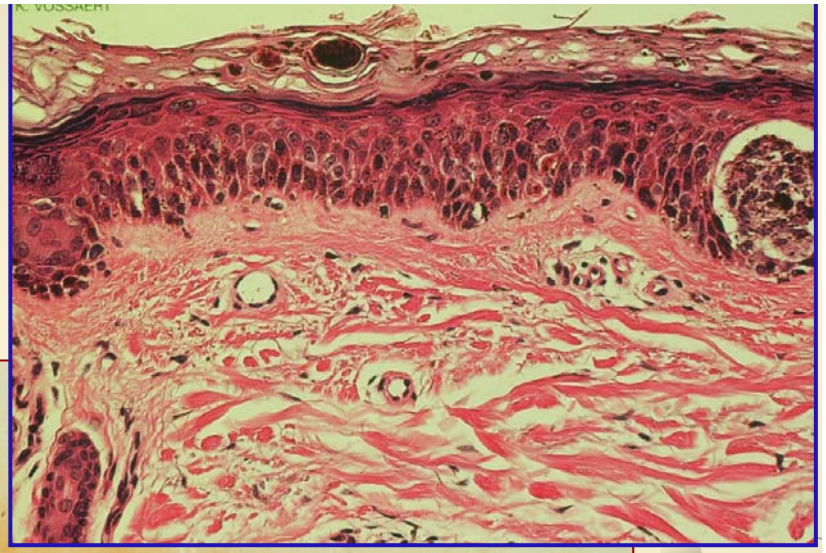

I. TROMME U.C.L.

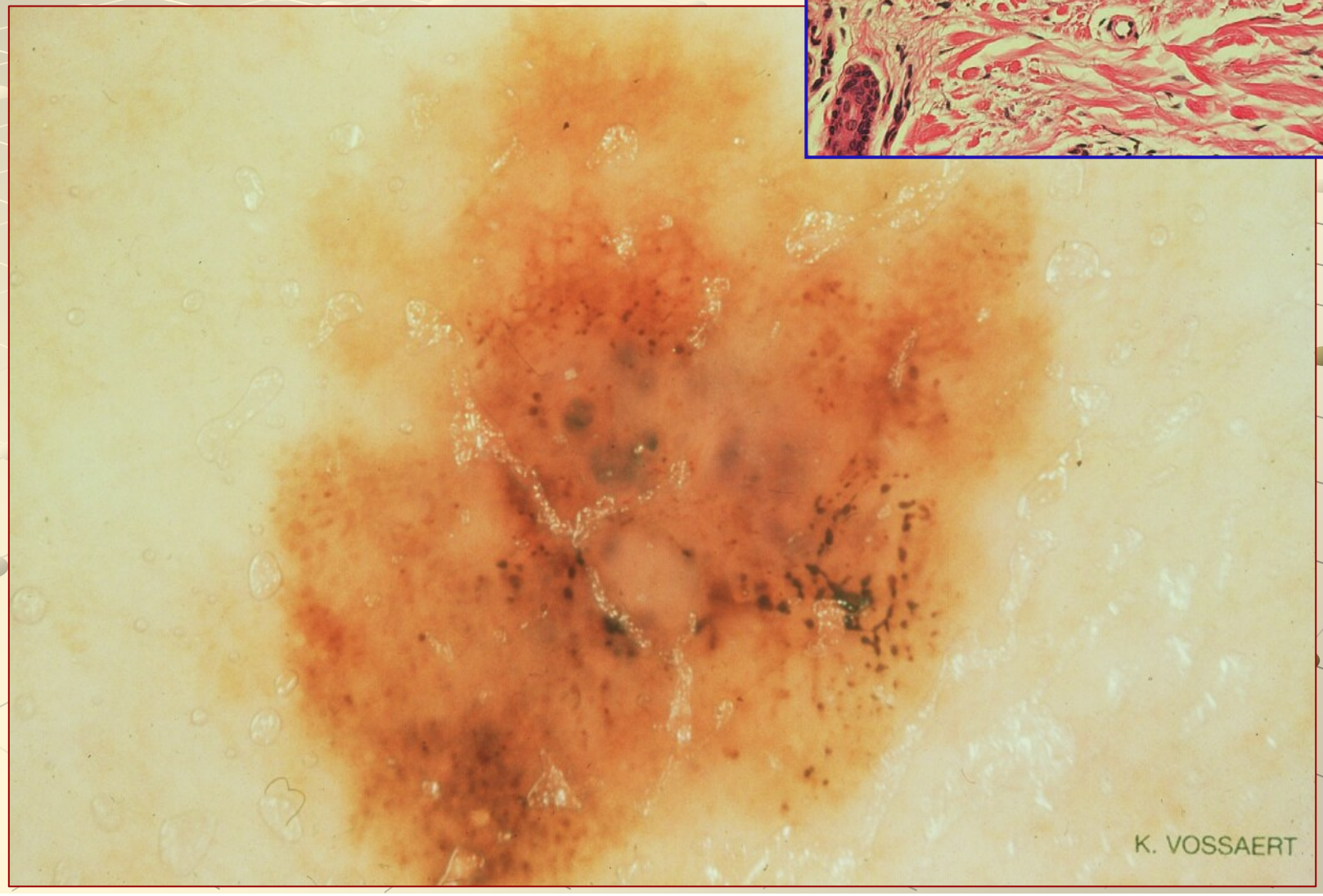
Brown globules





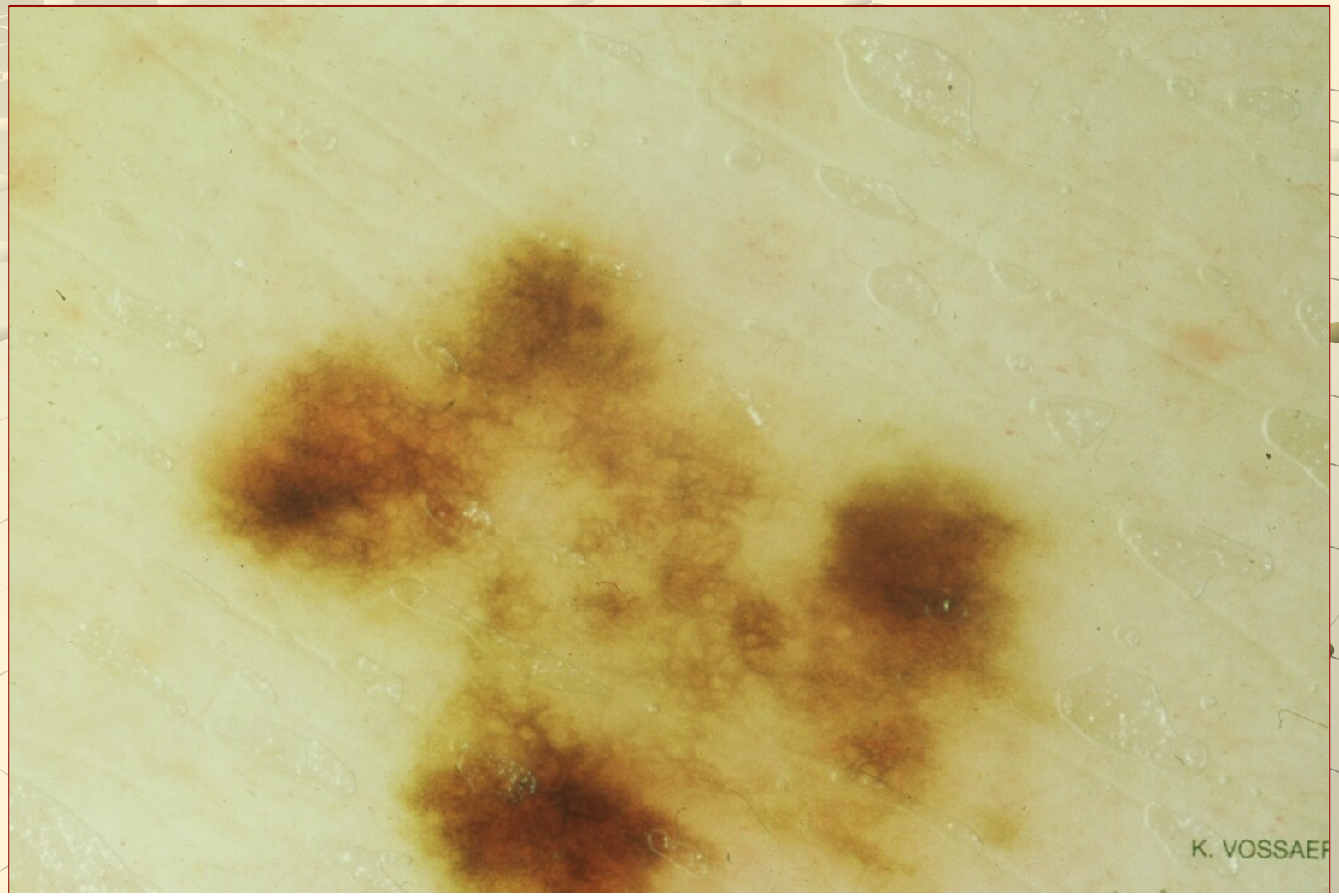
Black dots



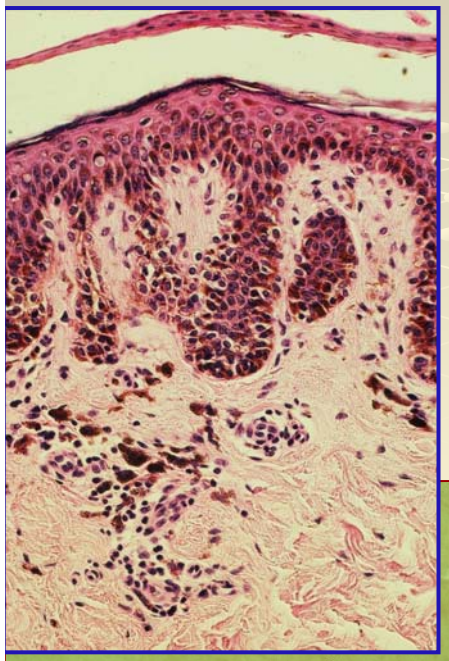


Structureless areas:

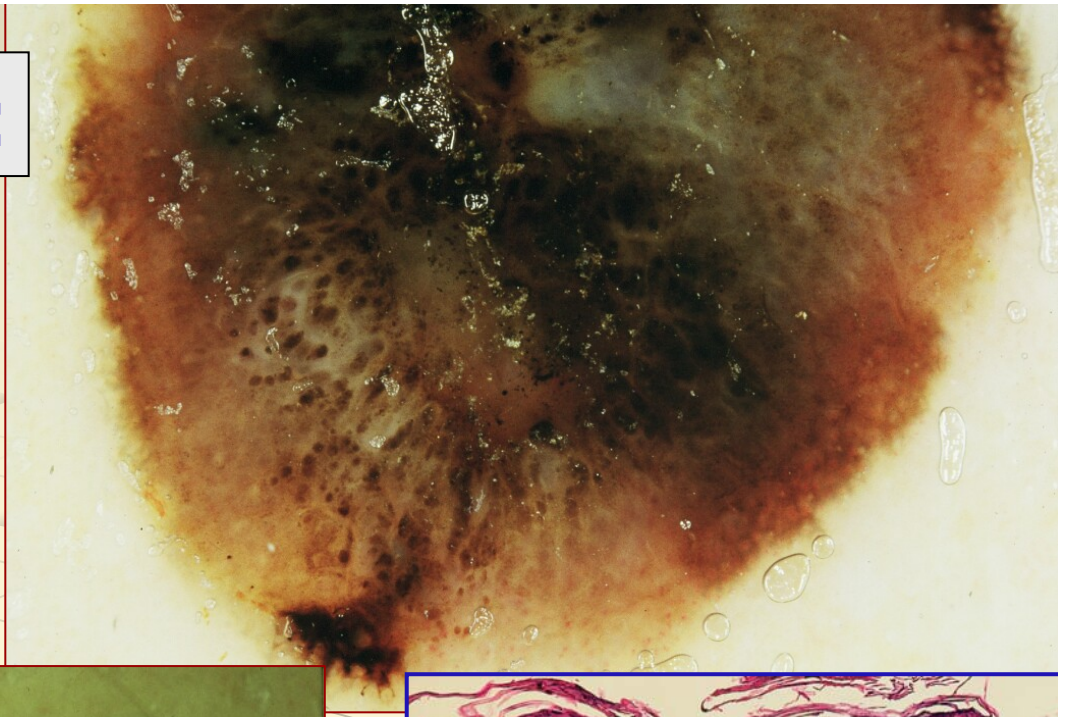
hypopimented areas

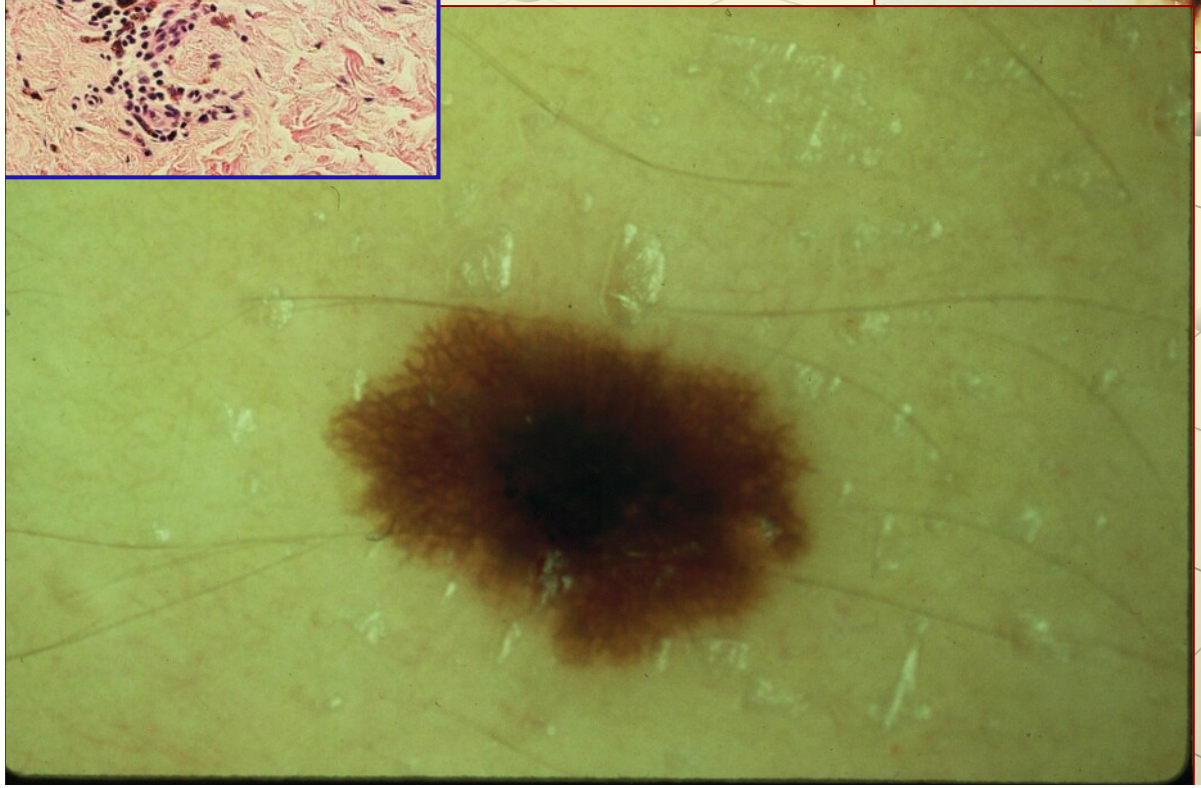


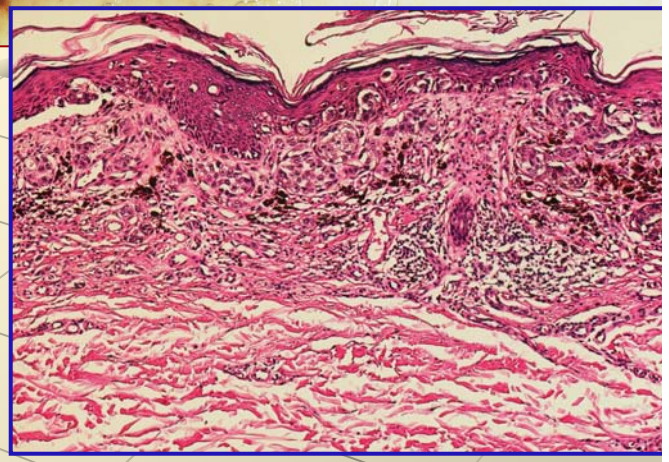
Structureless areas:



blotches

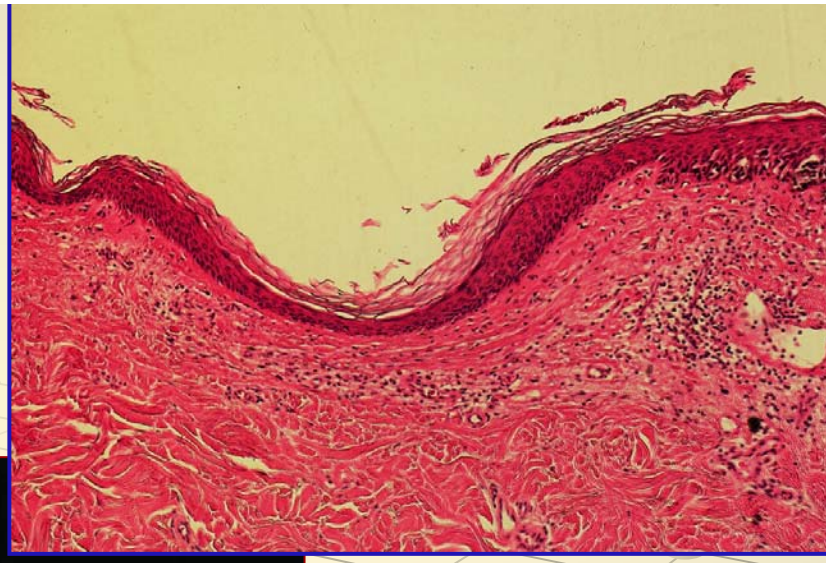


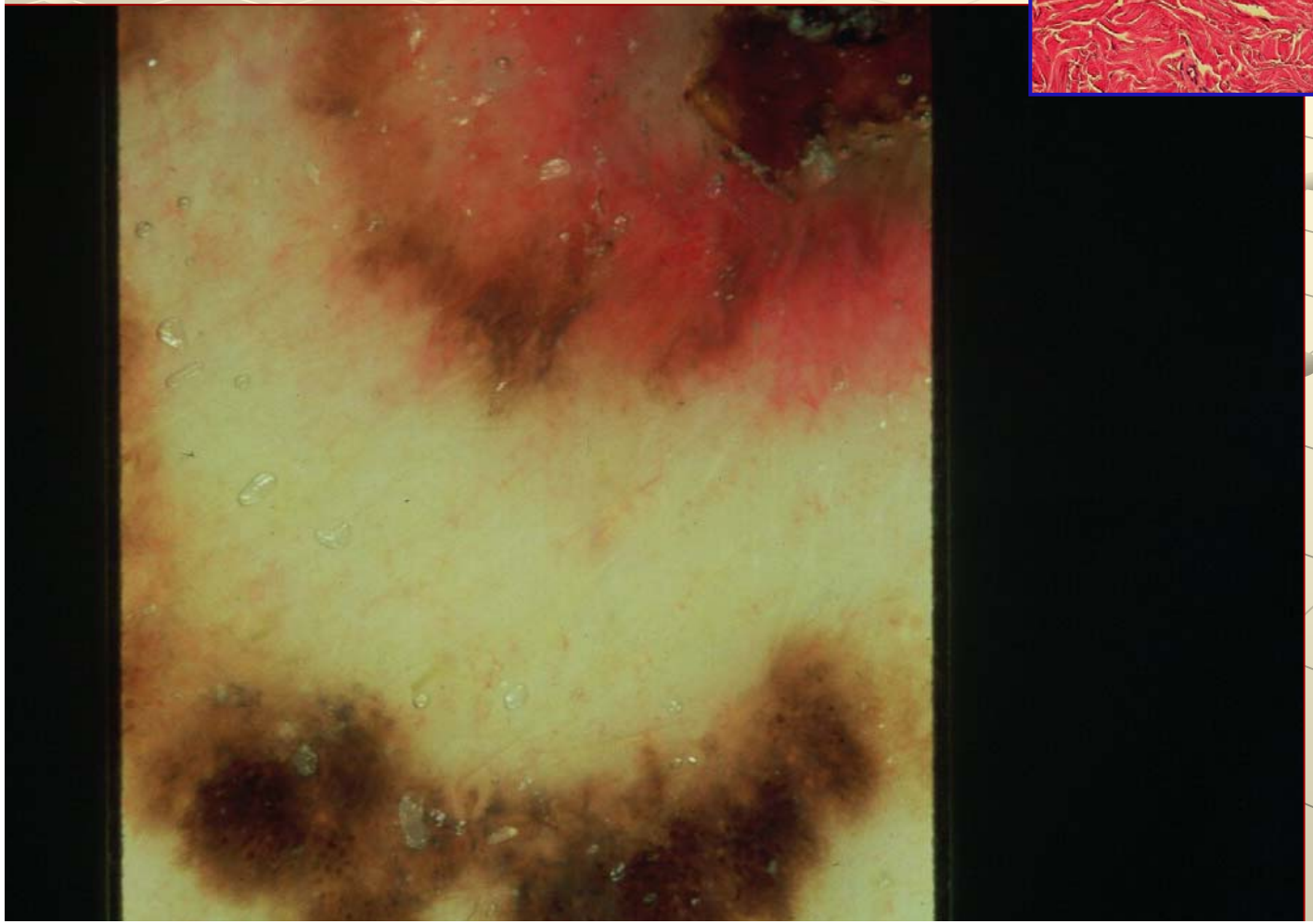




Structureless areas:

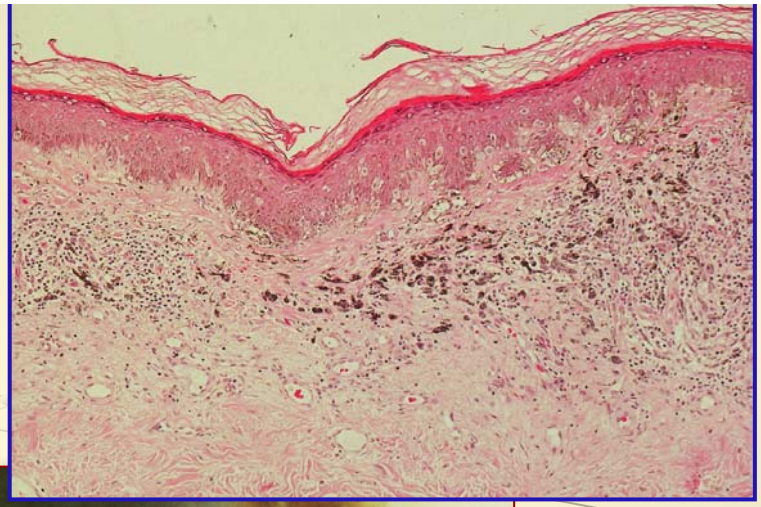
white areas

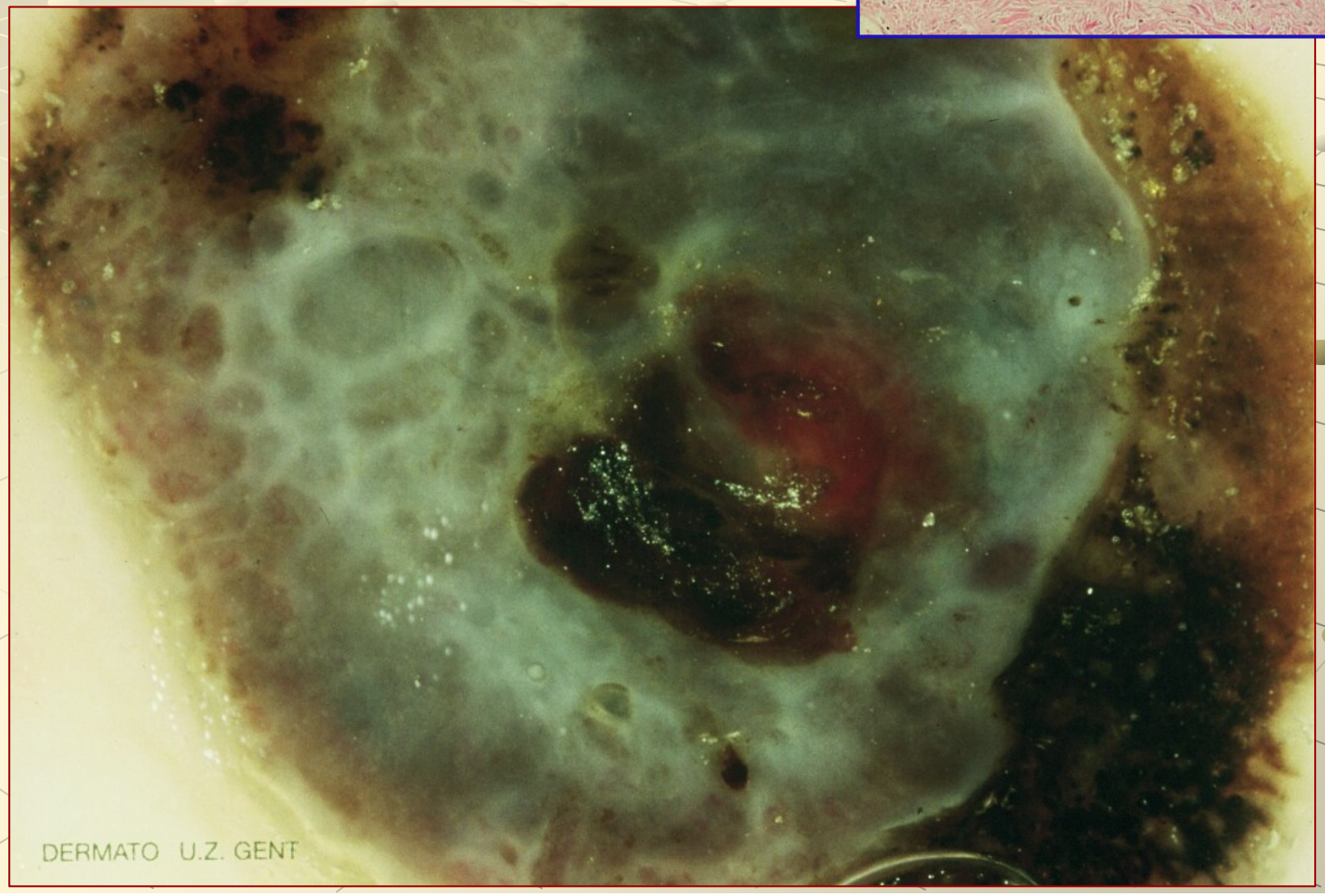




Structureless areas:

blue-grey areas

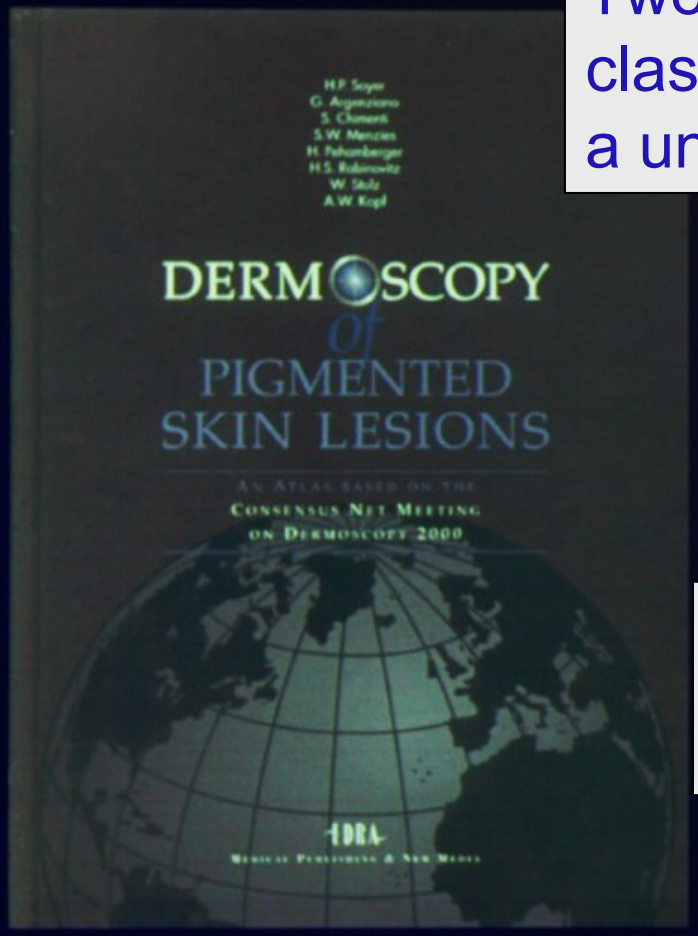




First World Congress of Dermoscopy

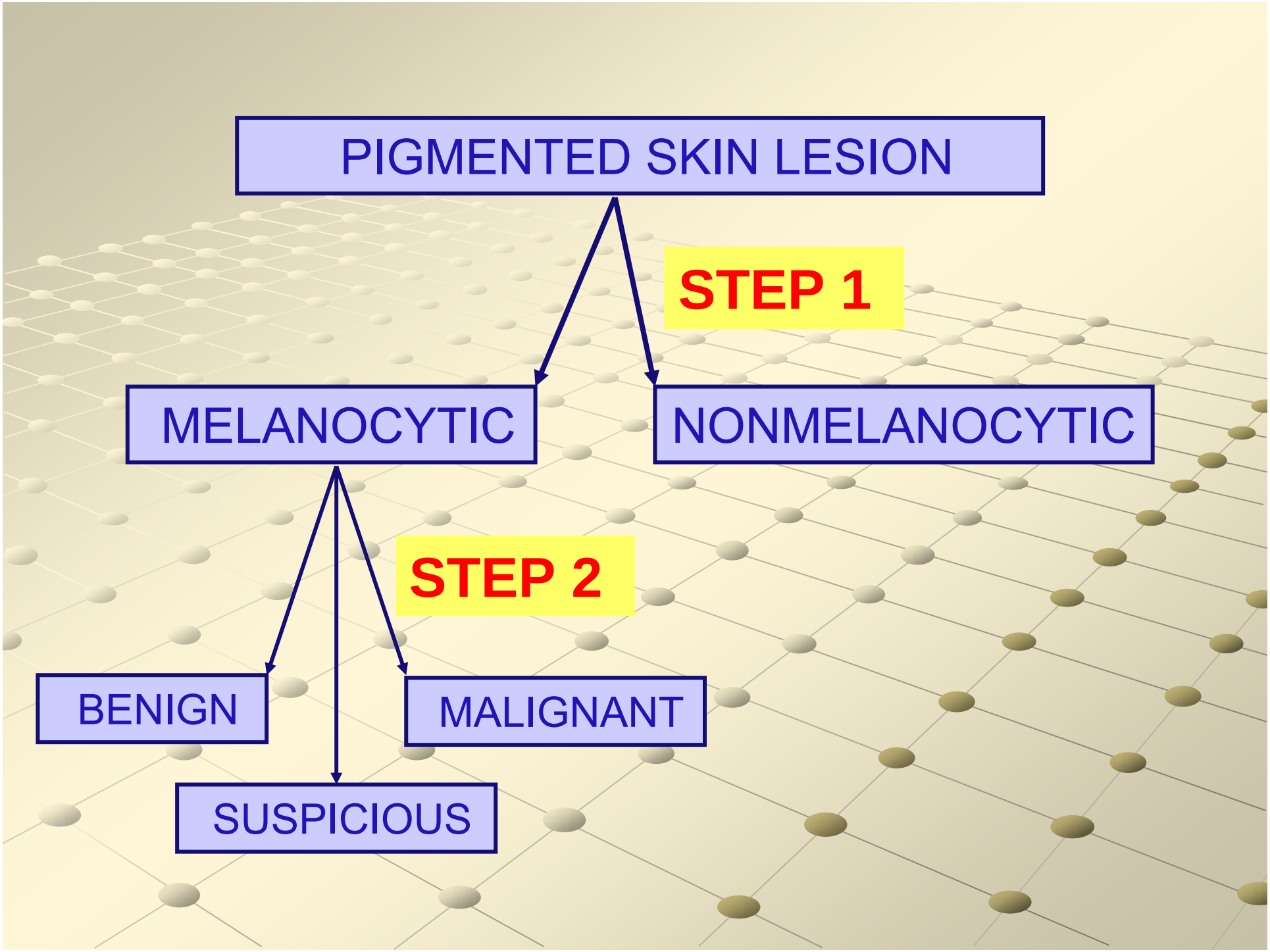
Rome, February 23-25, 2001

Two steps procedure for the dermoscopic classification of pigmented skin lesions: a unifying concept

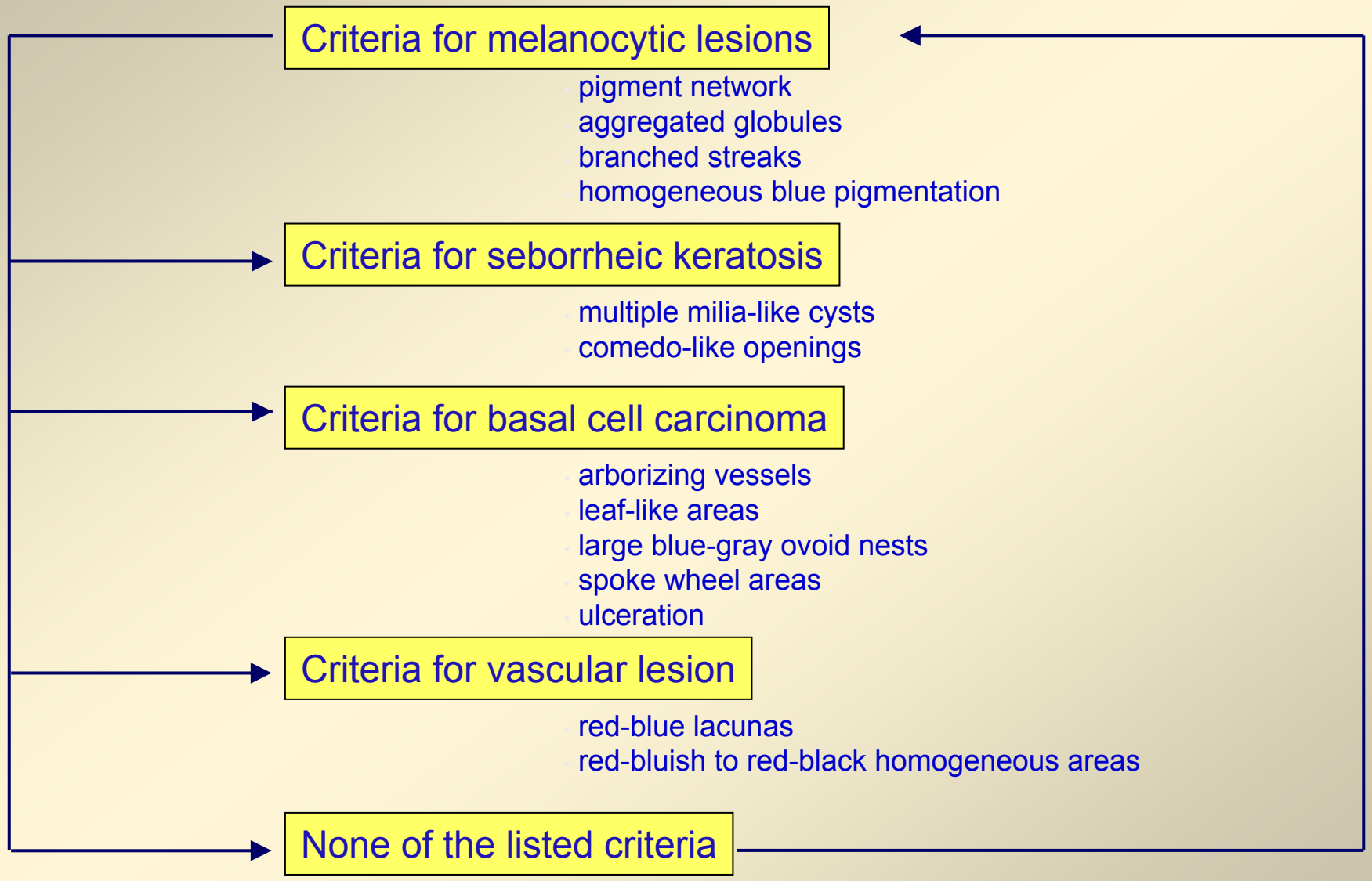


First step:
Differentiation between melanocytic and non-melanocytic lesions

Second step:
Differentiation between benign melanocytic lesions and melanoma


PIGMENTED SKIN LESION
STEP 1
MELANOCYTIC
NONMELANOCYTIC
STEP 2
BENIGN
MALIGNANT
SUSPICIOUS

STEP 1


Criteria for melanocytic lesions
pigment network
aggregated globules
branched streaks
homogeneous blue pigmentation
Criteria for seborrheic keratosis
multiple milia-like cysts
comedo-like openings
Criteria for basal cell carcinoma
arborizing vessels
leaf-like areas
large blue-gray ovoid nests
spoke wheel areas
ulceration
Criteria for vascular lesion
red-blue lacunas
red-bluish to red-black homogeneous areas
None of the listed criteria

STEP 2

Pattern analysis
according to Pehamberger et al. 1993

ABCD rule
Stolz et al. 1994

Menzies' scoring method
Menzies et al. 1996

7-point checklist
Argenziano et al. 1998

STEP 2

Pattern analysis
according to Pehamberger et al. 1993

ABCD rule
Stolz et al. 1994

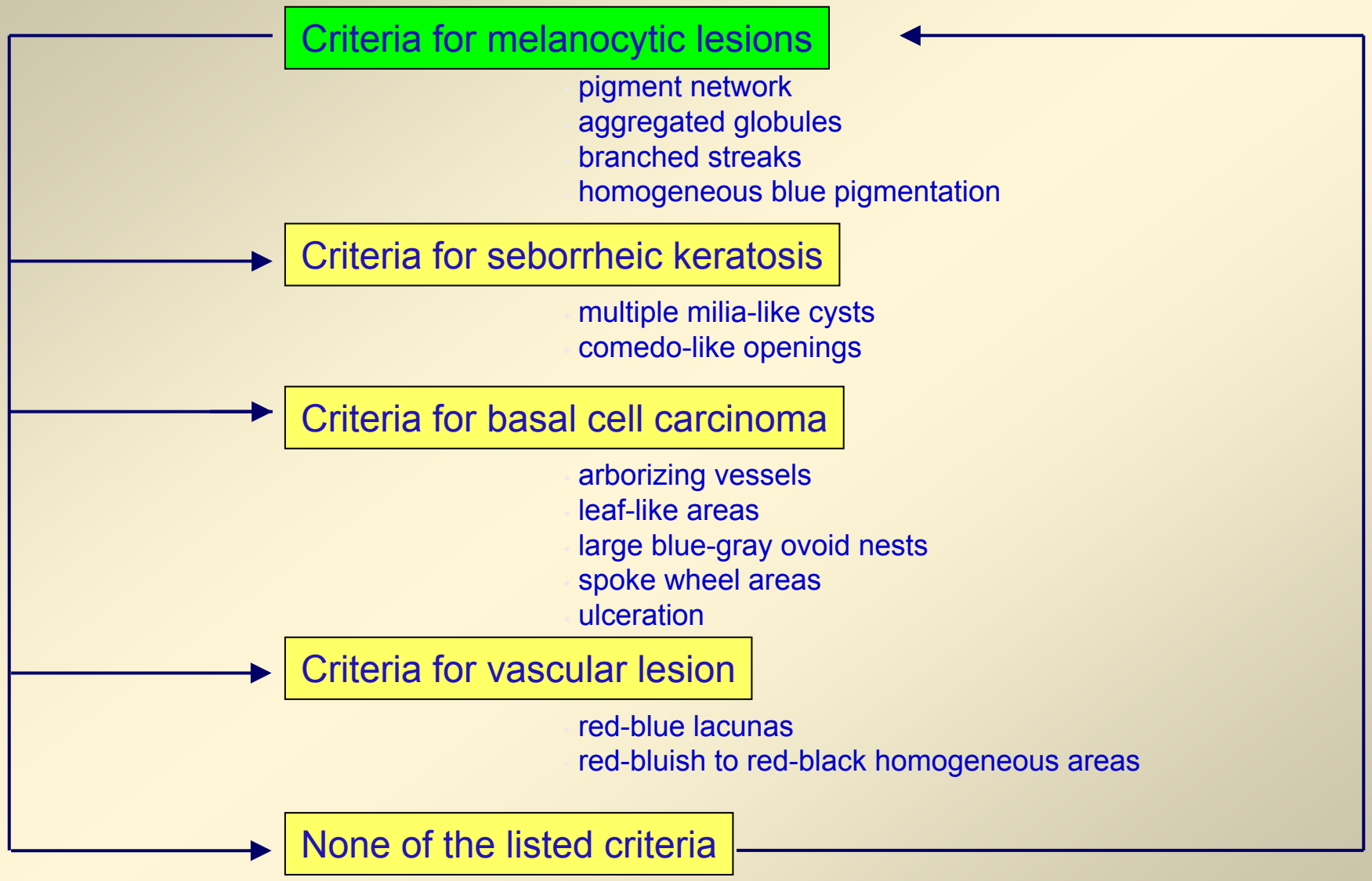
Menzies' scoring method
Menzies et al. 1996

7-point checklist
Argenziano et al. 1998

CRITERIA FOR FOR THE BODY

!!! NOT APPLICABLE TO FACE AND PALMS / SOLES

STEP 1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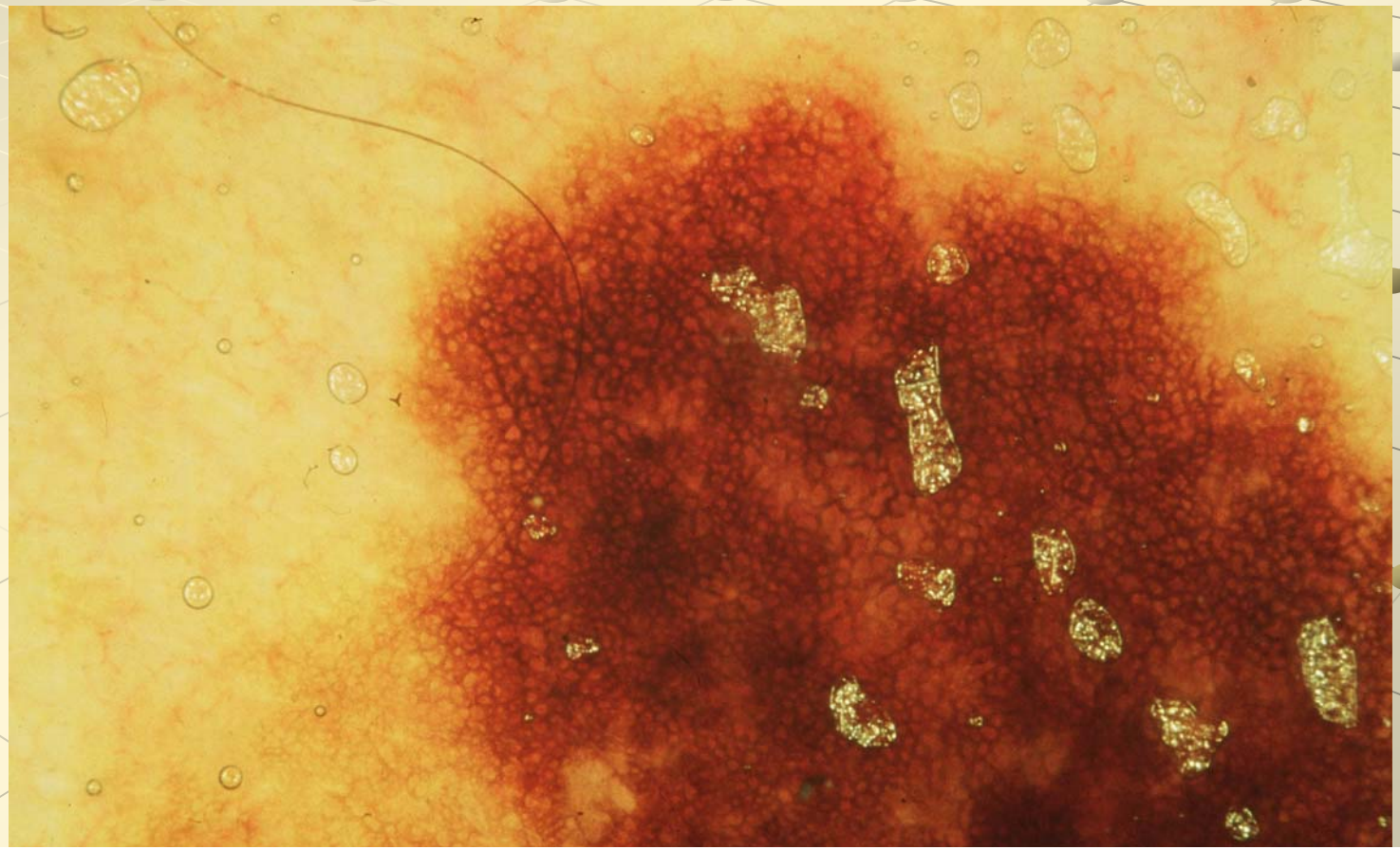
Criteria for basal cell carcinoma
arborizing vessels
leaf-like areas
large blue-gray ovoid nests
spoke wheel areas
ulceration
Criteria for vascular lesion
red-blue lacunas
red-bluish to red-black homogeneous areas
None of the listed criteria

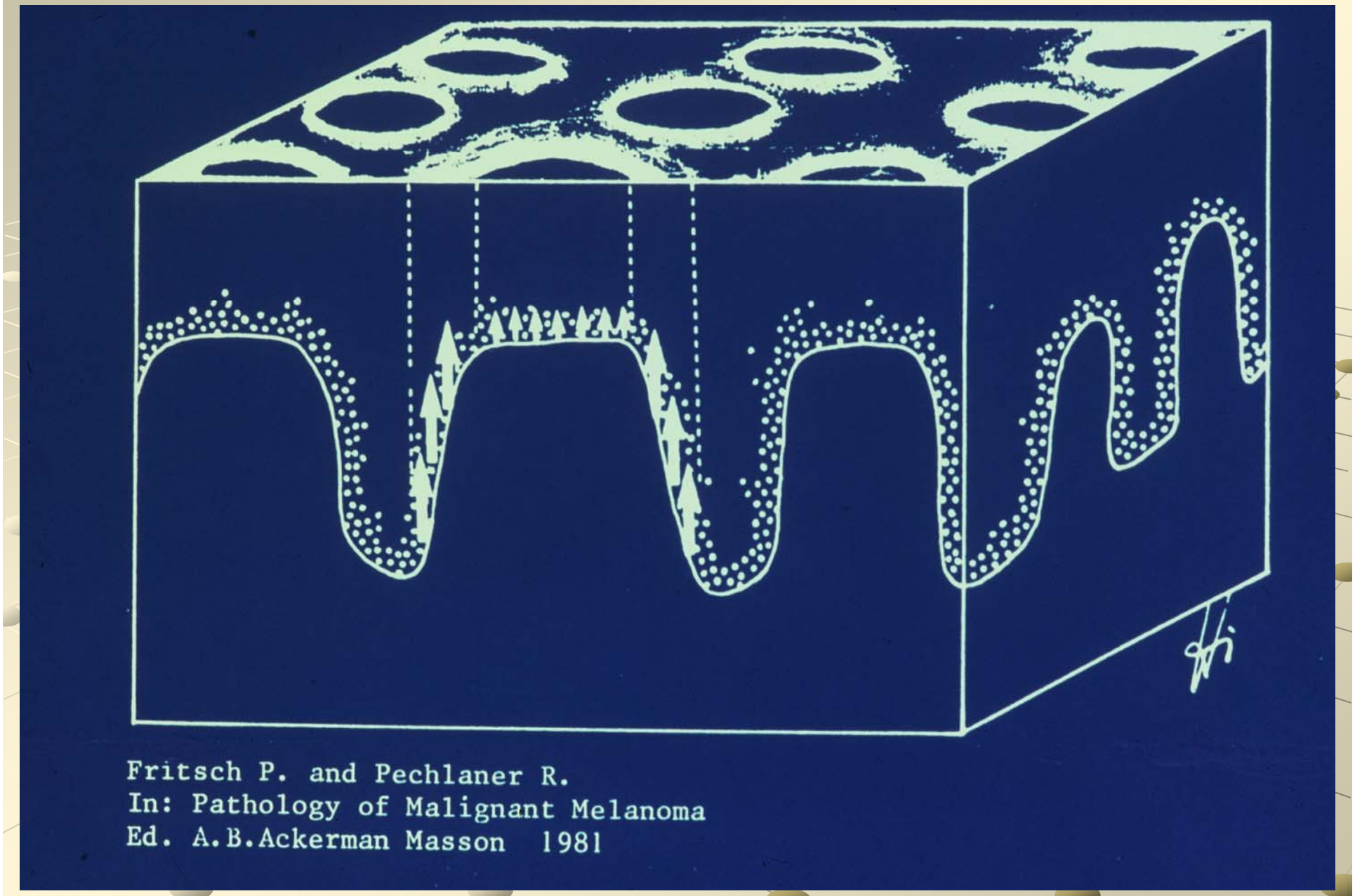
CRITERIA FOR MELANOCYTIC LESIONS

- pigment network

PIGMENT NETWORK

- honeycomb-like openings
- brown to black color





Fritsch P. and Pechlaner R.
In: Pathology of Malignant Melanoma
Ed. A.B.Ackerman Masson 1981

PIGMENT NETWORK

≠ pseudonetwork of the face:

= openings of skin appendages

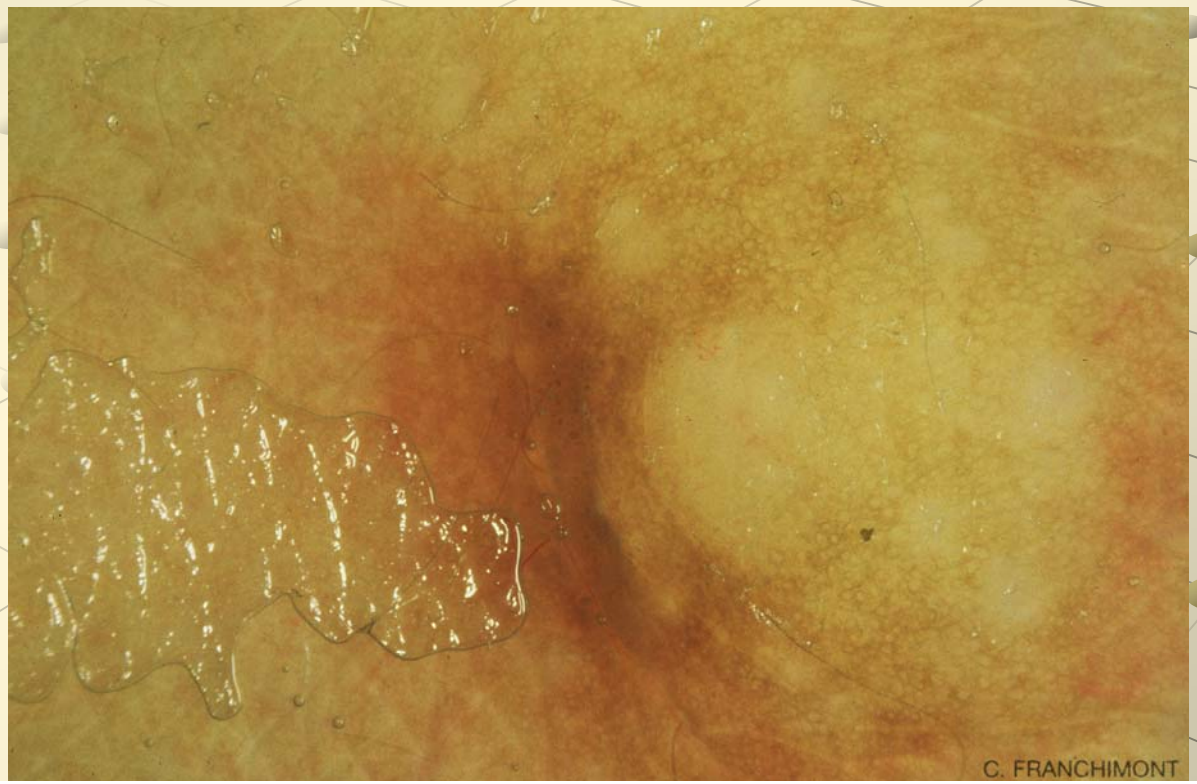
PIGMENT NETWORK

Not all melanocytic lesions have pigment network.

PIGMENT NETWORK

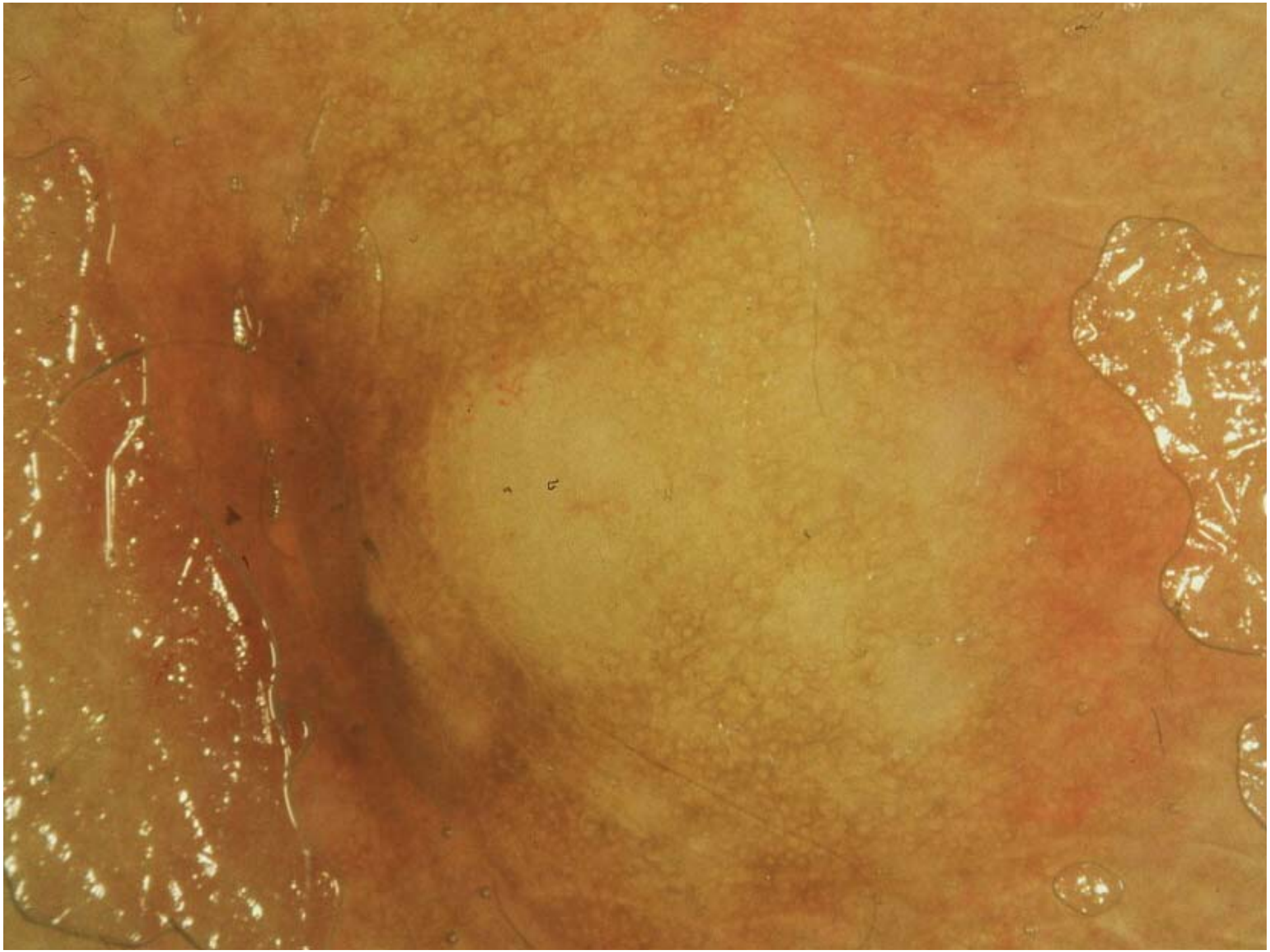
Characteristic network is specific for melanocytic lesions

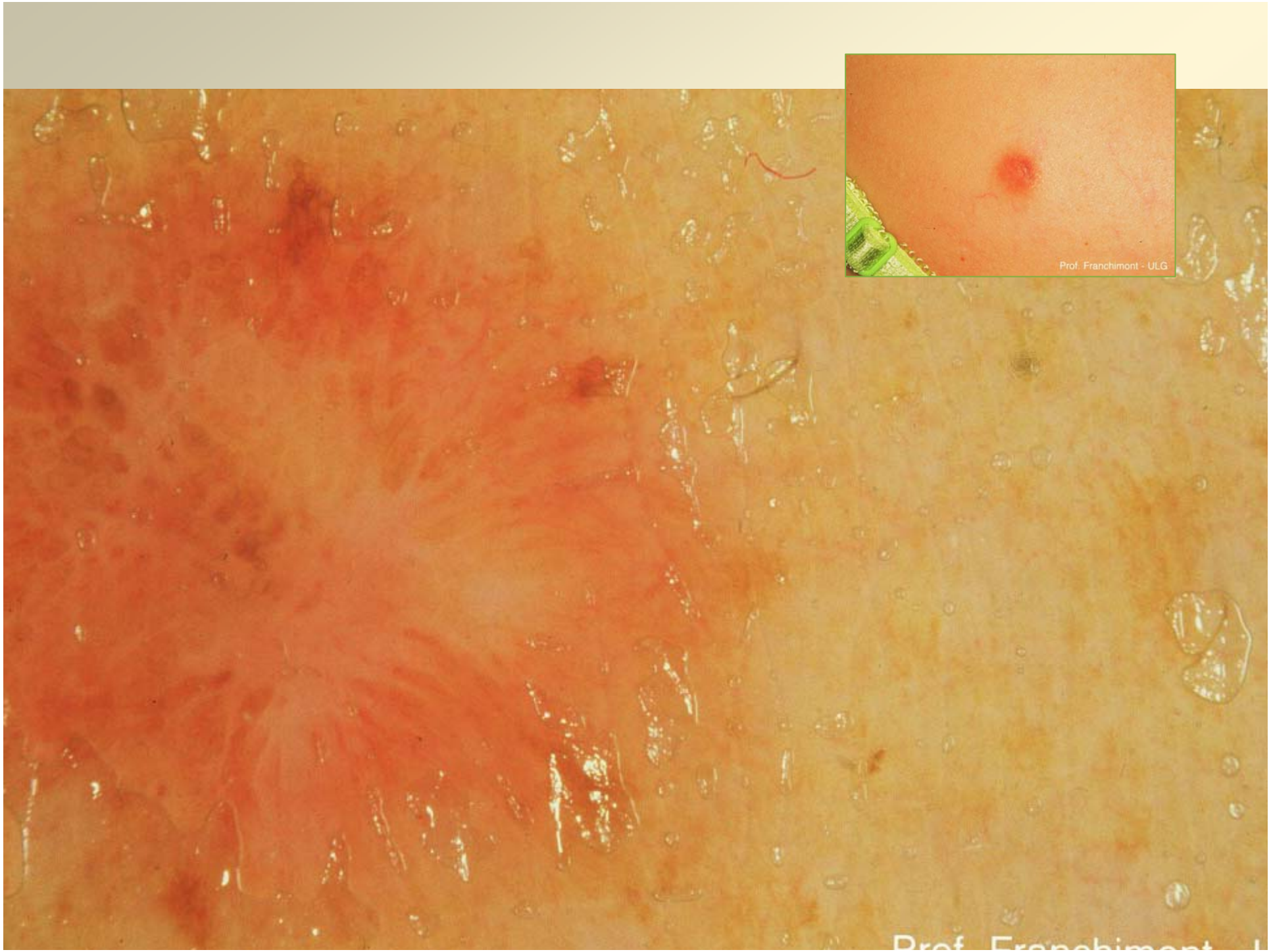
EXCEPTION: dermatofibroma



DERMATOFIBROMA

- white / skin-colored center surrounded by a pigment network or branched streaks (targetoid pattern)
- small vessels in a targetoid or ring-like pattern around the center
- clinical diagnosis



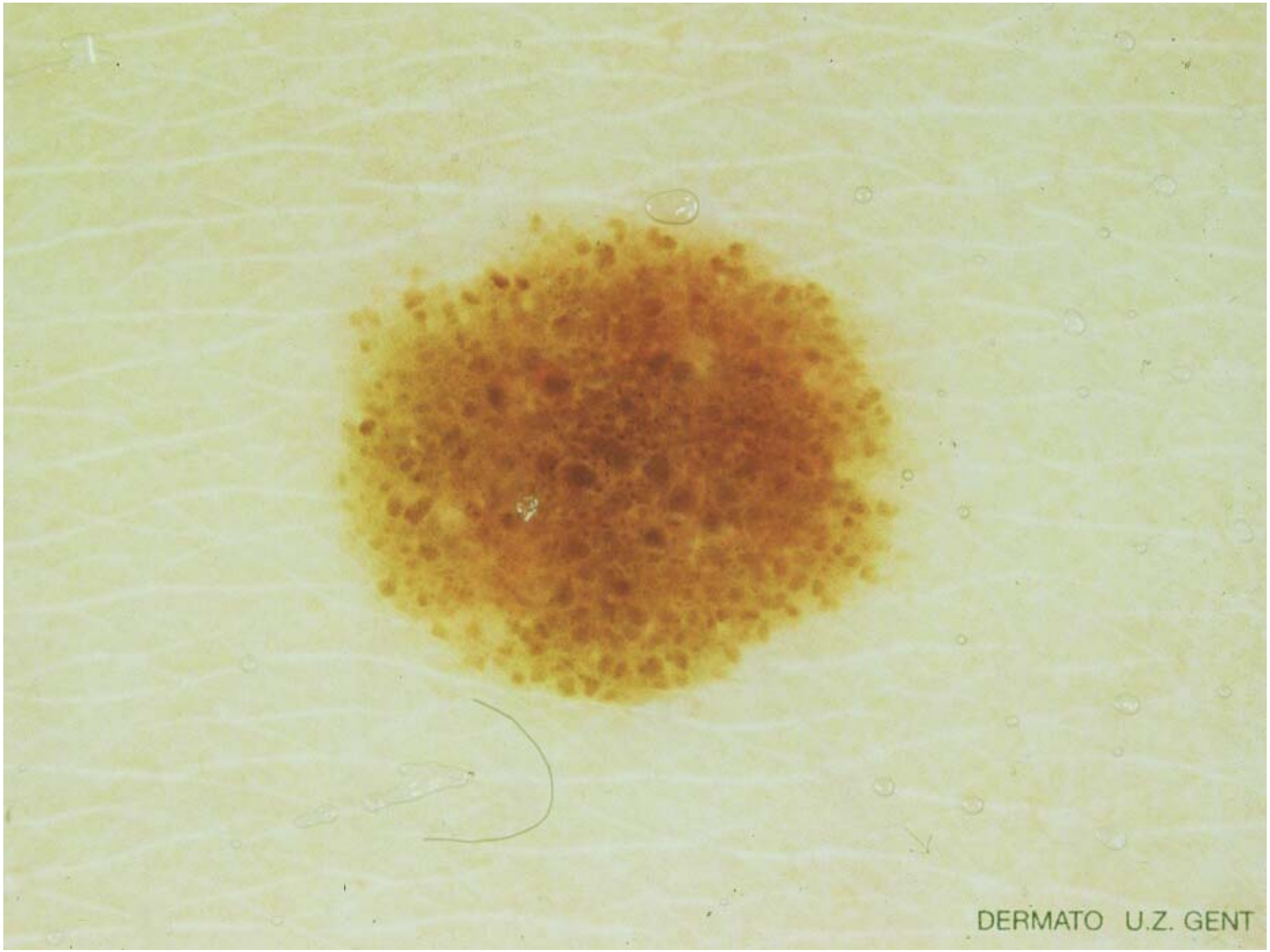

Prof. Franchimont - ULG

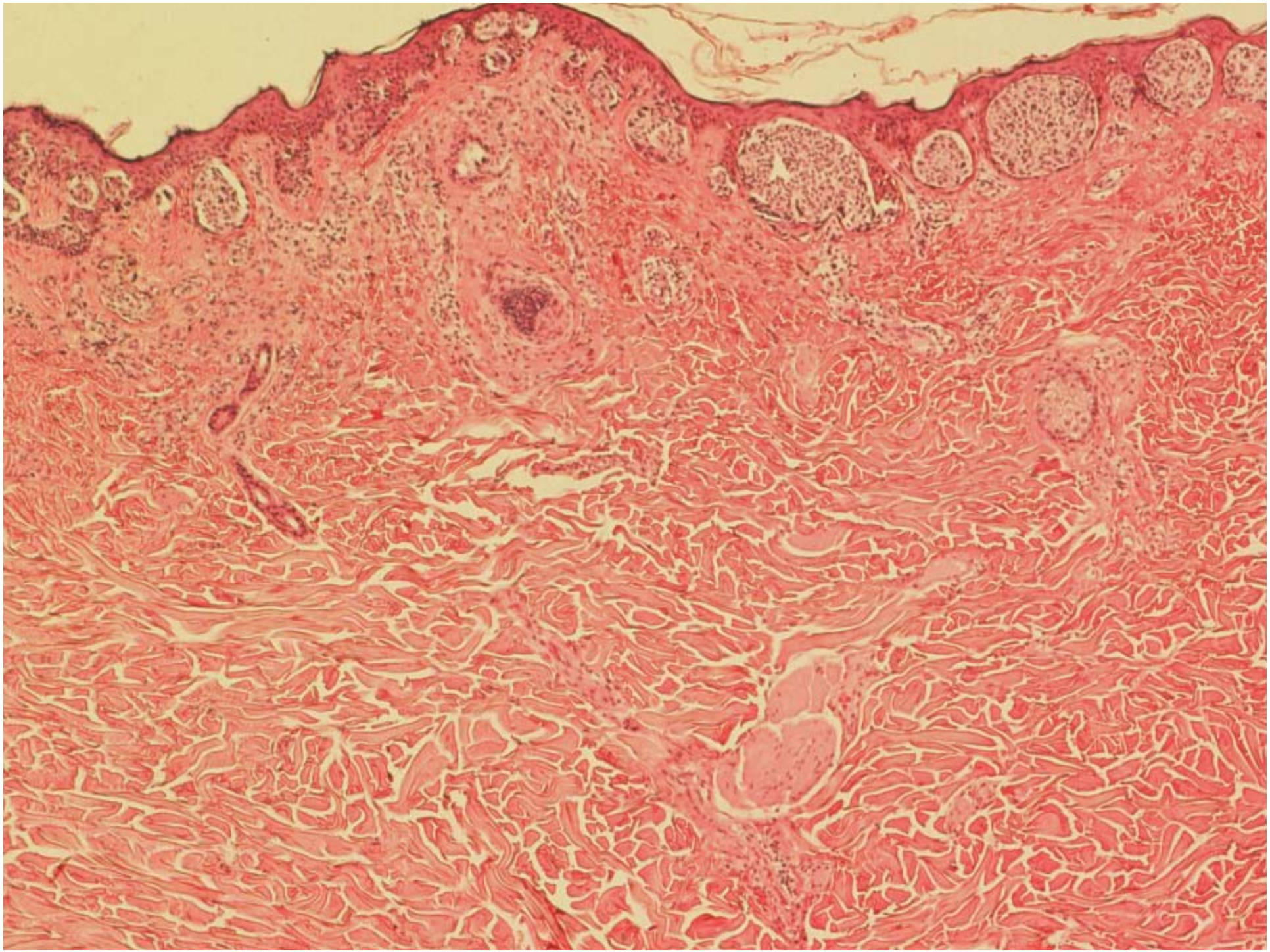
CRITERIA FOR MELANOCYTIC LESIONS

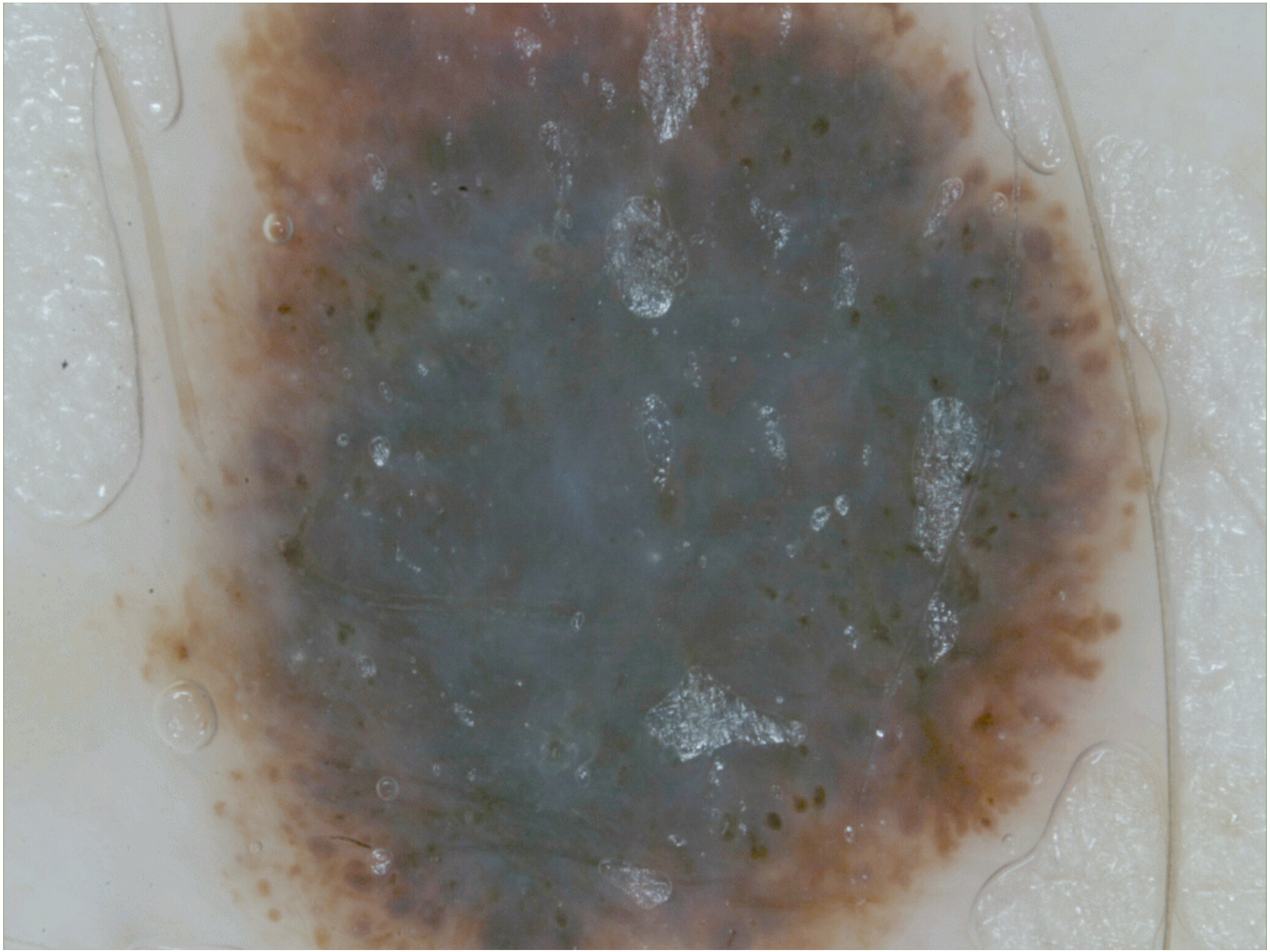
- pigment network
- aggregated globules

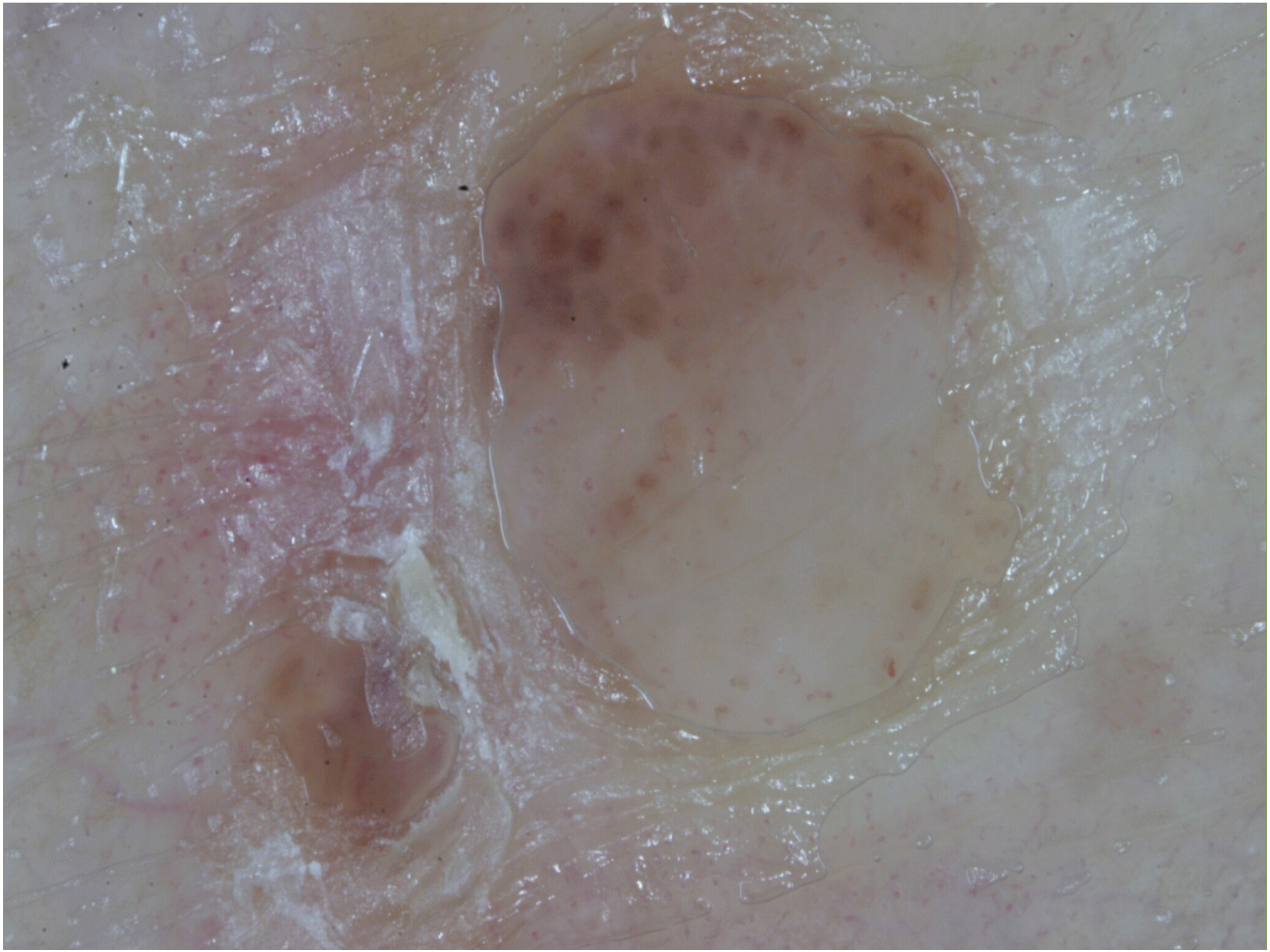
PIGMENT GLOBULES

- aggregated
- brown, slate-blue or black


DERMATO U.Z. GENT

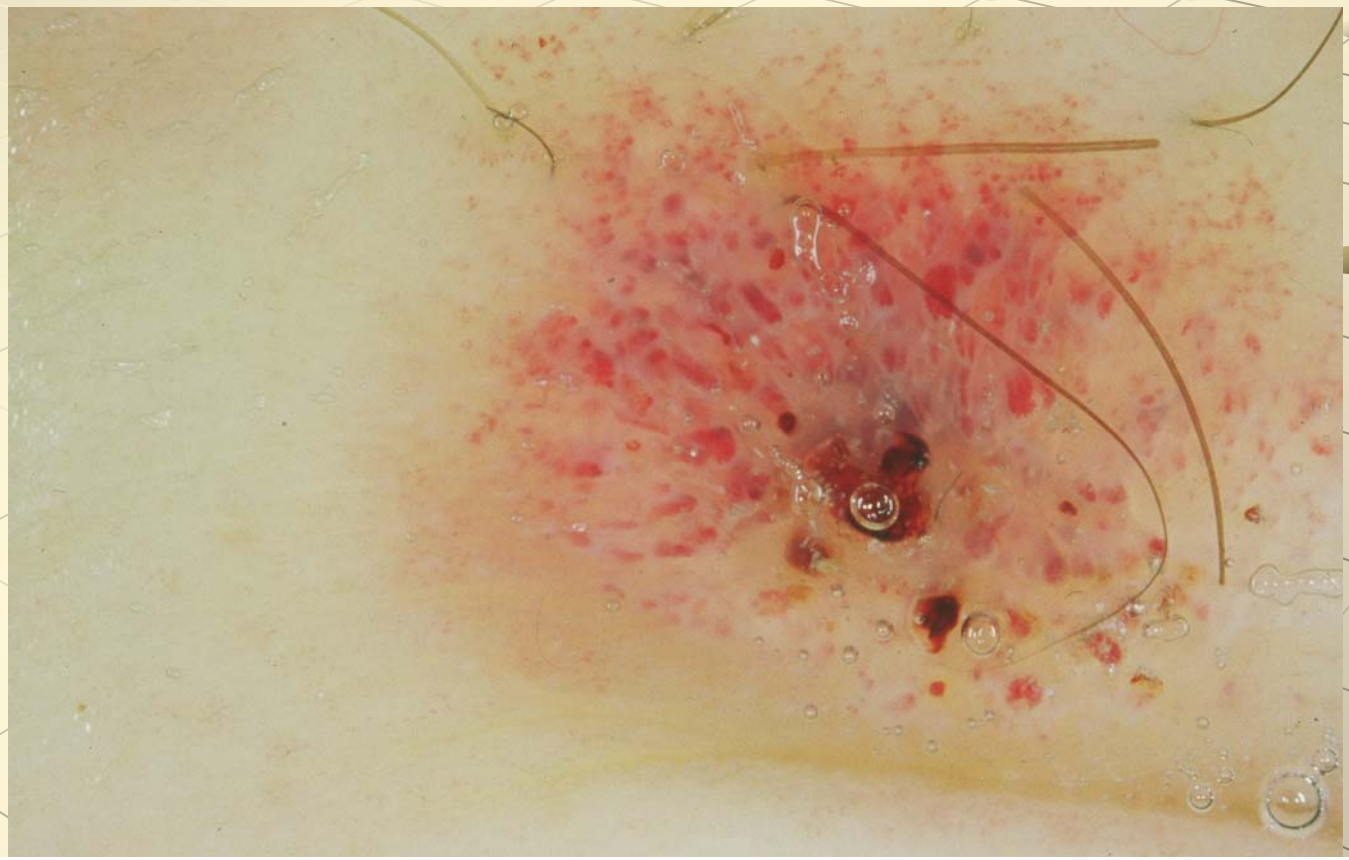






PIGMENT GLOBULES

≠ milky-red globules
(may be melanocytic or vascular)

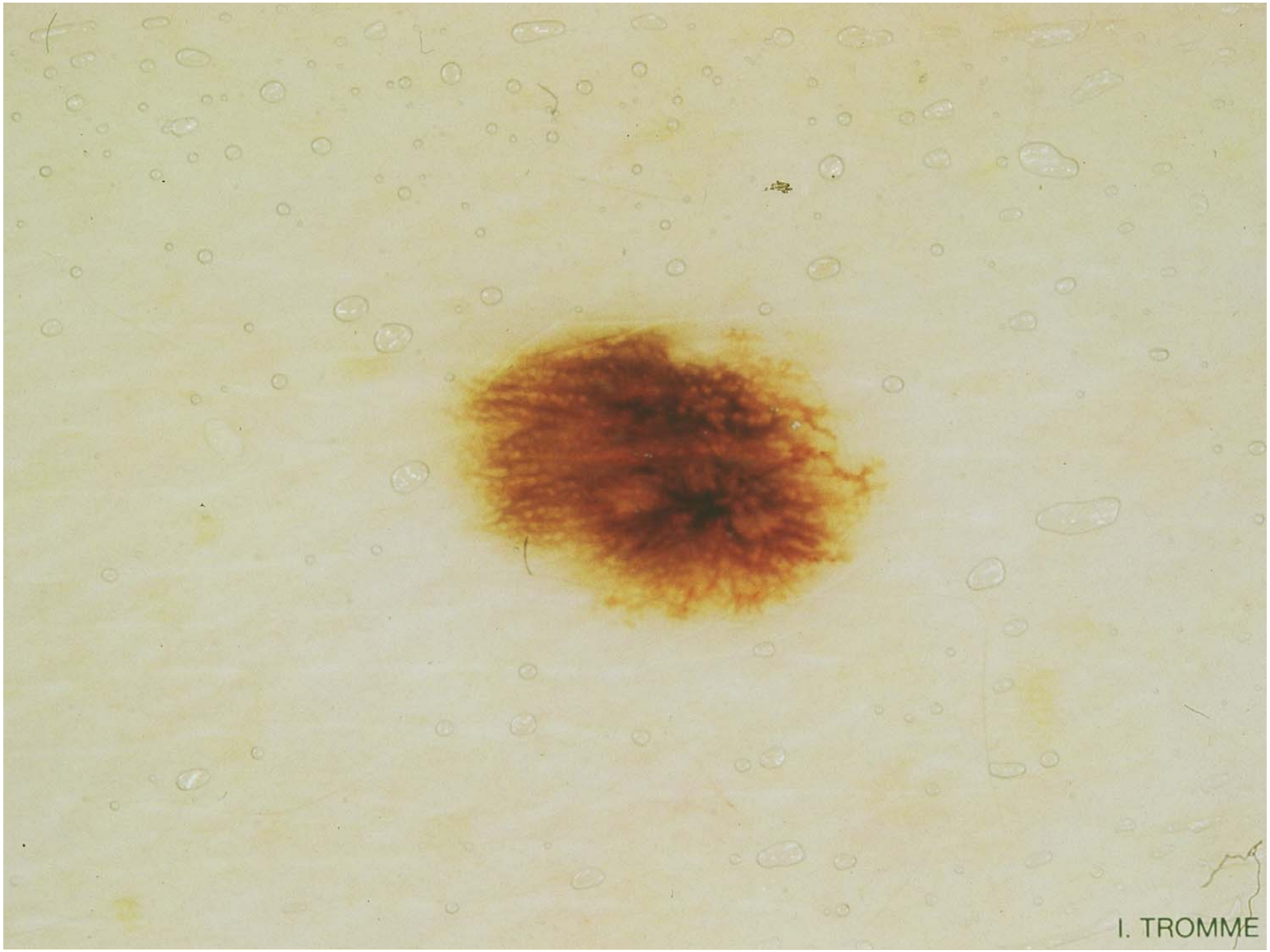


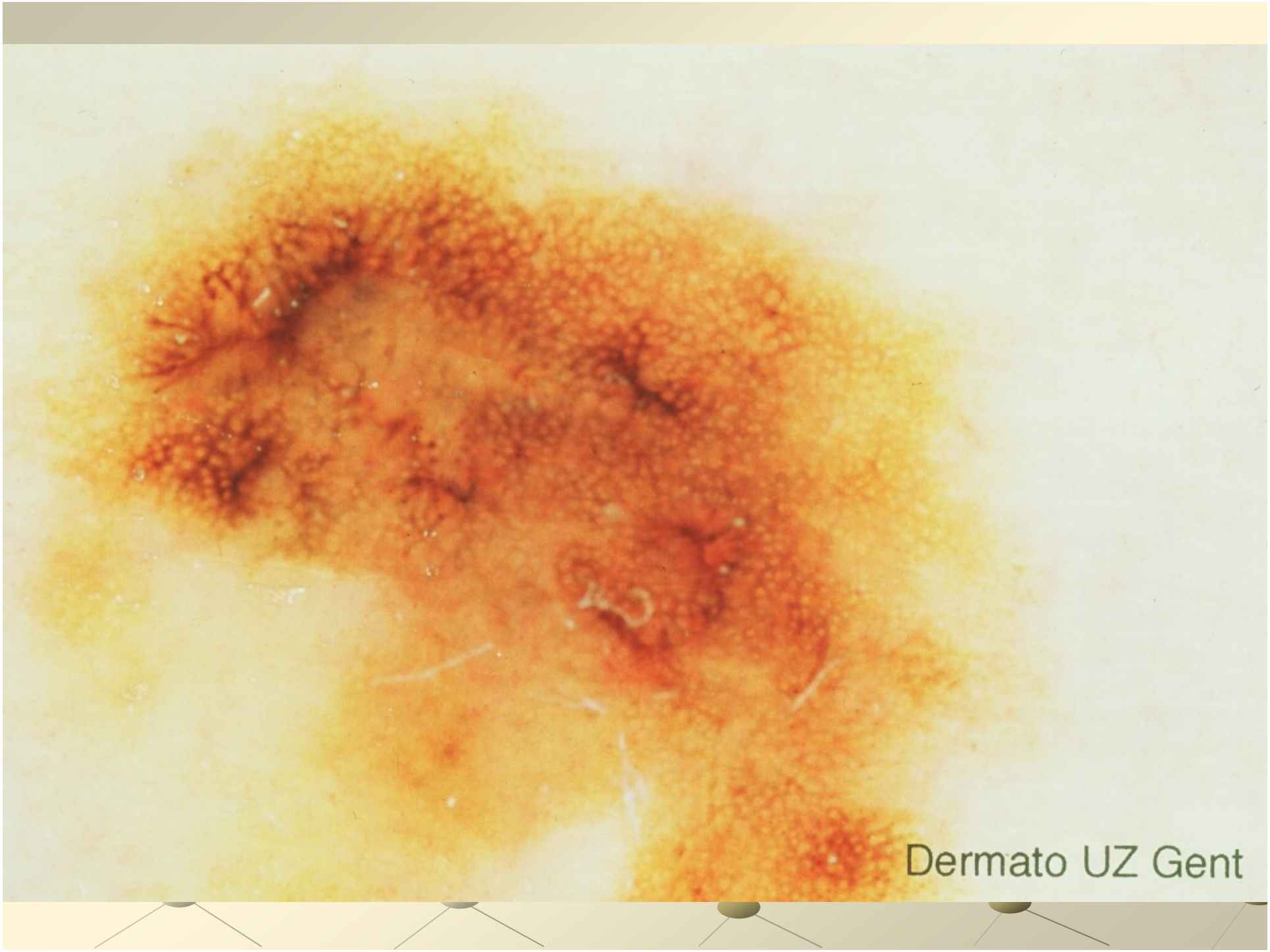
CRITERIA FOR MELANOCYTIC LESIONS

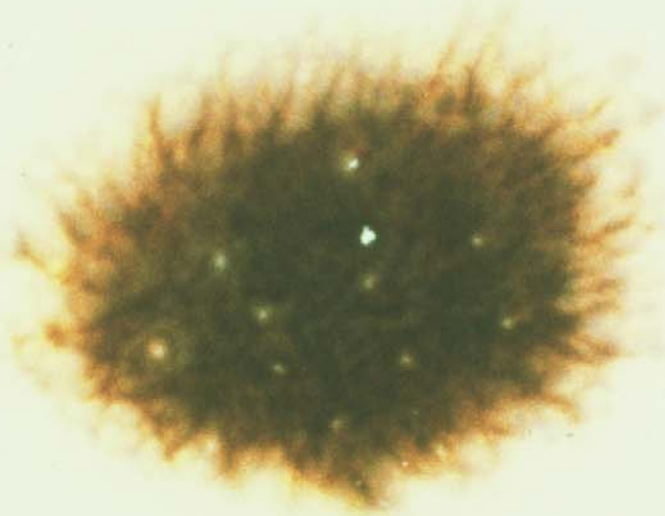
- pigment network
- aggregated globules
- branched streaks

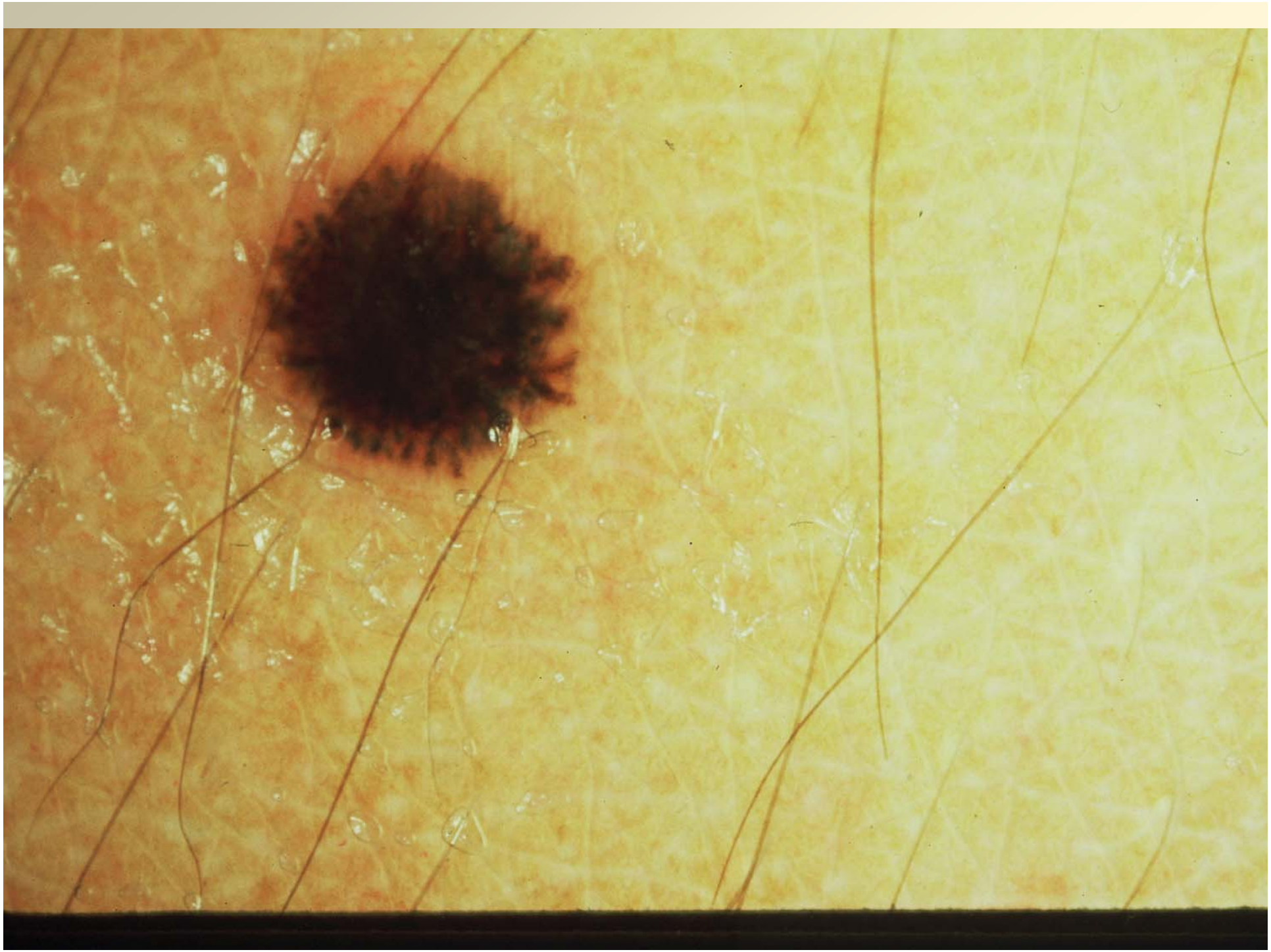
BRANCHED STREAKS

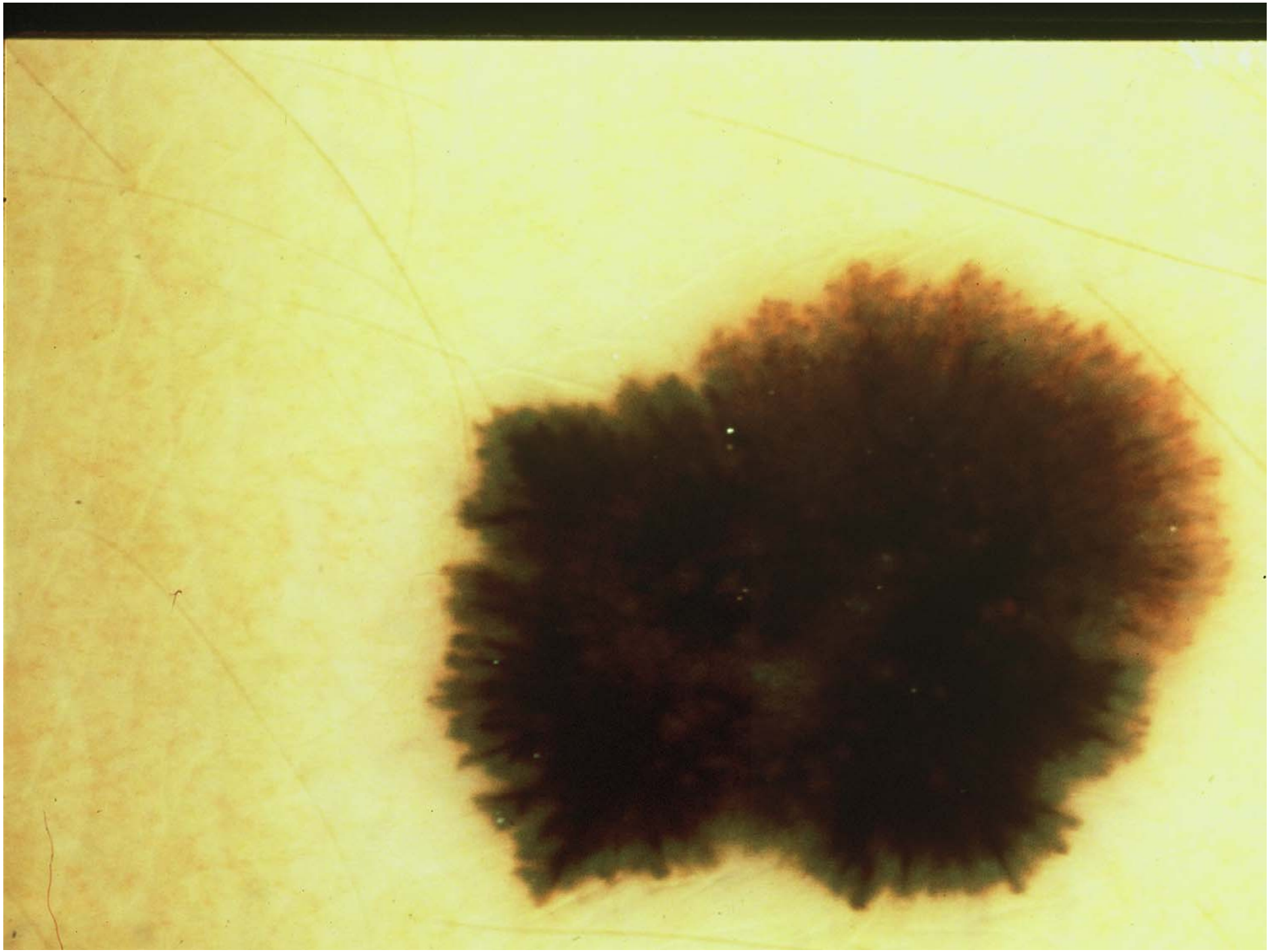
- branched
- brown, slate-blue or black


I. TROMME


Dermato UZ Gent







BRANCHED STREAKS

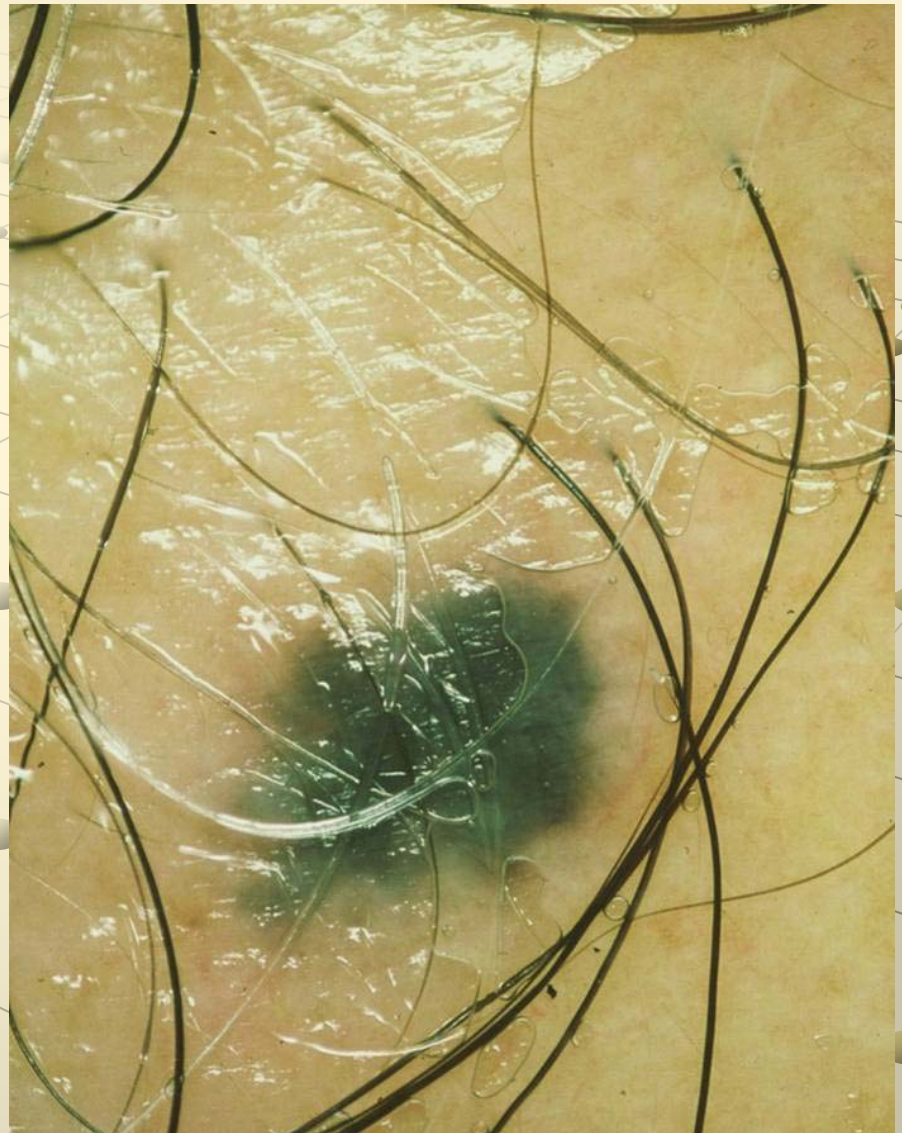
≠ pseudostreaks

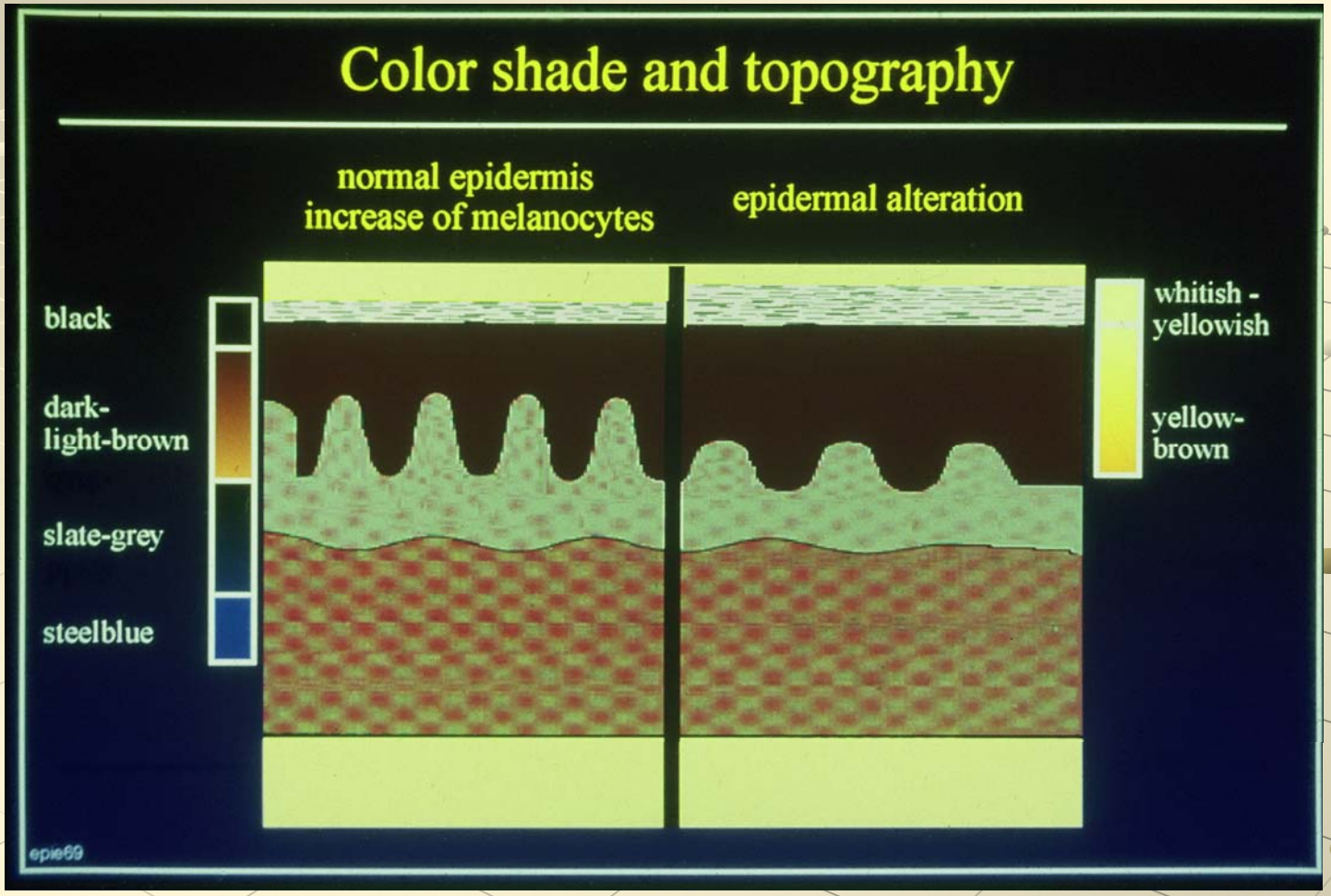
≠ capillary vessels

CRITERIA FOR MELANOCYTIC LESIONS

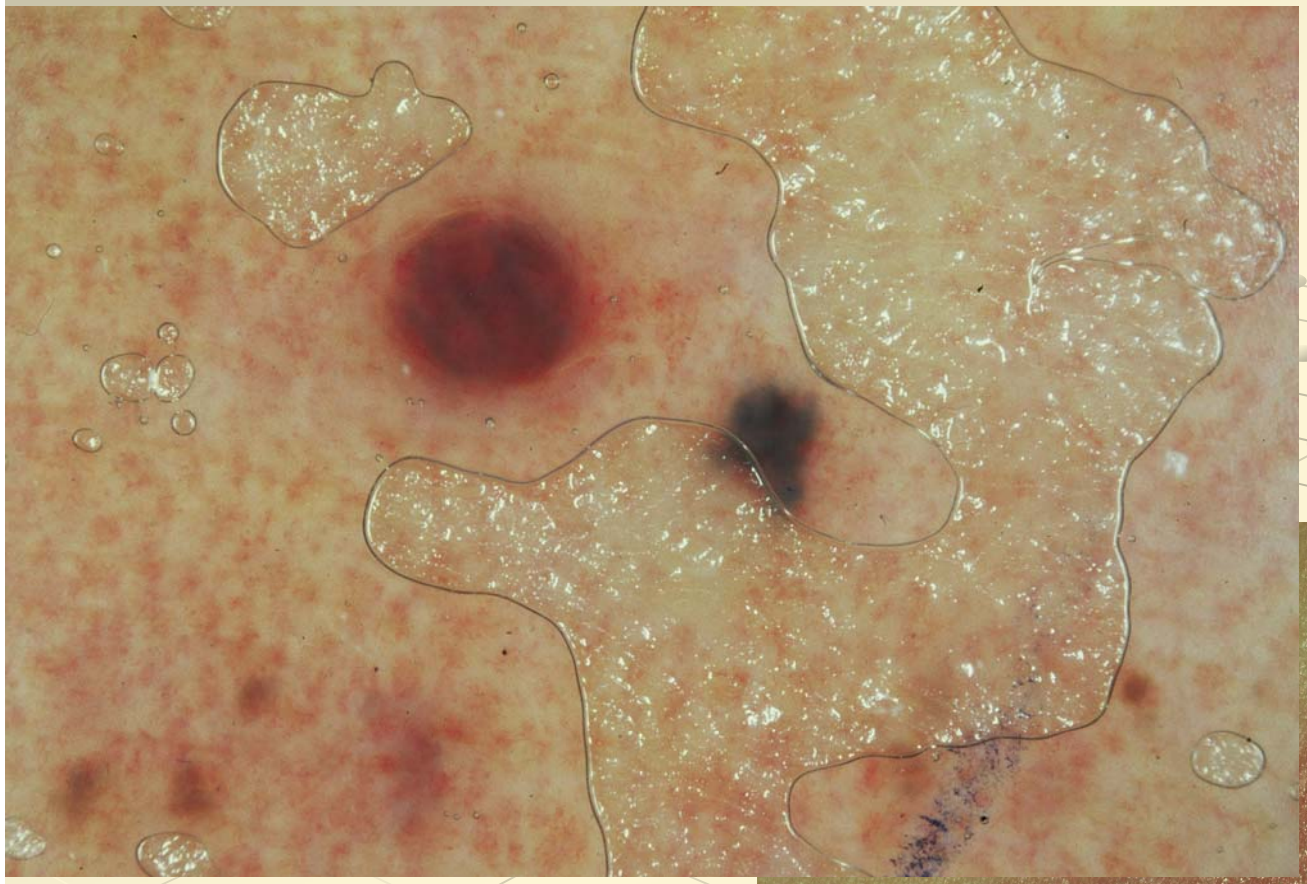
- pigment network
- aggregated globules
- branched streaks
- homogeneous blue pigmentation

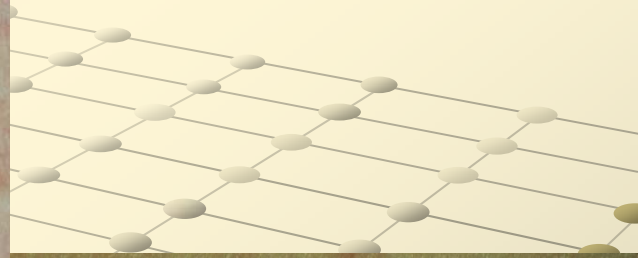
HOMOGENEOUS BLUE PIGMENTATION

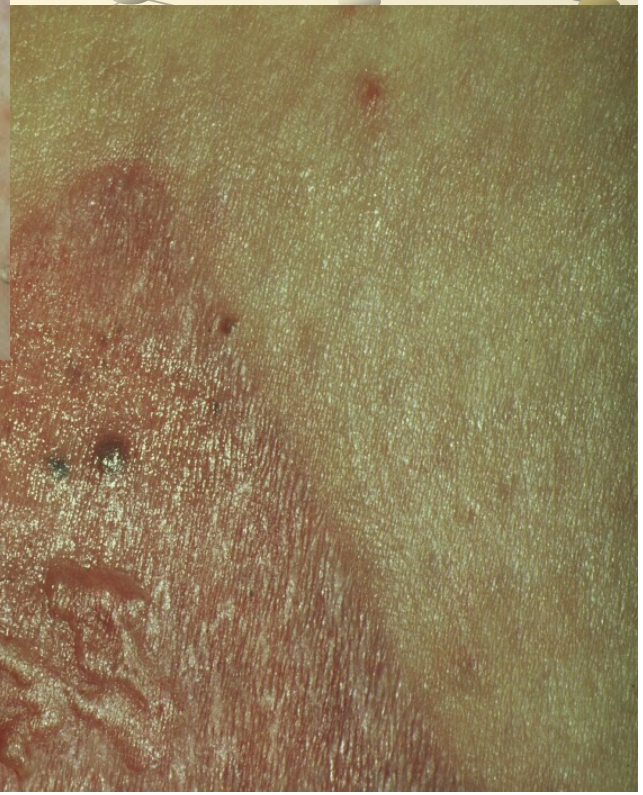


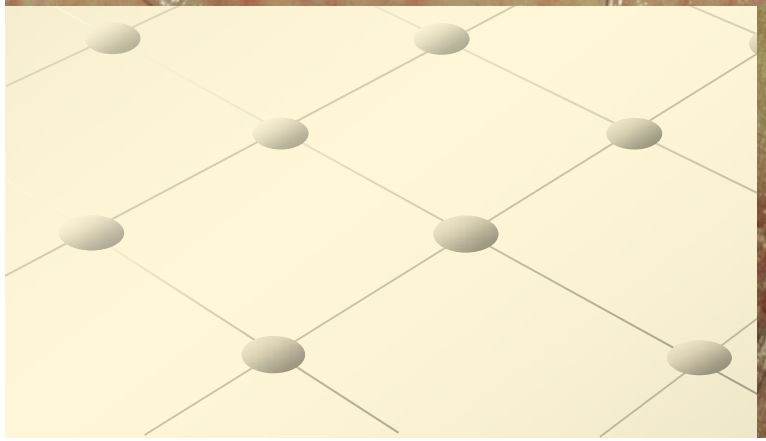

Color shade and topography
normal epidermis
increase of melanocytes
epidermal alteration
black
dark-
light-brown
slate-grey
steelblue
whitish -
yellowish
yellow-
brown
epie99

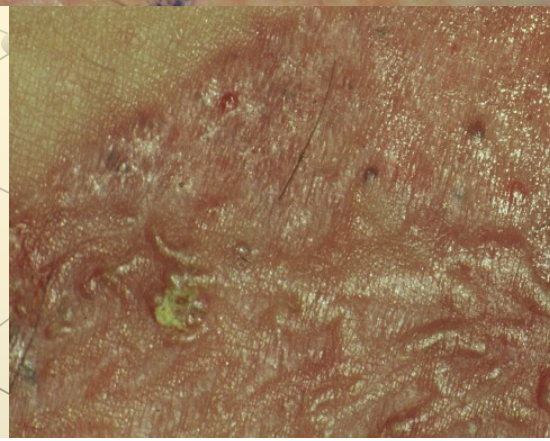
HOMOGENEOUS BLUE PIGMENTATION

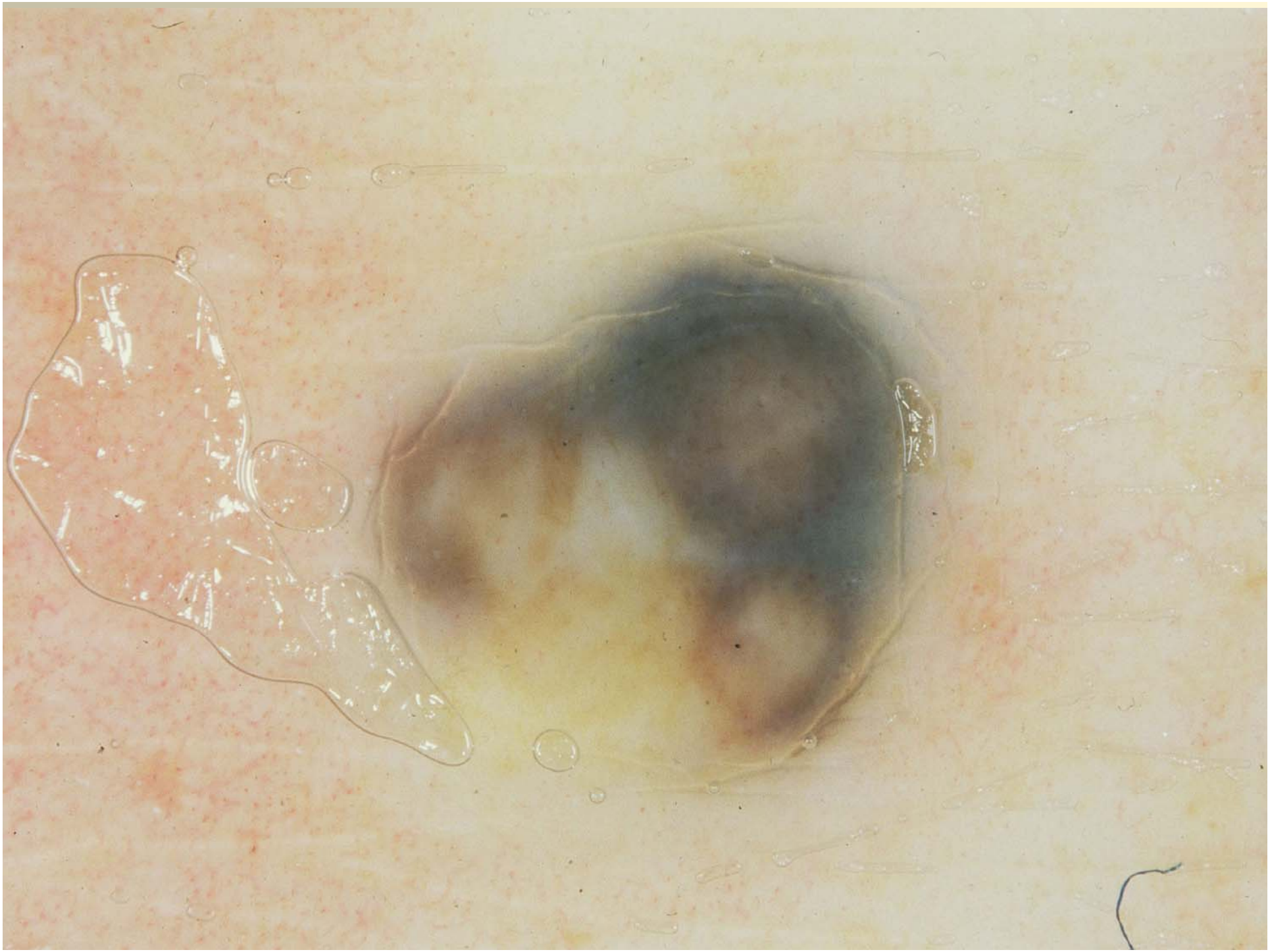




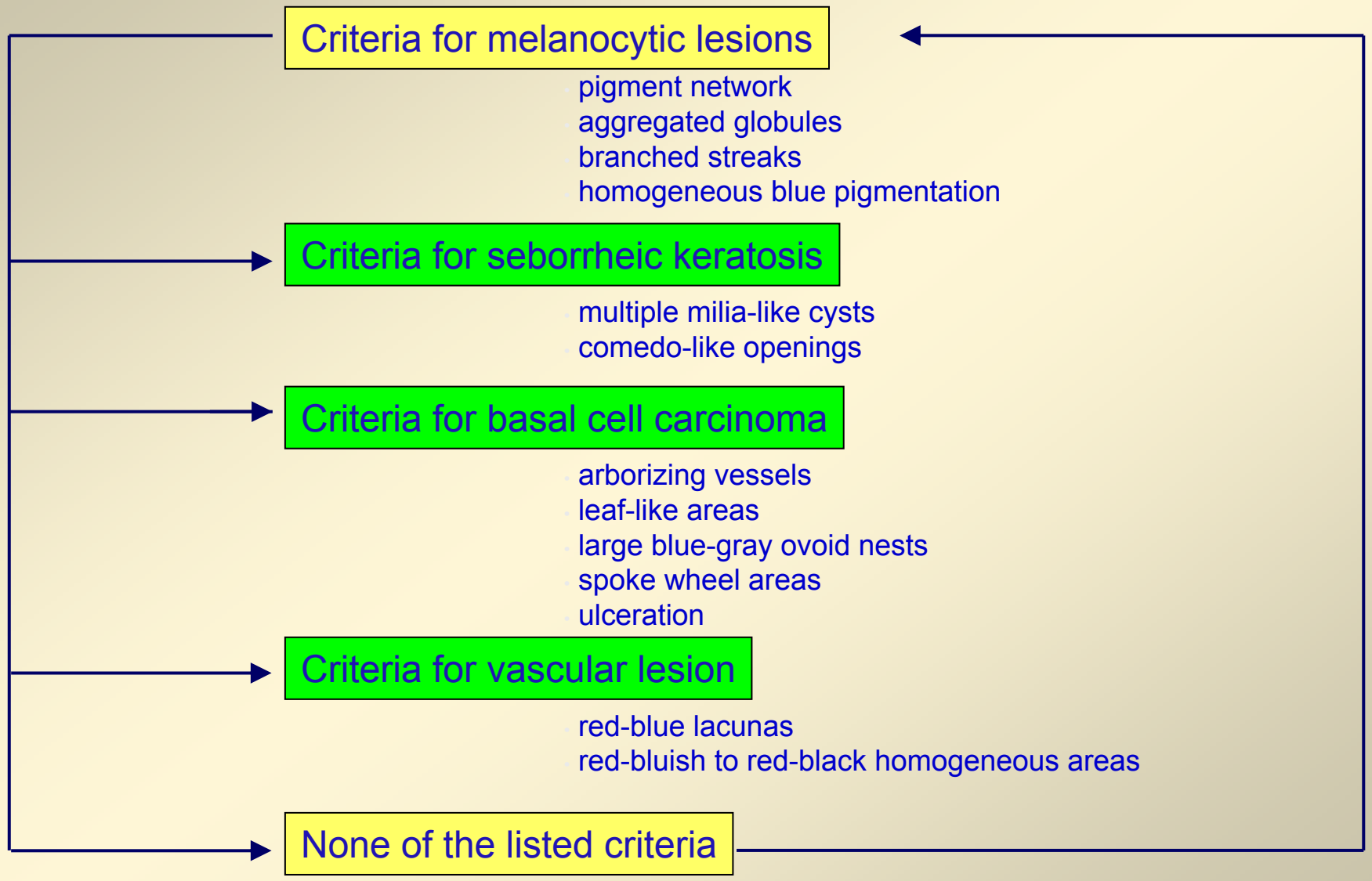








STEP 1


Criteria for melanocytic lesions
pigment network
aggregated globules
branched streaks
homogeneous blue pigmentation
Criteria for seborrheic keratosis
multiple milia-like cysts
comedo-like openings
Criteria for basal cell carcinoma
arborizing vessels
leaf-like areas
large blue-gray ovoid nests
spoke wheel areas
ulceration
Criteria for vascular lesion
red-blue lacunas
red-bluish to red-black homogeneous areas
None of the listed criteria

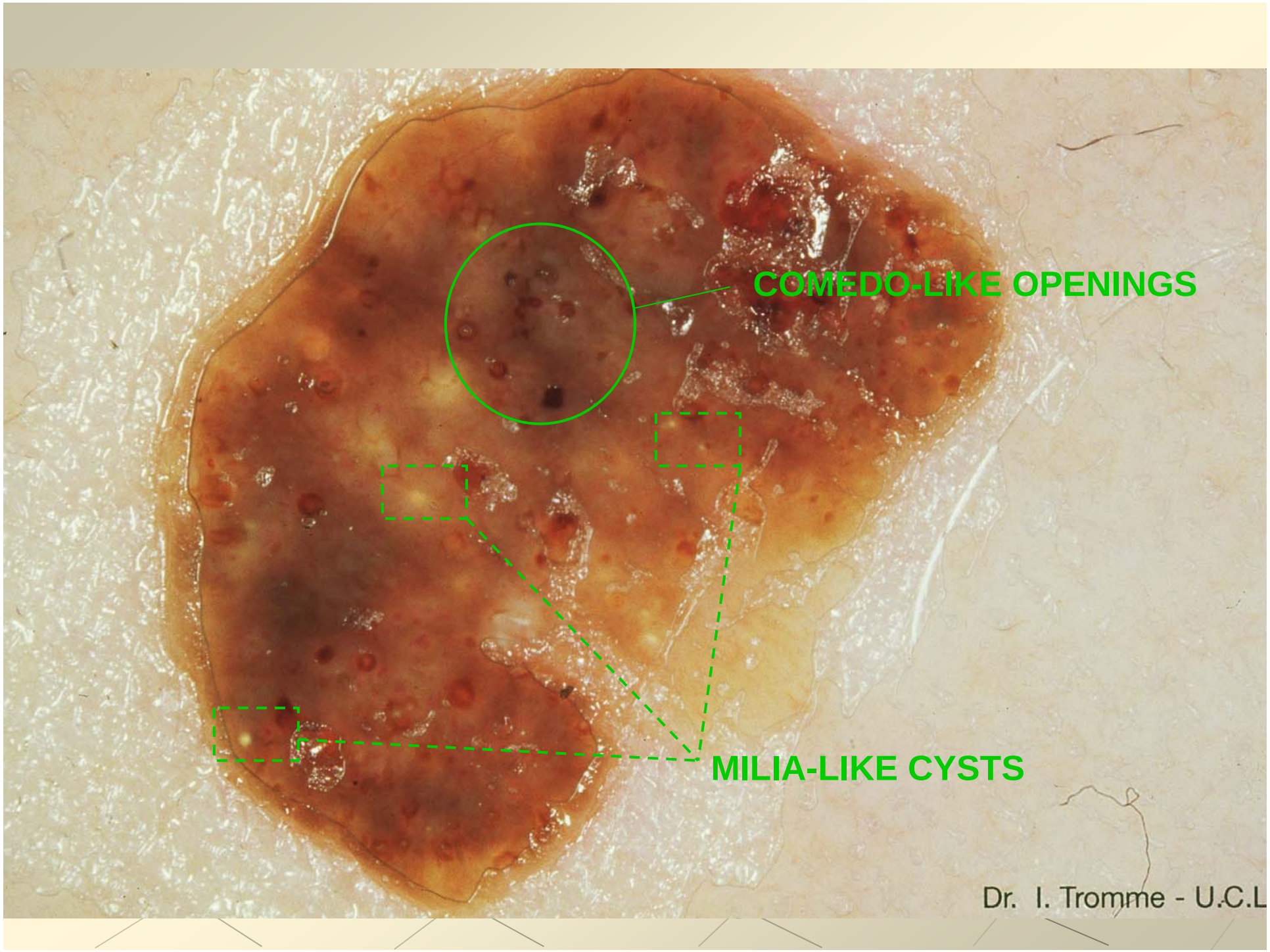
CRITERIA FOR NON-MELANOCYTIC LESIONS

- absence of characteristic structural components for pigmented melanocytic lesions
- essential prime criteria
- secondary criteria

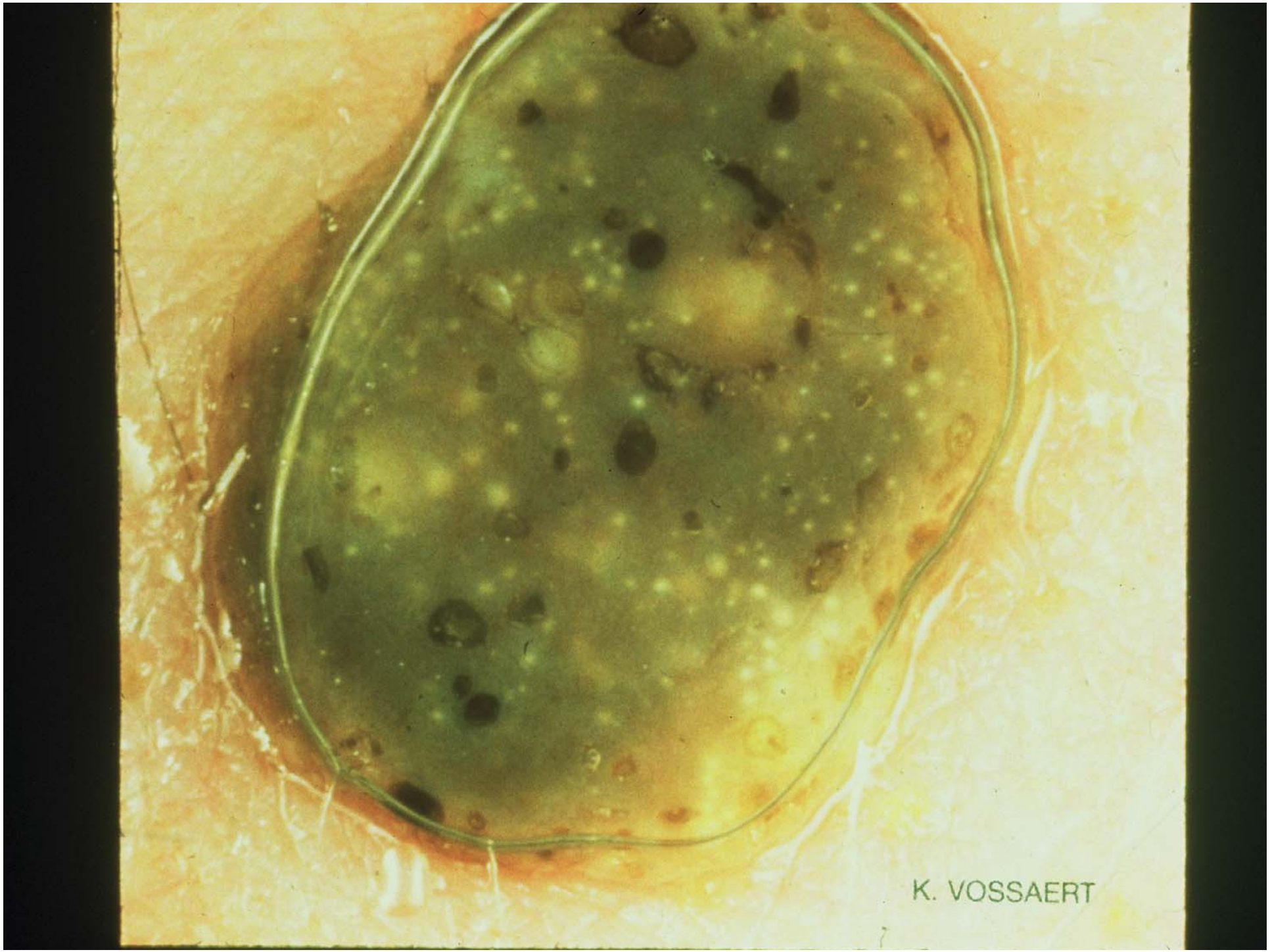
CRITERIA FOR SEBORRHEIC KERATOSIS

- absence of characteristic structural components for pigmented melanocytic lesions

- prime criteria:
  - pseudofollicular / comedo-like openings
  - horny pseudocysts / milia-like cysts

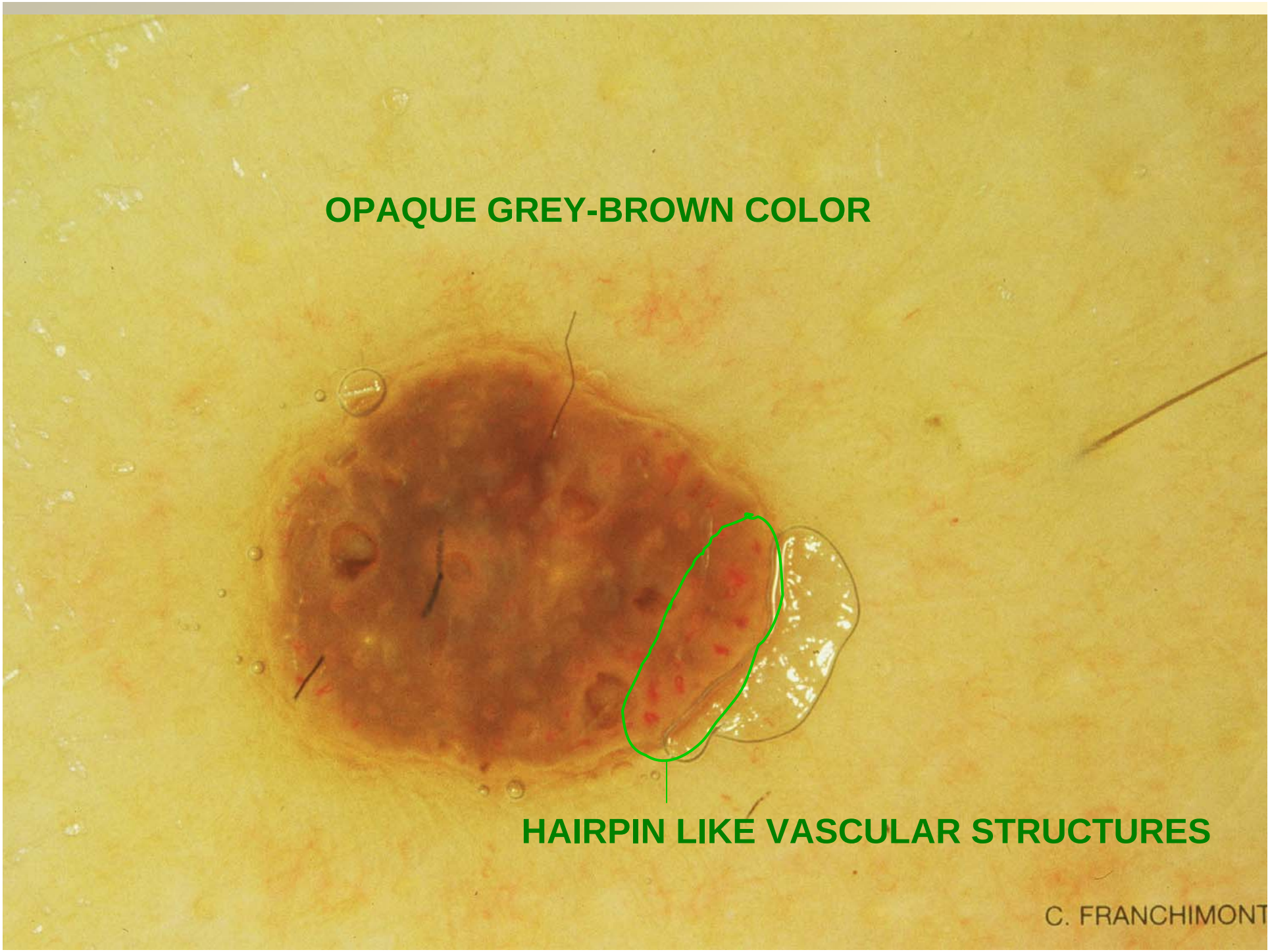

COMEDO-LIKE OPENINGS
MILIA-LIKE CYSTS
Dr. I. Tromme - U.C.L

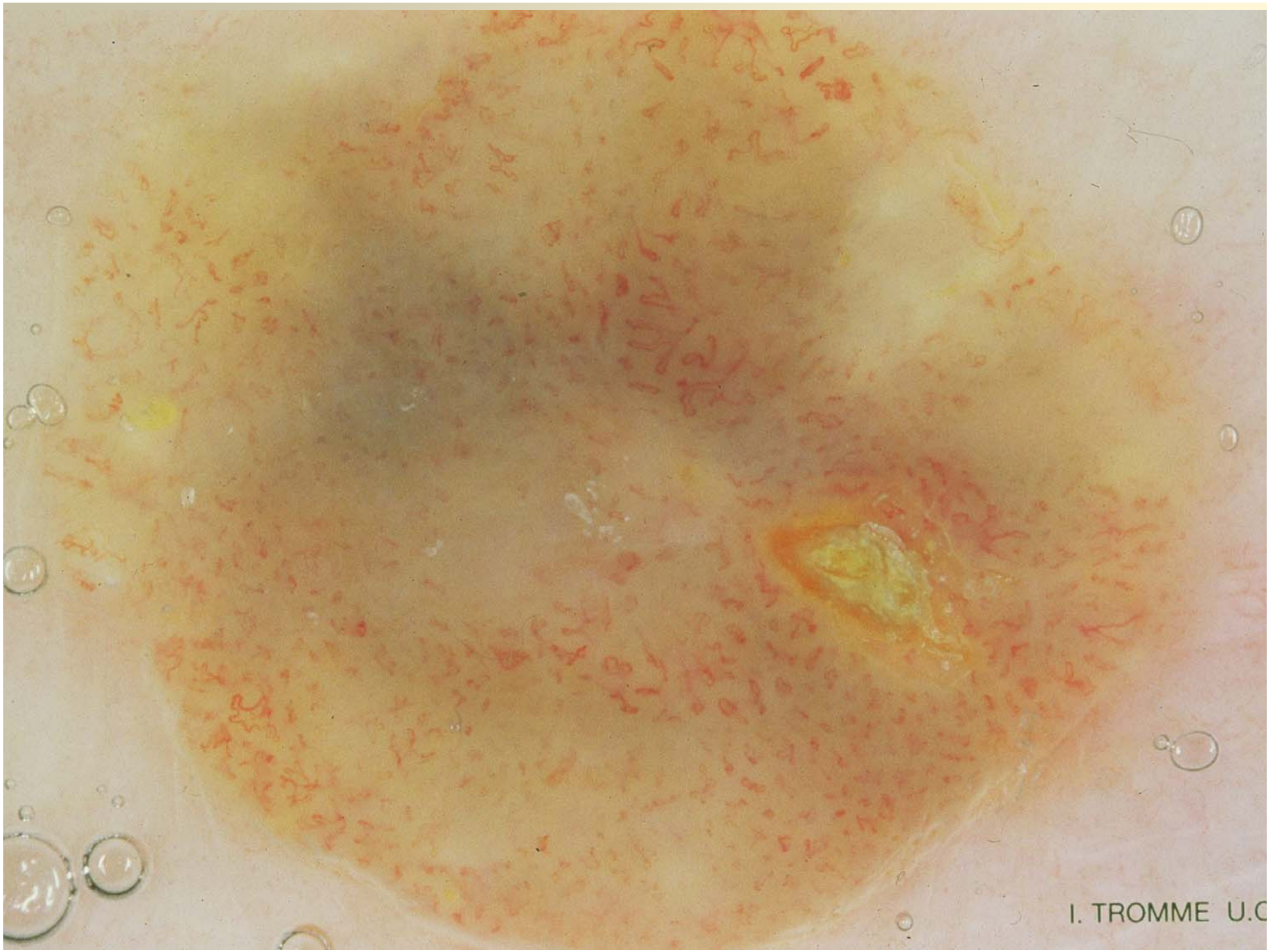

K. VOSSAERT

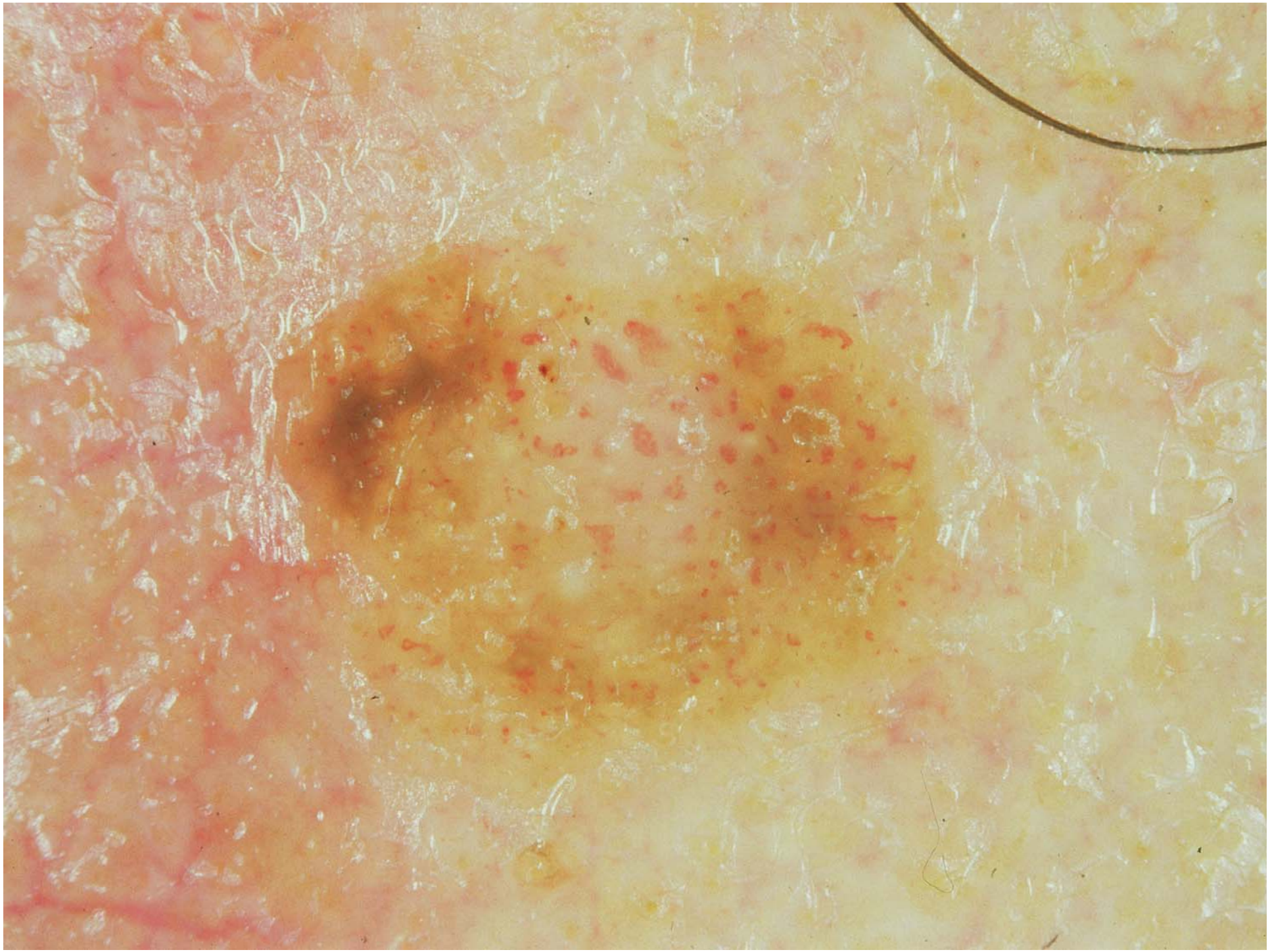

K. VOSSAERT

CRITERIA FOR SEBORRHEIC KERATOSIS

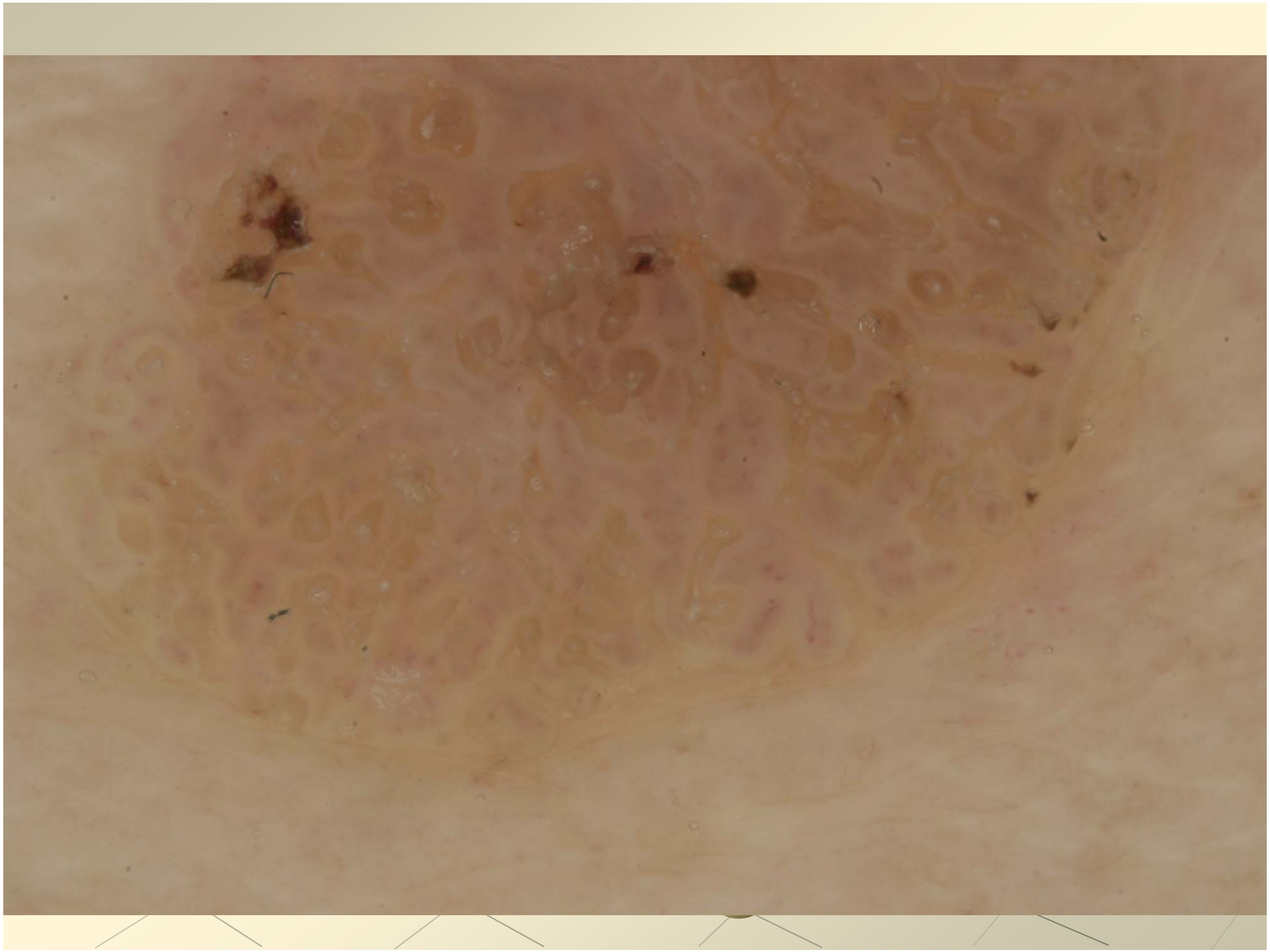
- secondary criteria:
  - opaque yellow-brown to grey-brown color
  - sharply demarcated hairpin like vascular structures
  - light-brown fingerprint-like structures
  - fissures / ridges (brain-like appearance)


OPAQUE GREY-BROWN COLOR
HAIRPIN LIKE VASCULAR STRUCTURES
C. FRANCHIMONT


I. TROMME U.C




BRAIN-LIKE APPEARANCE



CRITERIA FOR PIGMENTED BASAL CELL CARCINOMA

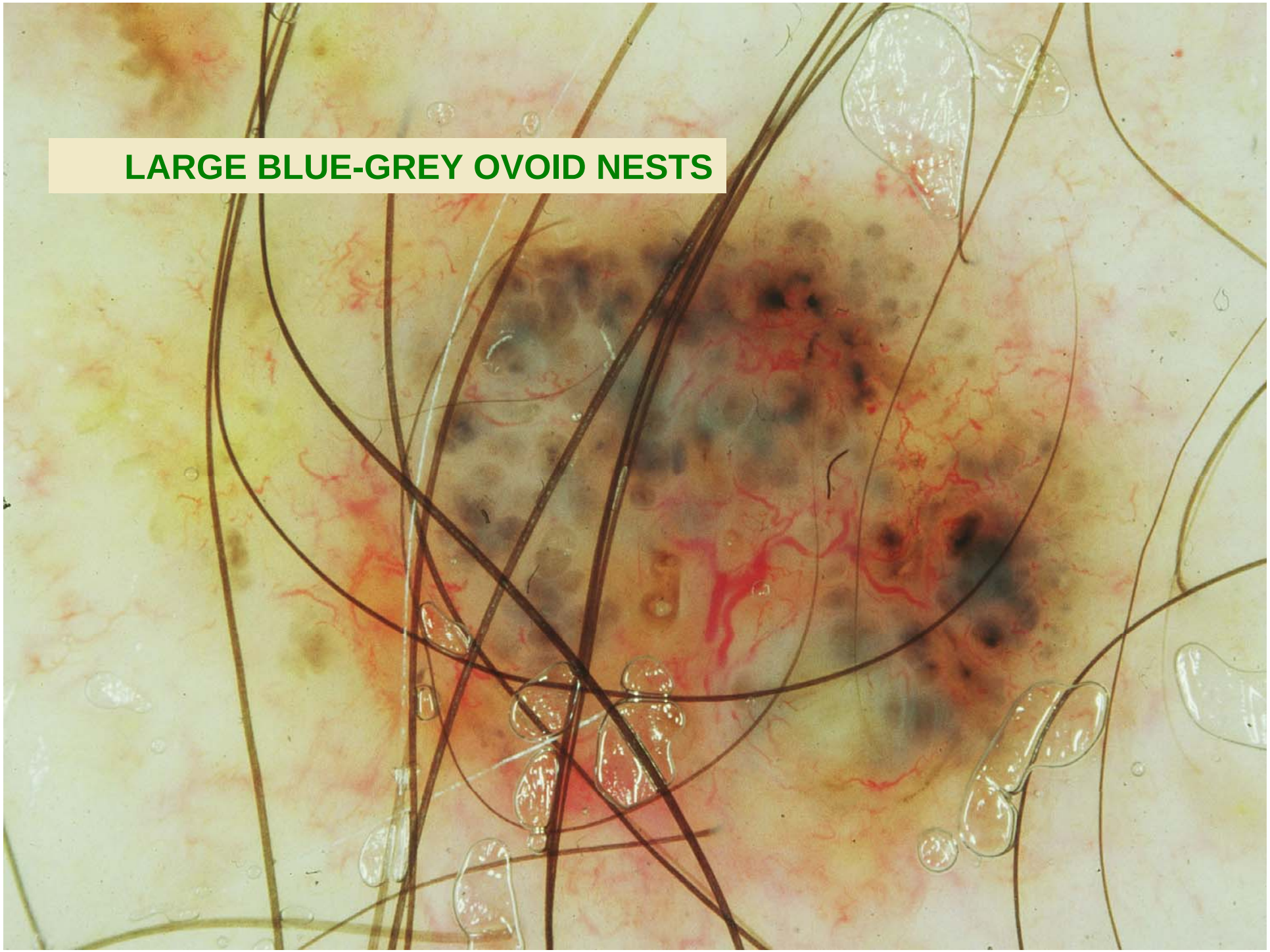
- absence of characteristic structural components for pigmented melanocytic lesions

- prime criteria:
  - tumor nodules at the periphery: maple-leaf like, large blue-grey ovoid nests
  - arborizing vessels

MAPLE-LEAF LIKE STRUCTURES


Dr. I. Tromm

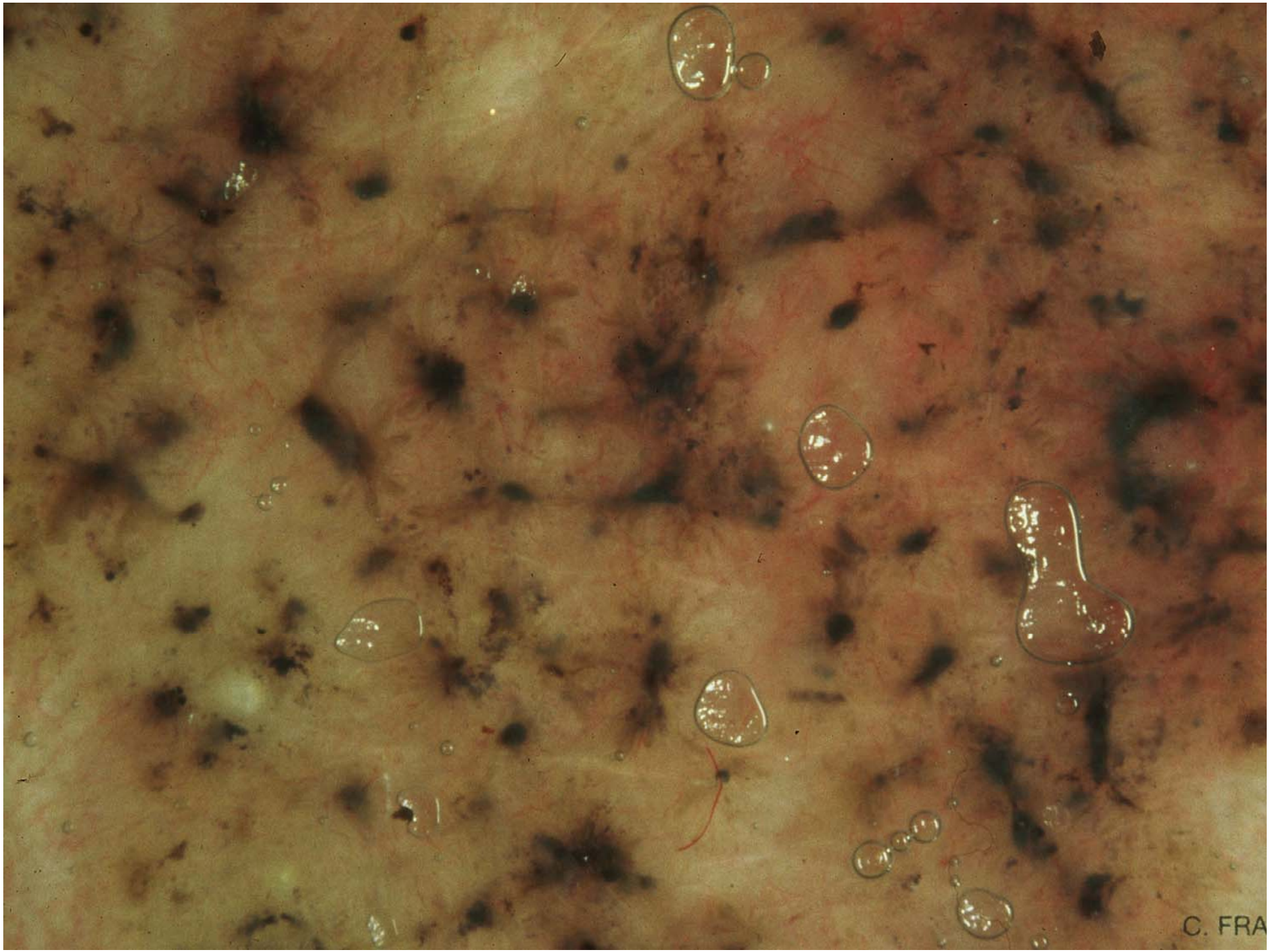

ARBORIZING VESSELS
Dr. I. Trom


LARGE BLUE-GREY OVOID NESTS


Dr. I. Tromme - U.C.L.

CRITERIA FOR PIGMENTED BASAL CELL CARCINOMA

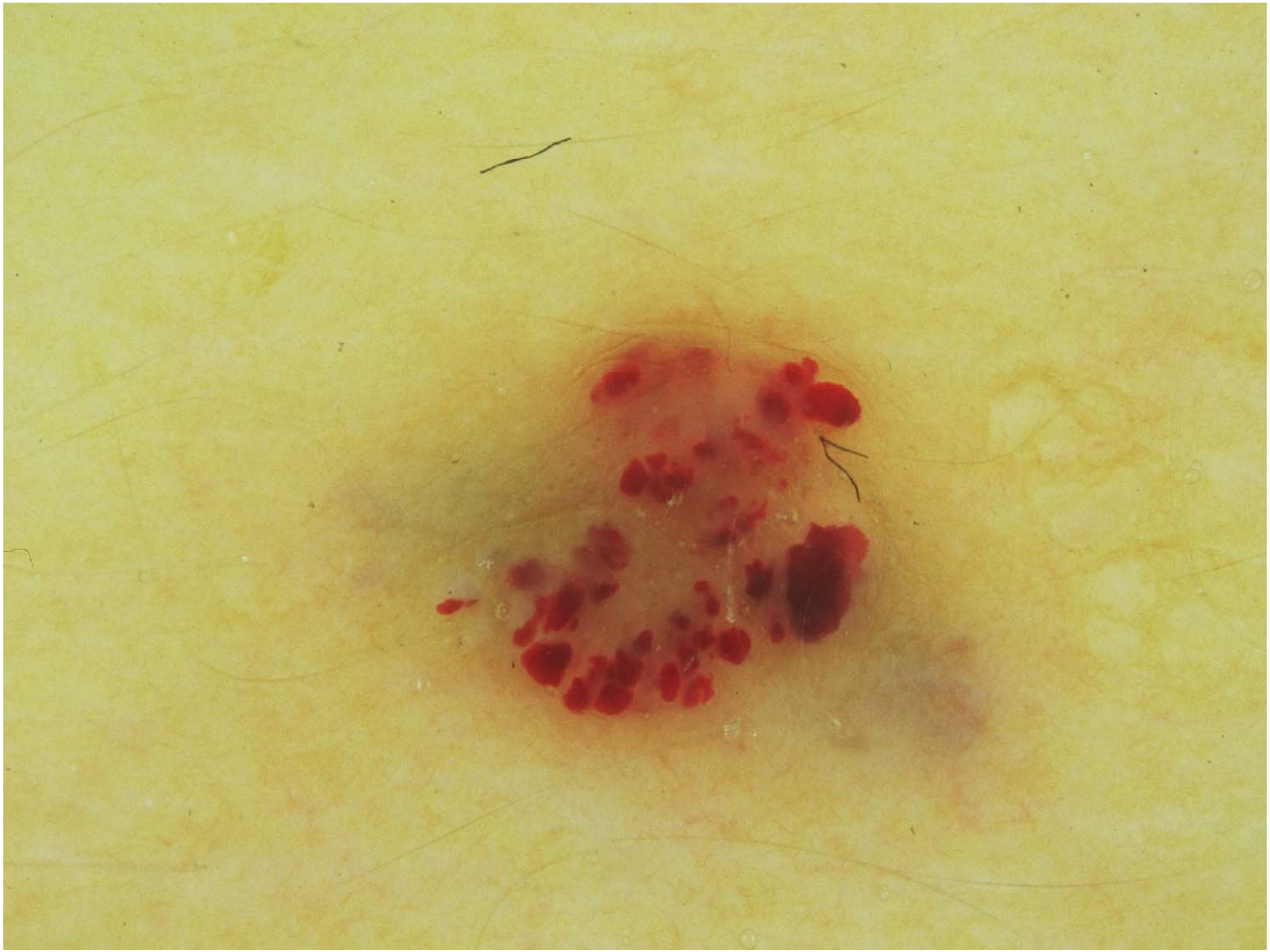
- secondary criteria:
  - spook wheel areas
  - ulceration


C. FRA

CRITERIA FOR VASCULAR STRUCTURES

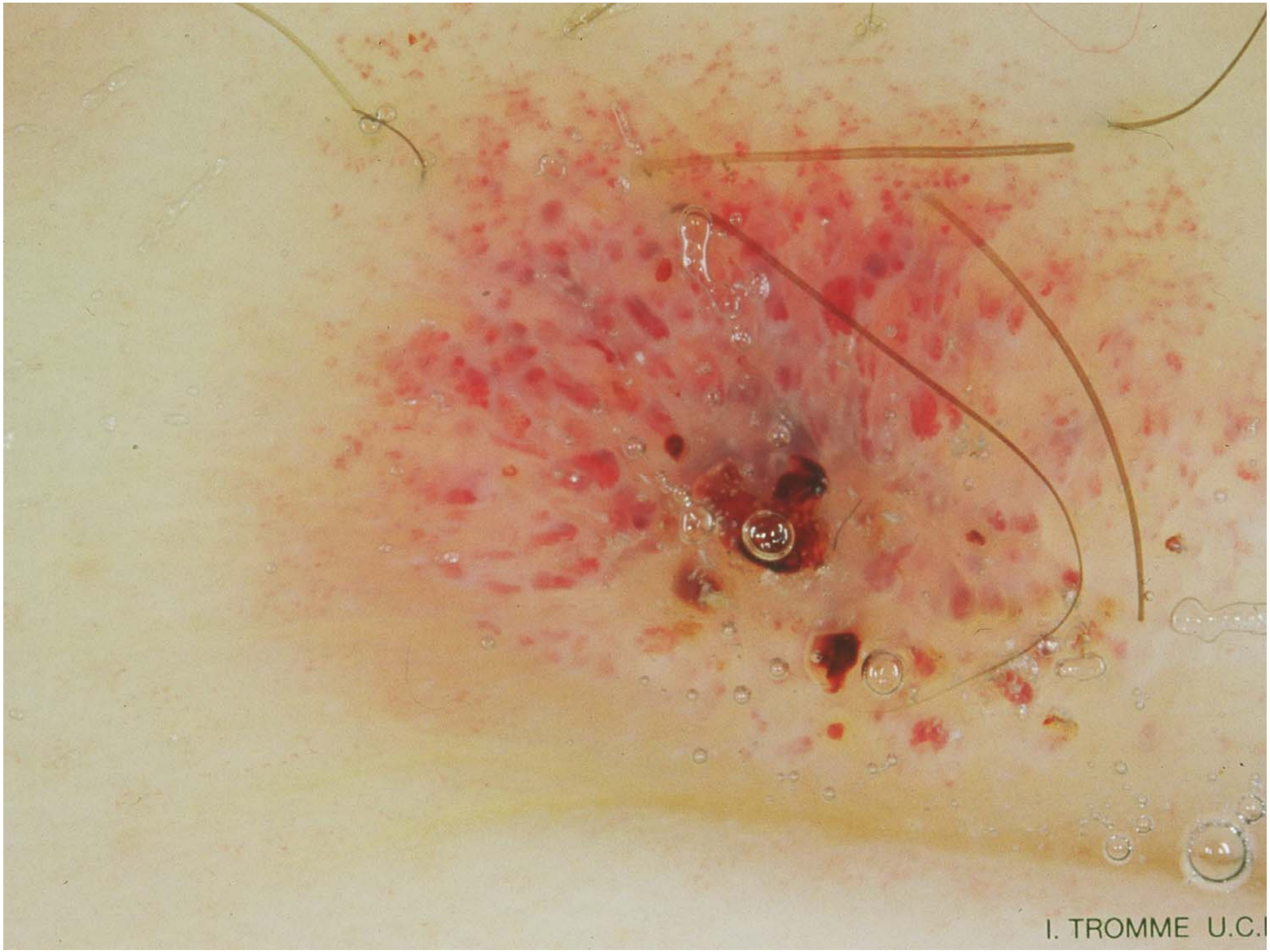
- absence of characteristic structural components for pigmented melanocytic lesions

- prime criteria:
  - demarcated red, blue or red-black lagoons



CRITERIA FOR VASCULAR STRUCTURES

- secondary criteria:
  - hemorragic crusts ≠ pigment globules
  - translucent jelly-like border and central white areas in angiokeratoma


I. TROMME U.C.

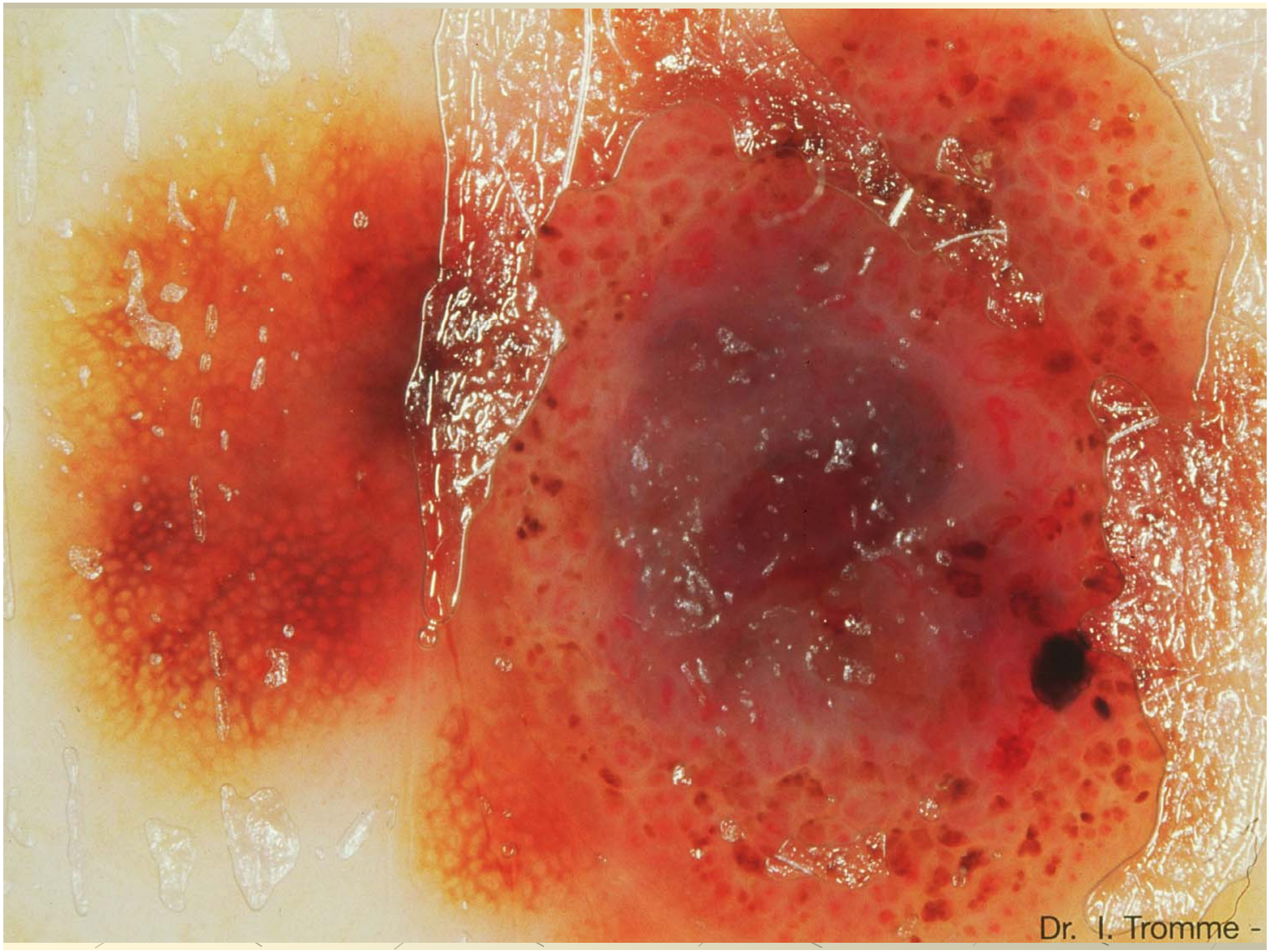
CAUTION

- milky-red areas without distinct borders or lagoon-like structures

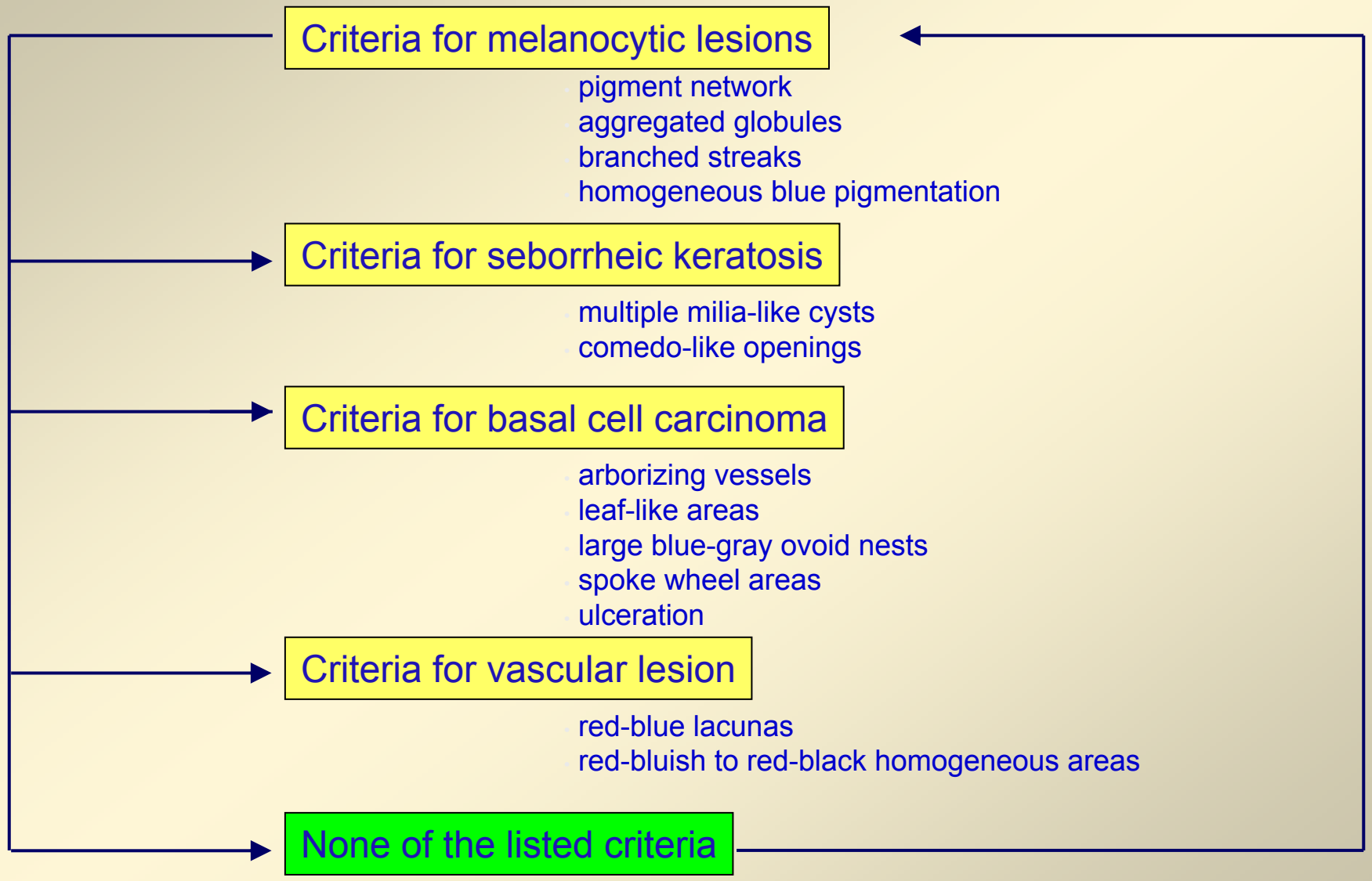
CAVE *malignant vascular tumor e.g. angiosarcoma*

- milky-red globules with adjacent brown areas

CAVE *malignant melanoma*


Dr. I. Tromme -

STEP 1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multiple milia-like cysts
comedo-like openings
Criteria for basal cell carcinoma
arborizing vessels
leaf-like areas
large blue-gray ovoid nests
spoke wheel areas
ulceration
Criteria for vascular lesion
red-blue lacunas
red-bluish to red-black homogeneous areas
None of the listed criteria

STEP 2

Pattern analysis
according to Pehamberger et al. 1993

ABCD rule
Stolz et al. 1994

Menzies' scoring method
Menzies et al. 1996

7-point checklist
Argenziano et al. 1998

STEP 2

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according to Pehamberger et al. 1993

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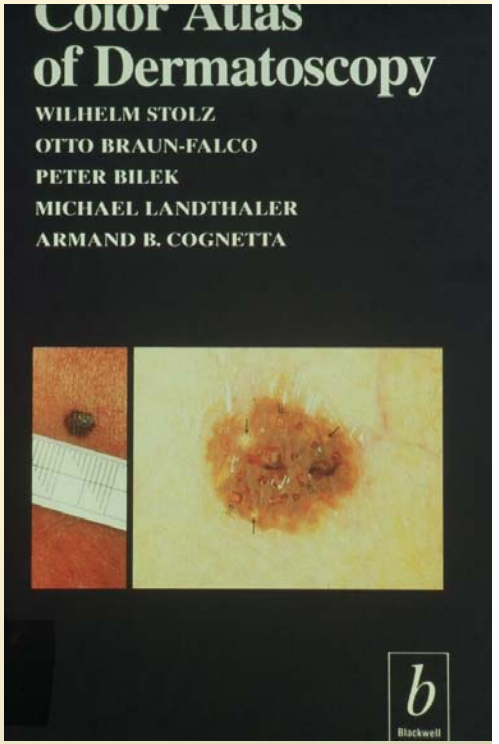


ABCD - RULE OF DERMATOSCOPY

		SCORE
A SYMMETRY	in zero, one or two axes color, texture, shape	0 - 2
B ORDER	abrupt cut-off of pigment pattern in 0 - 8 segments	0 - 8
C OLOR	presence of up to 6 colors (white, red, light-brown, dark-brown, slate-blue, black)	1 - 6
D ERMATOSCOPIC STRUCTURES	precence of network, structureless areas, dots, globules, and streaks	1 - 5

Asymmetry x 1.3

+

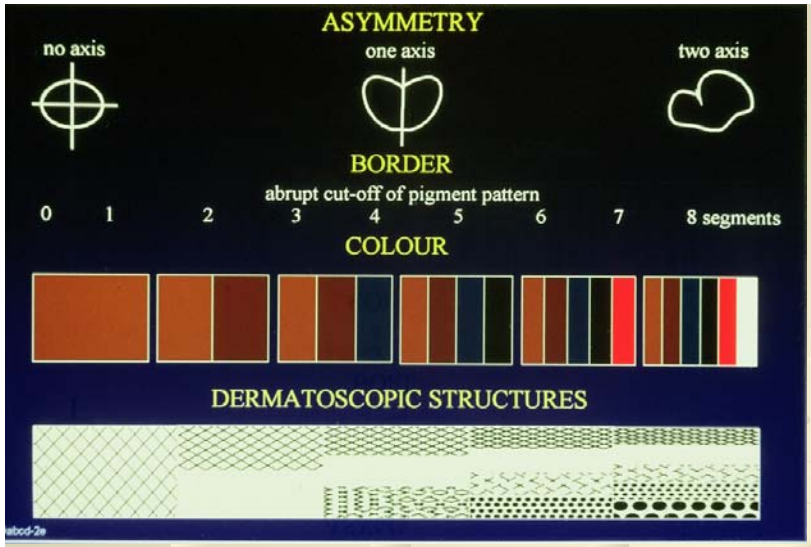
Border x 0.1

+

Color x 0.5

+

Dermatoscopic structures x 0.5

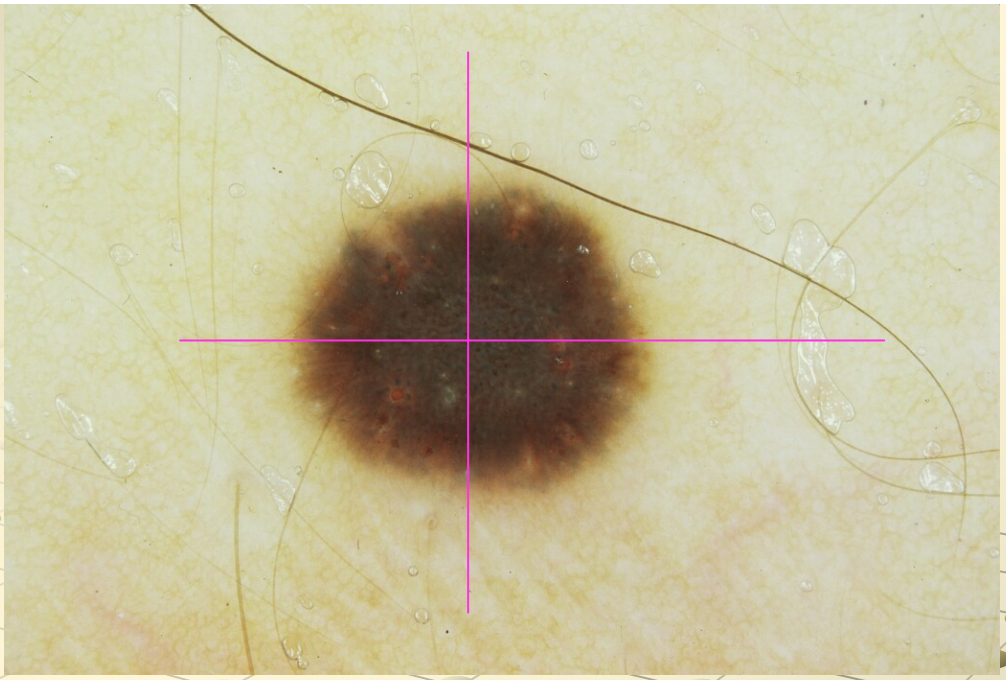


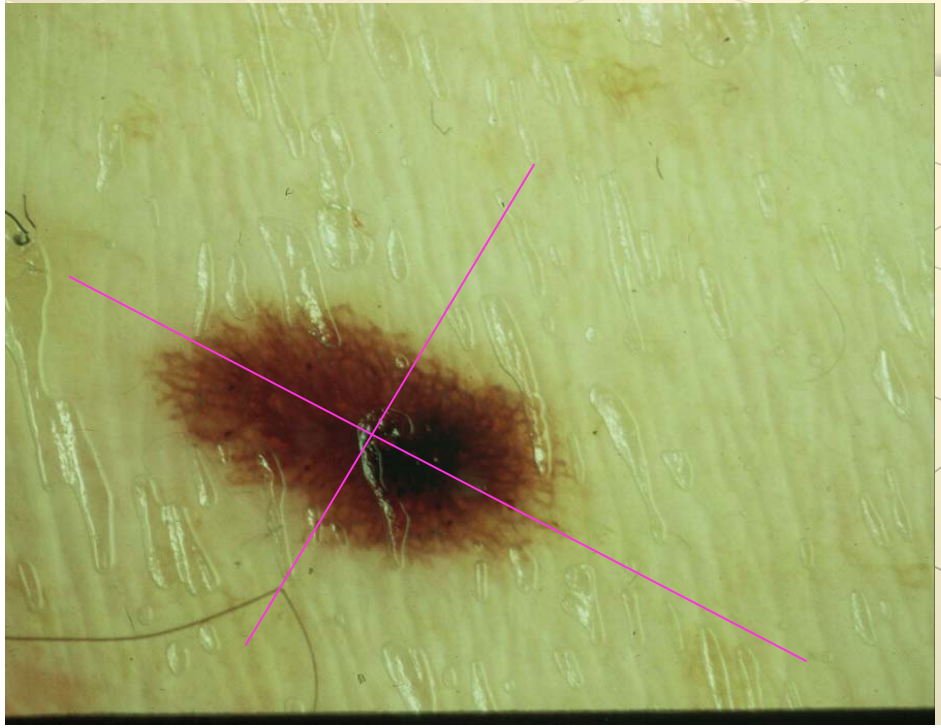
Dermatoscopy score:

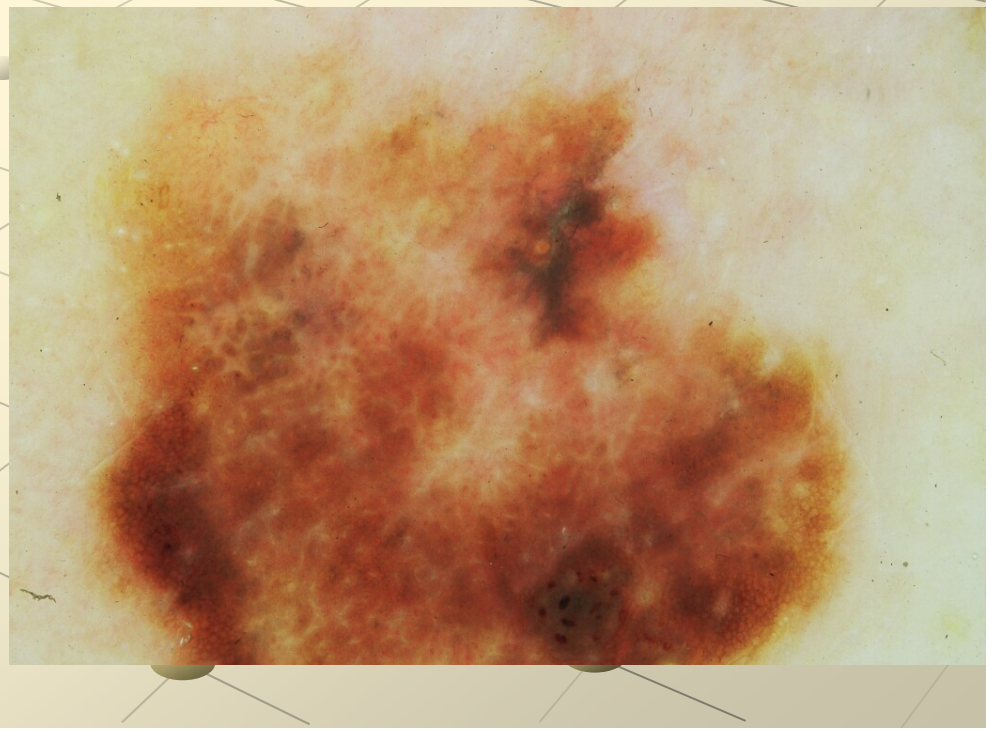
< 4.75: *benign melanocytic lesion*
4.8 - 5.45: *suspicious lesion*
> 5.45: *highly suggestive for melanoma*

	Benign	Malignant
A	*less*	*more*
B	*ill-defined*	*abrupt*
C	*less*	*more*
D	*less*	*more*

Asymmetrie

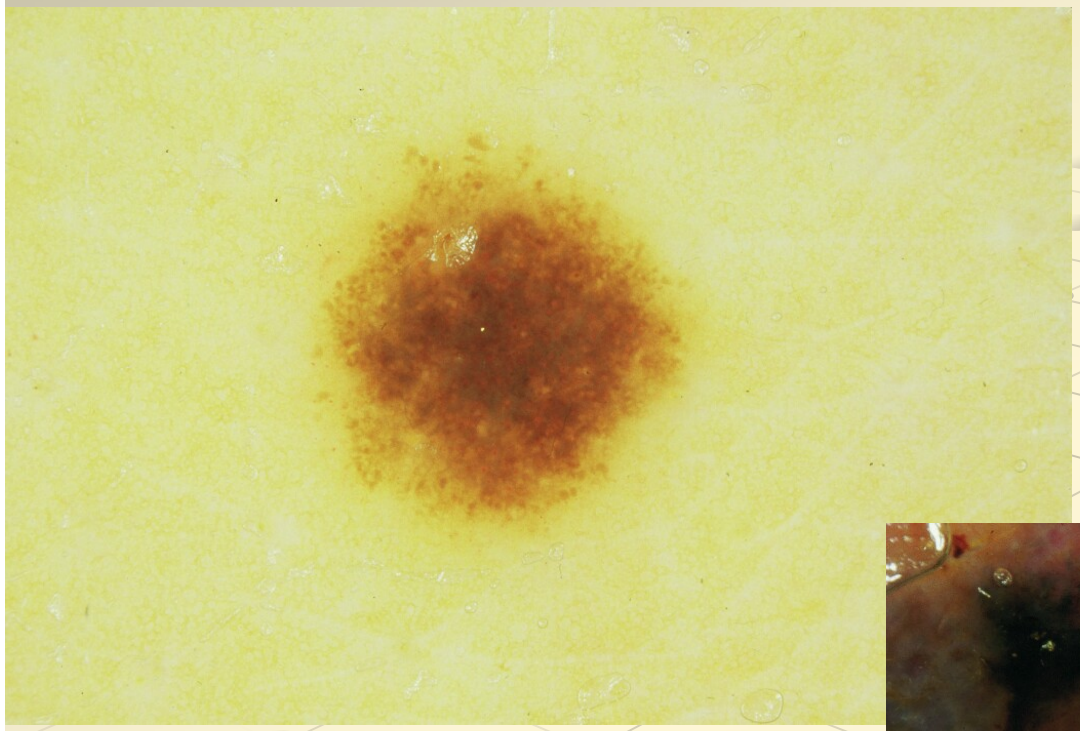


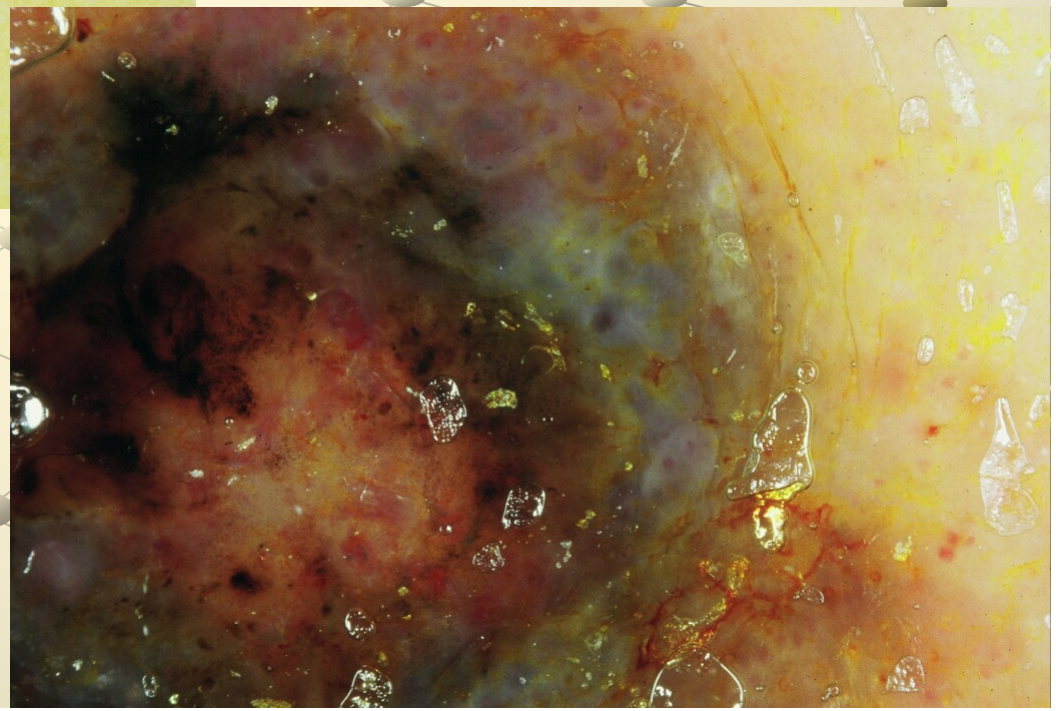




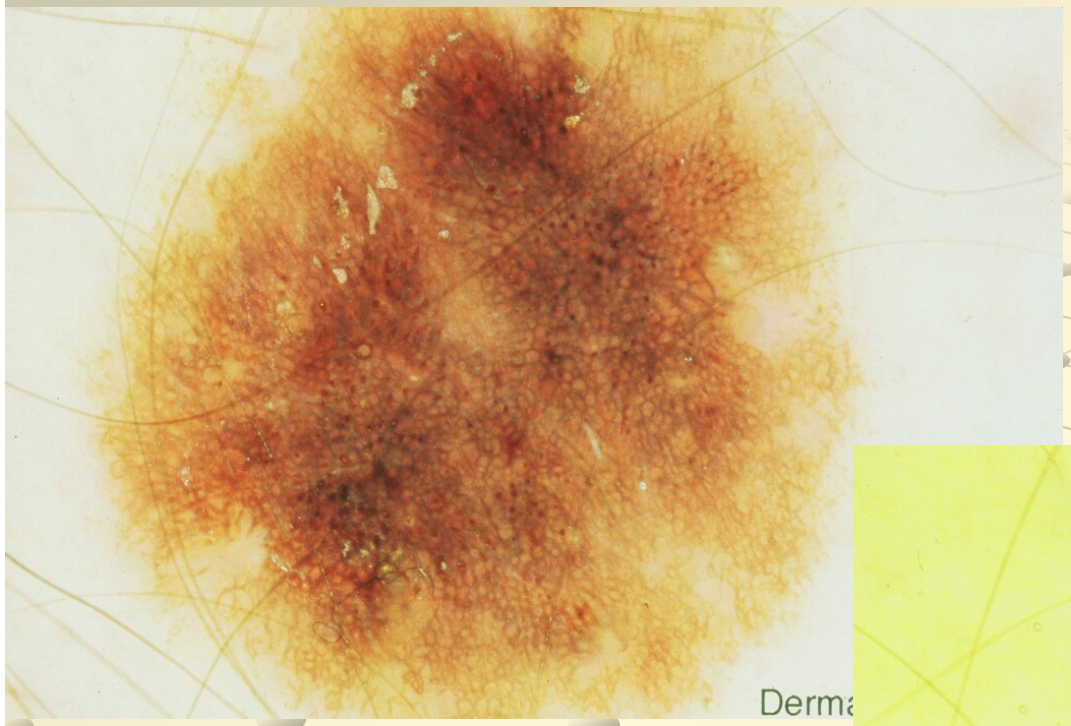
Border

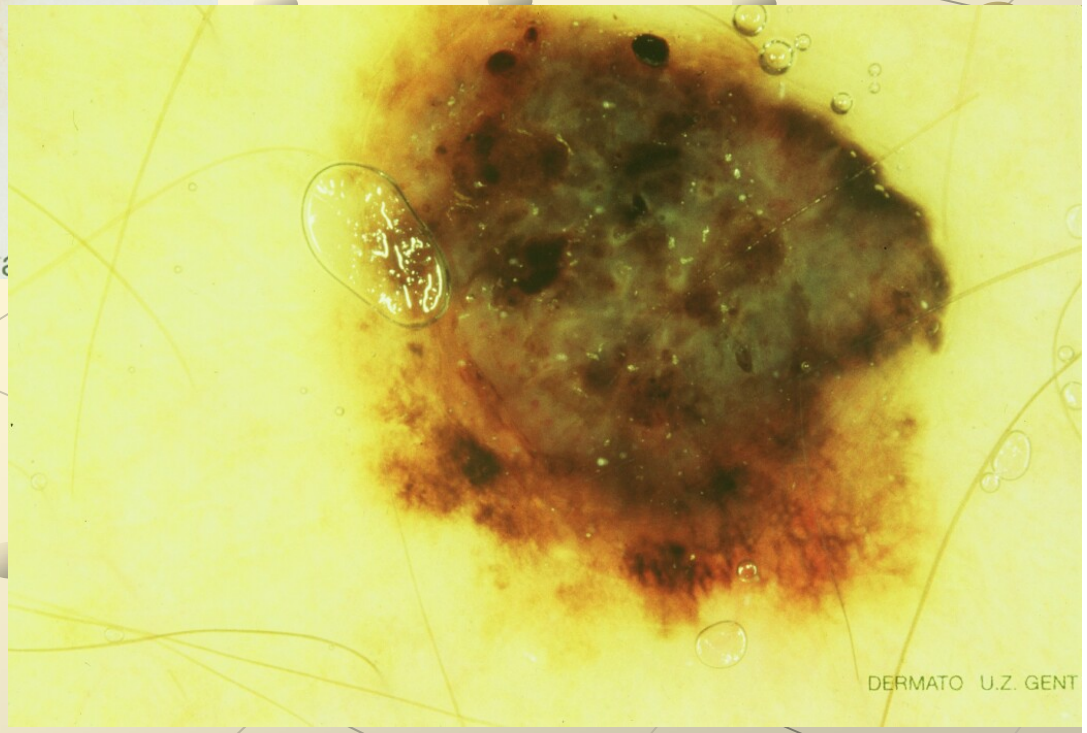
Colors

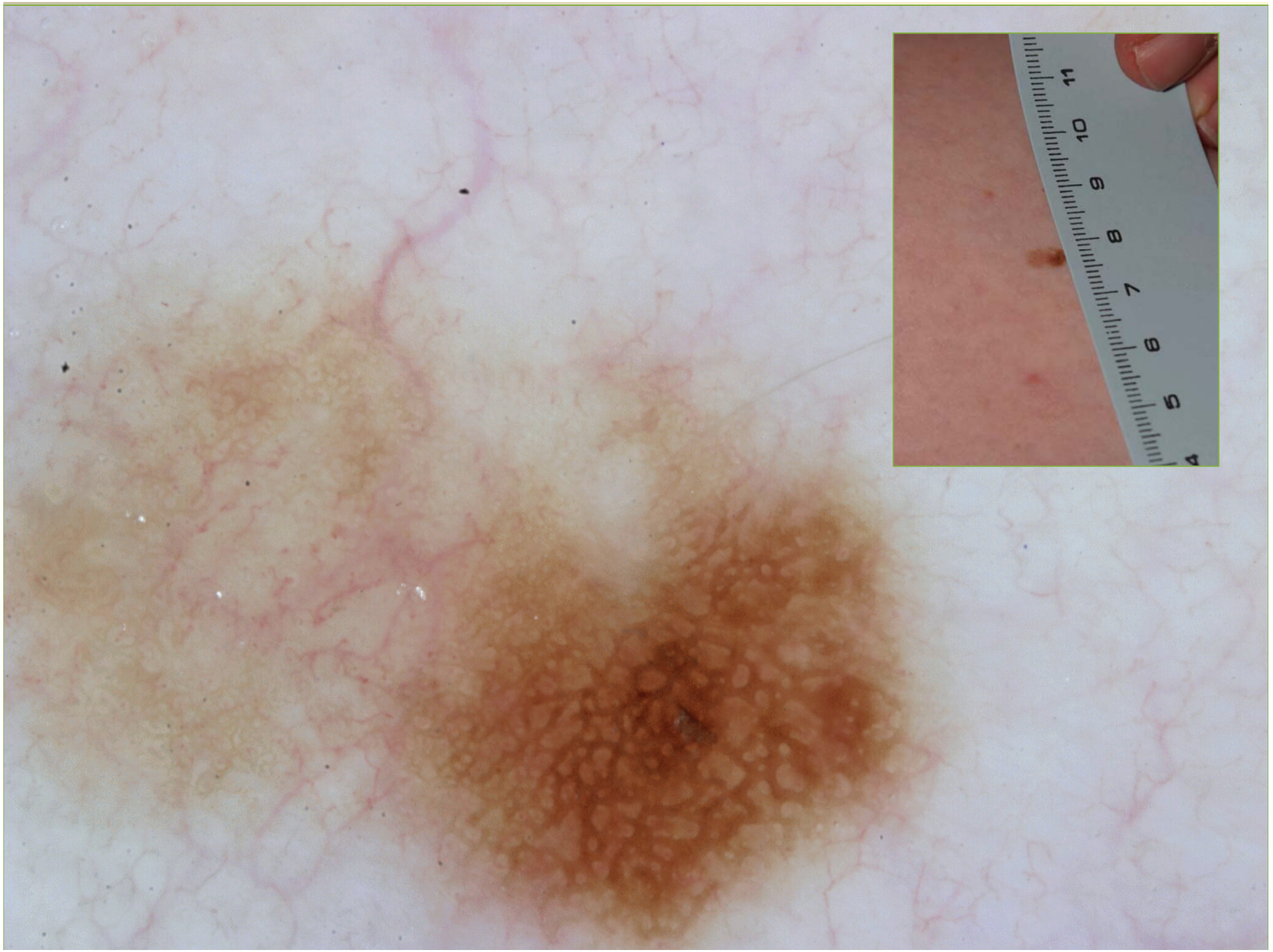




Dermoscopic structures



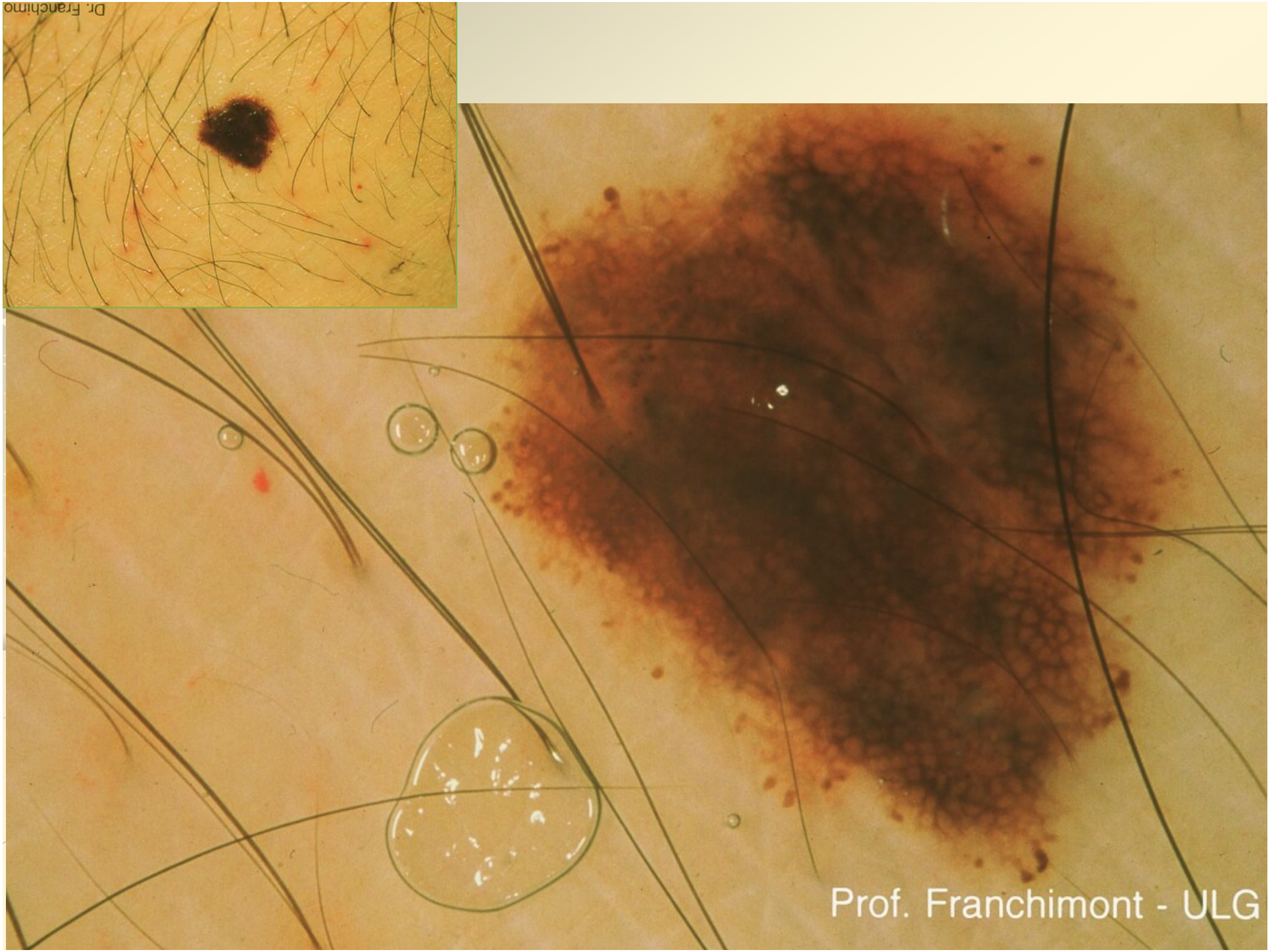


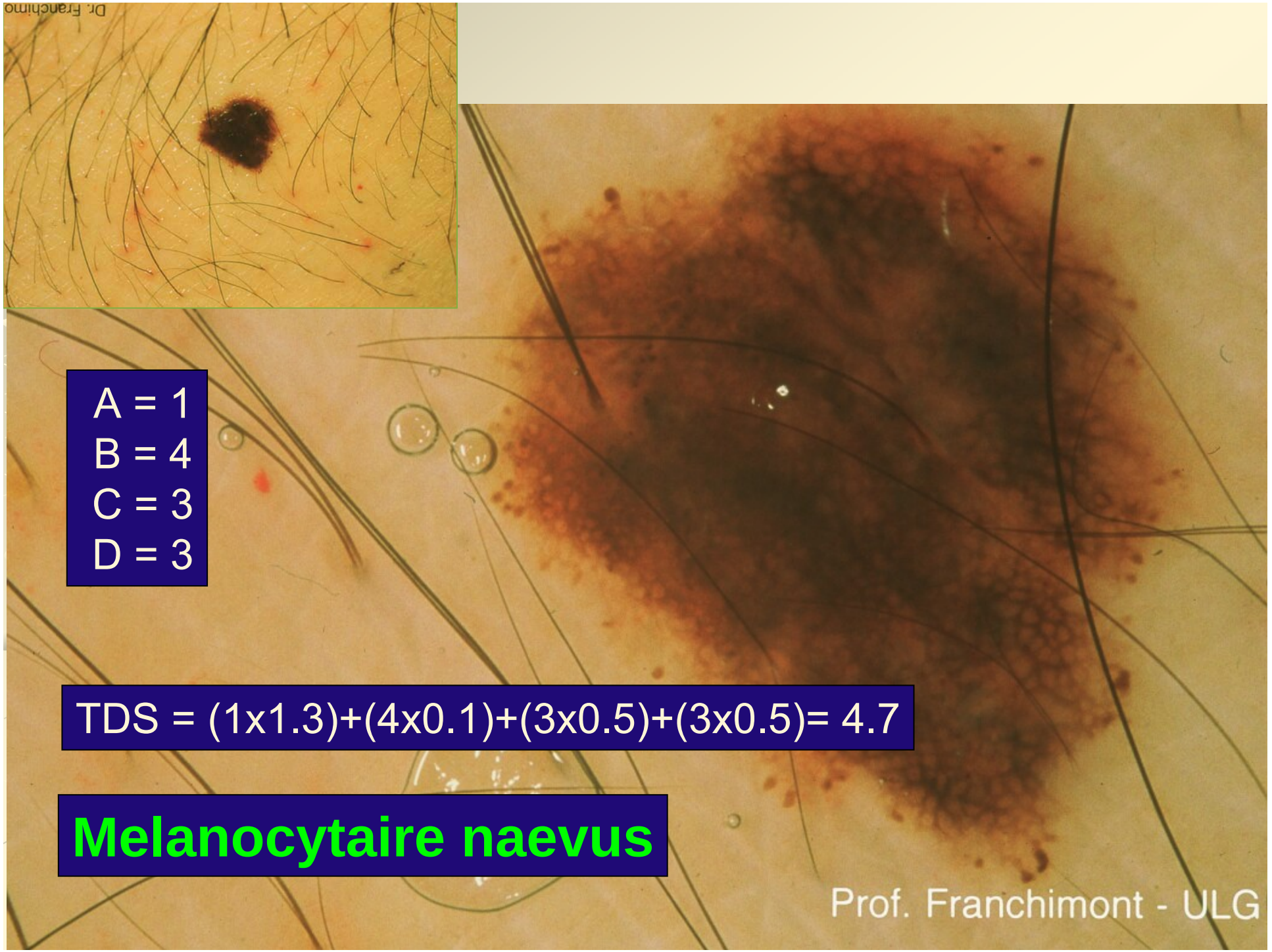


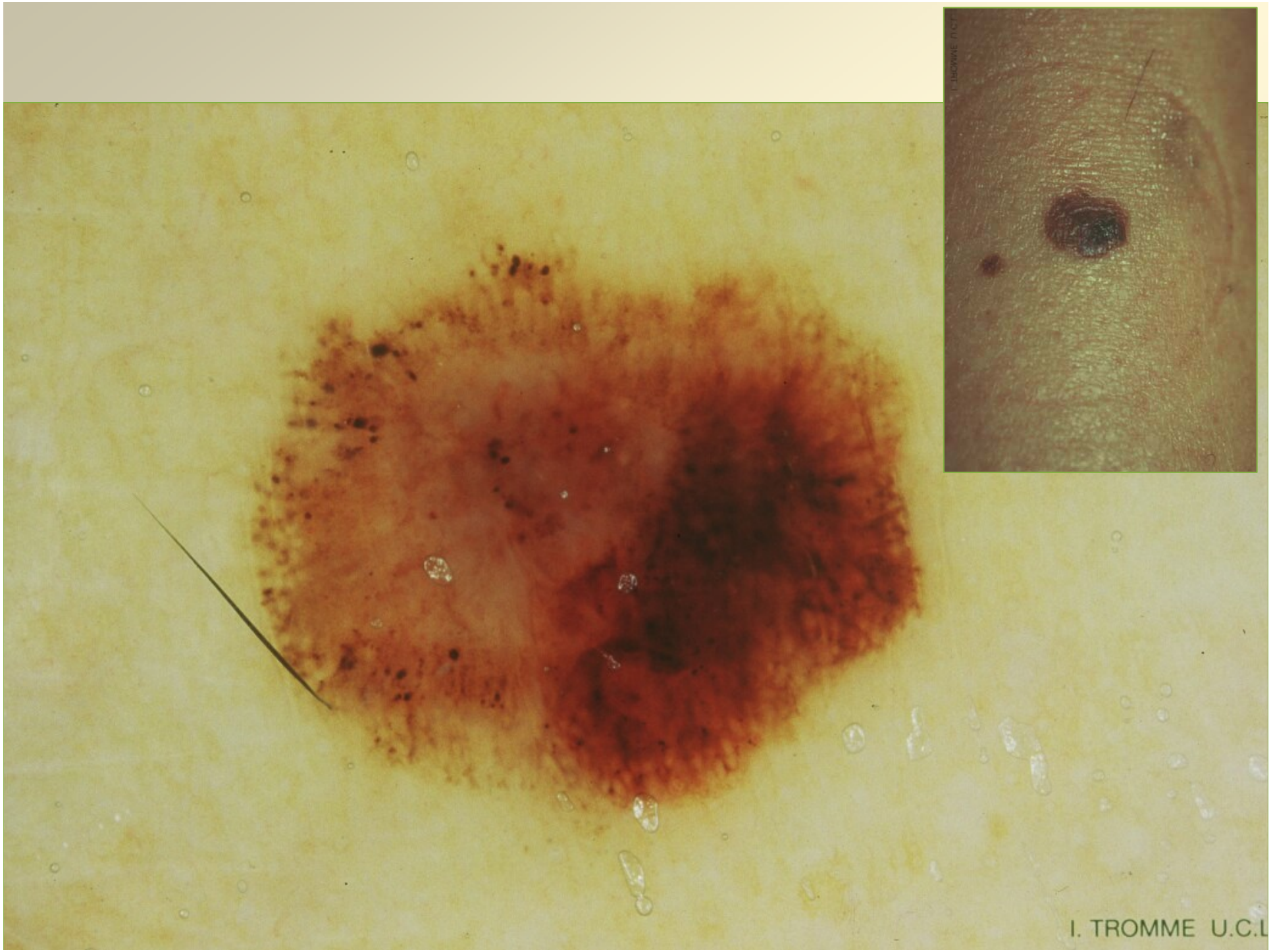
A = 1
B = 0
C = 2
D = 1

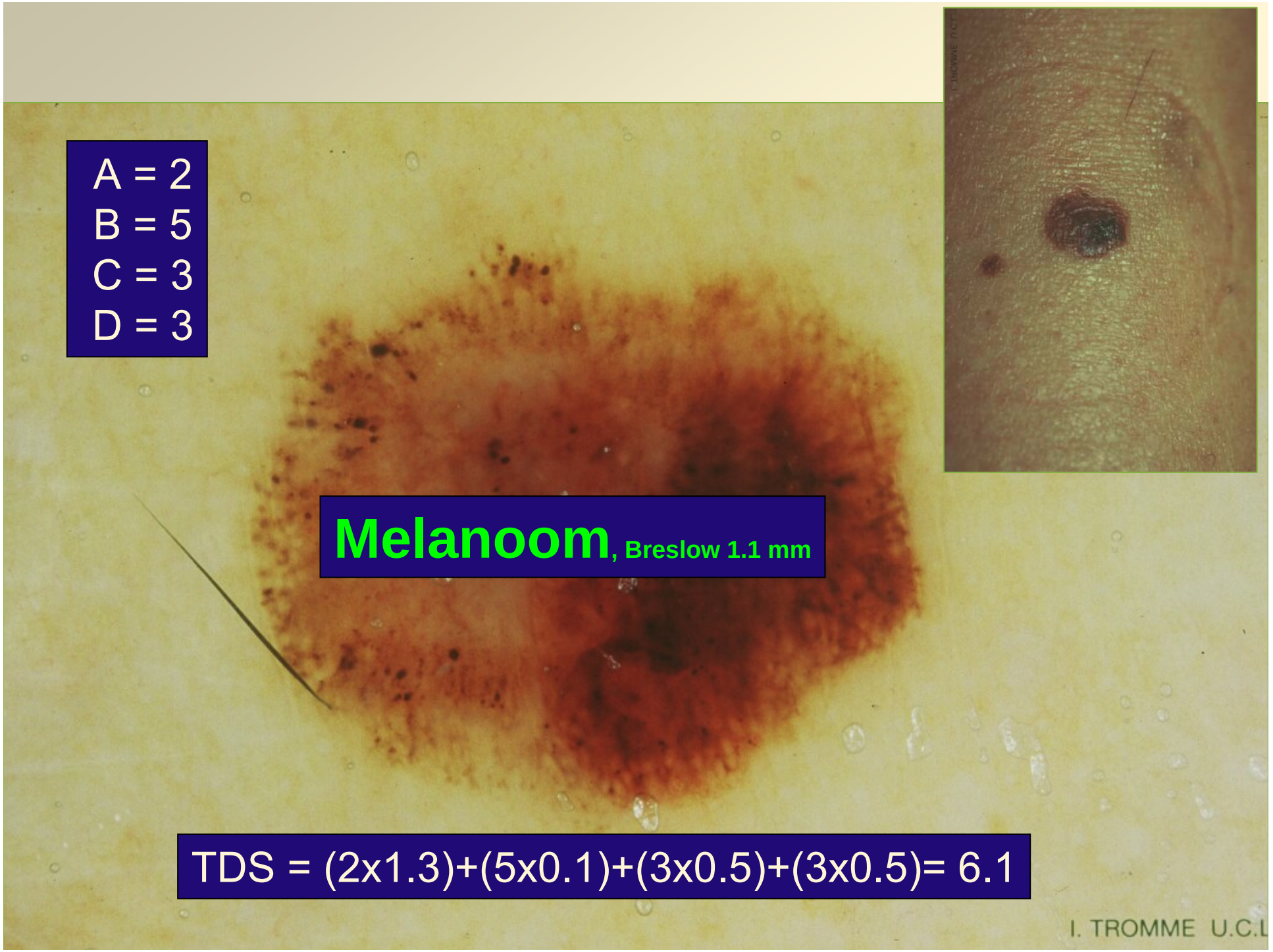
TDS = (1x1.3)+(0x0.1)+(2x0.5)+(1x0.5)= 2.8

Collisie van 2 naevi


Prof. Franchimont - ULG


A = 1
B = 4
C = 3
D = 3
TDS = (1x1.3)+(4x0.1)+(3x0.5)+(3x0.5)= 4.7
Melanocytaire naevus
Prof. Franchimont - ULG


I. TROMME U.C.L


A = 2
B = 5
C = 3
D = 3
Melanoom, Breslow 1.1 mm
TDS = (2x1.3)+(5x0.1)+(3x0.5)+(3x0.5)= 6.1
I. TROMME U.C.L

Referenties:

- Color Atlas of Dermatoscopy, 2nd ed by Wilhelm Stolz, Otto Braun-Falco, Peter Bilek, Michael Landthaler, Walter H. C. Burgdorf, and Armand B. Cognetta, 224 pp, ISBN 1-4051-0098-2, Berlin, Germany, Blackwell Wissenschafts-Verlag Berlin, 2002.

- Atlas of dermoscopy, ed by A. Marghoob, RP Braun, AW Kopf, 374 pp, ISBN 1-84214-225-9, UK, Taylor and Francis 2005
  + interactive CD-rom of dermoscopy (Informa Healthcare)

- An atlas of surface microscopy of pigmented skin lesions: dermoscopy, ed by SW Menzies, KA Crotty, C Ingvar, WH Mc Carthy, 171pp, ISBN 0-07-471102-4, McGraw.Hill Australia 2000
  + self test CD-rom