Dermoscopie en Médecine de Proximité

(Pourquoi ? Comment ? Et après ?)

Luc THOMAS

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Liens d'intérêt

- Employé à temps plein du ministère de l'Enseignement Supérieur et de la Recherche. Pas d'activité libérale. Pas de lien financier personnels avec l'industrie pharmaceutique ou d'appareillage médical.
- Equipements de dermoscopie et de dermoscopie numérique mis à disposition de mon institution (H.C.L.) (FOTOFINDER, HEINE, 3GEN, CASIO, PIXIENCE).
- Investigateur Principal ou Associé bénévole dans des essais cliniques en onco-dermatologie exclusivement(VICAL, ROCHE, GSK, BMS, INTUISKIN, PIXIENCE, NOVARTIS, GENENTECH, GALDERMA, MERCK-SERONO, FLAMEL TECHNOLOGIES, TEACHSCREEN, FOTOFINDER, HEINE, ONCOMECA, SQUAREMIND) pas d'honoraires personnels.
- Auteur (avec droits) de :
  - « Atlas de Dermoscopie » RP Braun et L Thomas Elsevier Masson Paris 2007 (Français Portugais et Polonais)
  - « Précis de dermatologie et IST » JH Saurat, D Lipsker, L Thomas, L Borradori et JM Lachapelle 6eme édition, Elsevier, Masson, Paris 2017 (French & Italian)
  - «Diseases of the nail and their management, 4th edition» R Baran, D de Berker, M Holzberg, B Richert & L Thomas Willey-Blackwell, London 2019
  - «Dermatologie chirurgicale 2nd edition» JM Amici, D Egasse, M Beylot Barry et L Thomas Elsevier Masson Paris 2017
  - « Manuel de Dermoscopie » L Thomas Elsevier Masson Paris 2022 (Français)

Transparence santé

Base Transparence Santé

Accueil • Recherche par bénéficiaire • Résultats •

Résultats des déclarations par bénéficiaire

11/10/2023

Afficher les Avantages | Afficher les Conventions | Afficher les Rémunérations

15 Avantage(s) correspondant à votre sélection

Bénéficiaire	Type de bénéficiaires	Entreprise	Date	Nature	Montant	
THOMAS Luc	Médecin	ConsuMed Research	04/11/2015	Autre : Indemnite	120 €	Détail
THOMAS LUC	Médecin	NAOS	11/02/2016	REPAS	19 €	Détail
THOMAS LUC	Médecin	BRISTOL-MYERS SQUIBB	11/03/2016	Repas	50 €	Détail
THOMAS LUC	Médecin	BRISTOL-MYERS SQUIBB	11/03/2016	Transport	530 €	Détail
THOMAS LUC	Médecin	BRISTOL-MYERS SQUIBB	07/04/2016	Repas	47 €	Détail
THOMAS LUC	Médecin	NAOS	14/04/2016	REPAS	21 €	Détail
THOMAS LUC	Médecin	ICOMED	12/05/2016	Autre: [Enquête]	25 €	Détail
THOMAS LUC	Médecin	NAOS	07/04/2017	Repas	49 €	Détail
THOMAS LUC	Médecin	NAOS	13/04/2017	Repas	24 €	Détail
THOMAS LUC	Médecin	NAOS	14/06/2017	Repas	50 €	Détail
THOMAS LUC	Médecin	NAOS	07/09/2017	Repas	26 €	Détail
THOMAS LUC	Médecin	COSMETIQUE ACTIVE FRANCE	29/03/2018	REPAS	78 €	Détail
THOMAS LUC	Médecin	galderma international	01/03/2019	Déjeuner	35 €	Détail
THOMAS LUC	Médecin	galderma international	04/04/2019	Déjeuner	25 €	Détail
THOMAS LUC	Médecin	galderma international	04/04/2019	Acheminement	202 €	Détail

Financements

- Université Claude Bernard Lyon 1 et Hospices Civils de Lyon
- Ligue contre le cancer du Rhône and de l'Ain
- Association Vaincre le Mélanome
- Fonds gérés direction de la recherche clinique des Hospices Civils de Lyon (sous contrôle de la cour des comptes)


DREAM TEAM

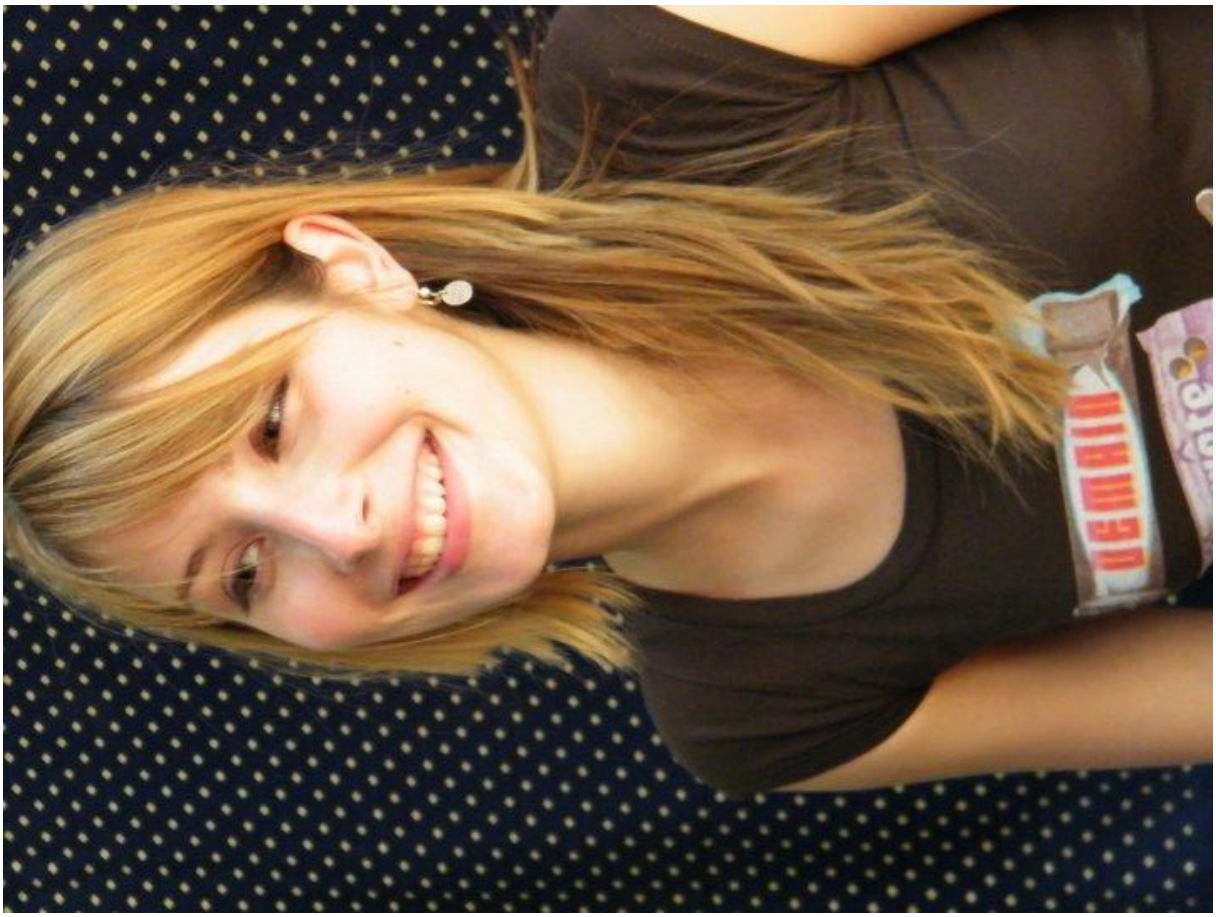
Stéphane Dalle

Alice Phan

Sébastien Debarbieux

Nicolas Poulalhon

Marie Perrier-Muzet



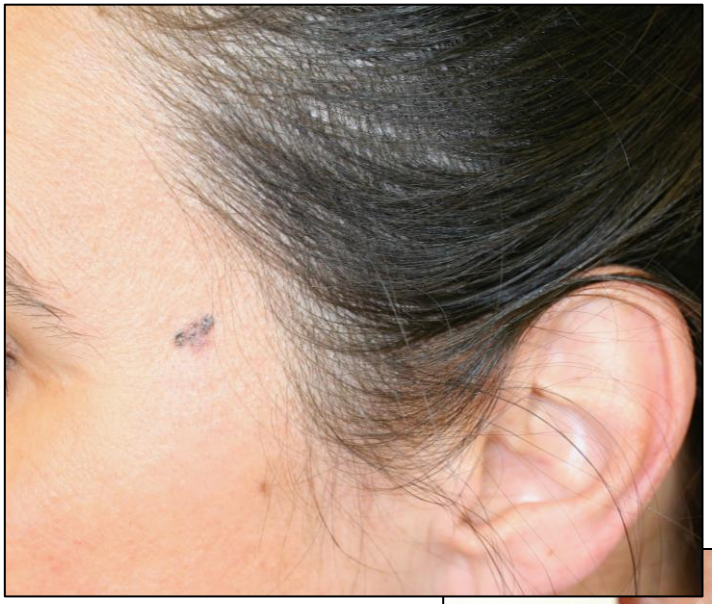
Sarah Milley

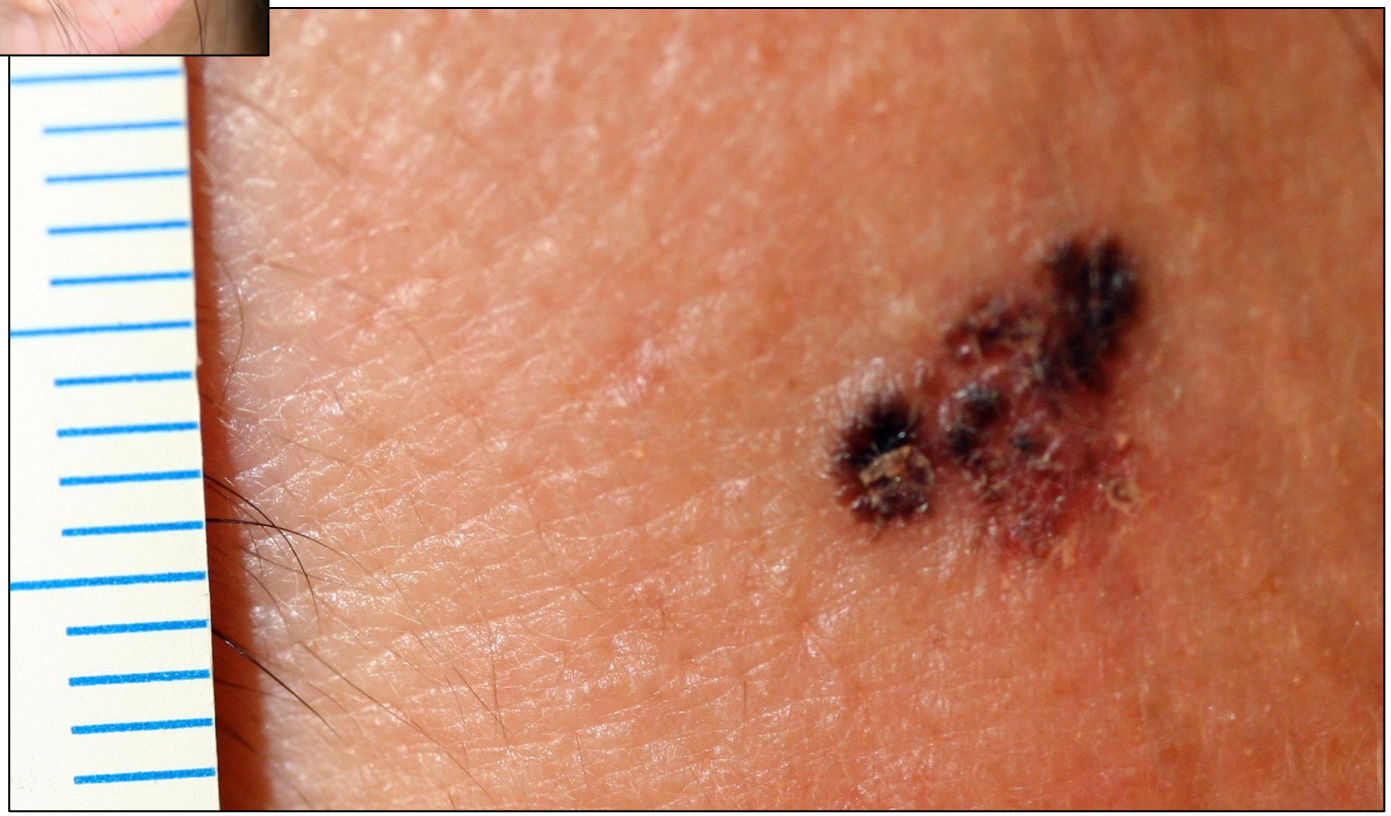
Dermatopathology team

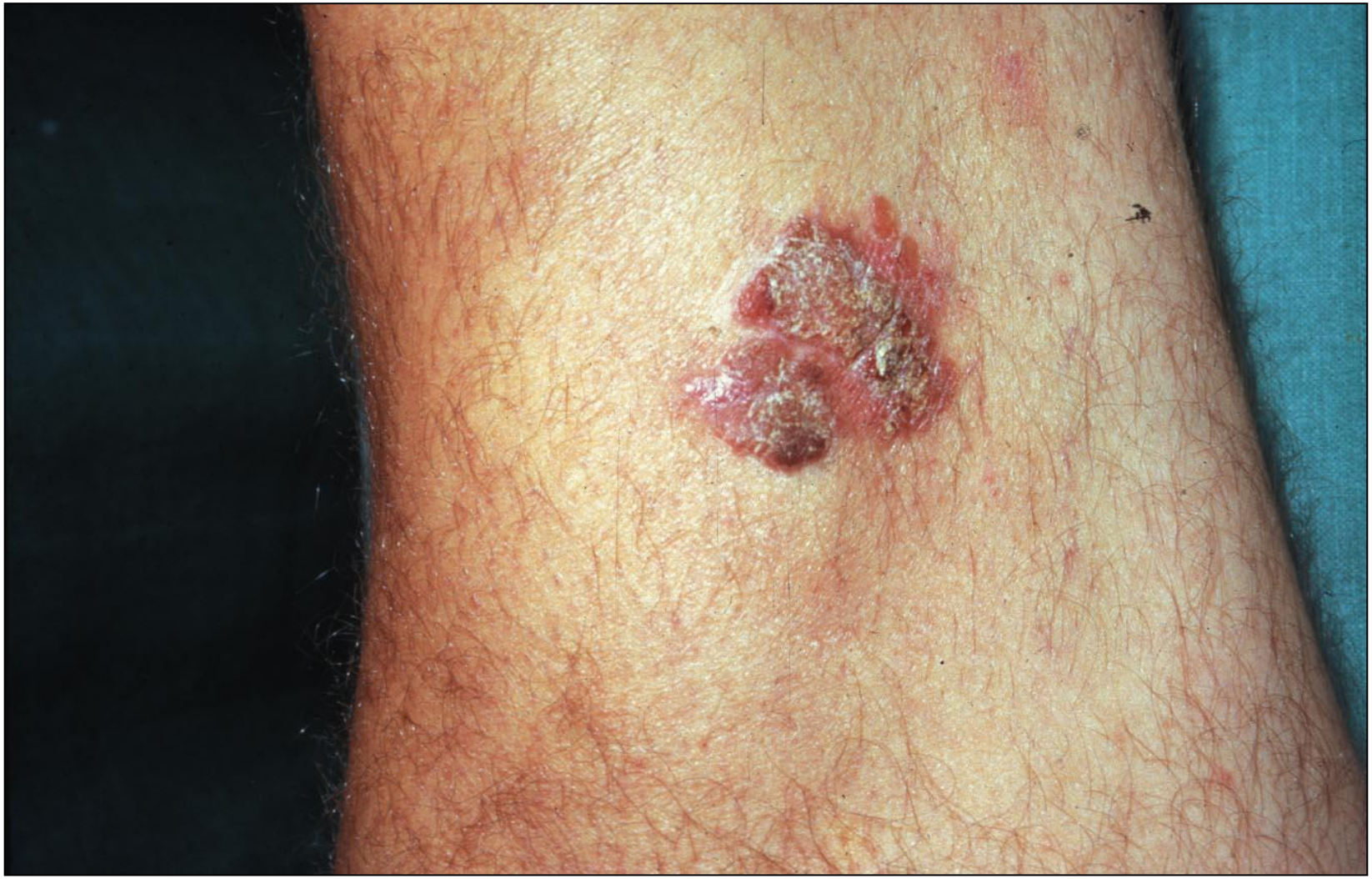
Toutes les images présentées appartiennent à la collection de l'Université Claude Bernard – Lyon 1
Les images empruntées, s'il y en a, font mention de leur auteur sur le diaporama
Tous les patients ont donné leur consentement pour l'usage des ces photos pour l'enseignement et la recherche
La reproduction, la diffusion de ces images, y compris sur l'internet, est formellement interdite

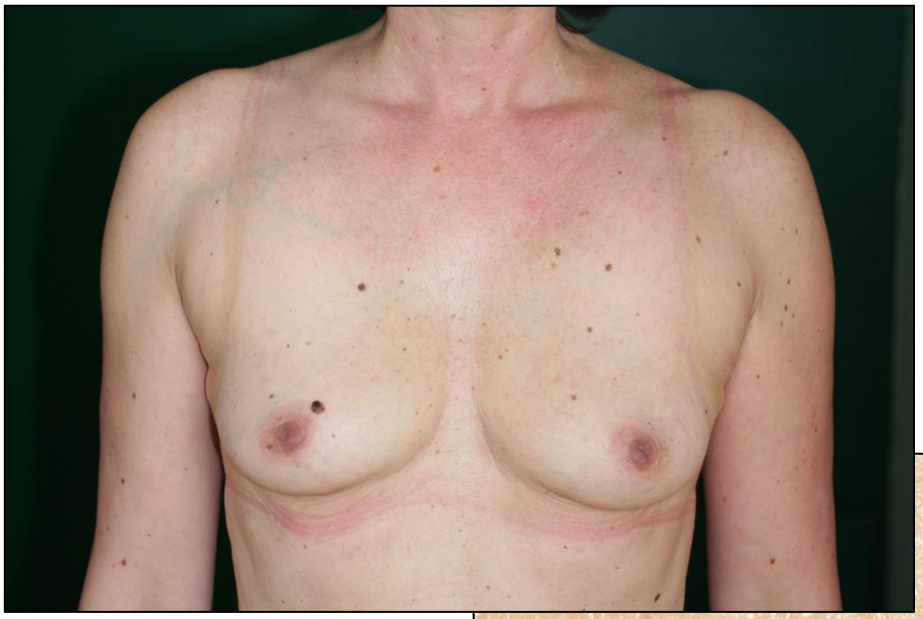

CASIO

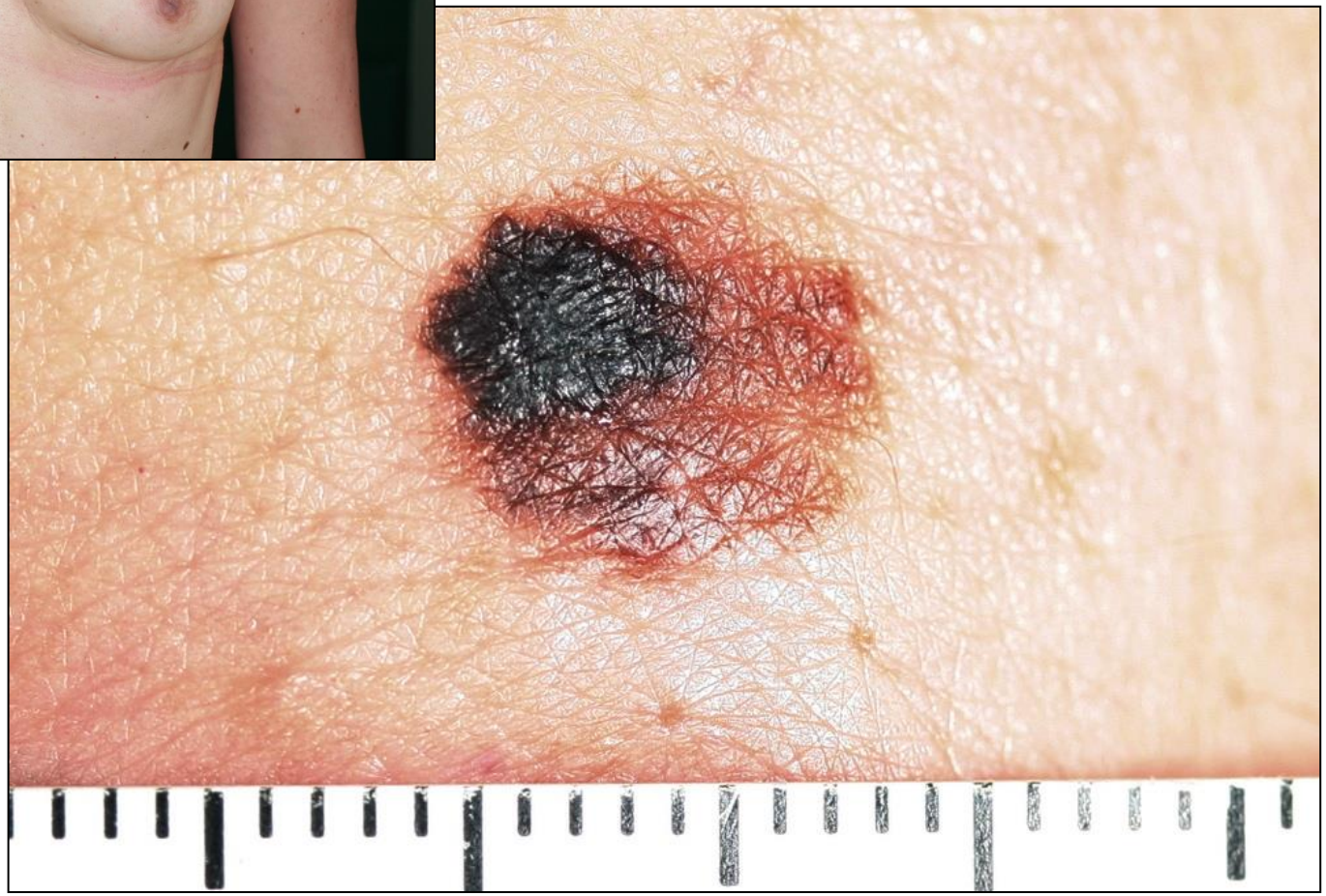

WHY









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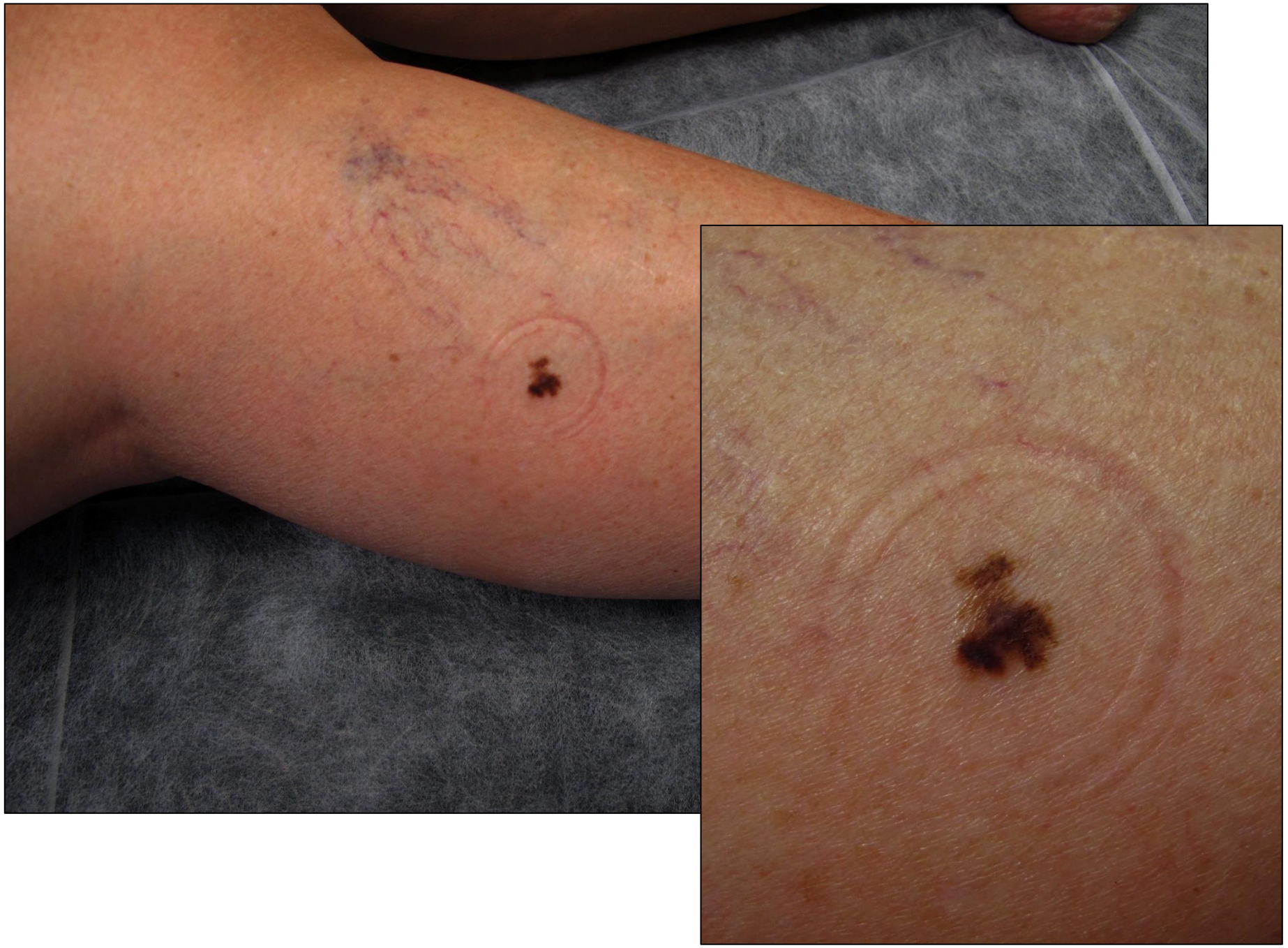

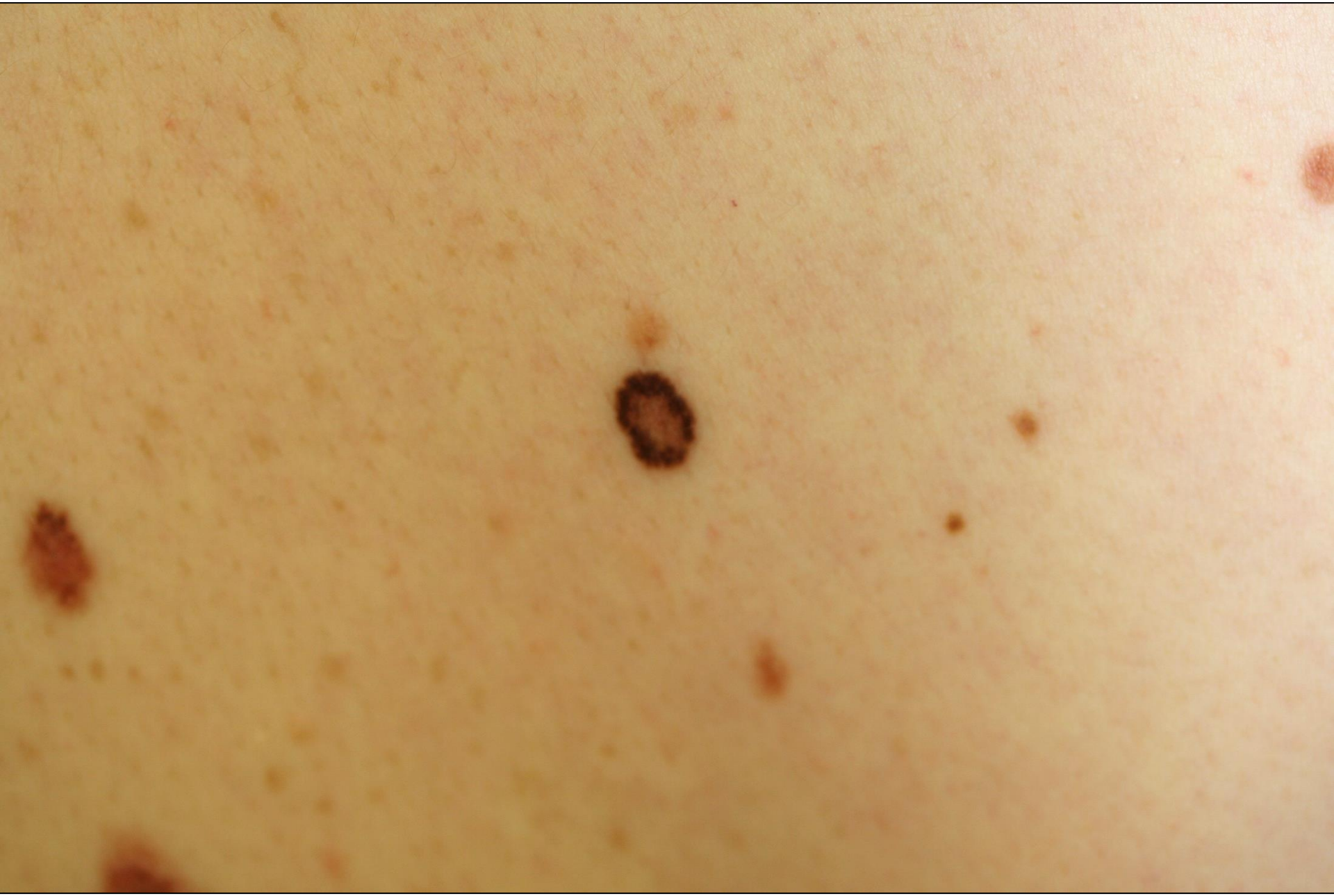


CONFOUNDING VARIABLES
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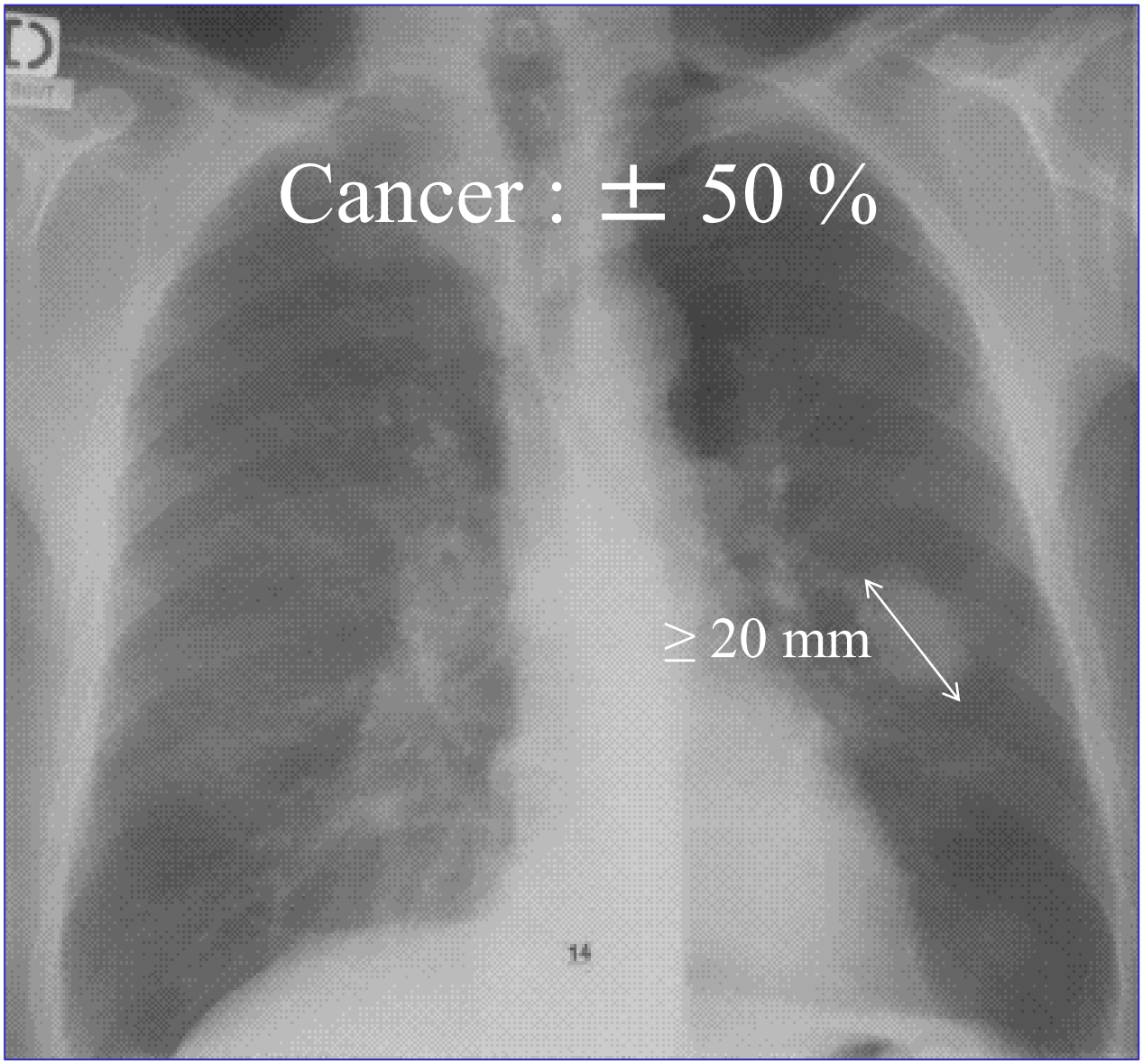
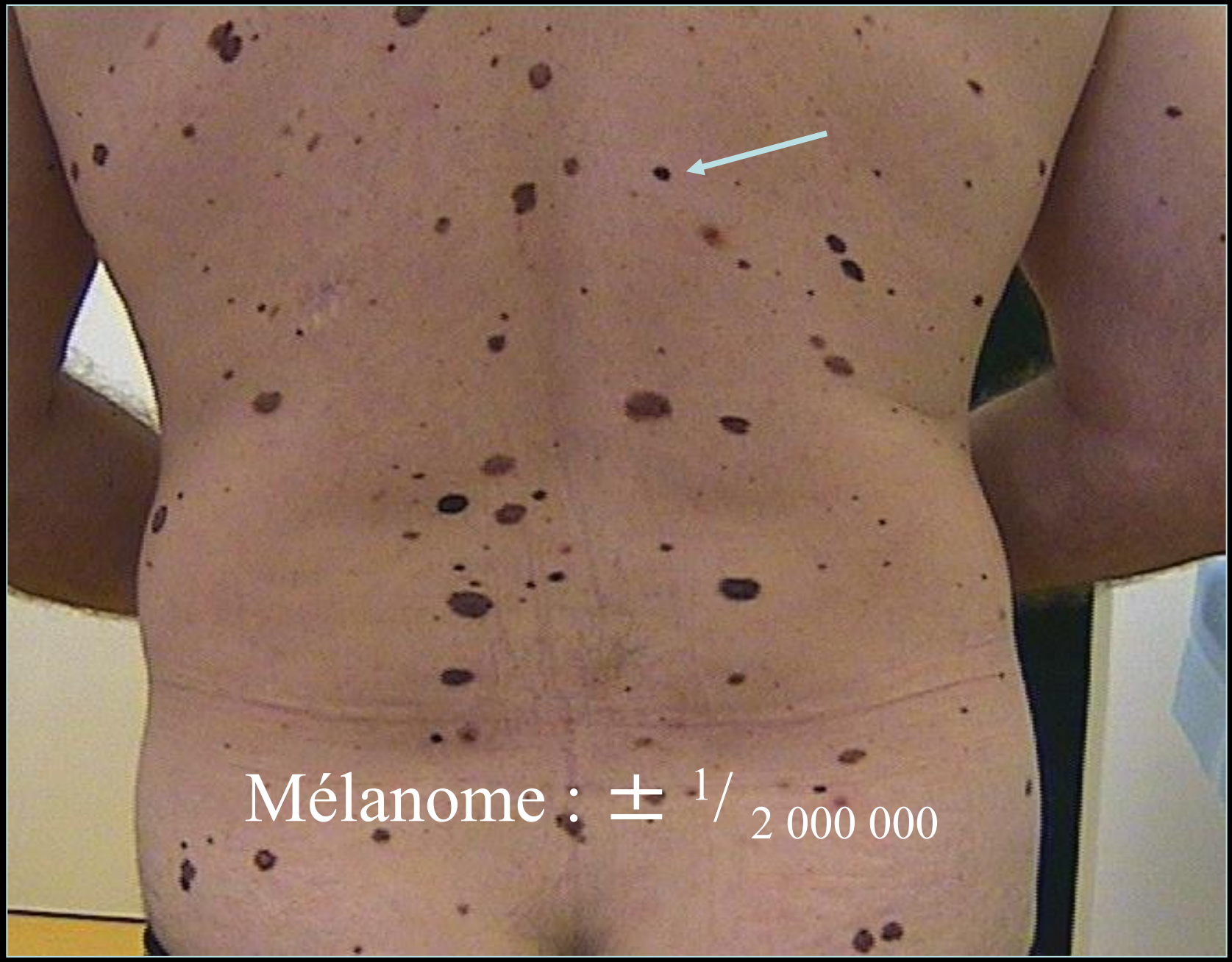
LUNG NERD

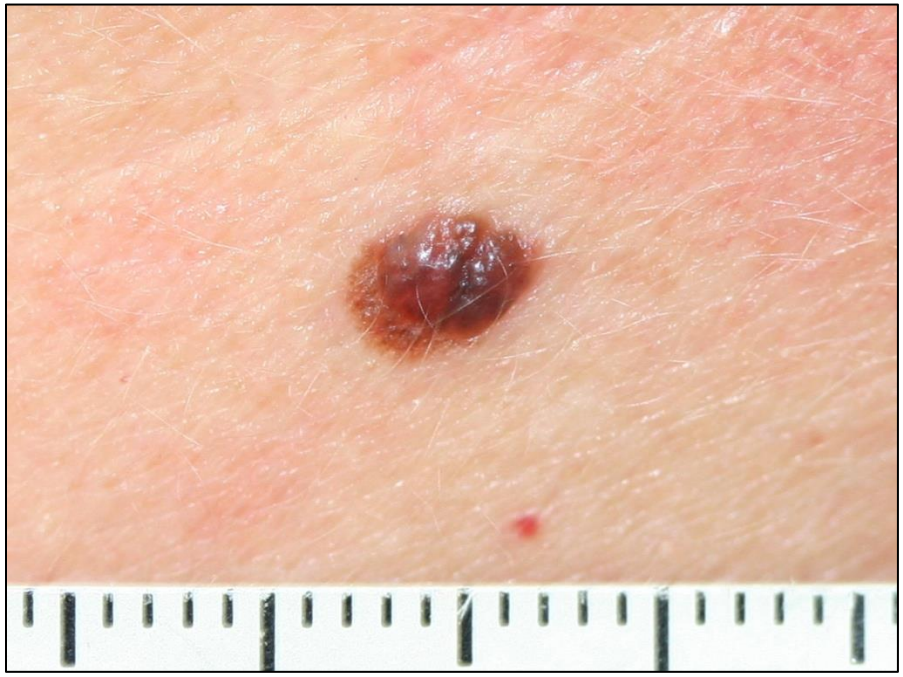

Cancer : ± 50 %
≥ 20 mm

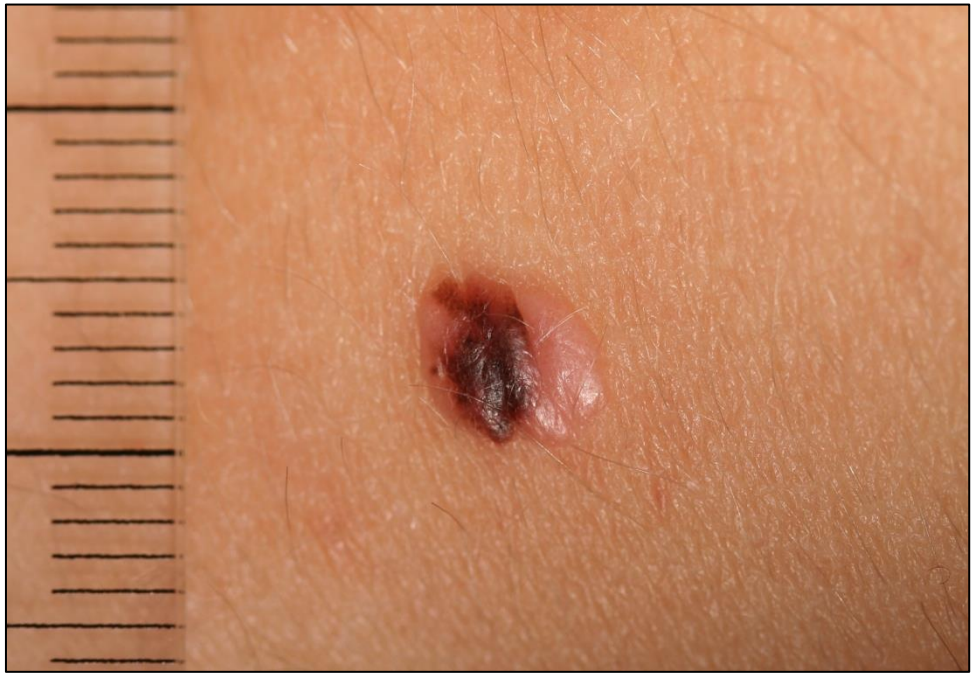

BEING A
DERMATOLOGIST
IS NOT A CAREER
IT'S A POST APOCALYPTIC
SURVIVAL SKILL

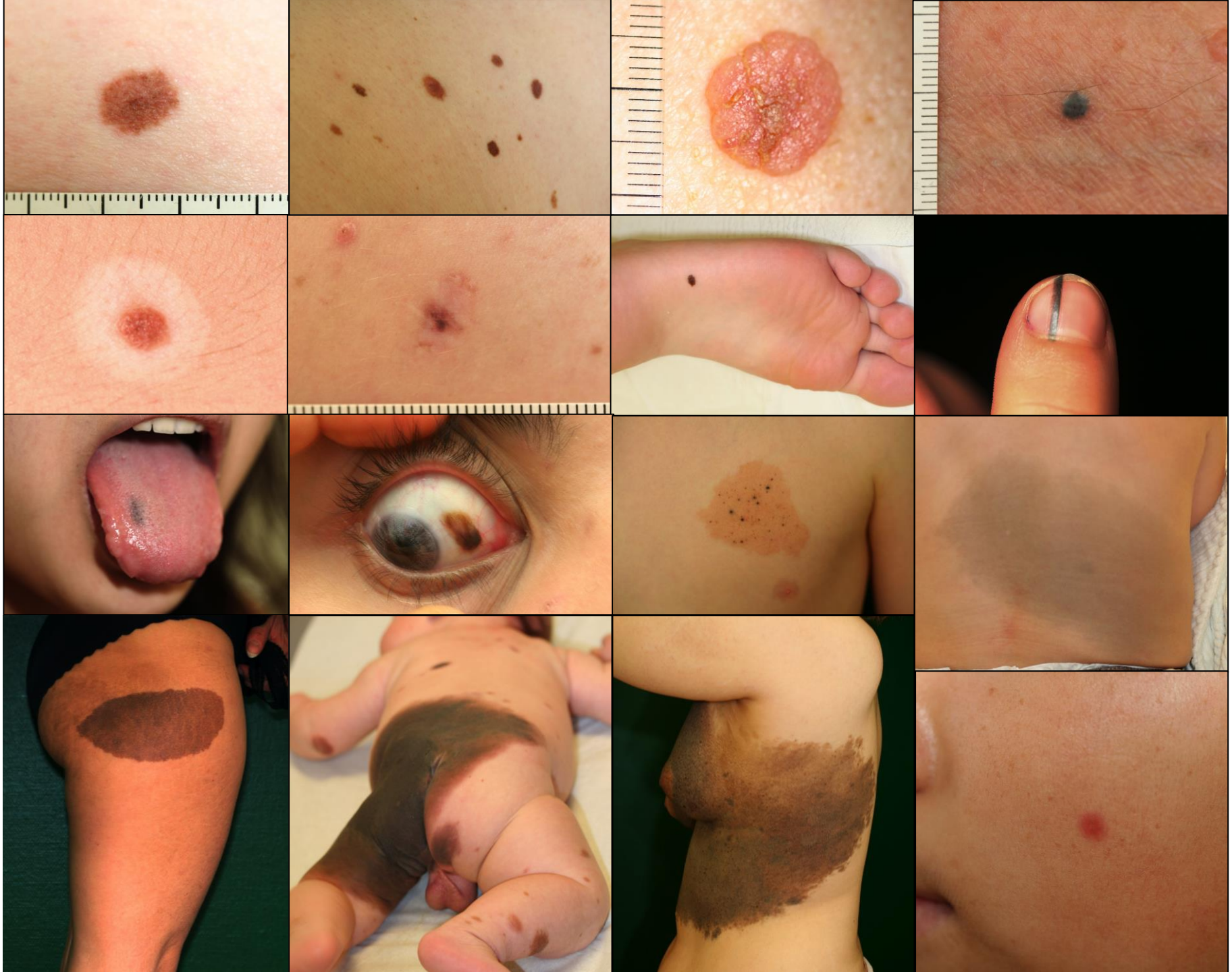

Mélanome : ± 1/2 000 000

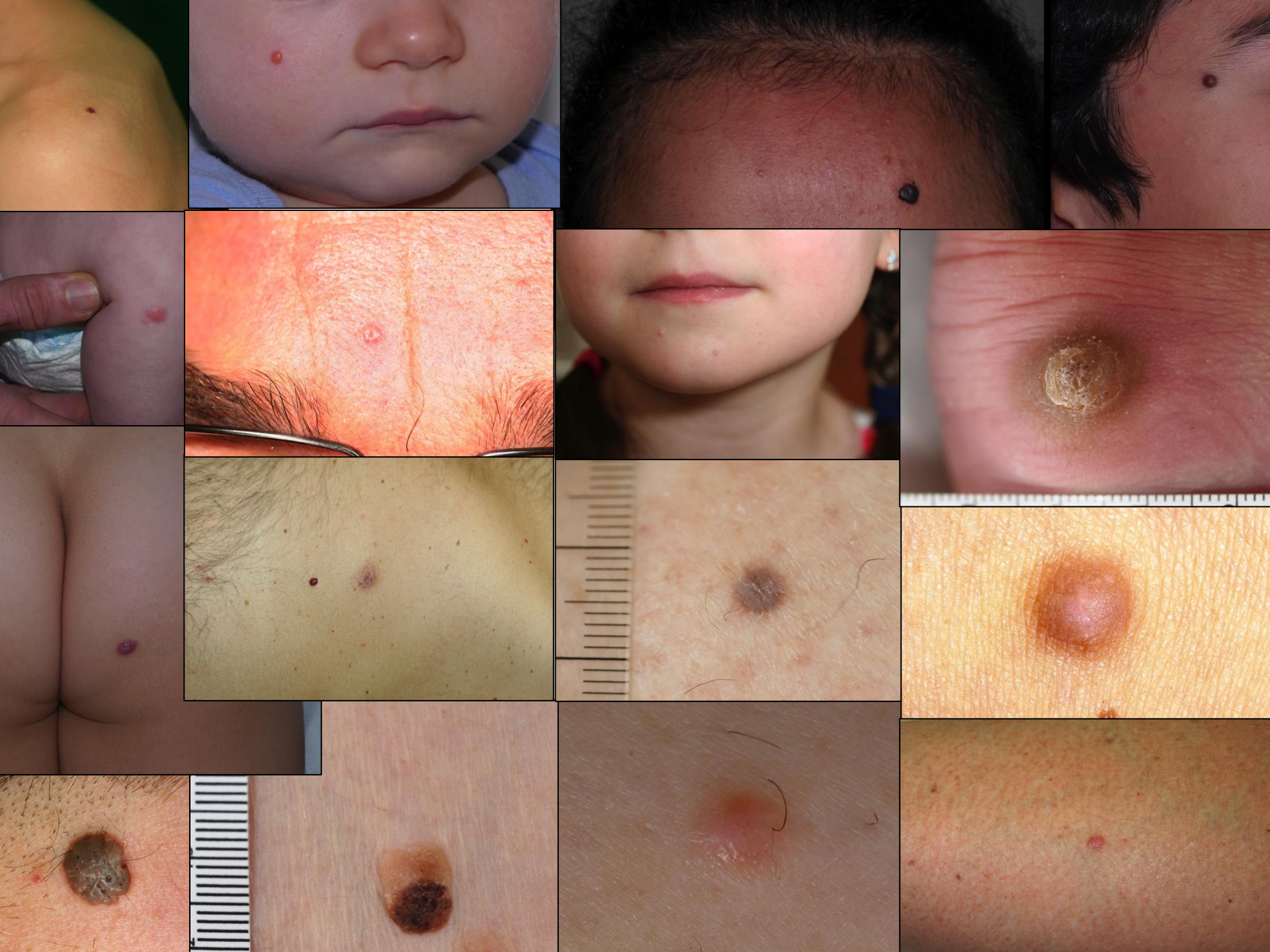
Naevus

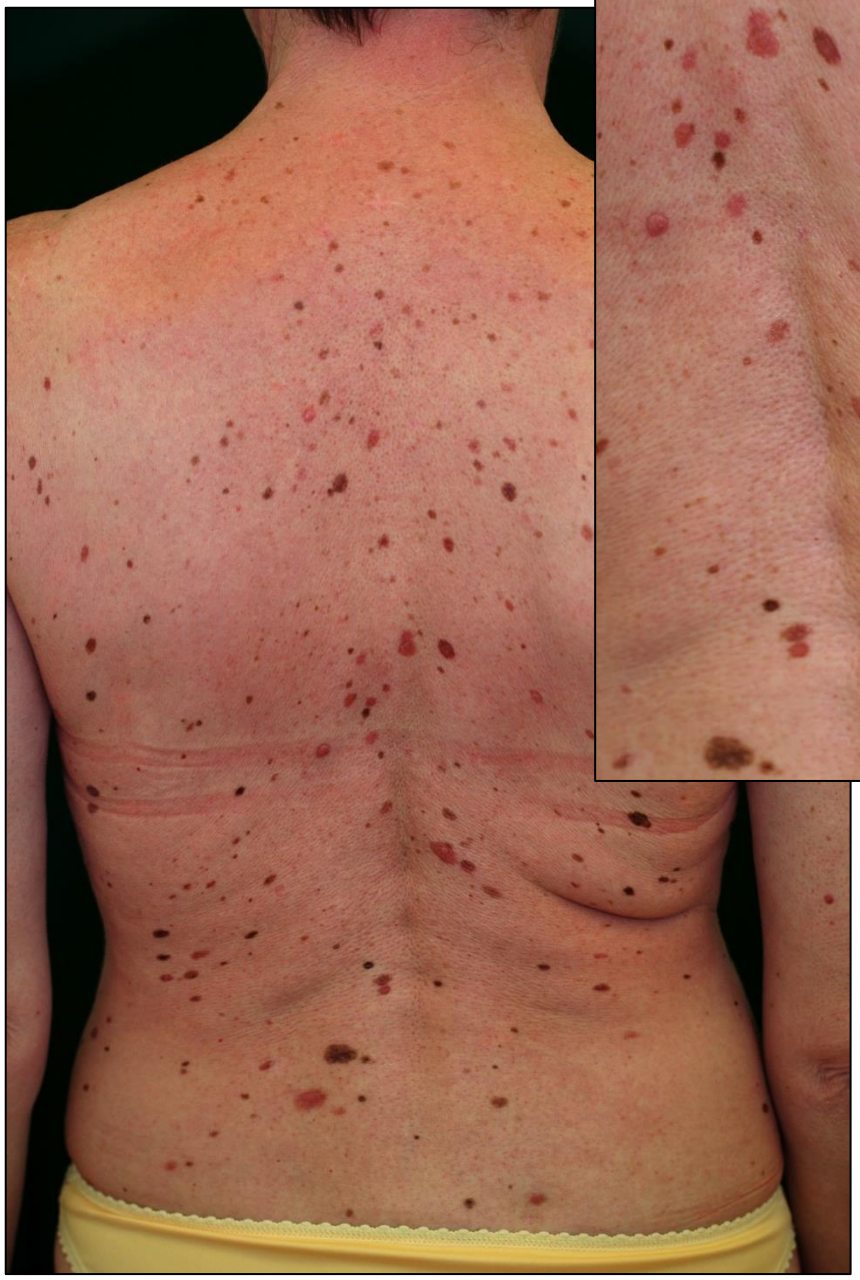
Mélanome

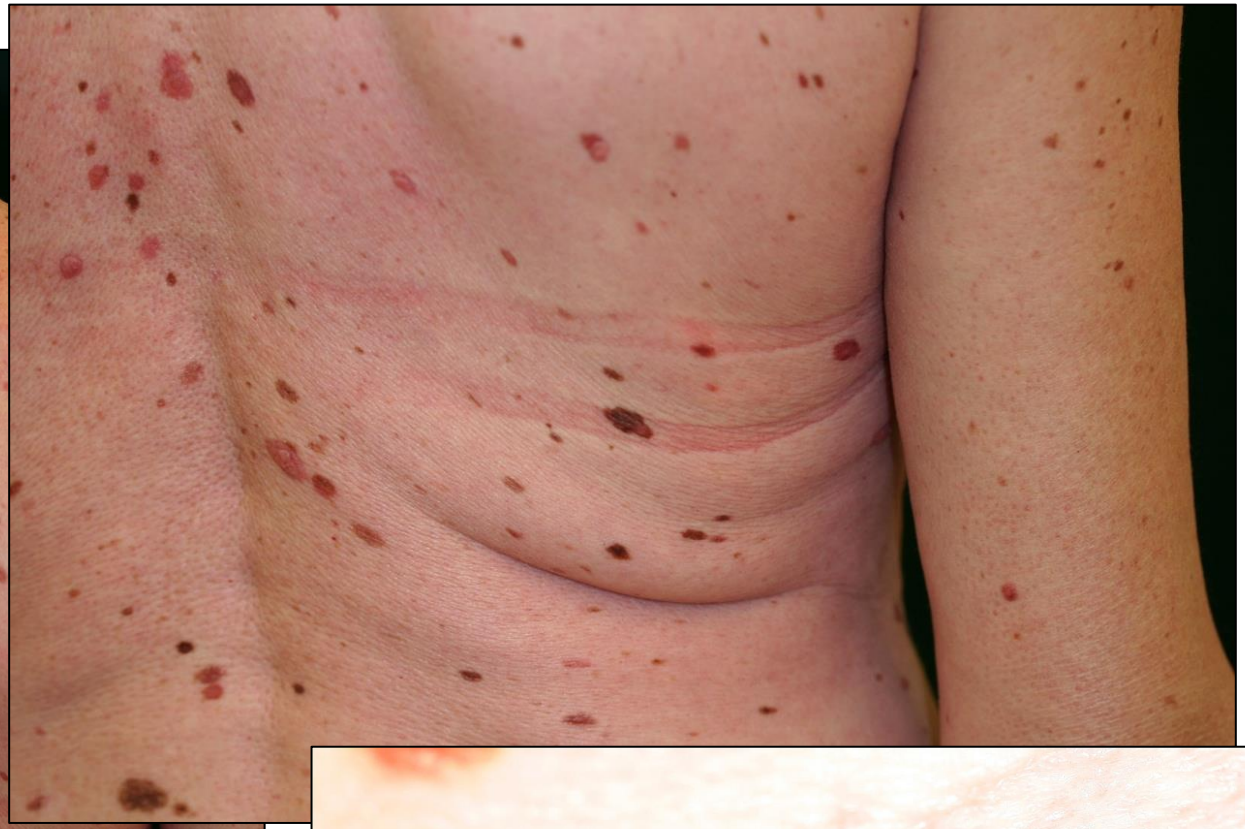


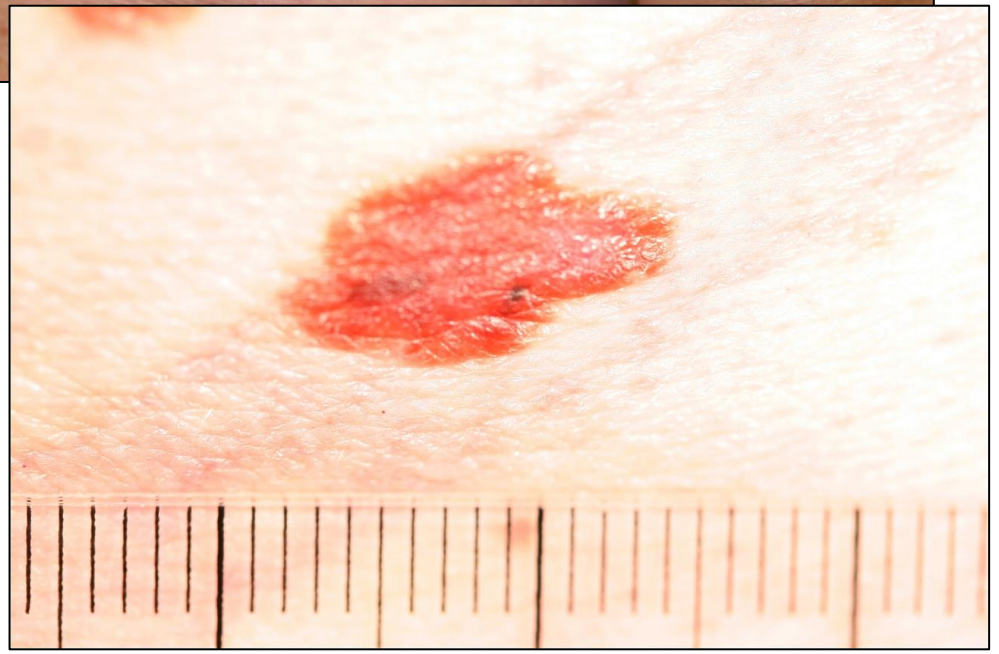












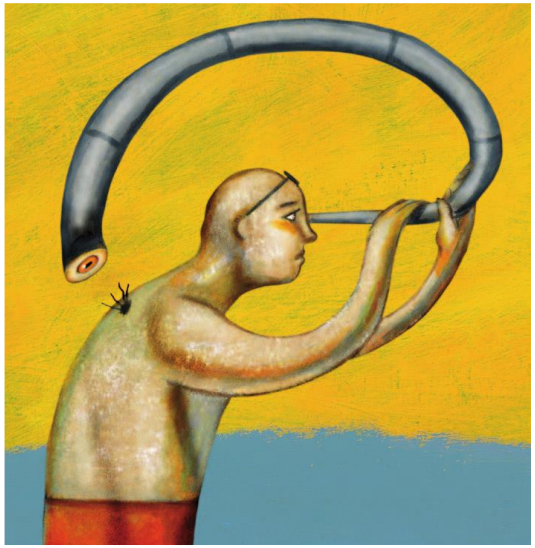


ILLUSTRATION BY ALBERTO RUGGIERI

EARLY DETECTION

Spotting the first signs

The sooner a cancer is found, the better. New technologies are pushing the limits of detection — towards the frontier of prevention.

BY NEIL SAVAGE

One day, a few years hence, a patient having a routine check-up might do little more than blow into a small machine at the doctor's office and, within a couple of minutes, be told whether there are any early signs of cancer. For another patient, a routine blood test to monitor cholesterol might present an opportunity to check for stray cells from tumours too small to spot. A dermatologist, instead of eying a mole and perhaps slicing it off to biopsy, could instead peer at it through a machine to instantly tell whether it is malignant or benign.

These, at least, are the visions of researchers developing technologies to detect the early signs of cancer. Better screening — looking for signs of cancer in people with no symptoms, as opposed to diagnosing suspected cancer — increases the odds that doctors will find cancer at its earliest stages when chances of a cure are higher. Screening has already reduced cancer deaths: the US National Cancer Institute (NCI) estimates that colonoscopies can lower mortality from colorectal cancer by at least 60%, and the National Lung Screening Trial recently found that computed tomography scans of heavy smokers could cut lung cancer deaths by as much as 20%. Researchers are exploring a new suite of potential screening methods that could one day join or even supplant today's colonoscopies, mammograms and pap smears. If some of these approaches can be shown to prevent cancer deaths and cut costs, they stand a good chance of becoming part of regular patient care.

LIGHT PROBES

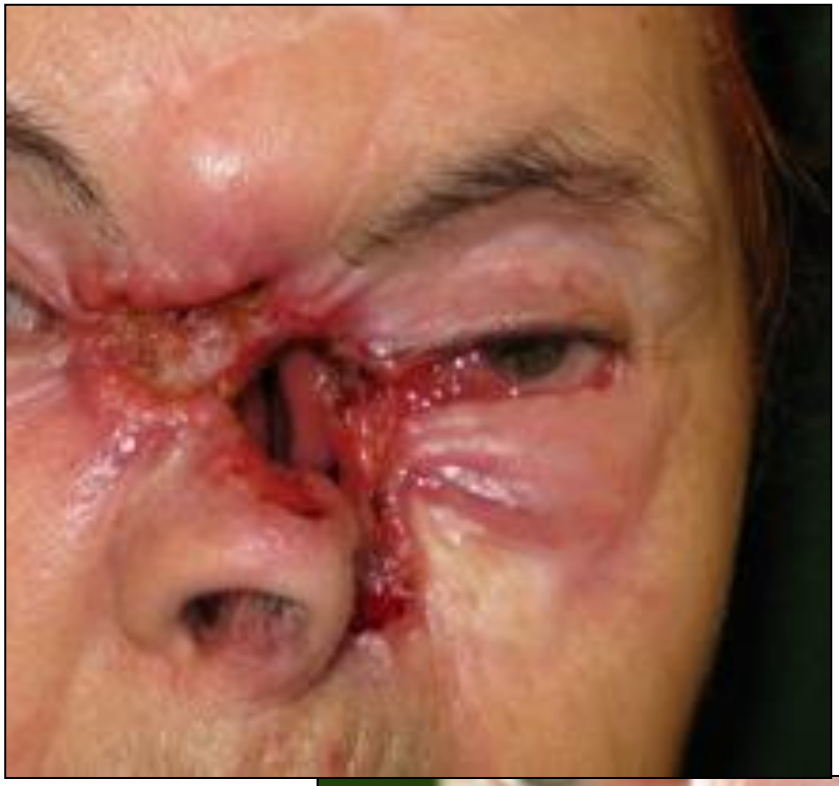
Many researchers are trying to improve on existing techniques such as endoscopy, delivering images from inside the body through fiber optics. Engineers at Duke University, North Carolina, for instance, have designed an optical system to search for premalignant changes in patients with Barrett's esophagus, in which stomach acid alters the cells lining the esophagus. The condition more than doubles the risk of esophageal cancer. Unlike conventional endoscopy, the Duke technique, called angle-resolved low-coherence interferometry, images structures beneath the surface of a cell for a sort of optical biopsy. Adam Wax, one of the Duke engineers, says looking at the basal layer of the epithelium, about 300 micrometers beneath the surface, seems most diagnostically useful. The system splits infrared light into two beams, and compares how far each travels to determine how deep it penetrates into the cell. Measuring the angle at which light bounces off cellular structures reveals the size of structures at increasing depth. The resolution is high enough to distinguish a normal-sized nucleus, about 10 micrometers in diameter, and a larger, precancerous one at least 13 micrometers.

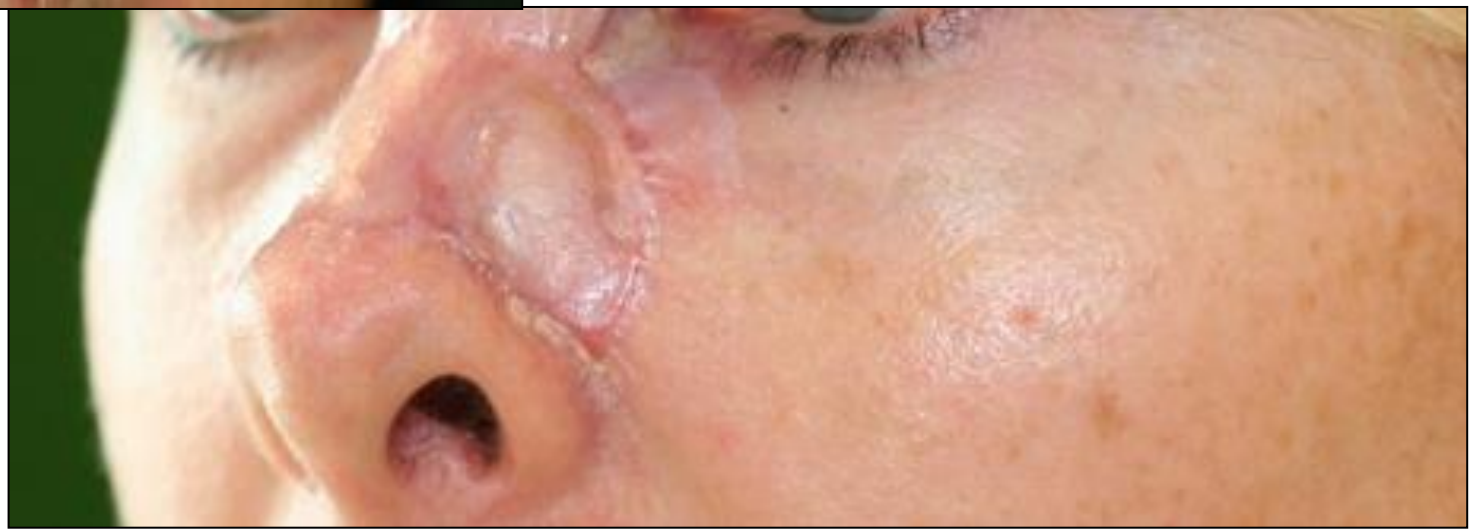
Wax says his enhanced endoscopy could provide better targets for biopsies — and, eventually replace biopsies altogether. According to the NCI, esophageal cancer causes nearly 15,000 deaths in the United States each year. "We hope that by contributing this tool we'll be able to shift that number downwards — the way it's gone with colonoscopy," says Wax, who has launched a company, Oncoscope, to raise funds for clinical trials.

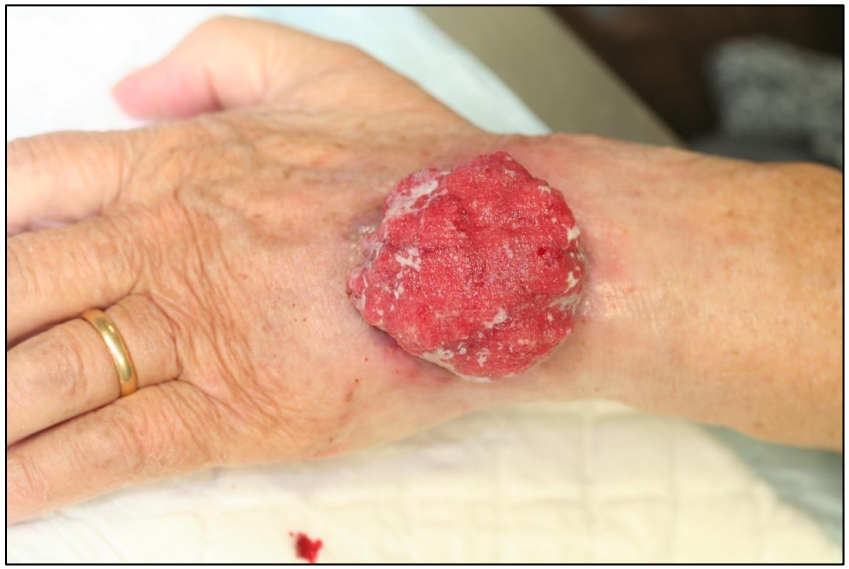
A similar light-based technique, optical coherence tomography (OCT) — could detect non-melanoma skin cancer below the surface of the skin, where standard visual exams can't see. Where Wax aims to get a precise measurement of cell structures, OCT provides images that doctors can examine. OCT — already used by ophthalmologists to examine the inside of the eye, also uses interferometry to image intracellular structures so doctors can see if they're abnormal. A British company, Michelson Diagnostics, is developing a handheld OCT scanner to detect non-melanoma skin cancer below the surface of the skin,

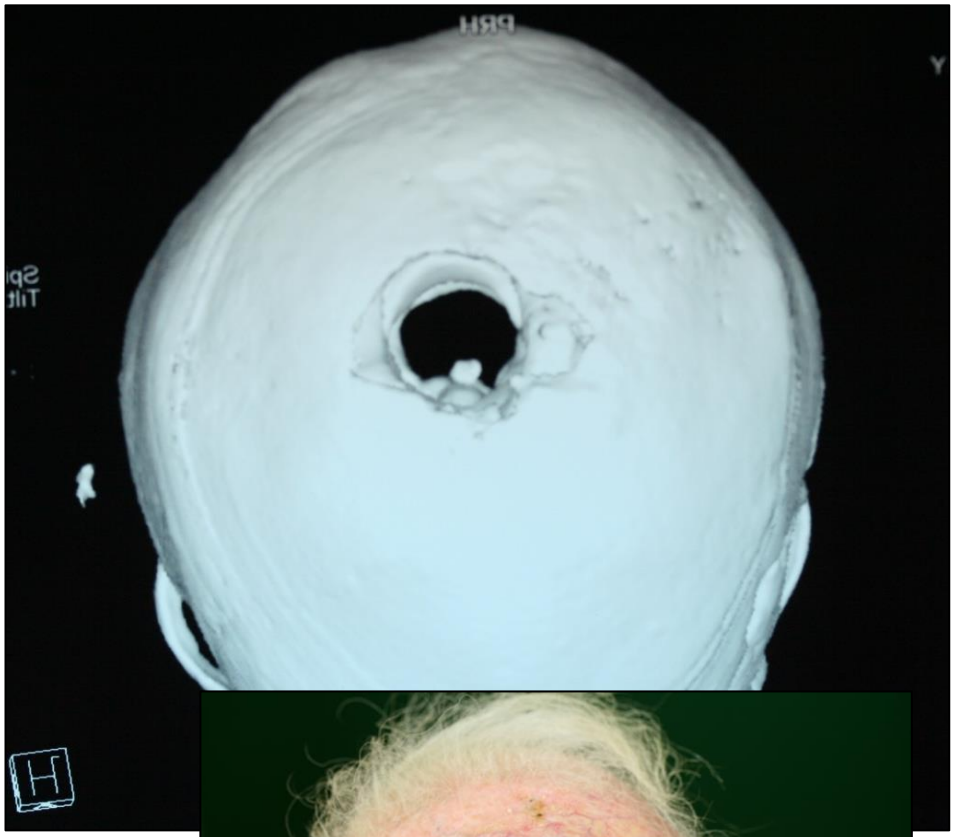
"We're very good at seeing where the lesion is," says biomedical engineer Gordon McKenzie, Michelson's medical applications director. "What we're doing now is gathering the evidence of whether we're seeing a cancer or a precancer." He says the machine, VivoSight, is comparable in both appearance and cost to the ultrasound machines found in obstetricians' offices. He hopes that the device, now

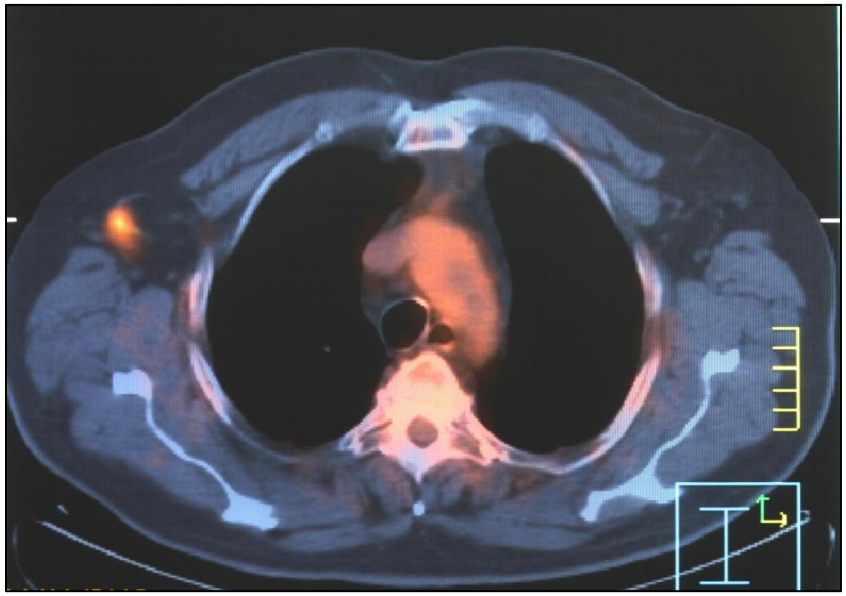
Nature 2011, 471, S14-5

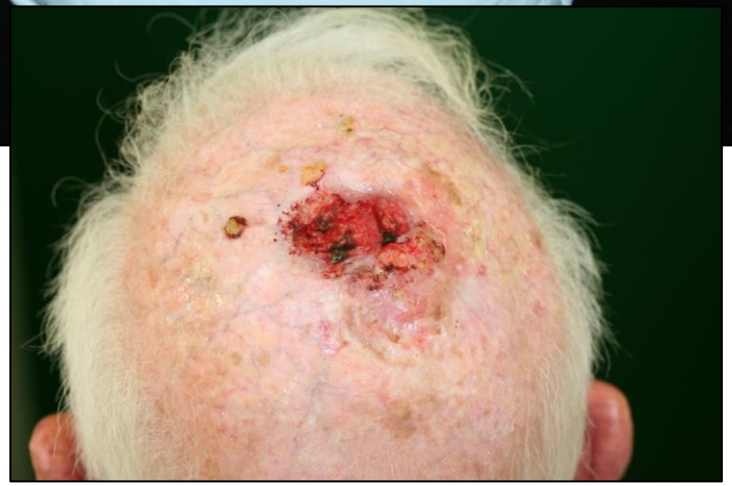


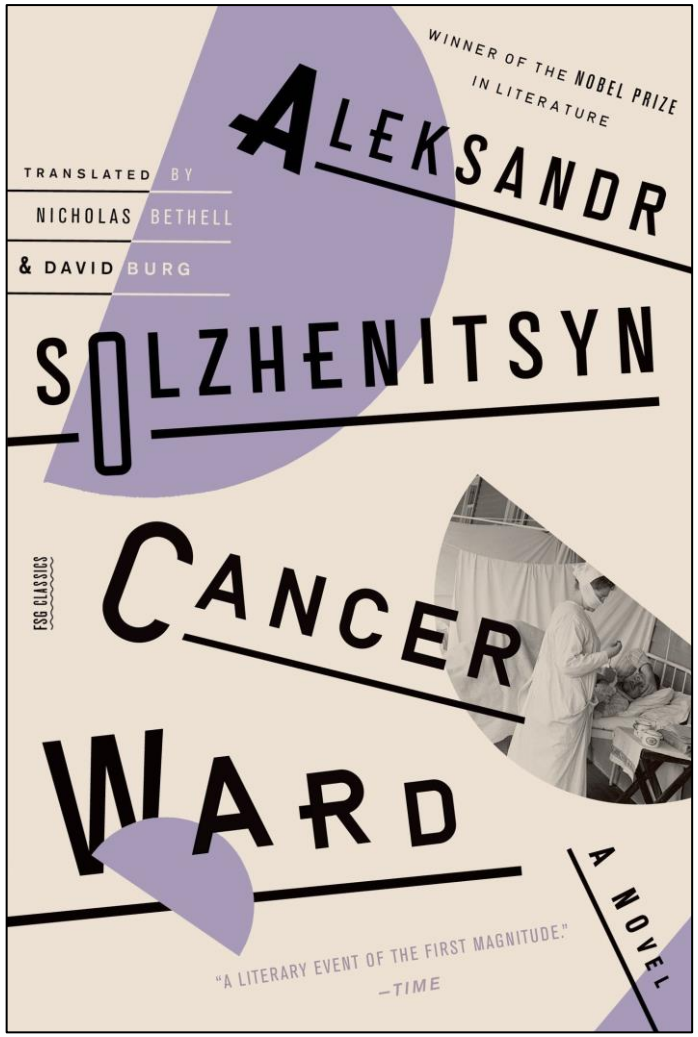




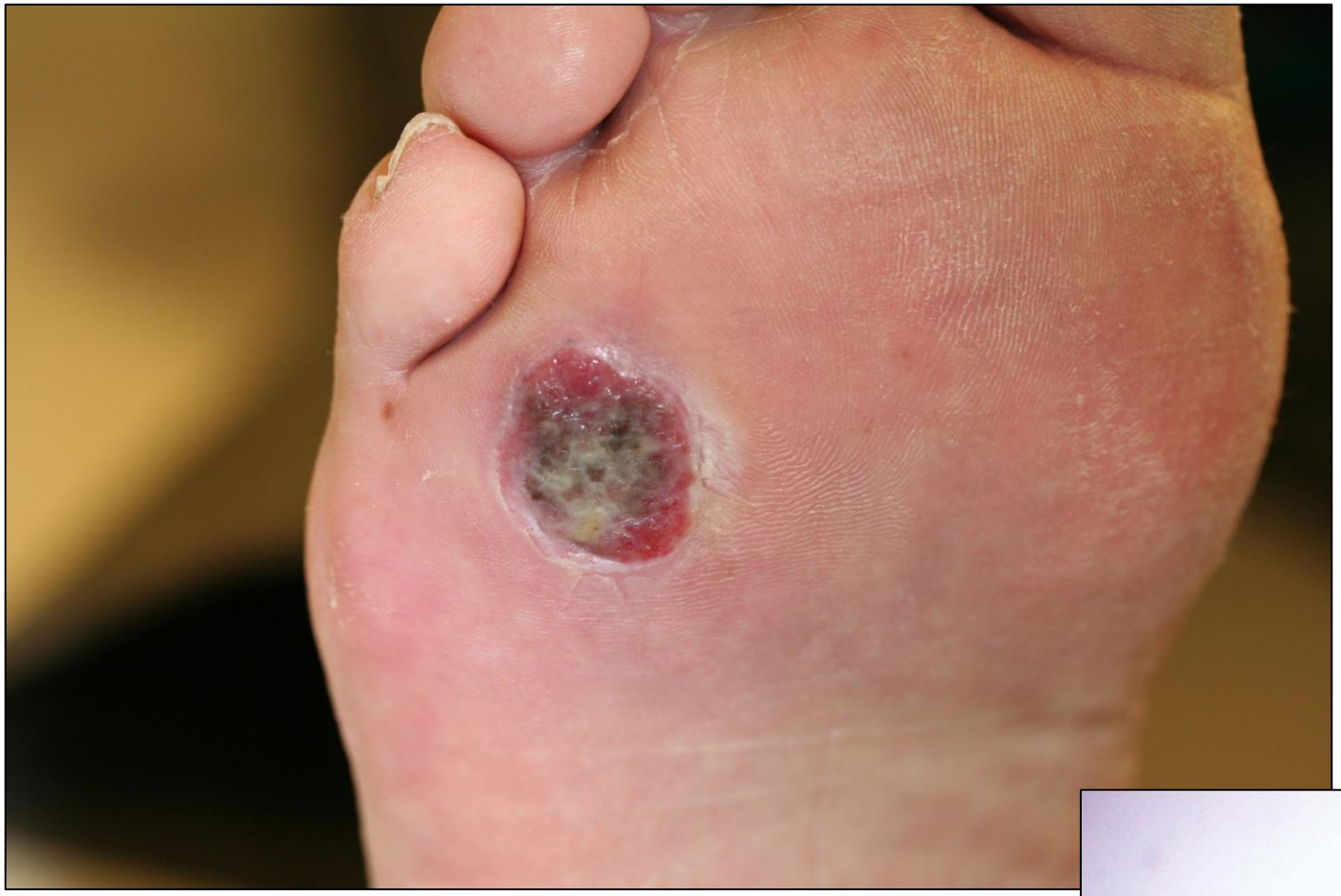


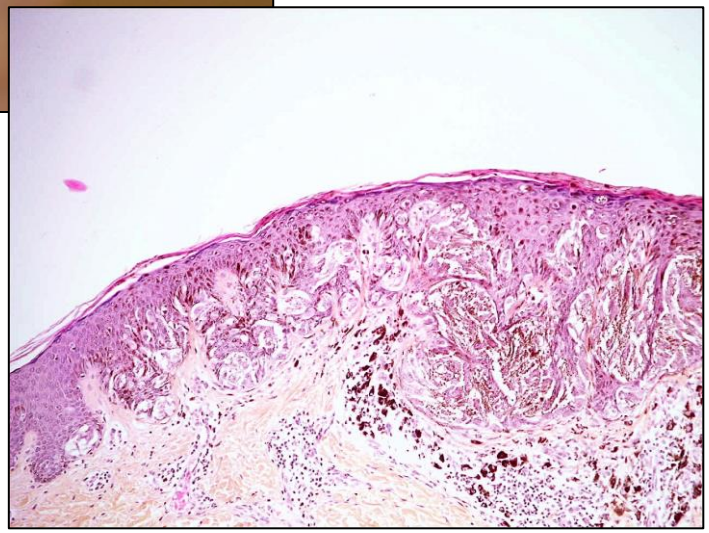


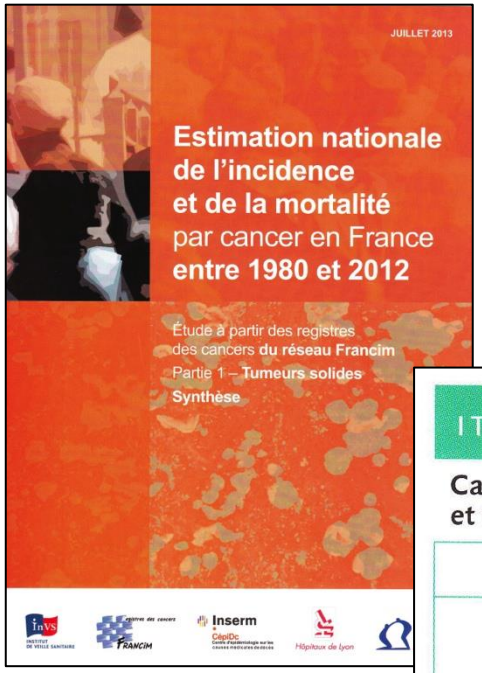




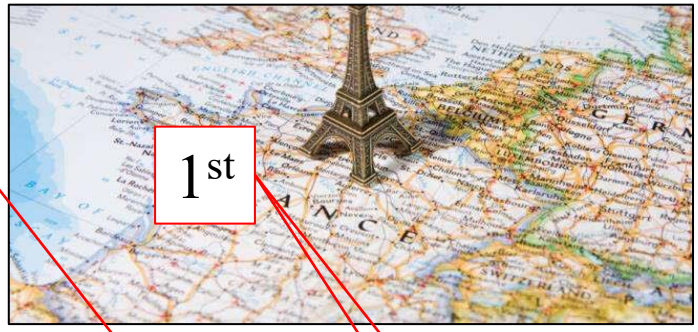
She was followed by a woman in-patient wearing a grey dressing-gown, with a little sherical pigmented tumour on the sole of her foot (… …), she was talking merrily away to the nurse, little realizing that this tiny ball, no more than a centimetre wide was the very queen of malignant tumours : a melanoma







9th



1st

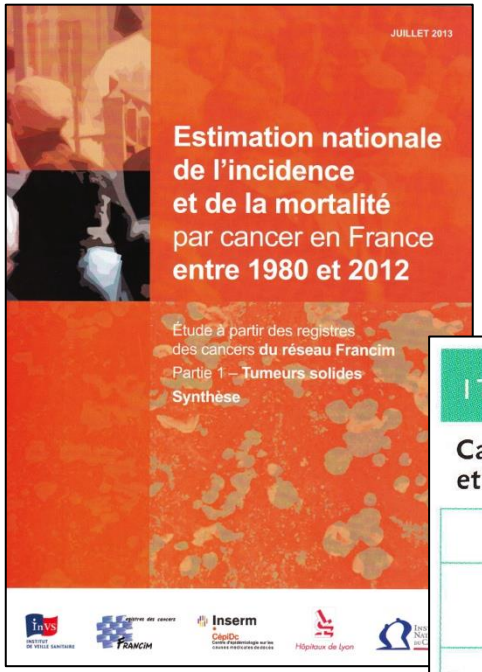
8th

2nd

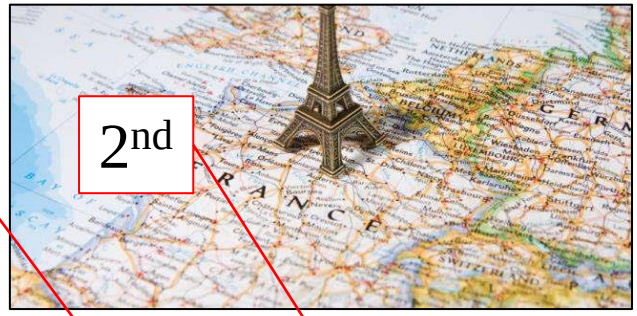
I Tableau 1 I

Cas incidents/décès estimés et taux d'incidence/de mortalité standardisés Monde par localisation en 2012 et tendances évolutives (1980-2012 et 2005-2012), estimations chez l'homme

	Incidence				Mortalité			
	Situation en 2012		Taux annuel moyen d'évolution (%)		Situation en 2012		Taux annuel moyen d'évolution (%)	
Localisation	Nombre de nouveaux cas	Taux d'incidence (1)	1980-2012	2005-2012	Nombre de décès	Taux de mortalité (1)	1980-2012	2005-2012
Lèvre, cavité orale, pharynx	8 033	16,1	-2,8	-5,3	2 465	4,7	-3,7	-6,5
Œsophage	3 503	6,2	-3,0	-4,4	2 653	4,6	-3,4	-5,0
Estomac	4 308	7,0	-2,2	-2,2	2 834	4,4	-3,4	-2,8
Côlon-rectum	23 226	38,4	0,3	-0,3	9 275	13,3	-1,2	-1,5
Foie (2)	6 867	12,1	3,2	1,3				
Pancréas (2)	5 963	10,2	2,3	4,5				
Larynx	2 821	5,4	-2,9	-4,7	783	1,4	-6,4	-9,3
Poumon	28 211	51,7	0,1	-0,3	21 326	37,0	-0,5	-2,2
Mélanome de la peau	5 429	10,8	4,7	2,9	954	1,7	1,9	0,1
Prostate (3)	56 841 (3)	99,4 (3)			8 876	10,2	-1,5	-3,7
Testicule	2 317	7,2	2,4	1,6	85	0,2	-3,5	-2,6
Vessie	9 549	14,7	-0,4	-1,4	3 574	4,9	-1,1	-2,4
Rein	7 781	14,5	2,0	1,8	2 651	4,0	0	-1,2
Système nerveux central	2 814	6,3	1,1	0,4	1 761	3,6	0,4	-1,1
Thyroïde	2 324	5,5	5,2	5,4	145	0,2	-1,9	-2,7
Tous cancers (4)	200 350	362,6	0,8	-1,3	85 255	133,6	-1,5	-2,9



10th



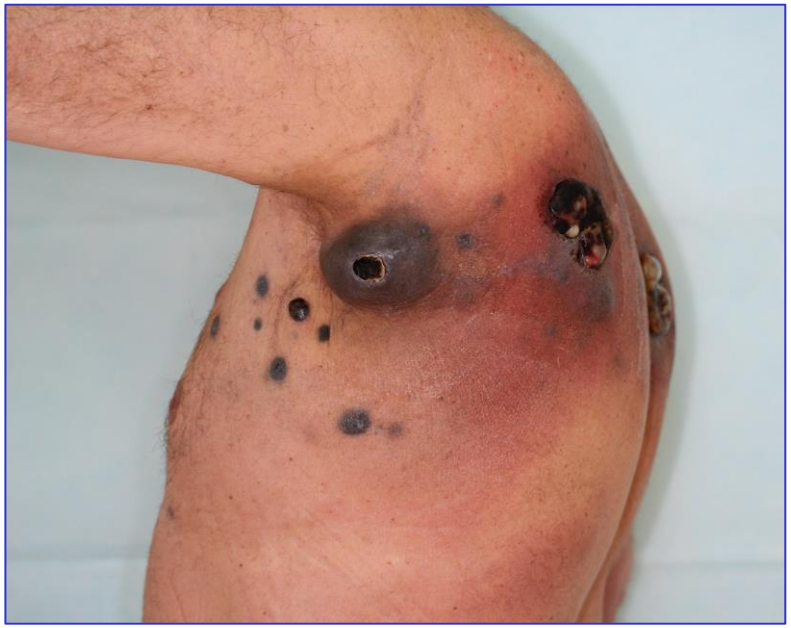
5th

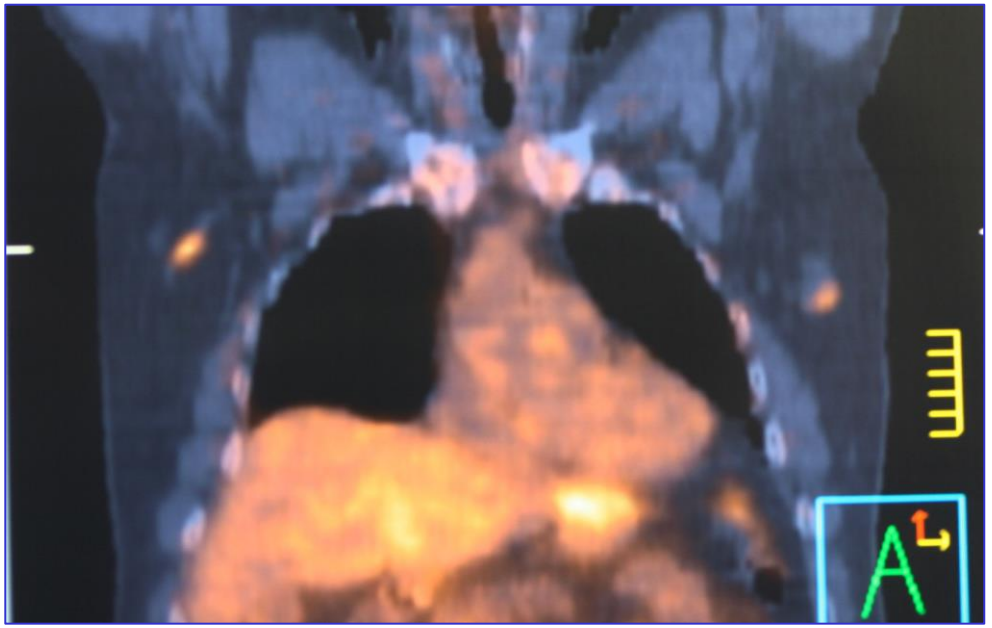
4th

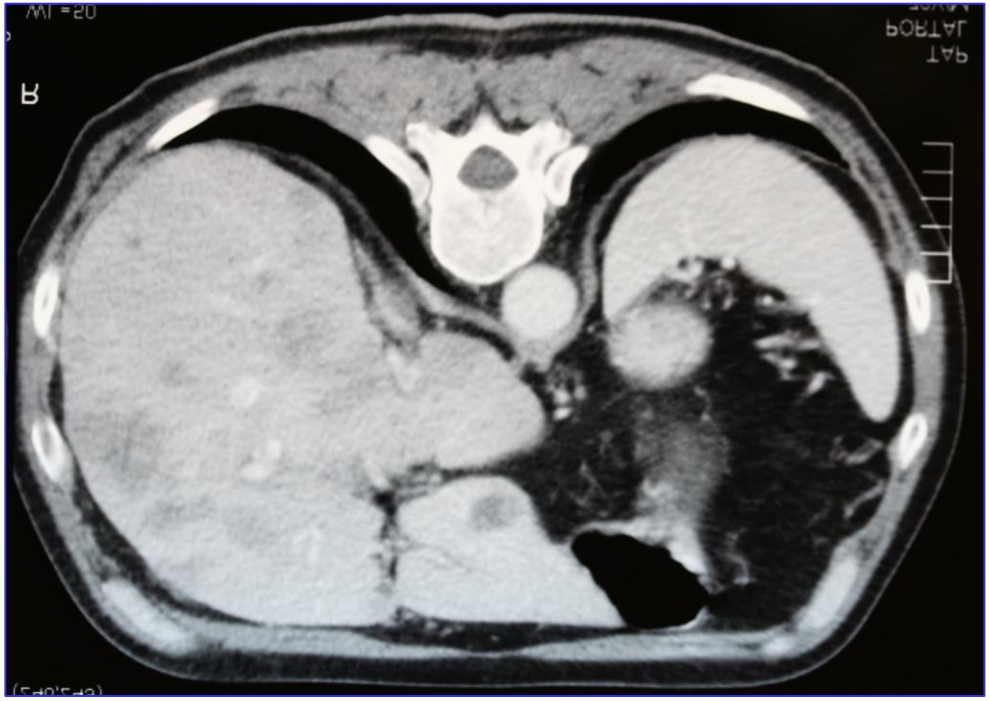
I TABLEAU 2 I

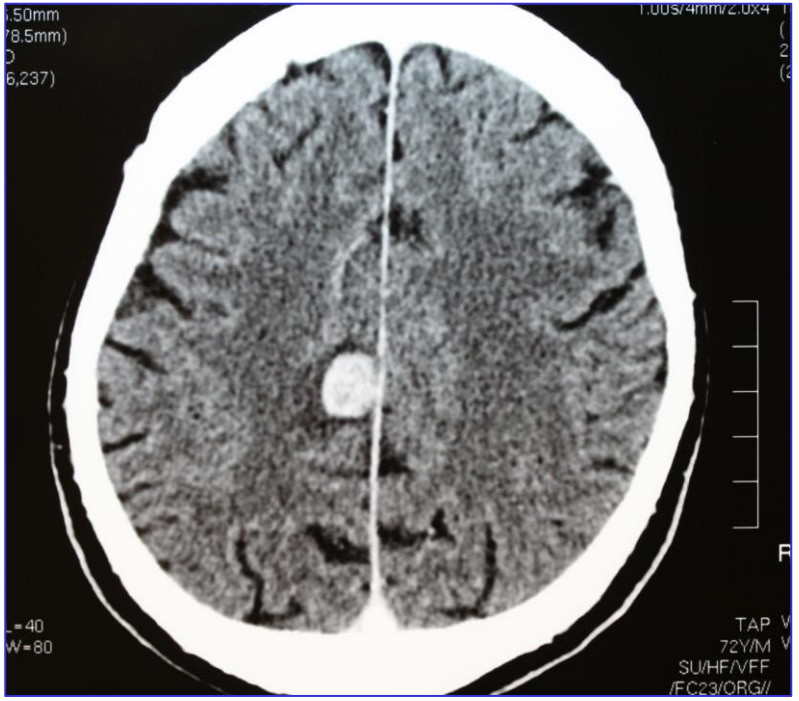
Cas incidents/décès estimés et taux d'incidence/de mortalité standardisés Monde par localisation en 2012 et tendances évolutives (1980-2012 et 2005-2012), estimations chez la femme

	Incidence				Mortalité			
	Situation en 2012		Taux annuel moyen d'évolution (%)		Situation en 2012		Taux annuel moyen d'évolution (%)	
Localisation	Nombre de nouveaux cas	Taux d'incidence (1)	1980-2012	2005-2012	Nombre de décès	Taux de mortalité (1)	1980-2012	2005-2012
Lèvre, cavité orale, pharynx	3 283	5,6	1,5	1,1	727	1,0	-0,5	-2,2
Œsophage	1 129	1,5	1,1	1,1	791	0,9	-0,5	-1,1
Estomac	2 248	2,6	-2,6	-2,0	1 577	1,7	-3,8	-2,7
Côlon-rectum	18 926	23,7	0,1	-0,3	8 447	7,9	-1,4	-1,1
Foie (2)	1 856	2,4	3,5	3,0				
Pancréas (2)	5 699	6,9	3,9	5,4				
Larynx	501	0,9	1,1	0,5	123	0,2	-2,5	-4,5
Poumon	11 284	18,6	5,3	5,4	8 623	12,9	3,7	4,6
Mélanome de la peau	5 747	11,0	3,2	1,7	718	1,0	0,8	-1,8
Sein	48 763	88,0	1,4	-1,5	11 886	15,7	-0,6	-1,5
Col de l'utérus	3 028	6,7	-2,5	-1,2	1 102	1,8	-3,2	-2,0
Corps de l'utérus	7 275	10,8	0,1	0,3	2 025	2,2	-1,0	-0,6
Ovaire	4 615	7,6	-0,6	-1,2	3 140	3,8	-1,2	-3,3
Vessie	2 416	2,5	-0,4	0,9	1 198	1,0	-1,0	-0,9
Rein	3 792	5,8	1,7	1,4	1 306	1,4	-0,9	-2,1
Système nerveux central	2 185	4,2	0,9	0,2	1 291	2,2	0,4	-1,9
Thyroïde	5 887	13,8	5,1	2,7	230	0,2	-3,4	-4,2
Tous cancers (4)	155 004	252,0	1,1	0,2	63 123	73,2	-1,0	-1,4

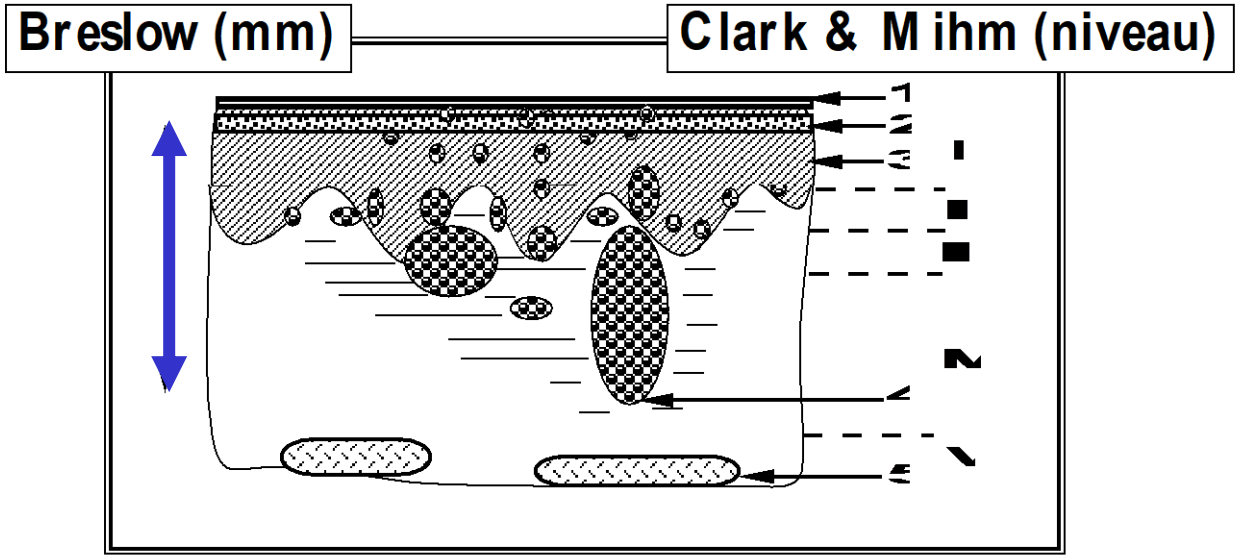








Epaisseur et niveaux d'invasion



1: couche cornée
2: couche granuleuse
3: épiderme
4: plus profonde cellule tumorale
5: hypoderme

Pronostic

	Survie à 10 ans
Mélanome stade local (AJCC I et II)	
Toutes épaisseurs confondues :	**91 %**
in situ	**100%**
< 0,75 mm :	**96 %**
0,76 - 1,49 mm :	**87 %**
1,5 - 2,49 mm:	**75 %**
2,5 - 3,99 mm:	**66 %**
> 4 mm :	**47 %**
Mélanome Stade régional (AJCC III) :	**36 à 41 %**
Mélanome Stade métastatique (AJCC IV) :	**< 5 % (5 ans)**

2008-2018

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Dementia pages 888, 909

The New England Journal of Medicine

Original Articles

Case Records of the Massachusetts General Hospital

Editorial

Sounding Board

Correspondence

Review Article

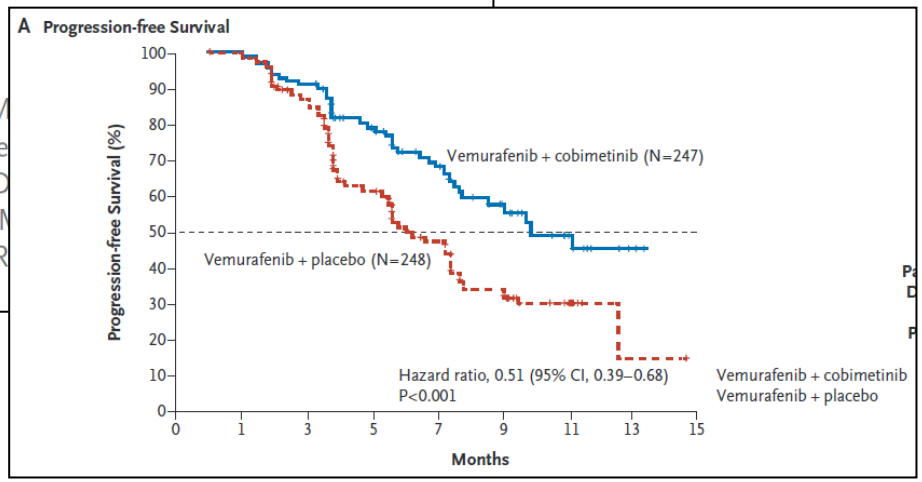
Clinical Problem-Solving

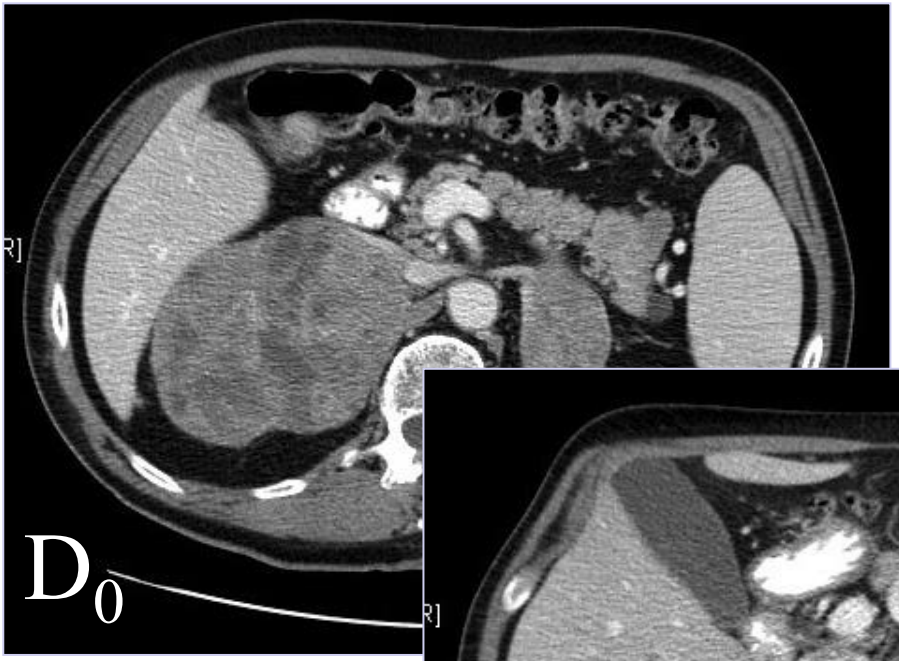
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 NOVEMBER 13, 2014 VOL. 371 NO. 20

Combined Vemurafenib and Cobimetinib in *BRAF*-Mutated Melanoma

James Larkin, M.D., Ph.D., Paolo A. Ascierto, M.D., Brigitte Dréno, M
Gabriella Liszkay, M.D., Michele Maio, M.D., Mario Mandalà, M.D., Lev De
Luc Thomas, M.D., Ph.D., Luis de la Cruz-Merino, M.D., Caroline D
Mika A. Sovak, M.D., Ph.D., Ilsung Chang, Ph.D., Nicholas Choong, M
Grant A. McArthur, M.B., B.S., Ph.D., and Antoni R

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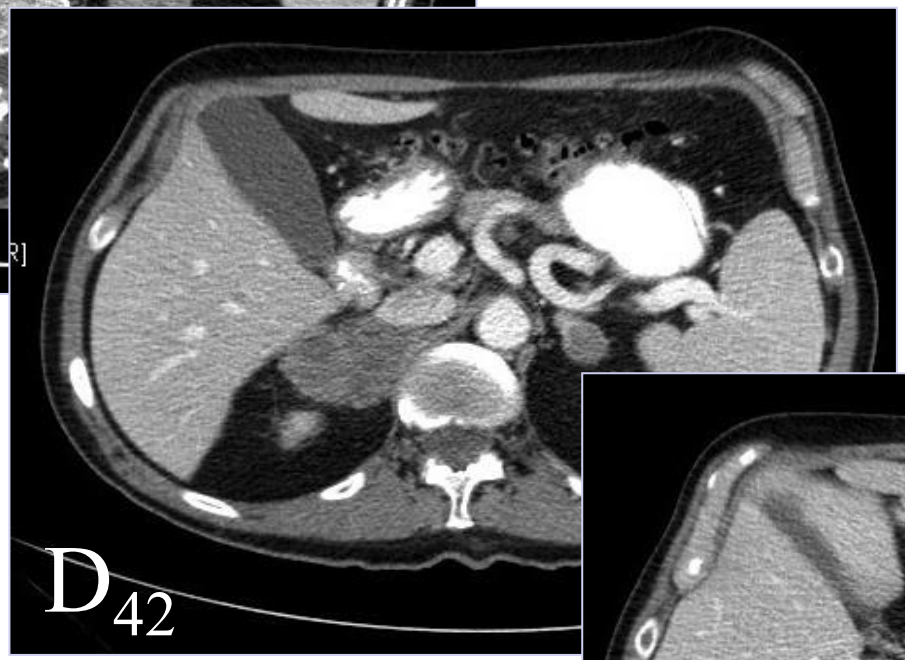
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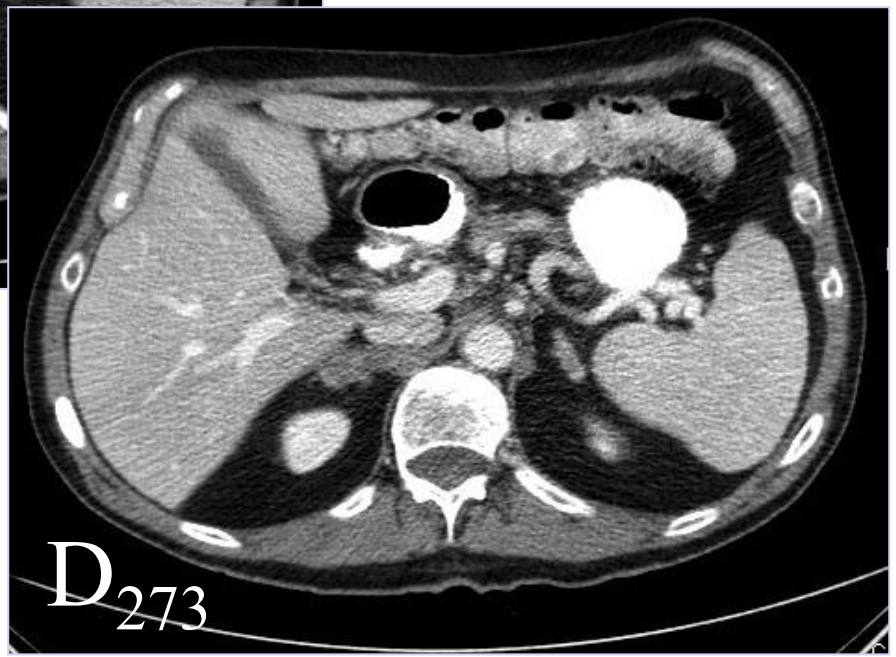
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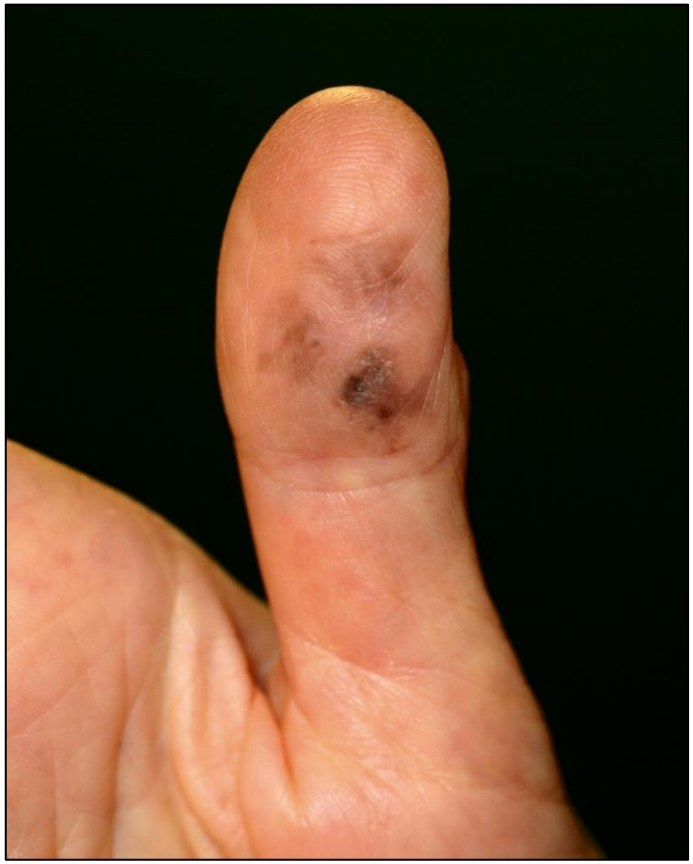
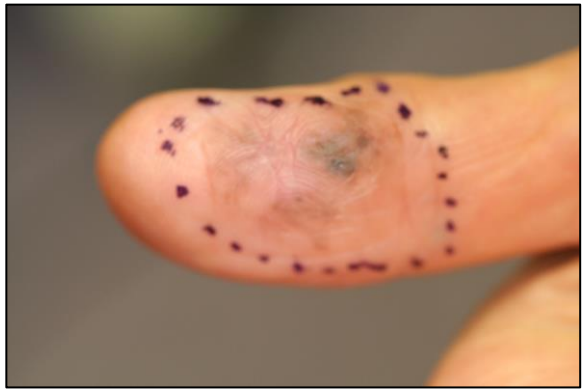
BUZZ
BUZZ
BUZZ
BUZZ
BUZZ
BUZZ

Cutaneous melanoma

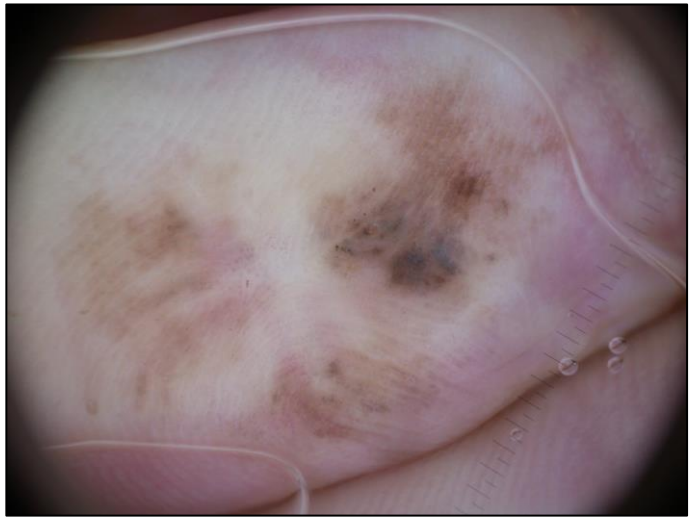
- 1940 : 40% 5 year-survival
- 1971 : 68% 5 year-survival
- 2002 : 92% 10 year-survival

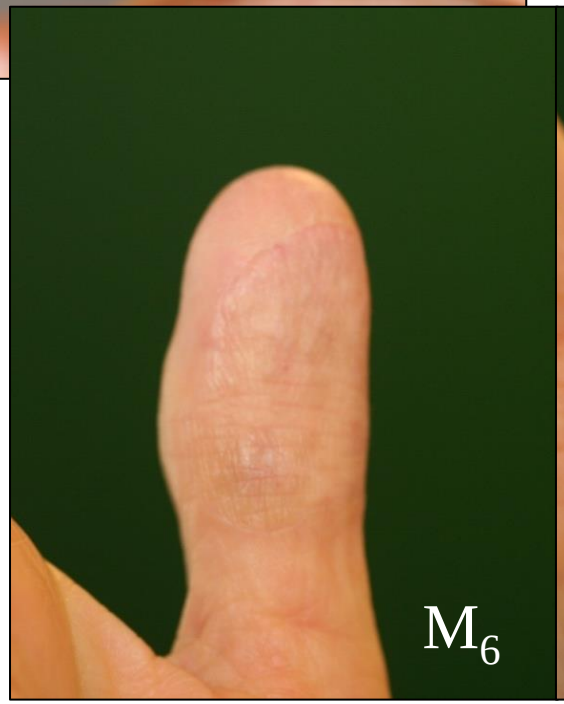
Hu S. et al Arch Dermatol 2009 145, 12 1369-1374






CONSERVATIVE

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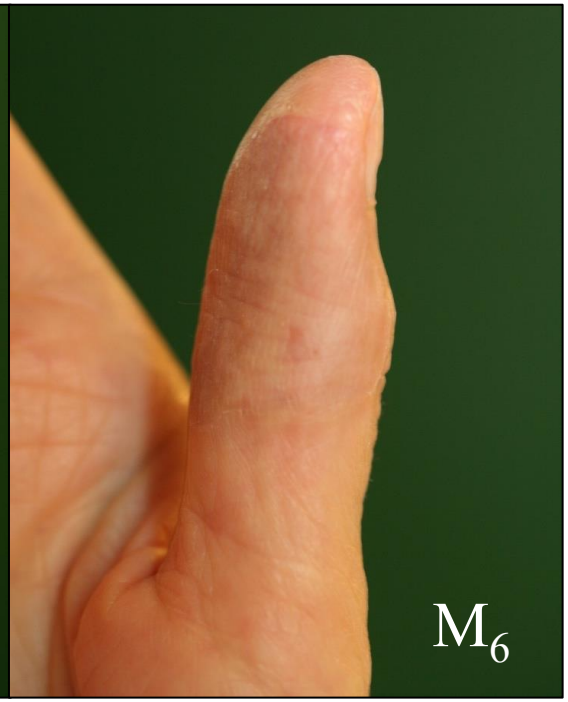
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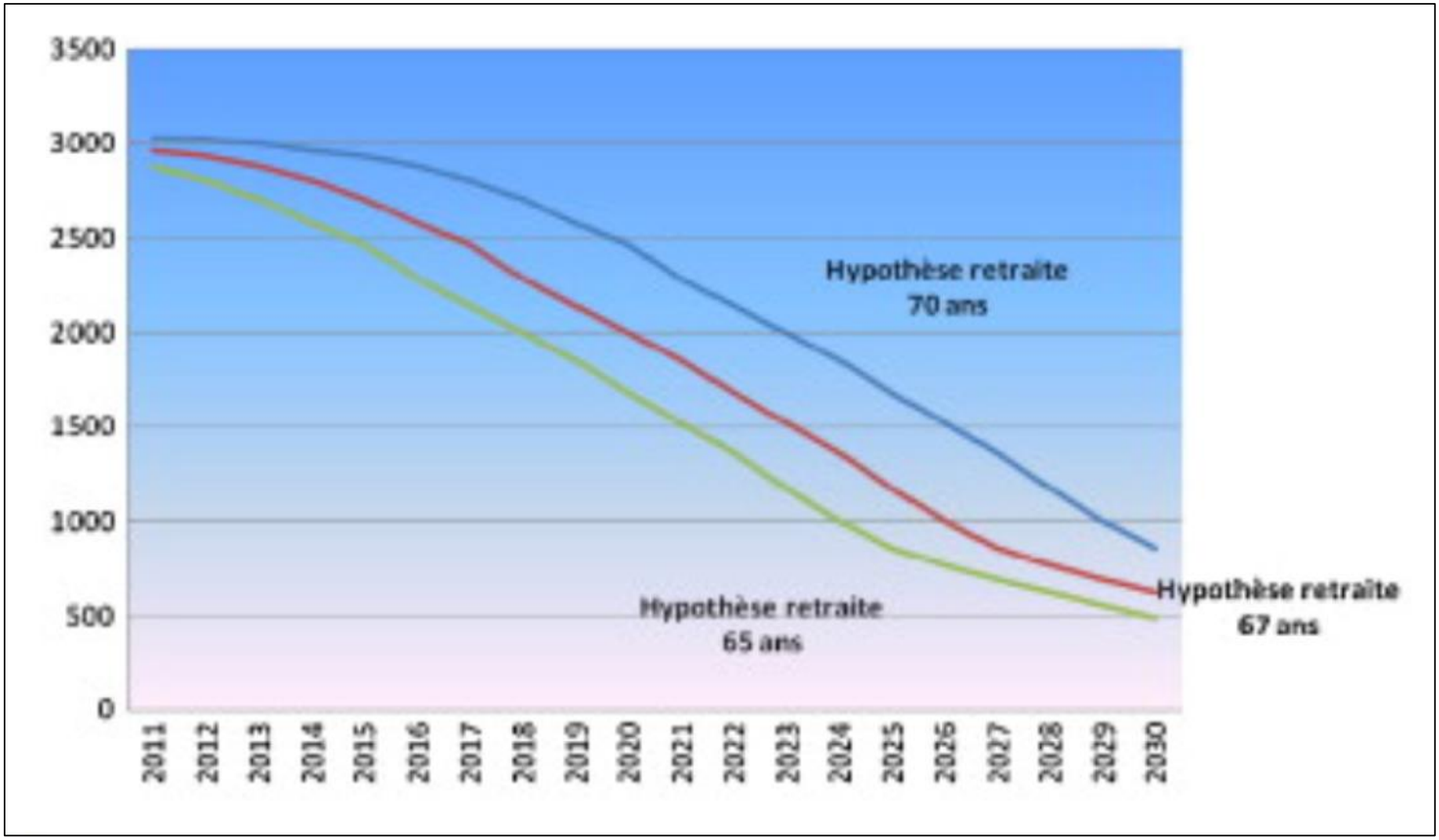
SO
WRONG

ARE YOU REALLY HERE



Ann dermatol venereol (2012) 139 833-11

Short wait times for patients seeking cosmetic botulinum toxin appointments with dermatologists

Jack S. Resneck, Jr, MD,[a] Shira Lipton, MD,[b] and Mark J. Pletcher, MD, MPH[c]
San Francisco and Los Angeles, California

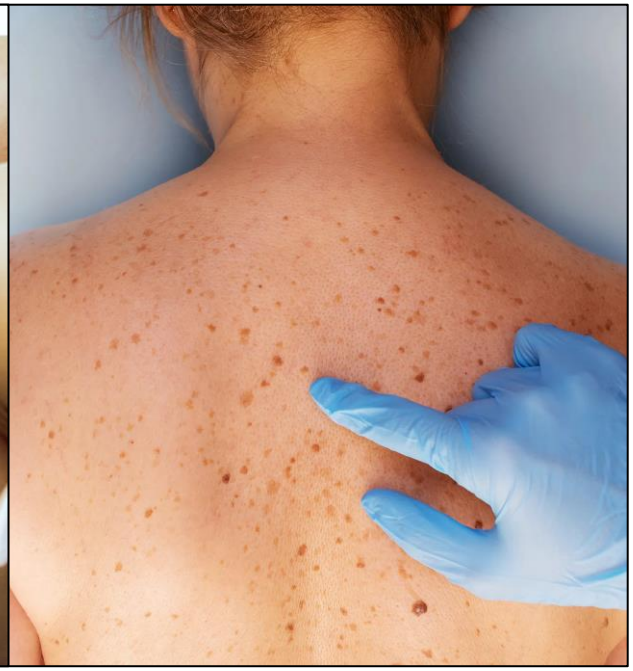
Background: Wait times for both routine and urgent dermatology appointments typically exceed 3 to 4 weeks. Many factors affecting physician workforce adequacy and patient access have been explored, but little is known about the impact of increasing numbers of doctors offering cosmetic services.

Objective: We sought to evaluate access to dermatologists for patients requesting cosmetic services.

Methods: Scripted patient telephone calls were made to 898 dermatologists in 12 metropolitan areas to assess wait times for an appointment to receive cosmetic botulinum toxin injections. The areas chosen were surveyed completely, and respondents represented about one tenth of practicing dermatologists in the United States. The methodology was identical to that used in a previous study of wait times for evaluation of a changing mole (a possible indicator of malignancy).

Results: Half of dermatologist respondents (455, 50.7%) offered appointments for botulinum toxin injections, and the median wait time was 8 days. Acceptance rates and wait times varied greatly by geographic area (range of median wait times 6.0-32.5 days), with dermatologists in Miami, Fla, and Orange County, California, most likely to provide a botulinum toxin appointment with a short wait time. Many dermatologists (241, 27%) employed physician extenders, and 39% of these extenders also offered appointments for botulinum toxin injections (median wait time 6 days). In comparison with a previous study showing median wait times of 26 days for evaluation of a changing mole in these communities, wait times for cosmetic injections were significantly shorter ($P < .001$).


DELAY



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Did you know?

Diagnosis and treatment of skin lesions are essential skills for primary care practitioners.

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Editorial

General practice and melanoma management in Australia: controversies and implications for generalist GP training

Cliff Rosendahl[1,2], Simon Clark[2,3]

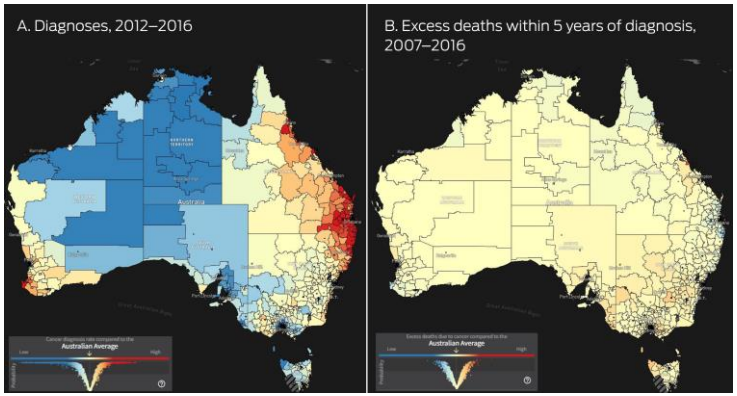
Australians should be confident that their generalist GP is trained to an acceptable level of competence in skin cancer diagnostics

In this issue of the *MJA*, Pandeya and colleagues report their study of a sample of 1683 Queensland adults diagnosed with first melanomas between 2011 and 2019.[1] Their article provides an authoritative insight into who treats melanoma in Queensland and how they treat it.

The authors found that 77.1% of first melanomas were treated in general practice, compared with 14.8% by dermatologists.[1] Their finding confirms other reports of the prominent role of general practice in melanoma management in Australia, particularly in Queensland.[2] This role has increased over the past two decades as general practitioners move into this area because of the relatively low numbers of dermatologists in Australia. However, a recent study found that general practice registrars do not use dermatoscopy as often as they should, concluding there was a "need for dermoscopy training to be a standard element of general practice training."[3] This problem has led to diverse providers offering training,[4] with options ranging from certificate courses, including awards from the Skin Cancer College Australasia,[5] to an Australian Qualification Framework-compliant online masters' degree at the University of Queensland.[6] Consequently, highly trained GPs with a special interest in skin cancer now work in this area alongside generalist GPs.

Differences between medical specialties in the management of melanoma are notable. Australian guidelines recommend elliptical excision biopsy as the preferred diagnostic procedure, citing the higher incidence of involved margins after alternative approaches.[7] While Pandeya and colleagues found that plastic surgeons, surgeons, and GPs undertook excision biopsy for 54% of patients, dermatologists did so for only 27%, preferring shave biopsy in 56% of cases. In a recent prospective study, a group of Queensland dermatologists reported no positive deep margins for 50 melanomas biopsied with the "intent to remove the lesion *in toto*", but conceded that there was peripheral margin involvement in thirteen cases.[8] Any positive margin can lead to recurrence, which in turn can result in an adverse outcome.[7]

Population ratios of melanoma diagnosis and excess melanoma deaths, Australia, 2007–2016



Source: Australian Cancer Atlas.[10]

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JEADV Journal of the European Academy of Dermatology and Venereology

COMMENTARY

The dermatoscope should be in every primary-care practitioner's kit

Cliff Rosendahl[1,2] | **Martelle Coetzer-Botha**[1]

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[2]Tehran University of Medical Sciences, Tehran, Iran

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In their elegantly designed and executed study on training for skin tumour triage for primary-care physicians (PCPs),[1] Harkemanne et al. highlight what is arguably obvious: Any structured training in dermatoscopy for PCPs is likely to be beneficial.

This study, involving 216 PCPs, 40% trainees, 87% younger than 46 years and 73% female, was adequately powered, rendering statistically significant findings. The training methods were based on a course previously designed for non-experts,[2] notably with an initial emphasis on recognizing the dermatoscopic patterns of benign lesions, before considering dermatoscopic features pointing to malignancy. The methodology of assessment, presenting standardized sets of images from selected benign and malignant categories, was consistent with other studies of dermatoscopic diagnostic accuracy, including methods employed in the assessment of both machine and human diagnostic performance.[3] The authors concluded that a short online dermatoscopic training session of 4 h was non-inferior to a longer 12-h training suite, which included the content of the first session. PCPs who completed all of four, monthly, 30-min refresher training sessions showed the best overall final tested performance ($p < 0.001$).[1]

It is one thing to demonstrate the benefit of skin lesion triage in a controlled online academic environment, but what about in the workplace? Some insights can be gleaned by considering the situation in Australia, where with a high prevalence of skin cancer, coupled with a shortage of dermatologists, PCPs have responded to the point where they now manage most skin malignancies, including melanomas.[4,5] In response, various educational programmes for PCPs have been developed, including a Masters' degree at the University of Queensland,[6] for which alumni now approximate the number of practising dermatologists in the country. Consequently, there is a cohort of highly educated PCPs working alongside generalists, with a recent suggestion that every PCP in Australia should be educated to confidence in skin cancer and melanoma diagnosis.[6] In addition to education, work experience including familiarity with dermatoscopy can impact diagnostic performance in this context. In a study on data from 2008 to 2010 involving 193 Australasian PCPs, it was found that the number needed to treat (NNT; the number of lesions excised to exclude melanoma, for every melanoma discovered), was 17 for generalist PCPs, but half of that (8.5), for PCPs who worked exclusively in the field of skin cancer, who also had a much higher use of dermatoscopy ($p < 0.0001$).[7] For a cohort of 21 of these PCPs who were also involved in a later study, their NNT fell from 10.78 to 5.56 between the 2008–2010 and 2013 study ($p = 0.0037$).[8]

Skin malignancy, including melanoma, is not as prevalent outside Australasia, but the finding of the current study, that 85% of participating PCPs from Belgium and Luxembourg 'always felt uncomfortable' when faced with a suspicious skin lesion,[1] begs a response. The dermatoscope is relevant to any assessment of skin lesions, both inflammatory and neoplastic, and with the prevalence of dermatological conditions in primary care throughout the world, there are many reasons why its use should be taught in all medical schools, along with that of instruments such as the stethoscope.[9,10] In that context, there is good reason that familiarity with the common benign skin lesions (nevus, seborrheic keratosis, dermatofibroma, angioma and sebaceous hyperplasia) could

Linked article: E. Harkemanne et al. JEur Acad Dermatol Venereol 2023; 37:1598-1608. https://doi.org/10.1111/jdv.19087.

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DOI: 10.1111/ajd.14061

ORIGINAL RESEARCH

Australasian Journal of Dermatology

Practitioner characteristics, diagnostic accuracy metrics and discovering-individual with respect to 637 melanomas documented by 27 general practitioners on the Skin Cancer Audit Research Database

Martelle Coetzer-Botha MBChB, MMed (Skin Cancer)[1] | **Clara Jimenez Balcells LLM&C, MMed (Skin Cancer)[2,3]** | **Jeremy Hay BMedSci, MbChB[4]** | **Jeff Keir MBBS, BA, MFamMed[1]** | **Nikita Rosendahl BMath, BSc, BSc(Hons)[5]** | **Tobias Wilson BSc (Comp)[6]** | **Simon Clark MBChB, FRCPA[5,7]** | **Astrid Baade MBBS, MMed (Skin Cancer)[8]** | **Cath Becker MBChB MMed (Skin Cancer)[9,10]** | **Luke Bookallil MBBS, MSpMED[11]** | **Chris Clifopoulos MBBS, MMed (Skin Cancer)[1]** | **Tony Dicker MBBS, PhD[1]** | **Martin Paul Denby BSc, MBChB, MMed (Skin Cancer)[12]** | **Douglas Duthie MBBS[13]** | **Charles Elliott MBBS, MMed (Skin Cancer)[14]** | **Paul Fishburn MBBS, MMed (Skin Cancer)[1]** | **Mark Foley MBChB, BMEDSC[15]** | **Mark Franck MBBS (Hons), MMed (Skin Cancer)[16]** | **Irene Giam MBBS, MMed (Skin Cancer)[17]** | **Patricio Gordillo MBBS[18]** | **Alister Lilleyman MBBS, MMed (Skin Cancer)[19]** | **Roger Macauley MBBS (Hons), MMed (Skin Cancer)[20]** | **James Maher MBBS[21]** | **Ewen McPhee MBBS[22]** | **Michael Reid MBBS[23]** | **Bob Shirlaw MBBS[24]** | **Graeme Siggs MBBS(Hons)[25]** | **Robert Spark MBBS, MHP[26]** | **John Stretch MBChB, MMed (Skin Cancer)[27]** | **Keith van Den Heever MBBCh, MMed (Skin Cancer)[28]** | **Thinus van Rensburg BSc, MBChB[29]** | **Chris Watson MBBS[30]** | **Harald Kittler MD[31]** | **Cliff Rosendahl MBBS, PhD[1,7]**

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[5]Faculty of Medicine, The University of Queensland, St Lucia, Queensland, Australia
[6]SCARD, Eight Mile Plains, Queensland, Australia
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Australasian Journal of Dermatology

Australasian Journal of Dermatology (2022) ••, ••–••

doi: 10.1111/ajd.13843

ORIGINAL RESEARCH

Characteristics, treatment and outcomes of 589 melanoma patients documented by 27 general practitioners on the Skin Cancer Audit Research Database

Jeremy Hay[1] | **Jeff Keir[2]** | **Clara Jimenez Balcells[3]** | **Nikita Rosendahl[4]** | **Martelle Coetzer-Botha[2]** | **Tobias Wilson[5]** | **Simon Clark[4,6]** | **Astrid Baade[7]** | **Cath Becker[8,9]** | **Luke Bookallil[10]** | **Chris Clifopoulos[2]** | **Tony Dicker[2]** | **Martin Paul Denby[11]** | **Douglas Duthie[12]** | **Charles Elliott[15]** | **Paul Fishburn[2]** | **Mark Foley[14]** | **Mark Franck[15]** | **Irene Giam[16]** | **Patricio Gordillo[17]** | **Alister Lilleyman[18]** | **Roger Macauley[19]** | **James Maher[20]** | **Ewen McPhee[21]** | **Michael Reid[22]** | **Bob Shirlaw[25]** | **Graeme Siggs[24]** | **Robert Spark[25]** | **John Stretch[26]** | **Keith van Den Heever[27]** | **Thinus van Rensburg[28]** | **Chris Watson[29]** | **Harald Kittler[30]** | **Cliff Rosendahl[2,6]**

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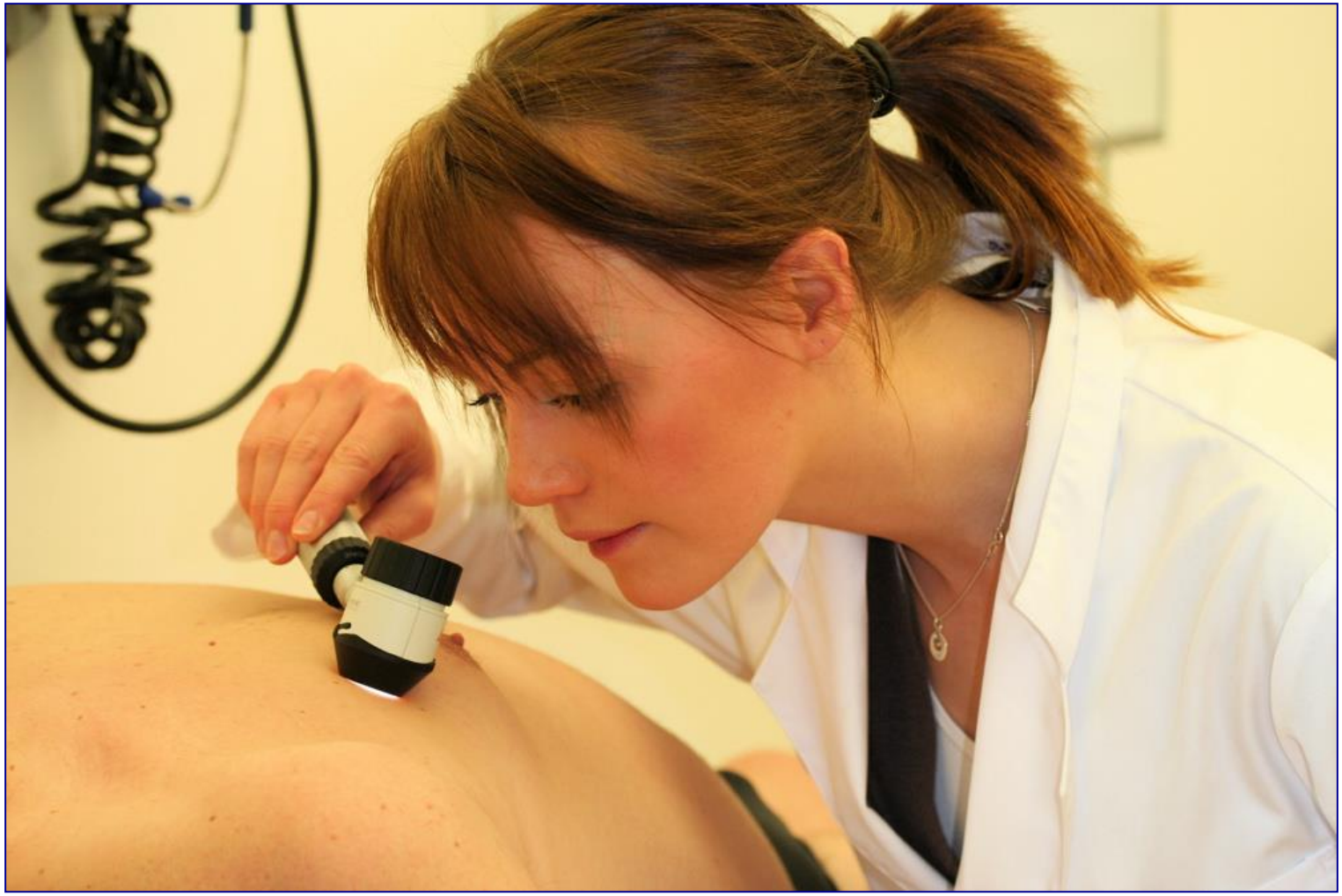
CASIO
HOW?

La dermoscopie c’est quoi ?




BULLSHIT

uestion N° 3 : Pr Luc Thomas

Question N° 3 : Pr Luc Thomas

La lésion élémentaire en dermatologie, ce qu'elle est (avec 4 exemples), ce qu'elle n'est pas (avec deux exemples), et comment la rechercher.

- Ce qu'elle est : macule, papule, végétations, squames.

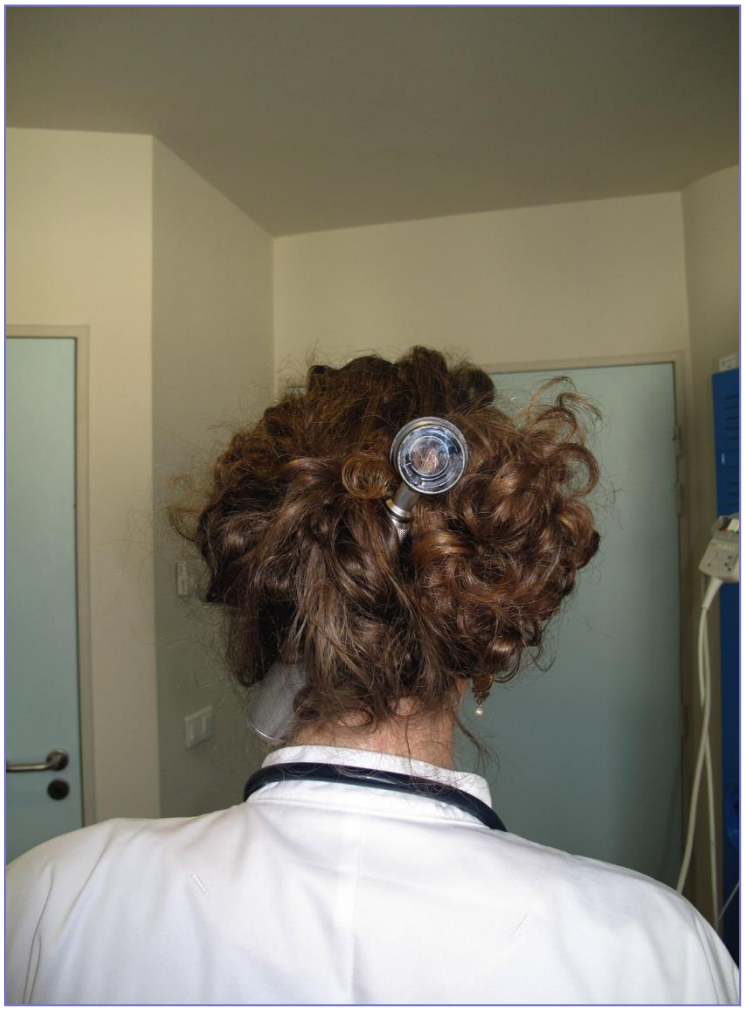
- Ce qu'elle n'est pas : - une lésion provoquée par grattage
  - une cicatrice

- On peut la rechercher à l'aide d'un dermatoscope, d'un mètre de couturière.

2052

Ce n’est pas …

Ce n’est pas …



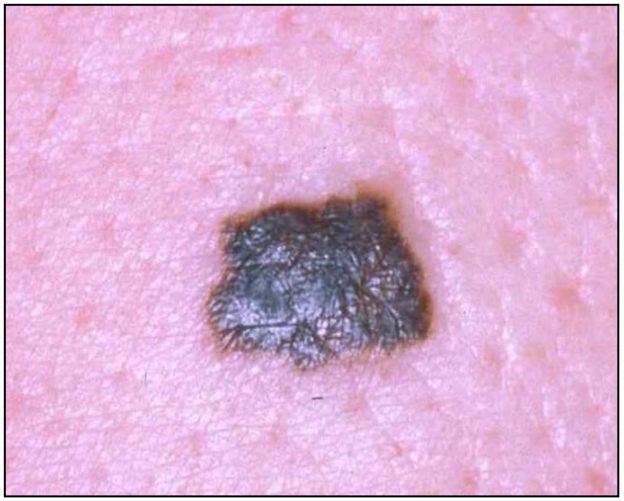
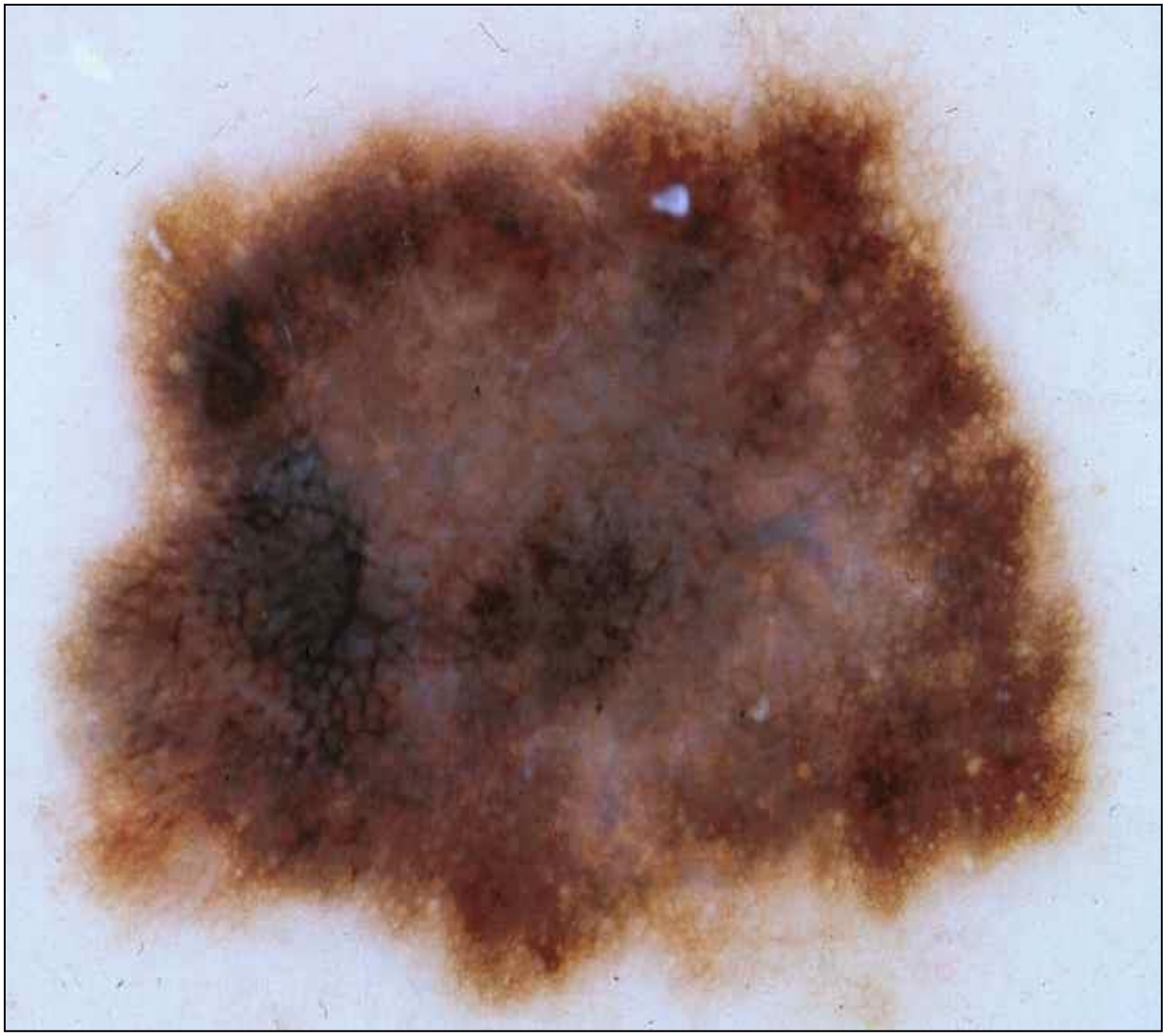
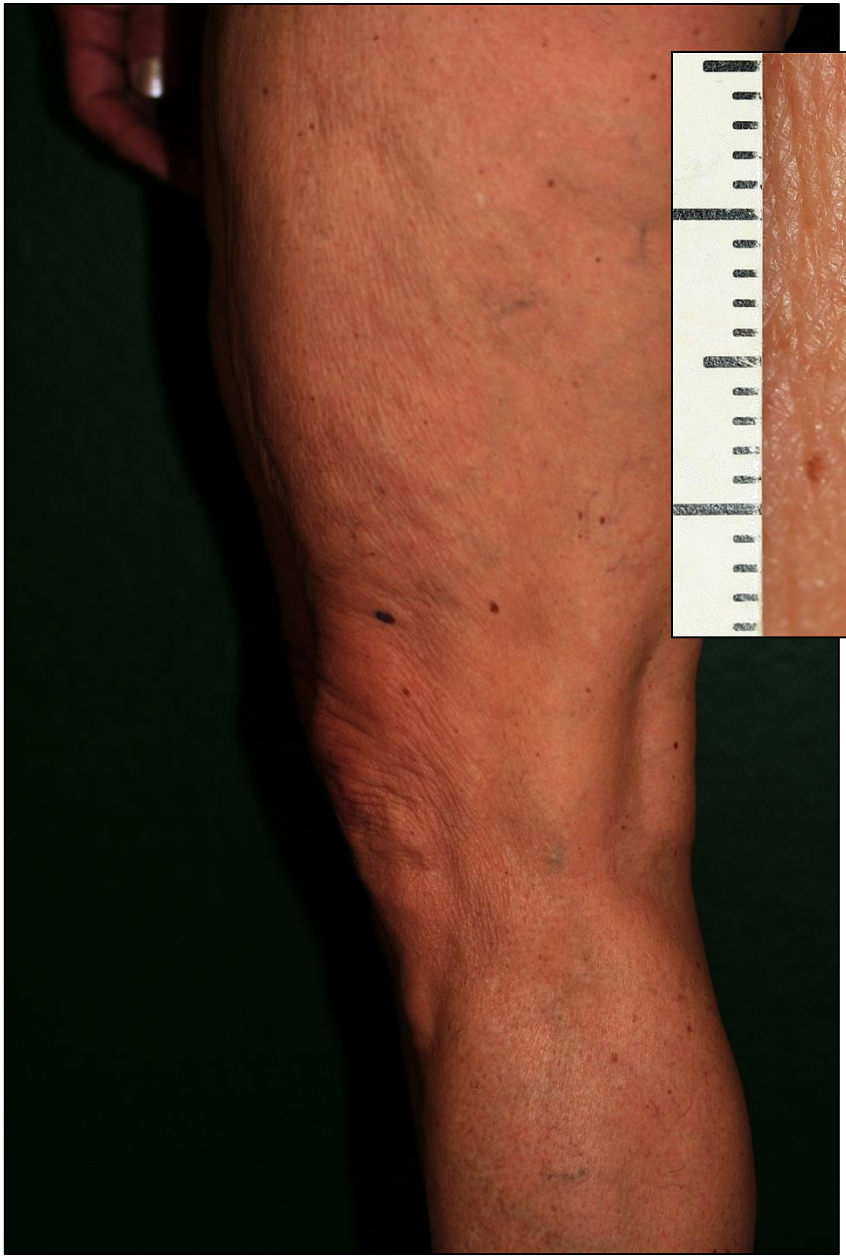
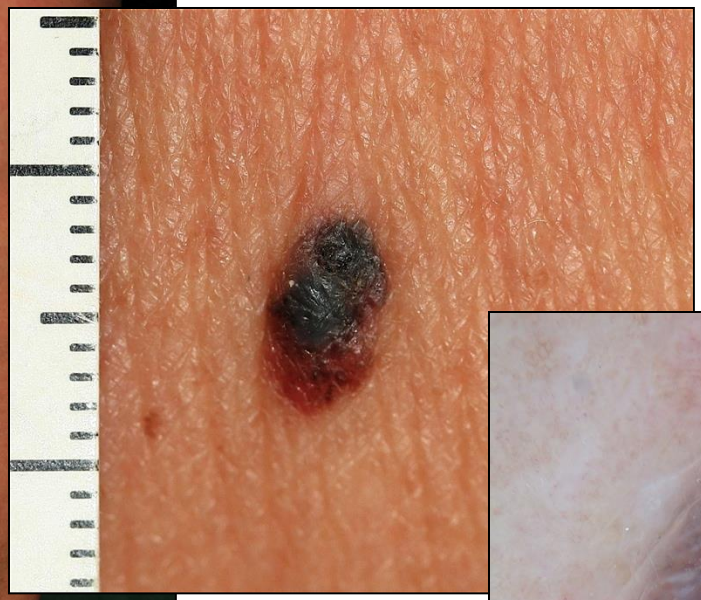


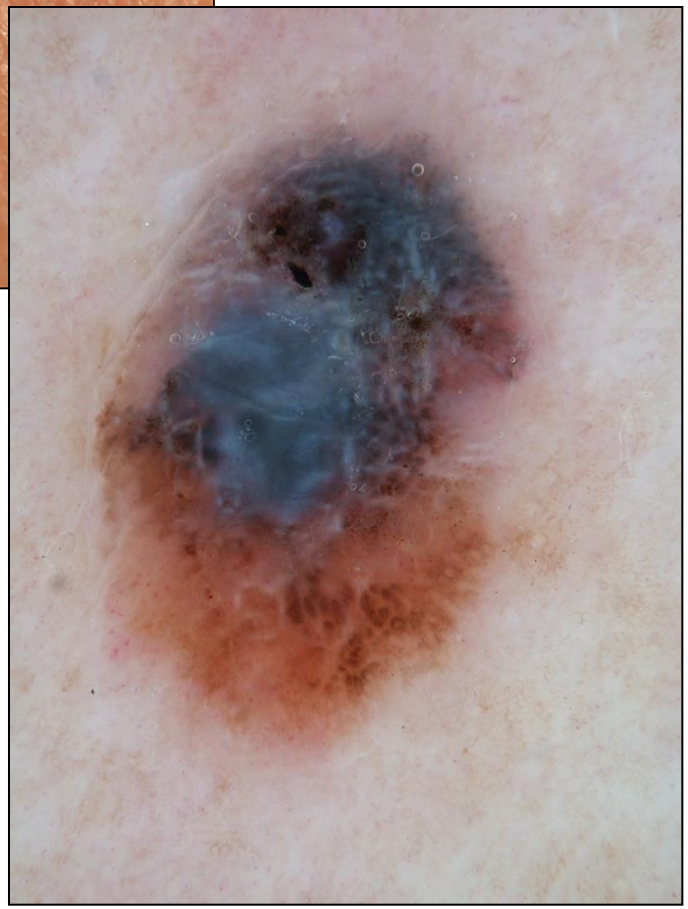
Image clinique

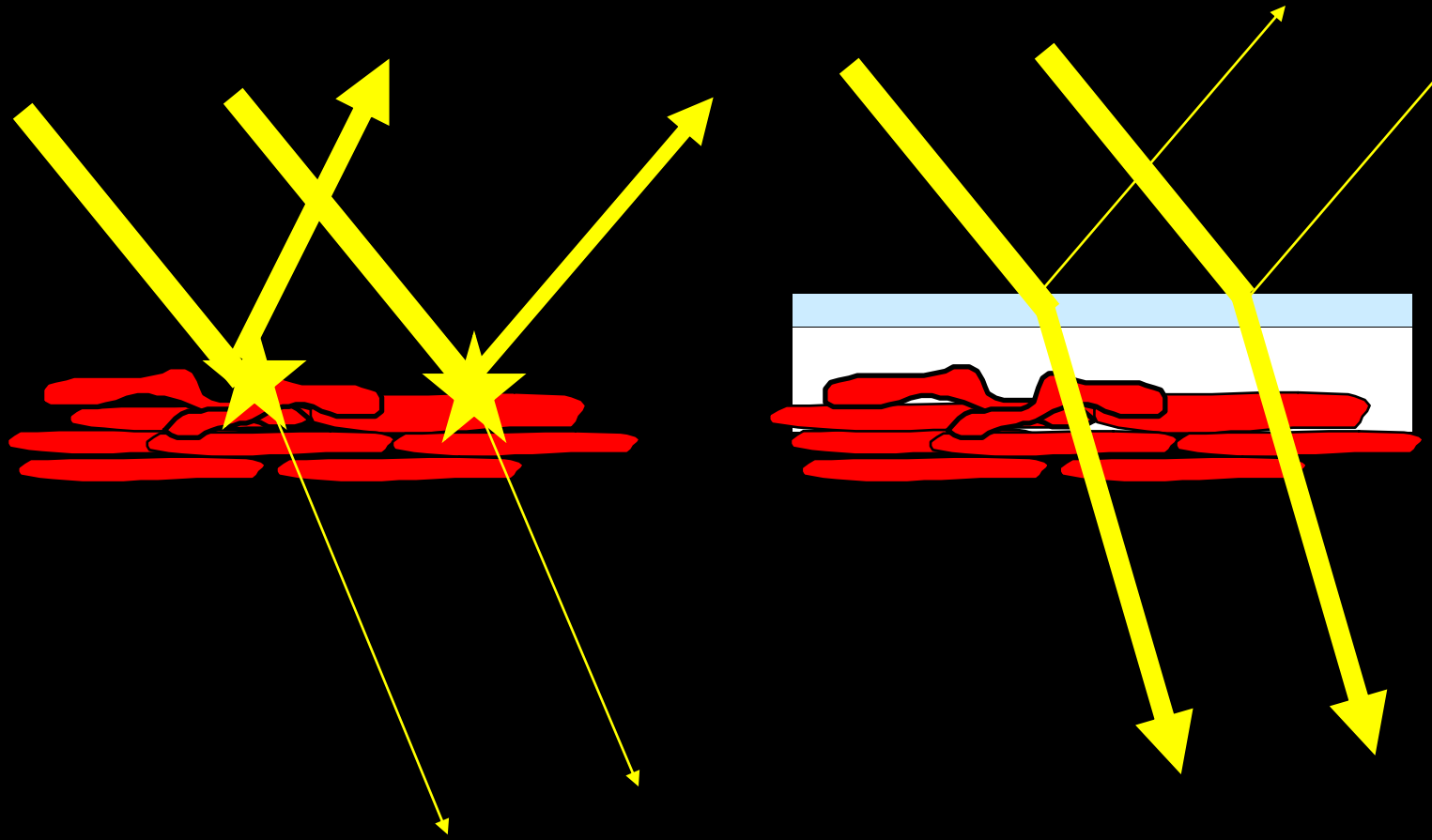


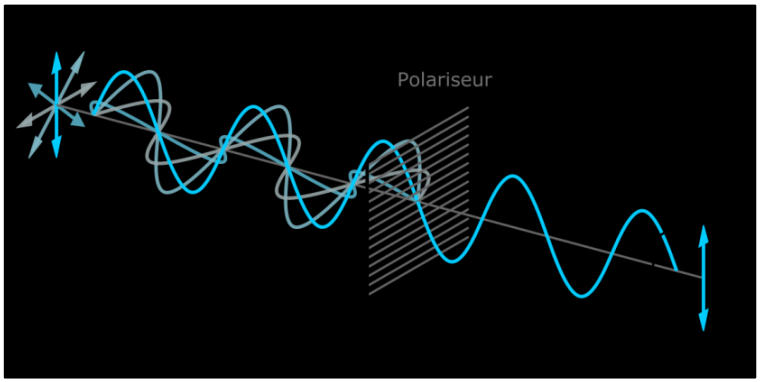
dermoscopie



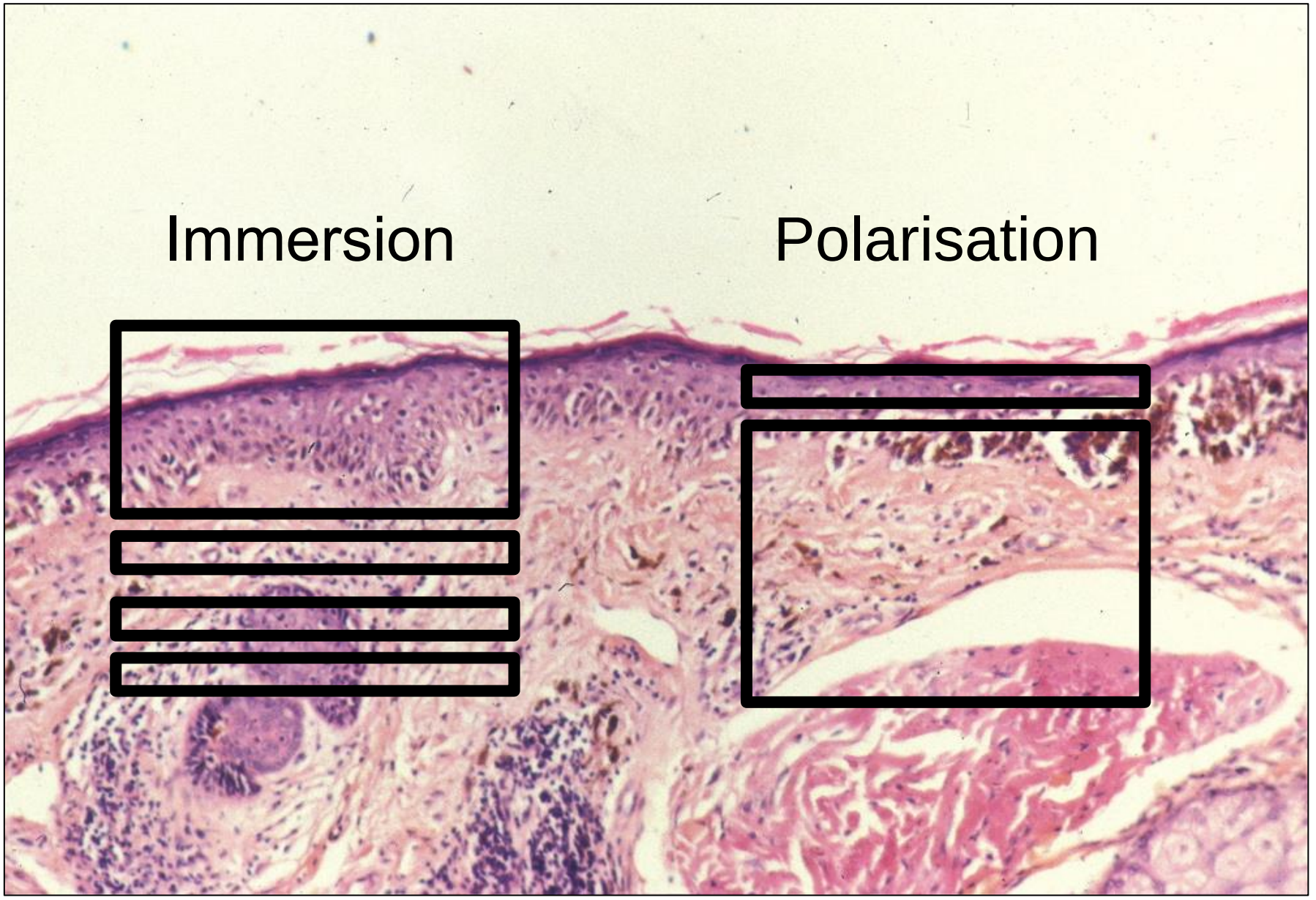


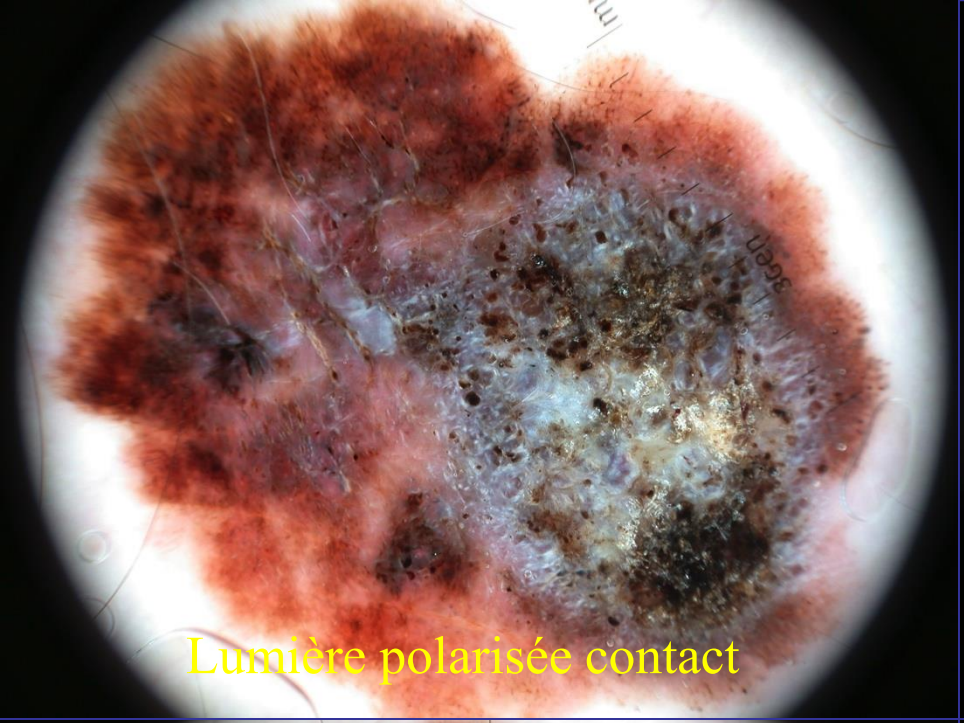




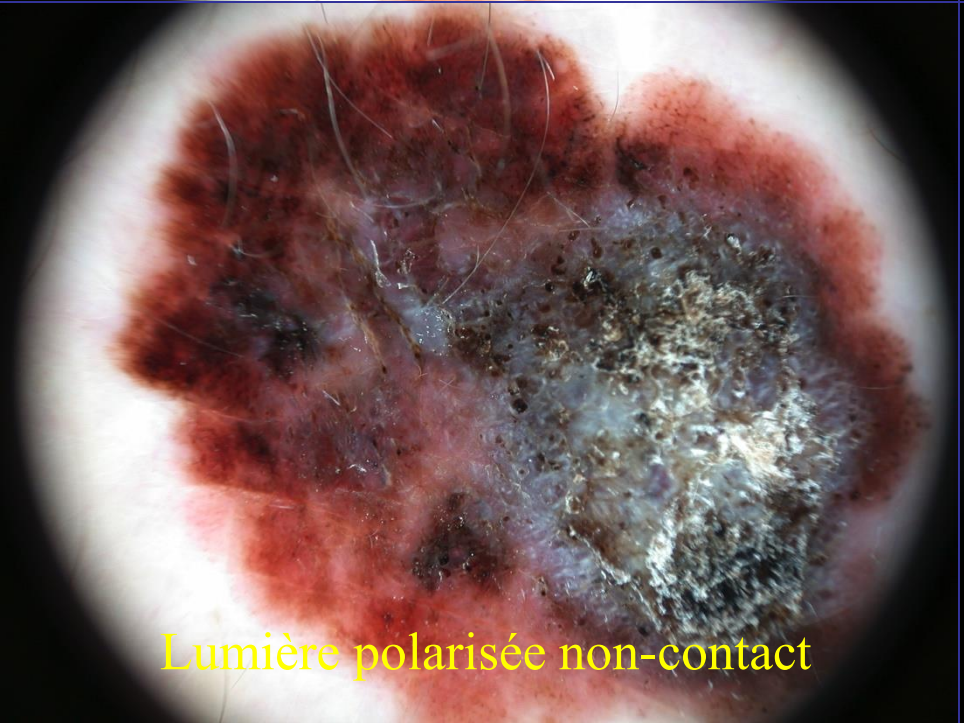

Polariseur

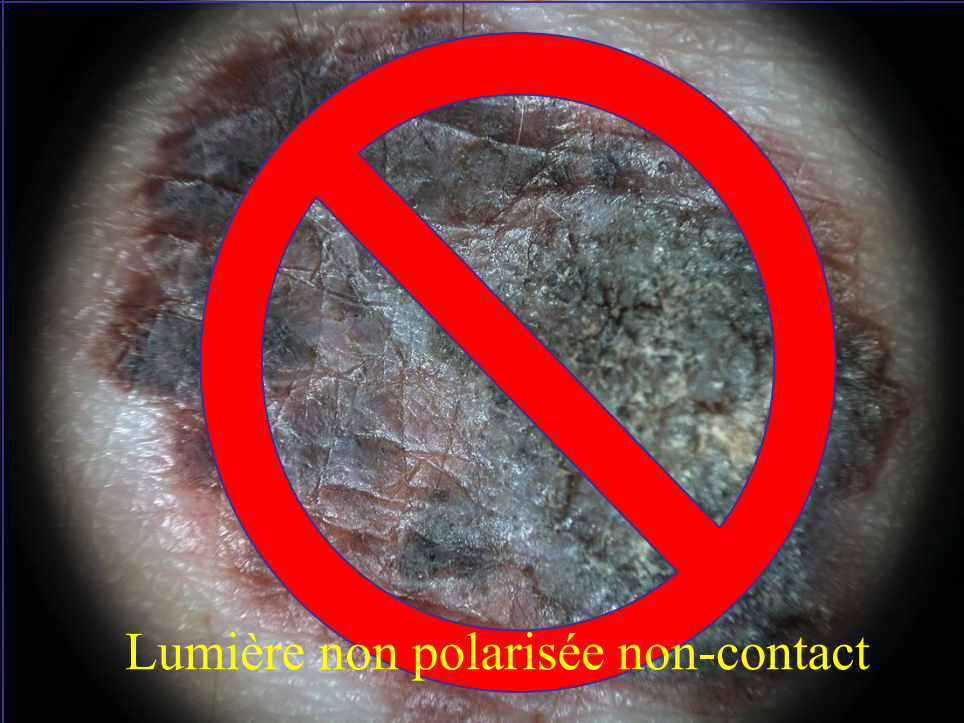
Dermoscopie double mode


Immersion
Polarisation


Lumière polarisée contact


Lumière non polarisée contact

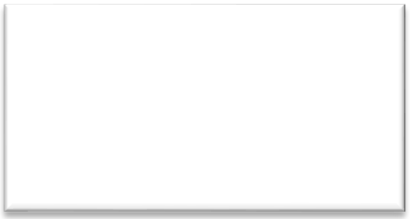

Lumière polarisée non-contact


Lumière non polarisée non-contact

Couleurs naturelles

Mélanine / hémoglobine (séchée)

(Oxy)hémoglobine (intra-cellulaire)



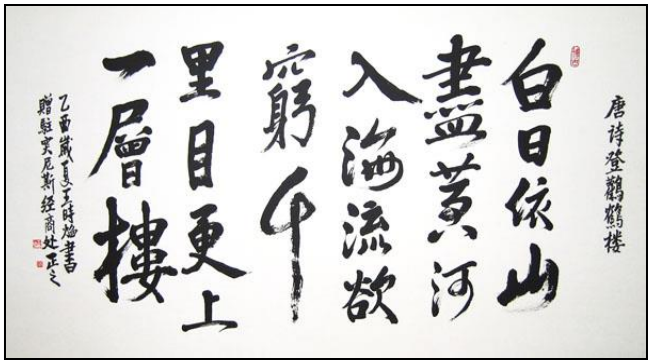
Kératine (non oxydée)

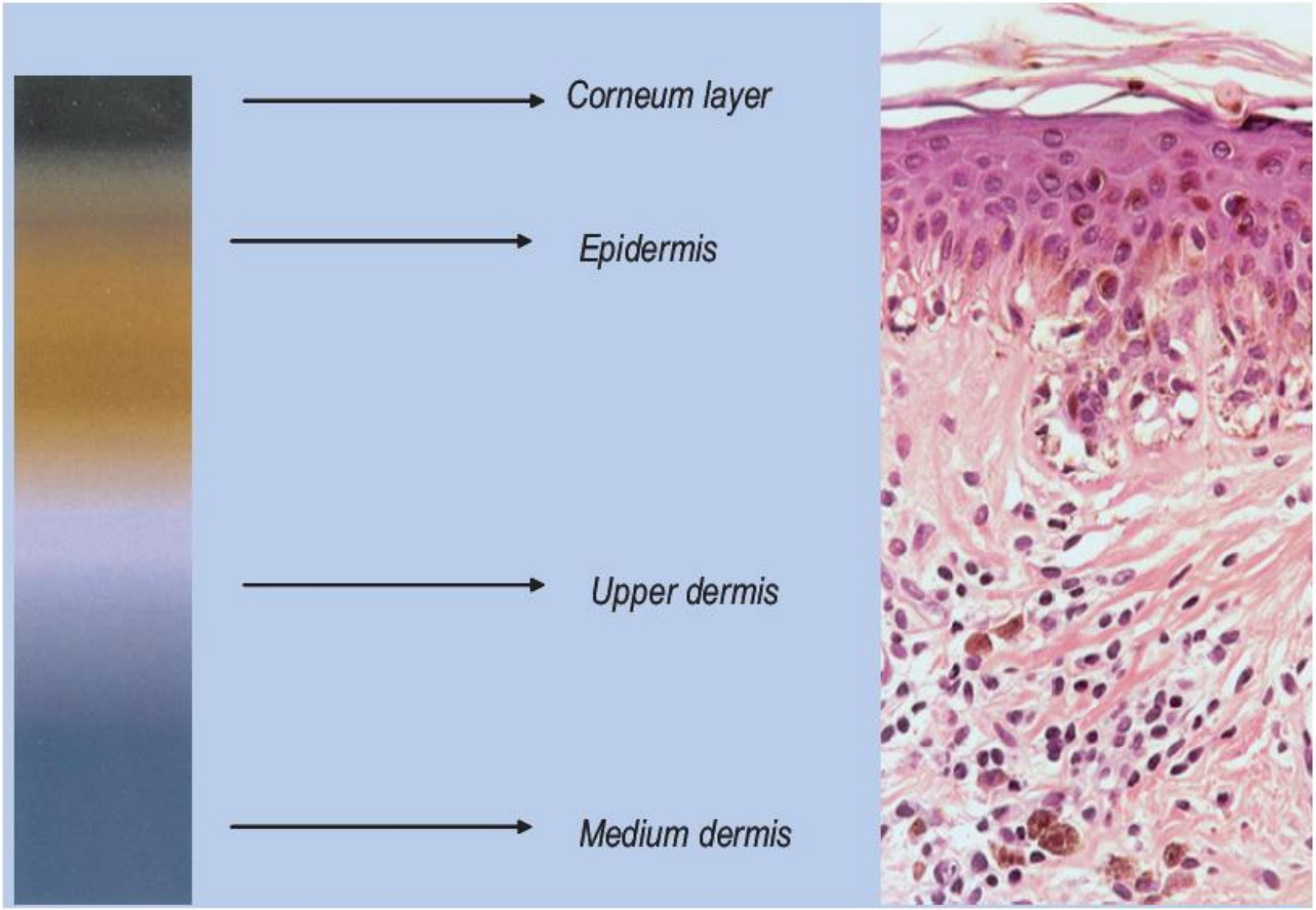
Kératine (oxydée) / sébum / sérum (séché)

Carboxyhémoglobine

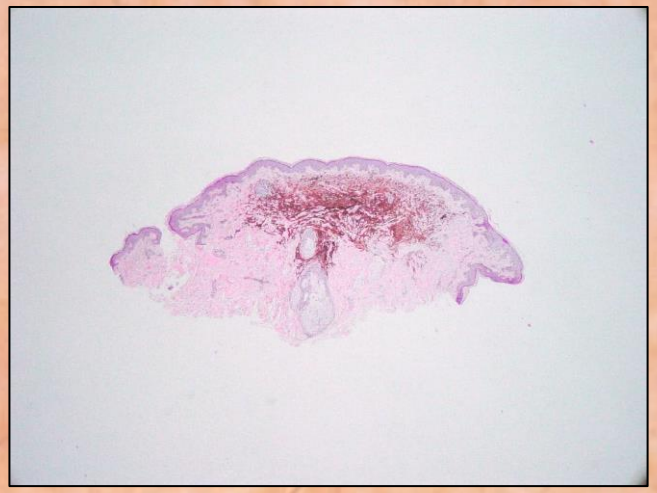

NANKING


北門


唐詩登鸛鵲樓
白日依山盡黃河
入海流欲
窮千
里目更上
一層樓

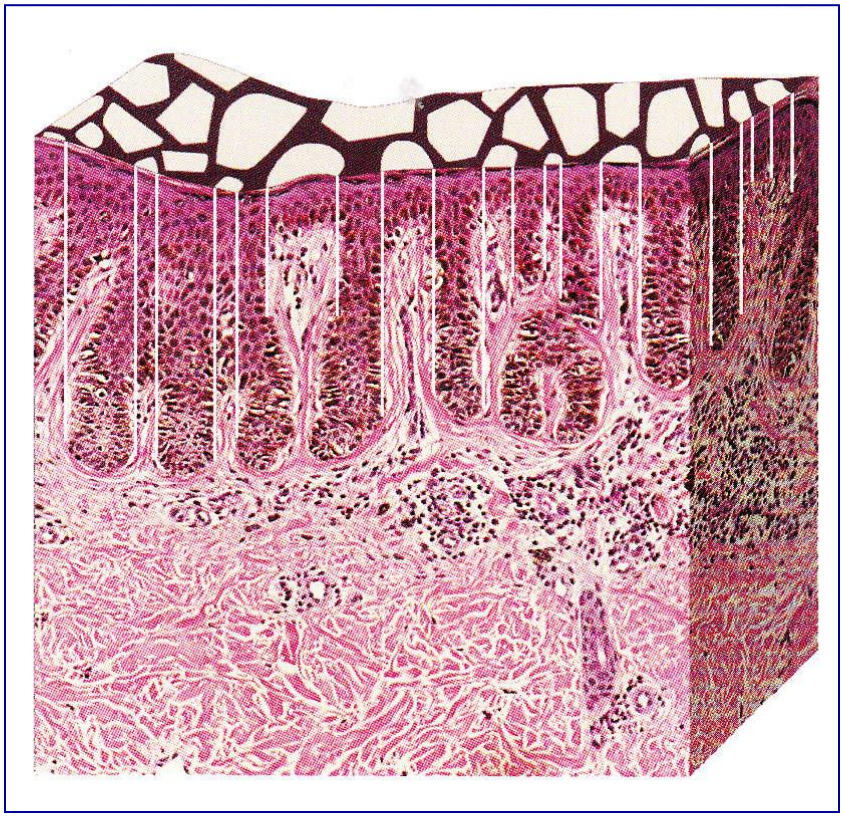


Avec la permission de S. Puig and J. Malvehy

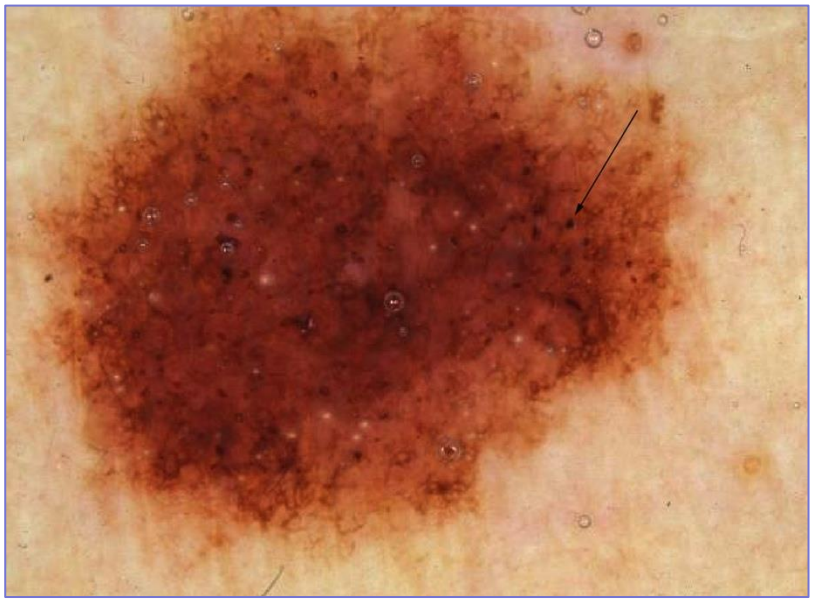


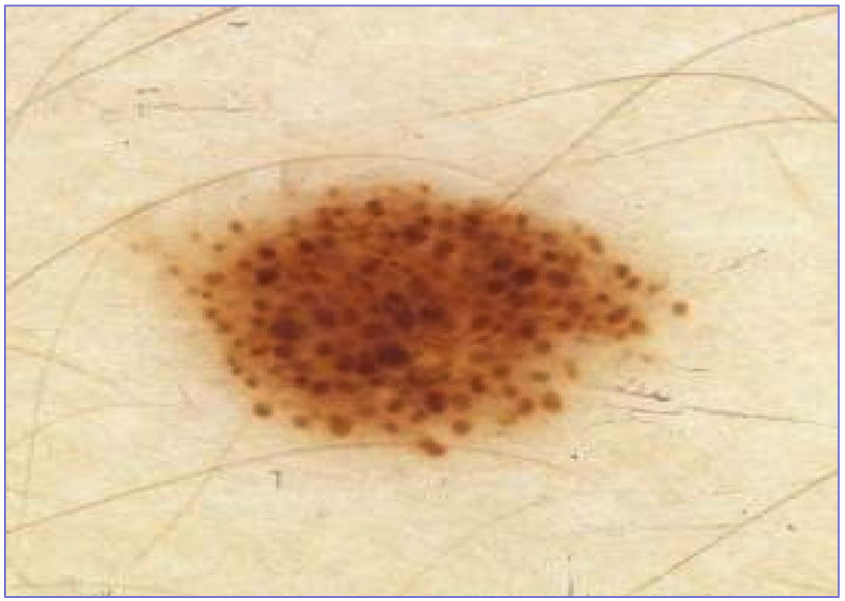
Structures

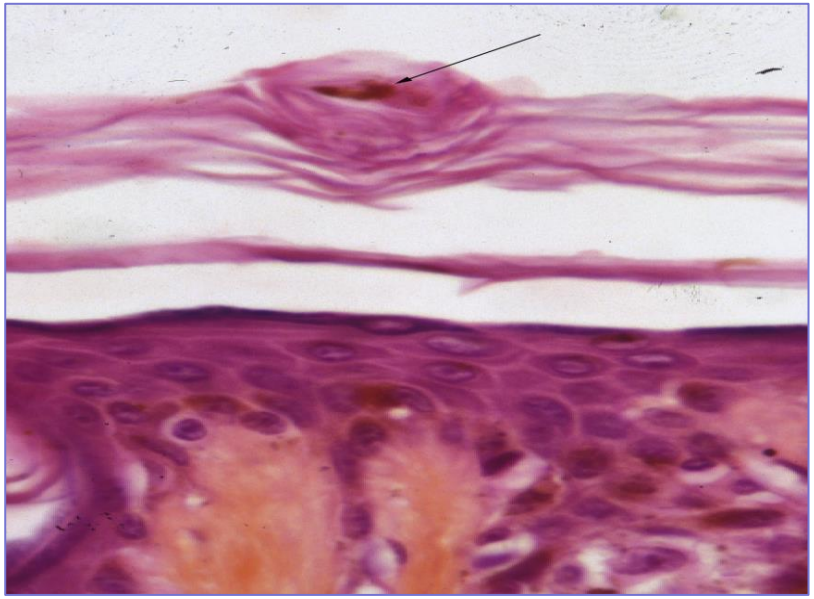
La dermoscopie reflète l'anatomie

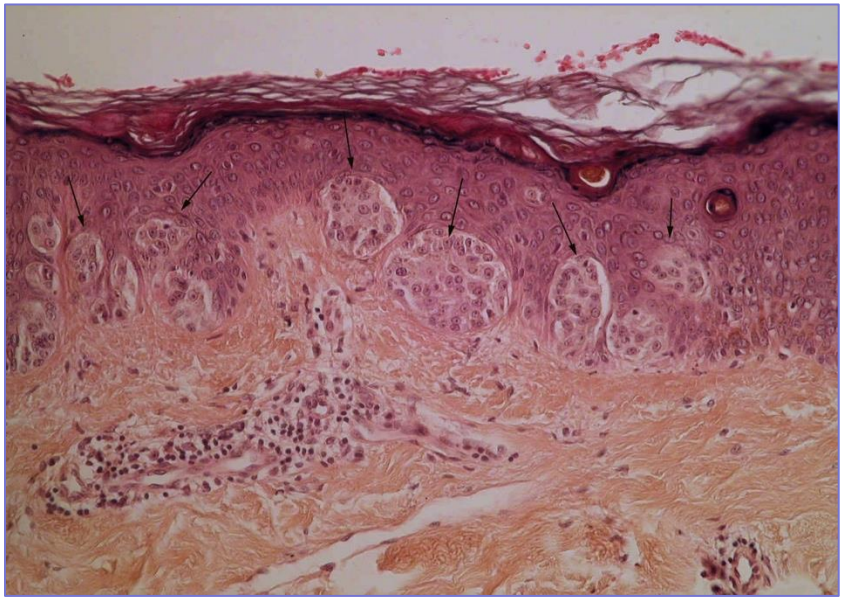


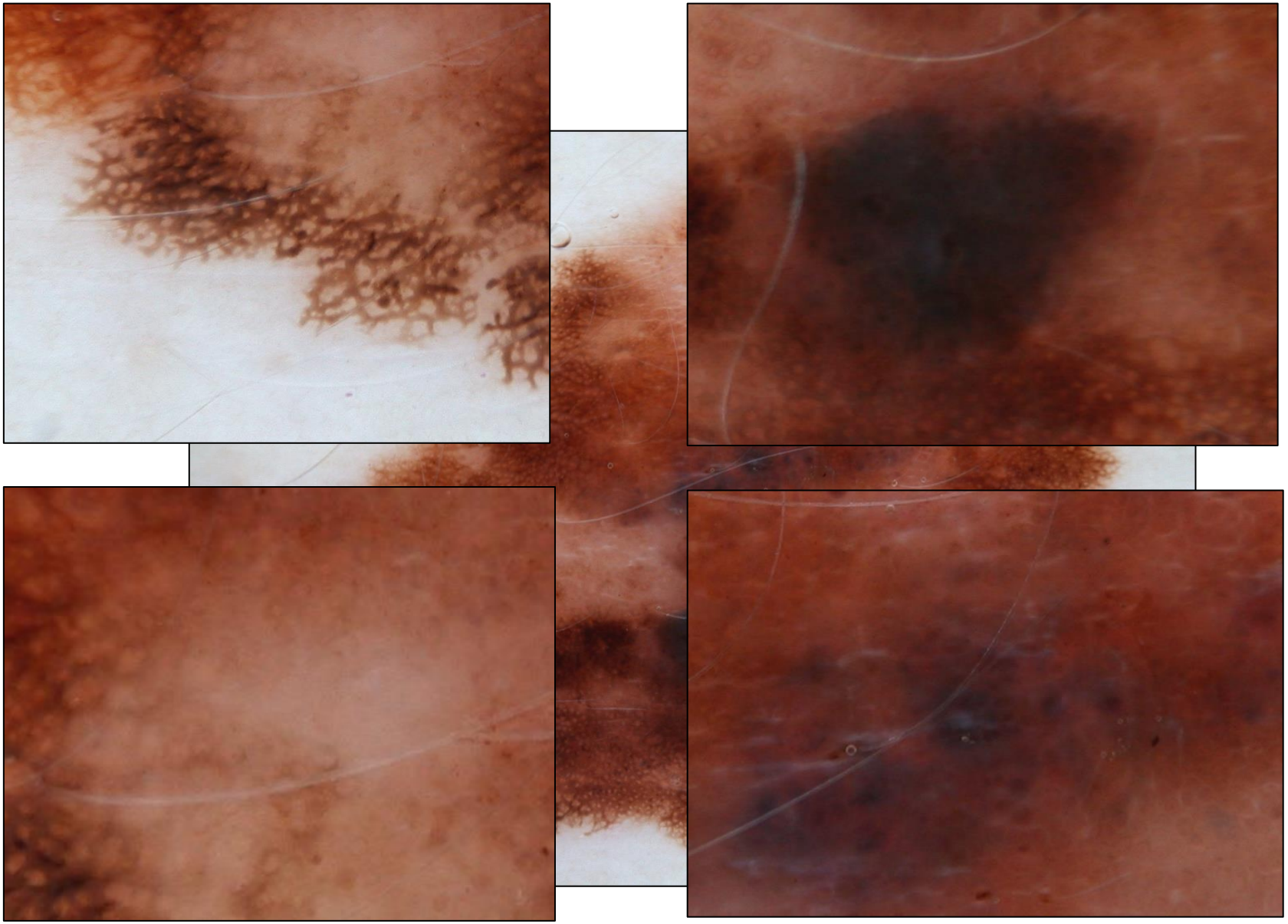
Avec la permission de S. Puig and J. Malvehy



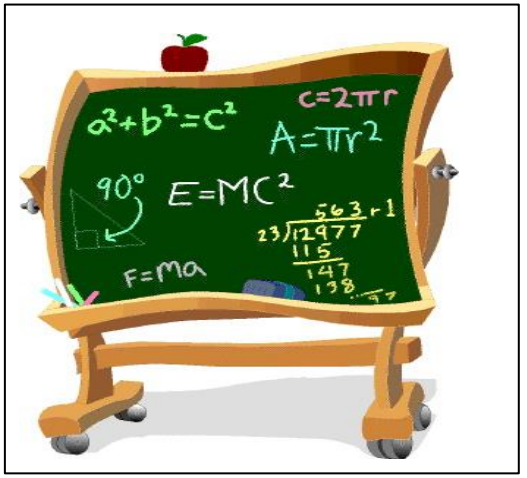


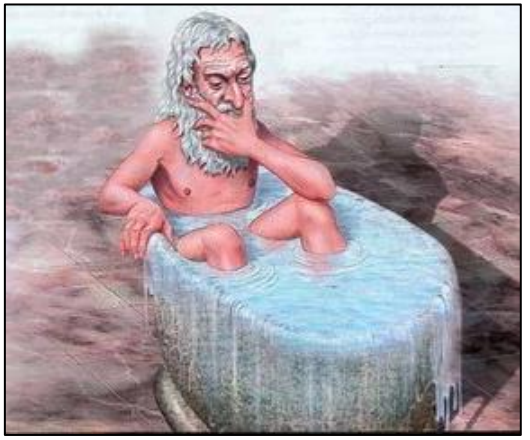


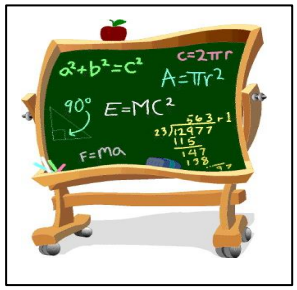




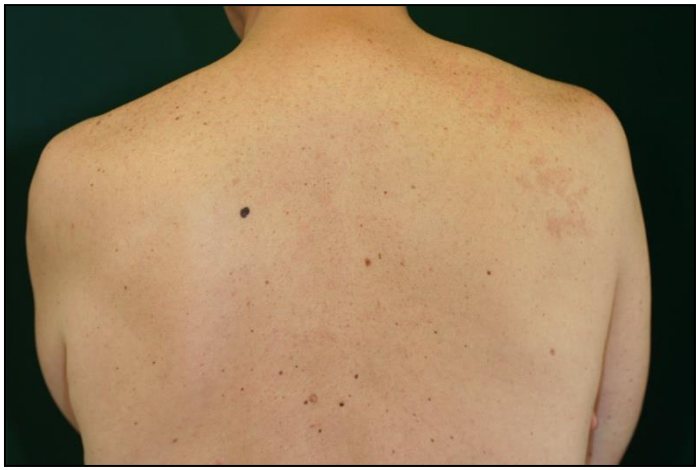
Méthodes







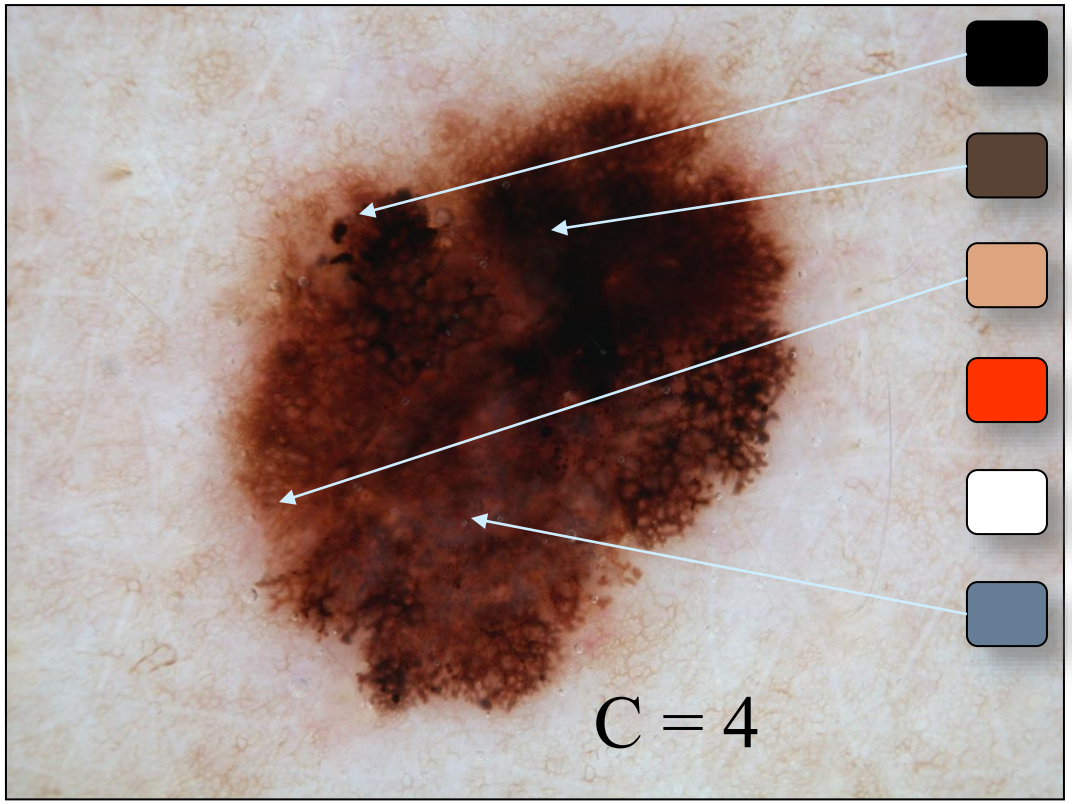
Algorithmes



A = 2

B = 3

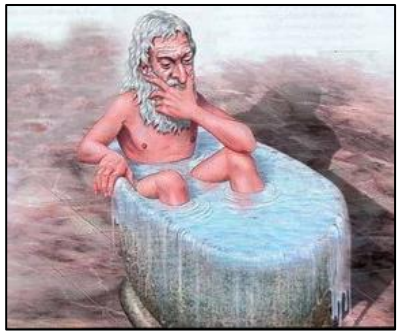
D = 4



TDS = (2 x 1,3) + (3 x 0,1) + (4 x 0,5) + (4 x 0,5) = 6,9

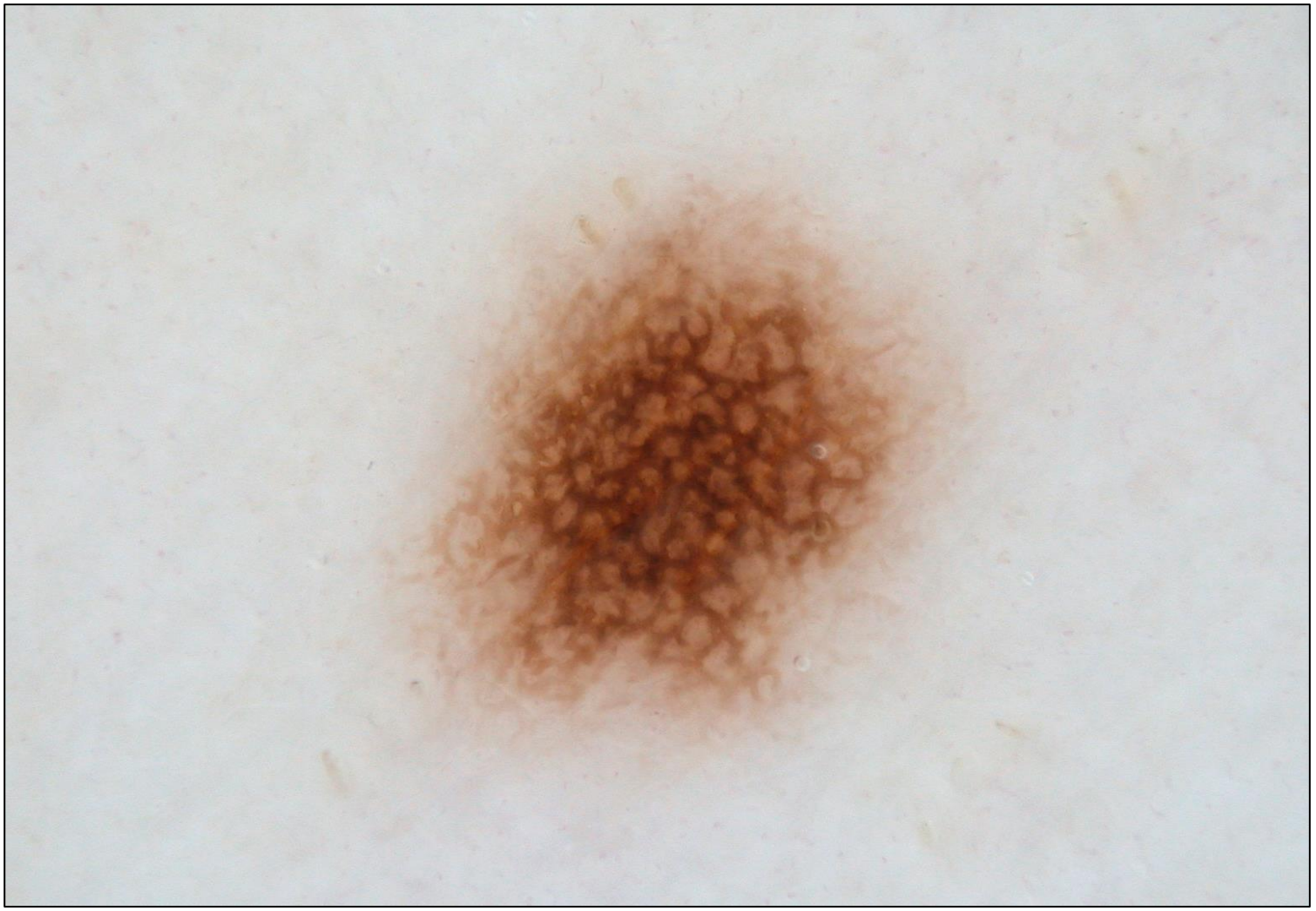
TDS > 5.45

Mélanome

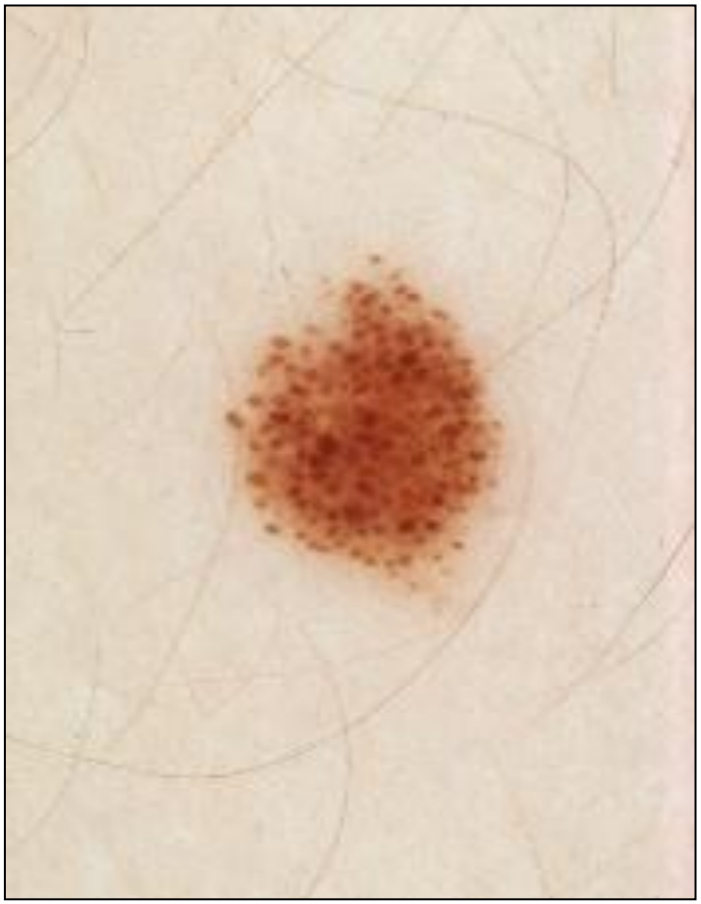


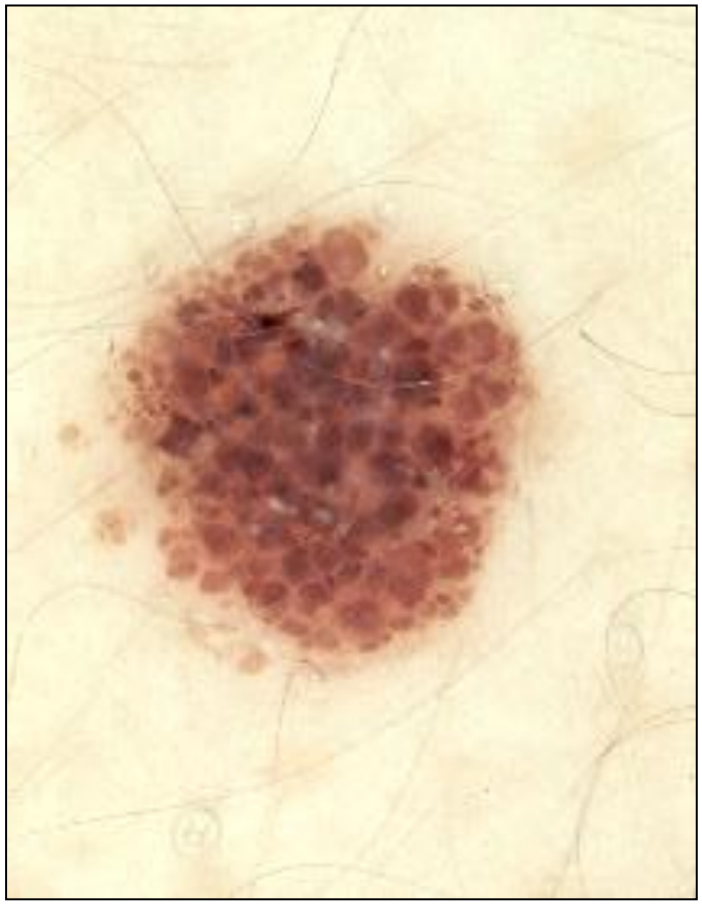
Patrons dermoscopiques

Patron réticulaire



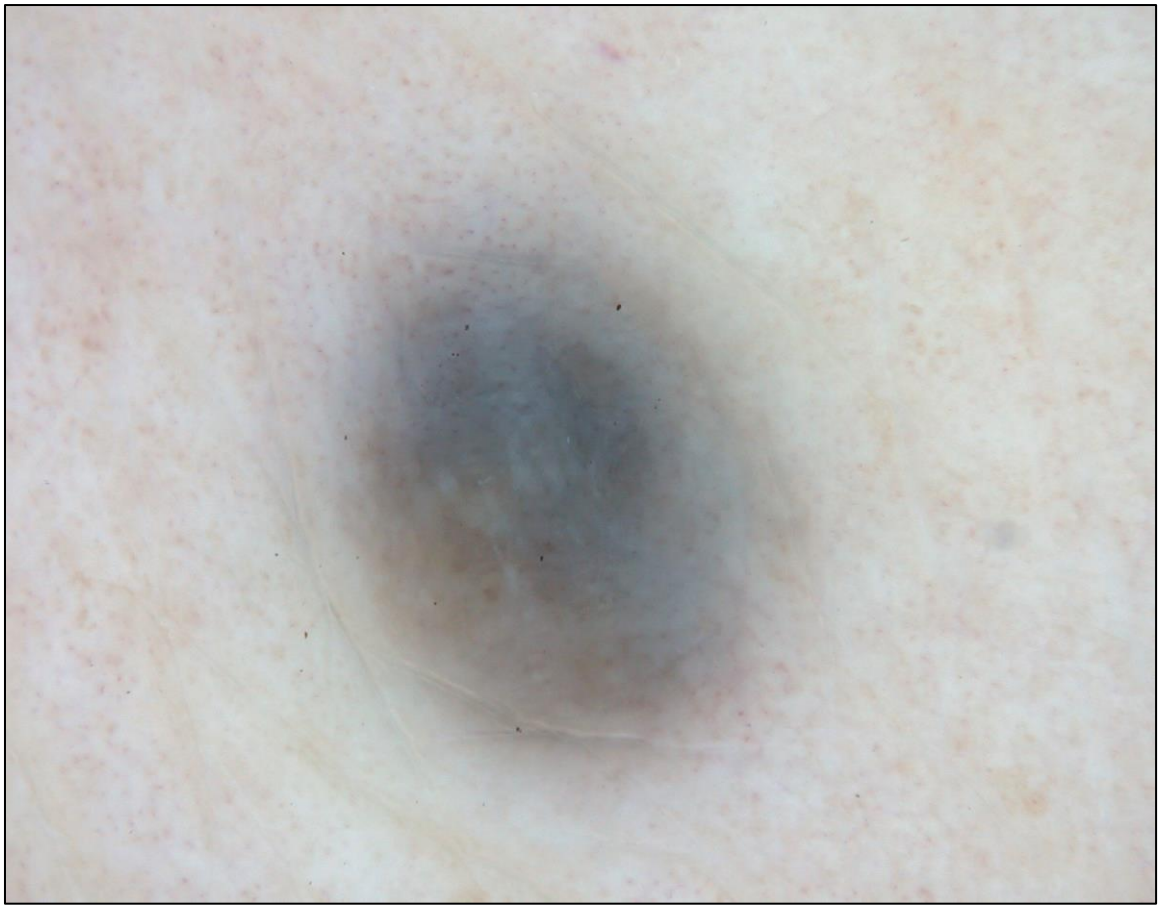
Patron globulaire
(et pavimenteux)



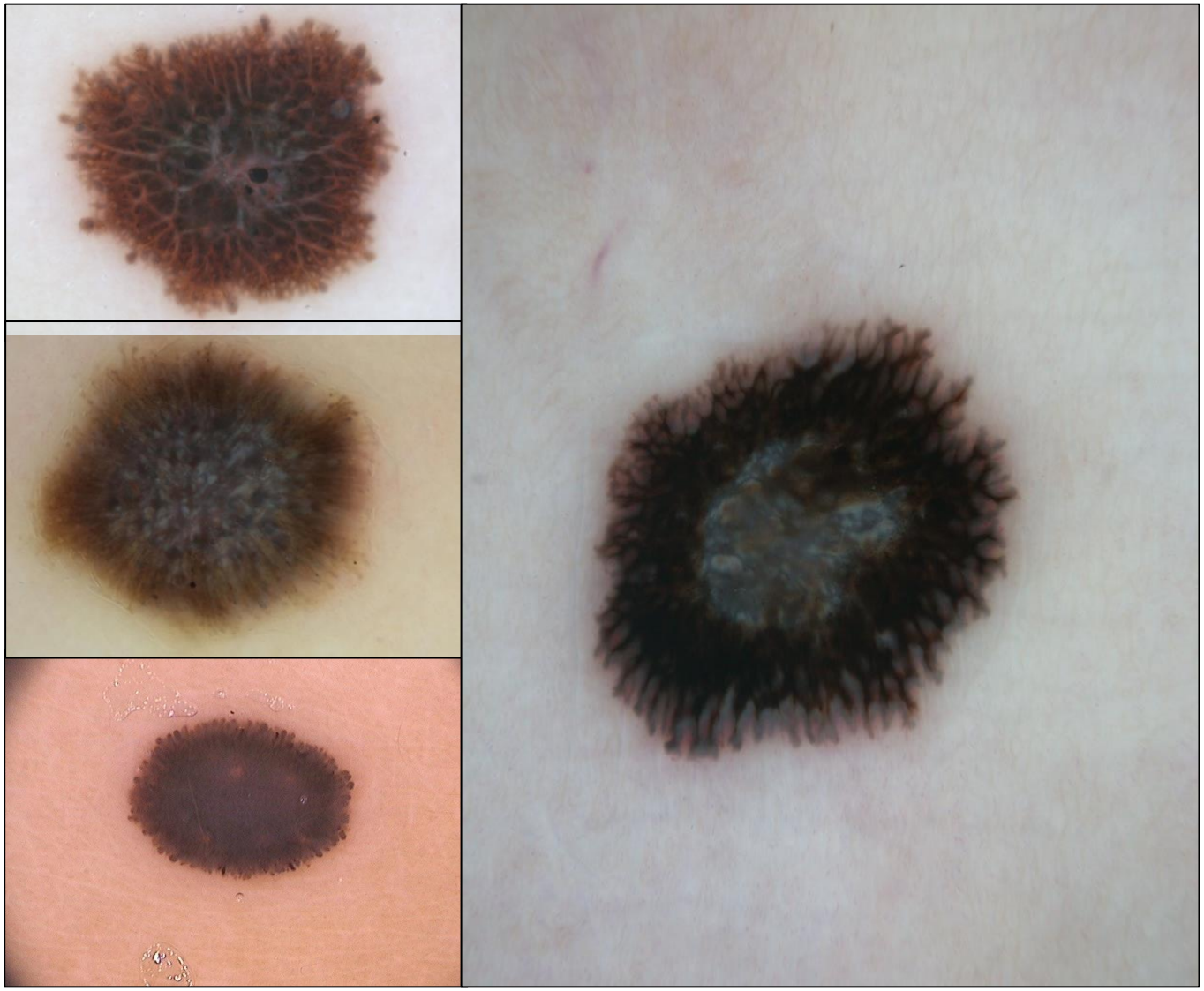


Patron sans structure

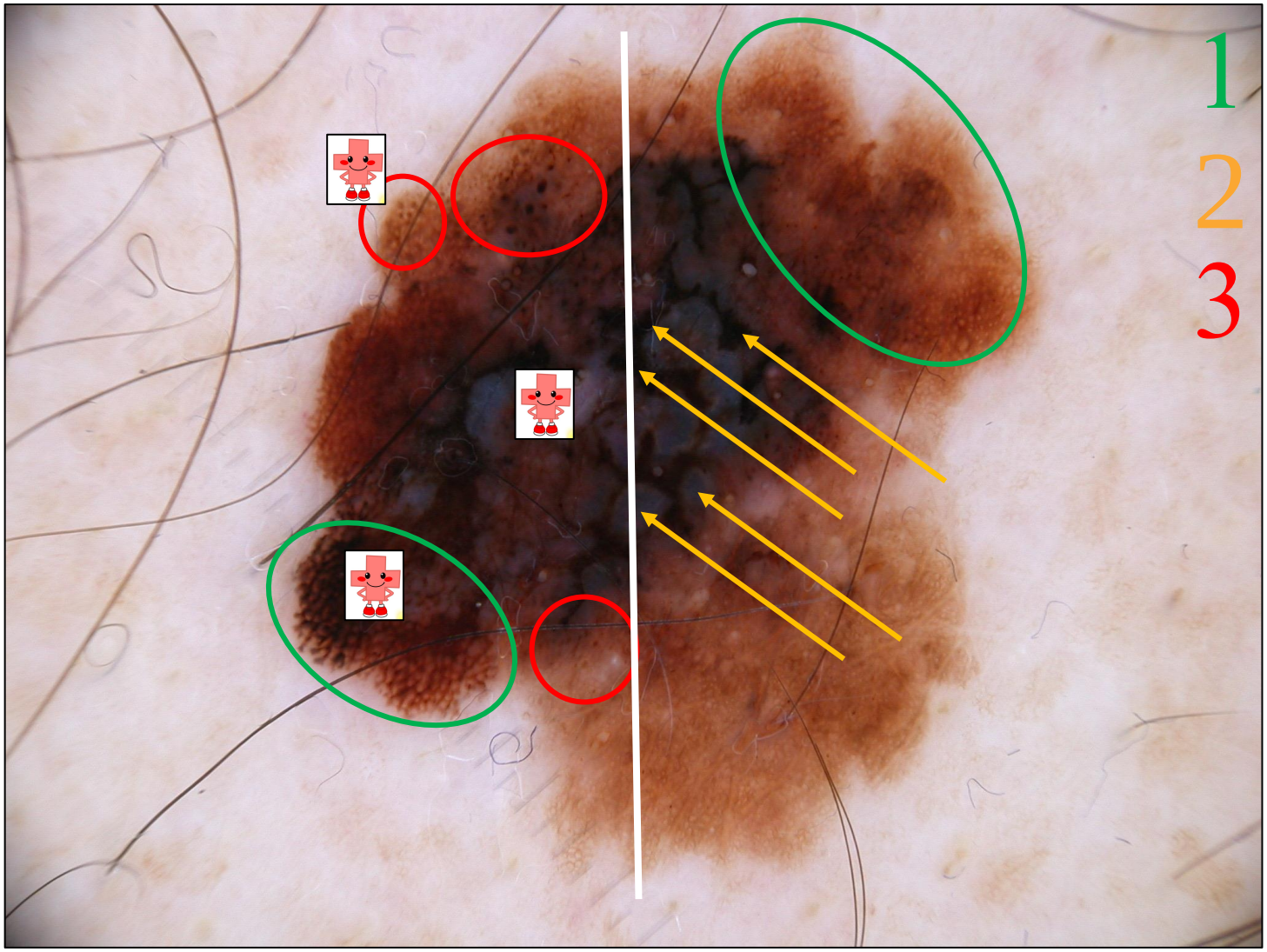
(ou homogène)

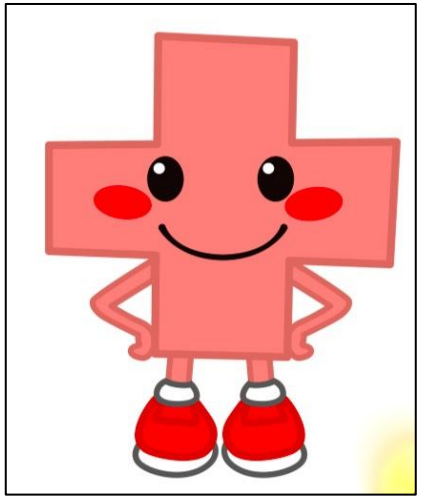


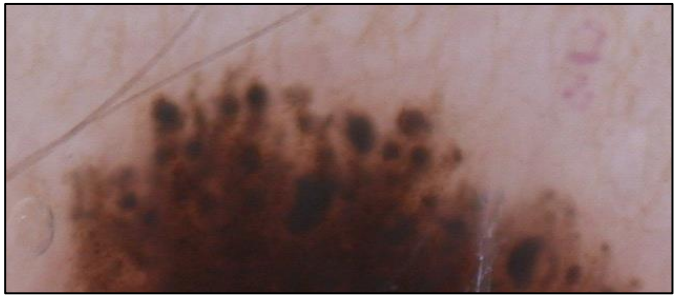
Patron étoilé

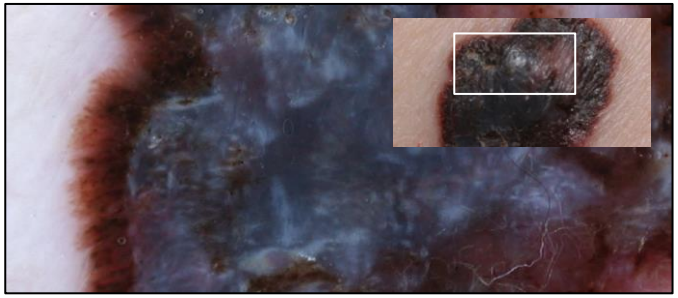


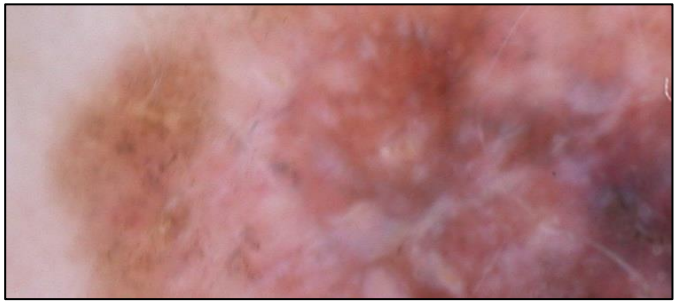
Patron multicomposé et asymétrique

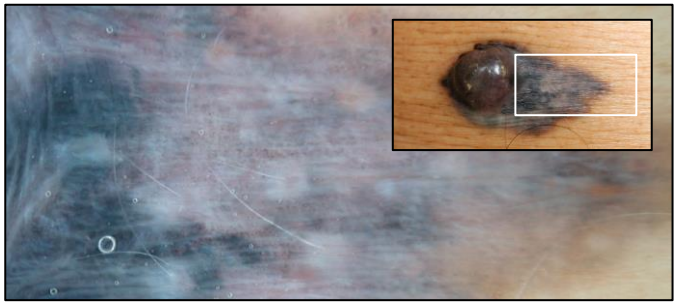


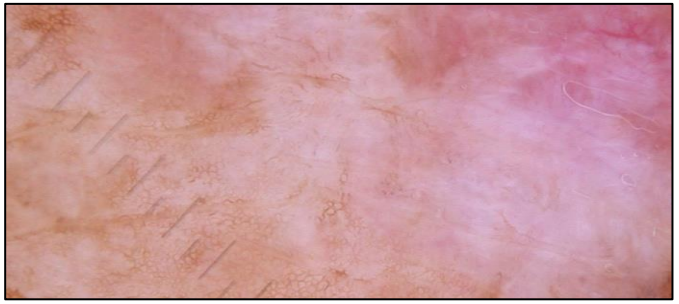


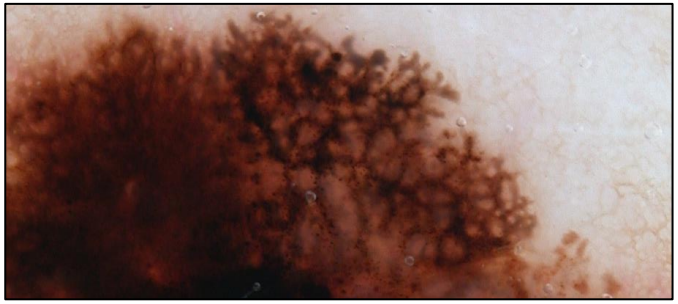


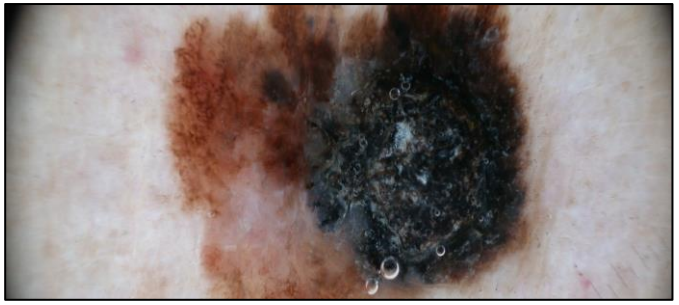


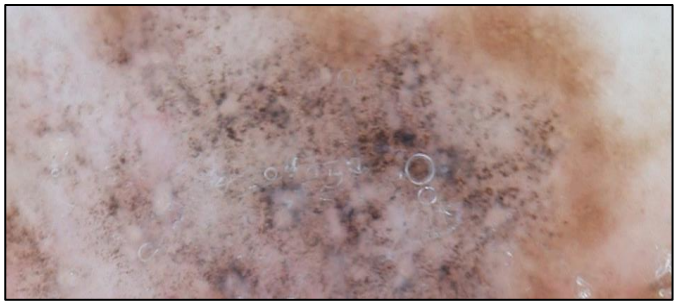




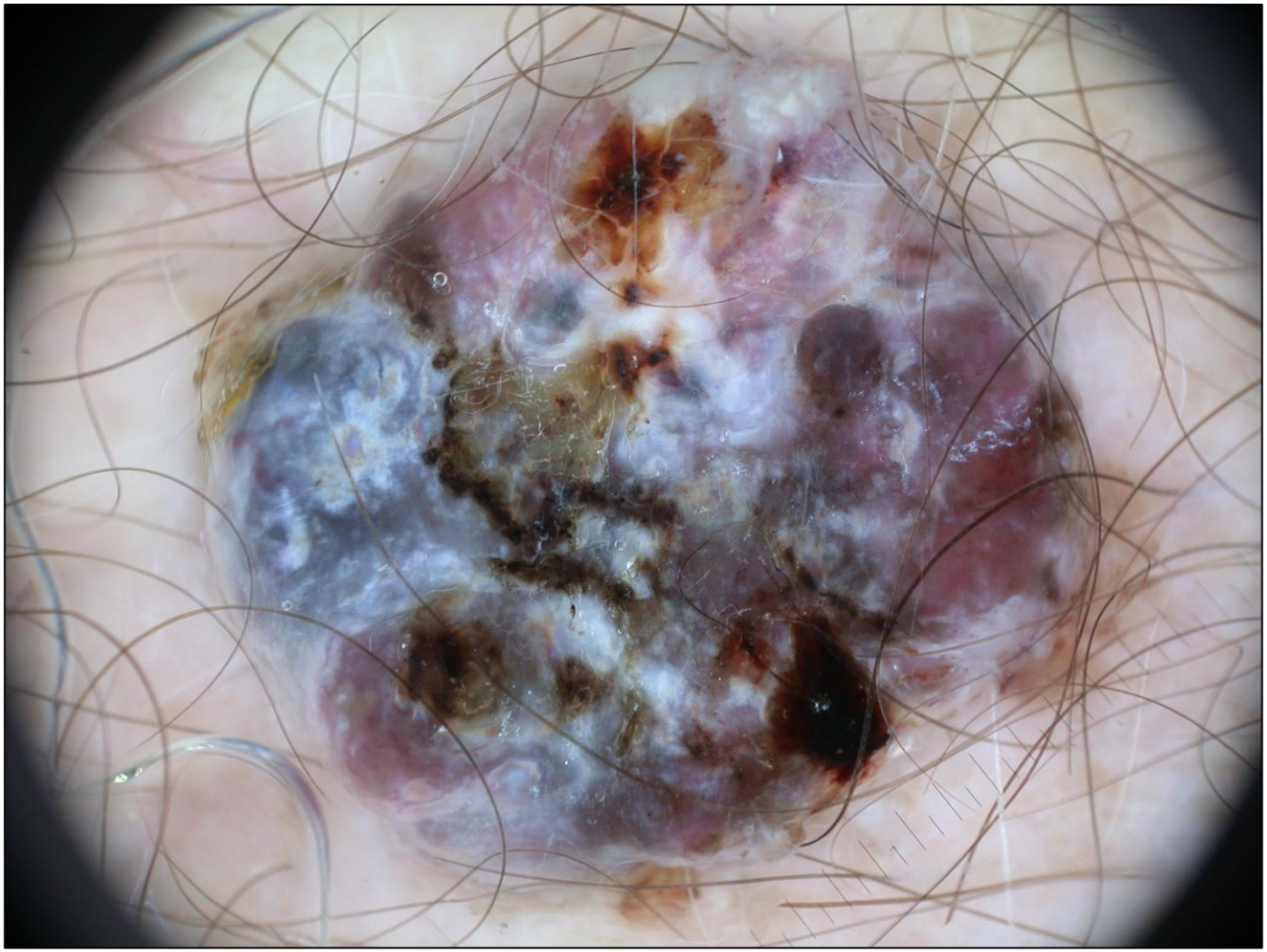




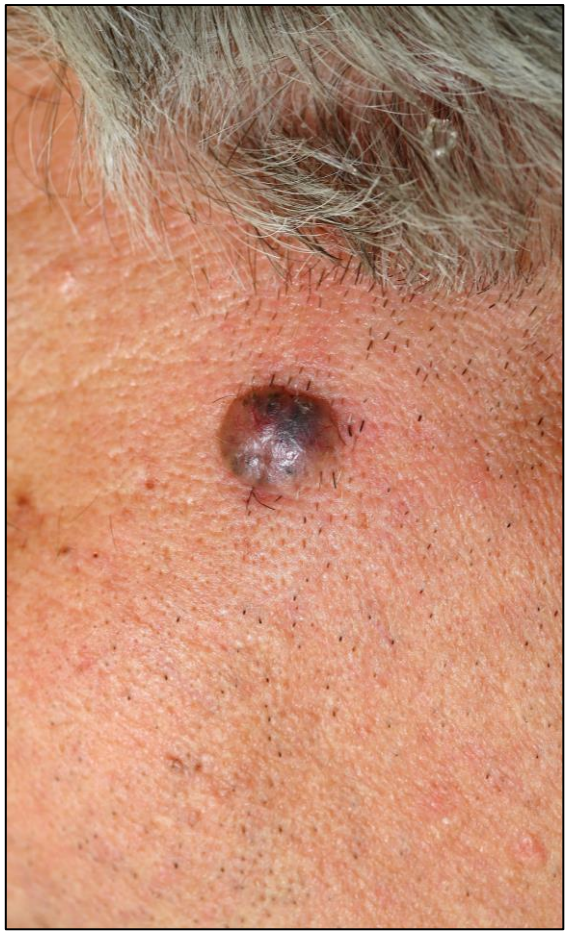


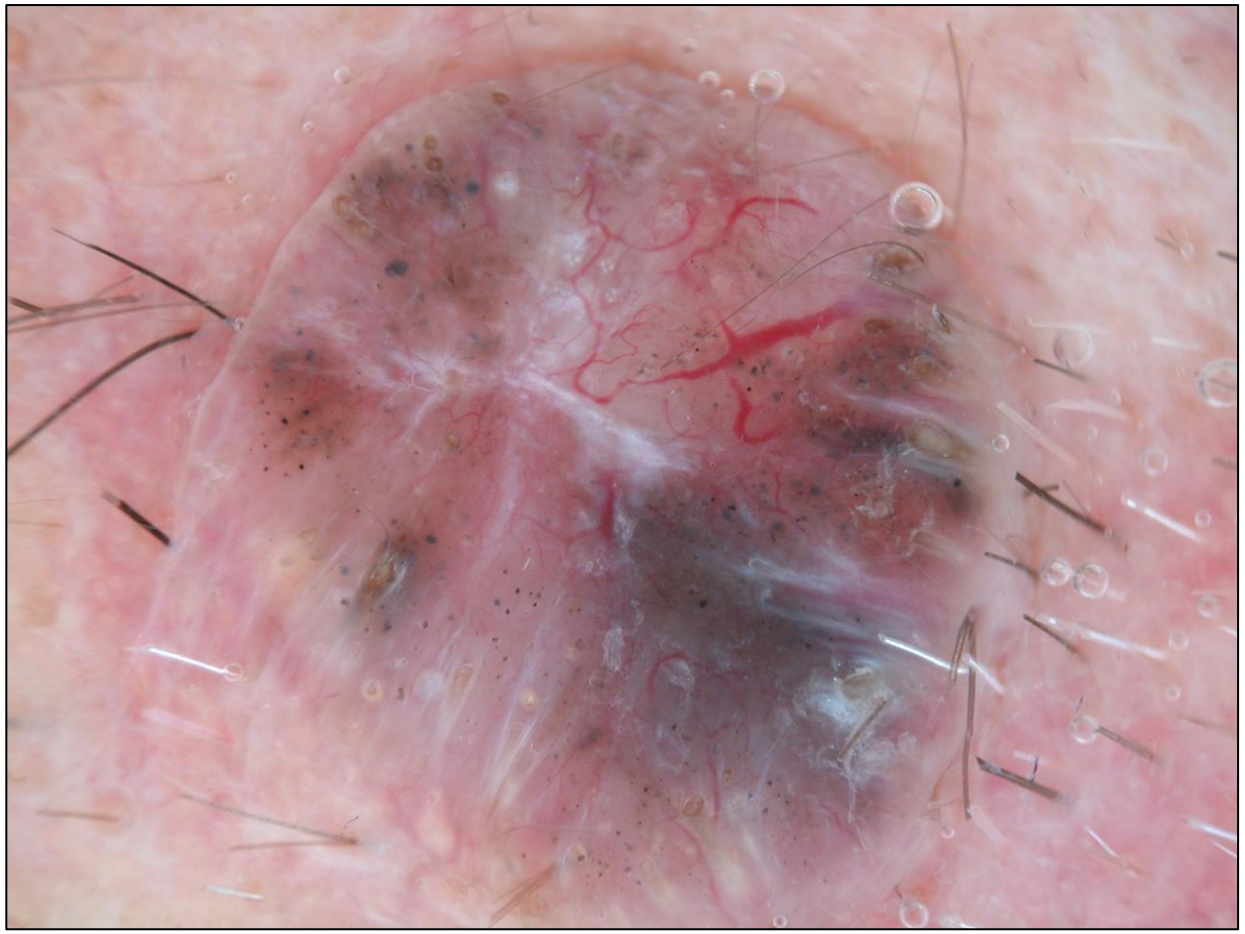


Patron nodulaire

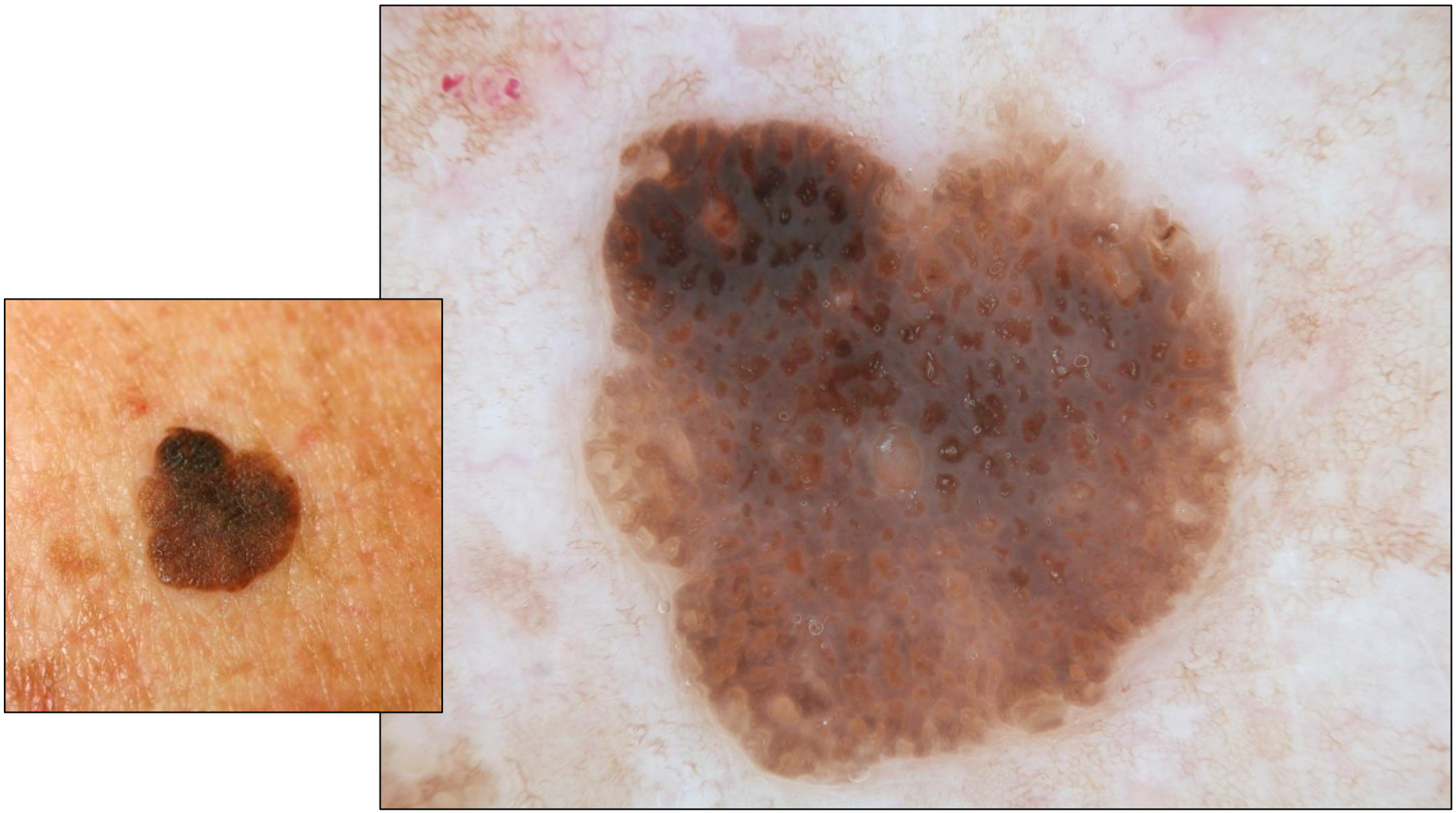


Carcinome basocellulaire

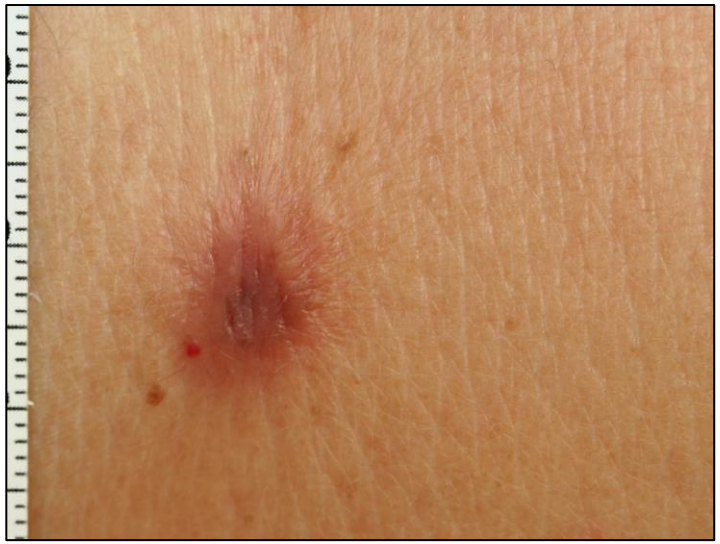


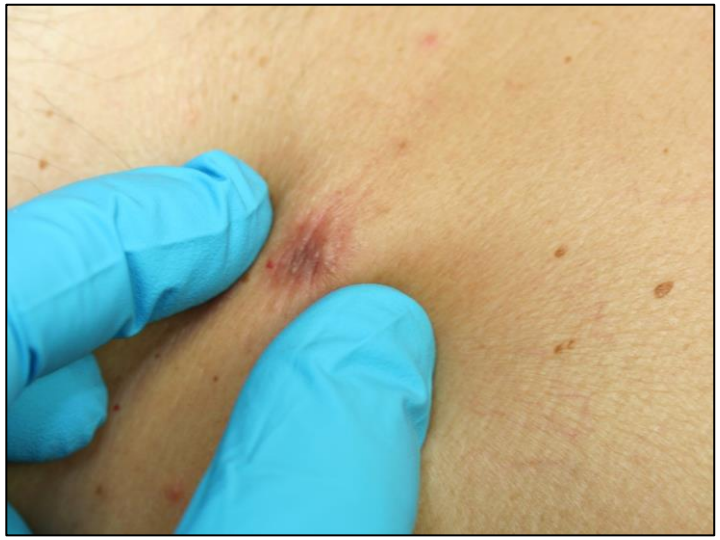


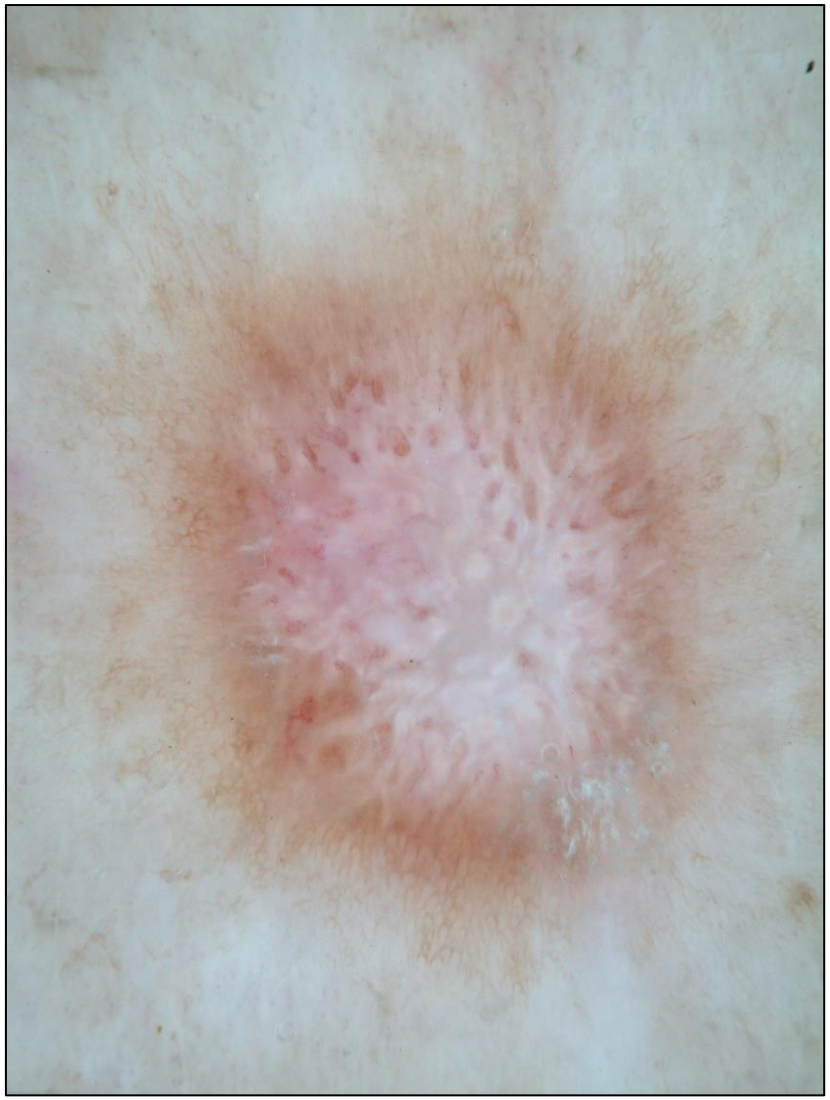
Kératose séborrhéique



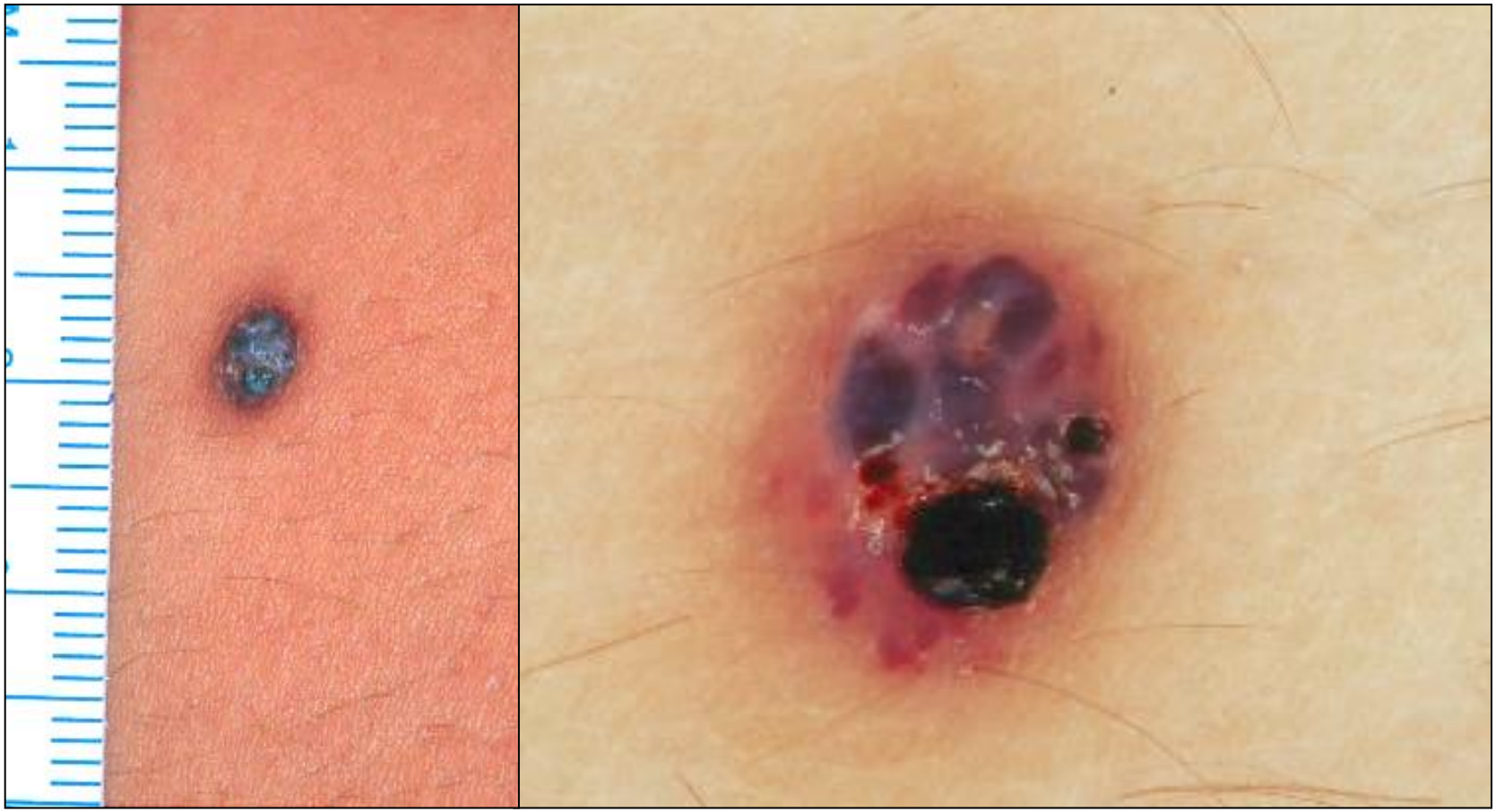
Dermatofibrome





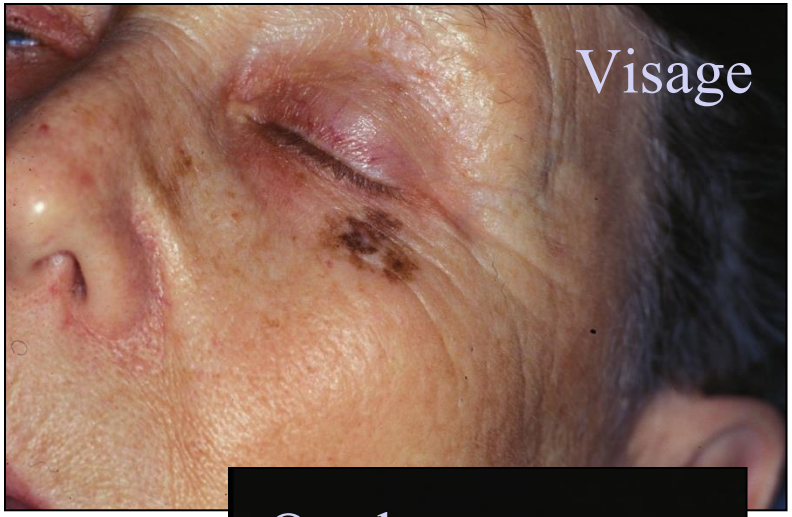


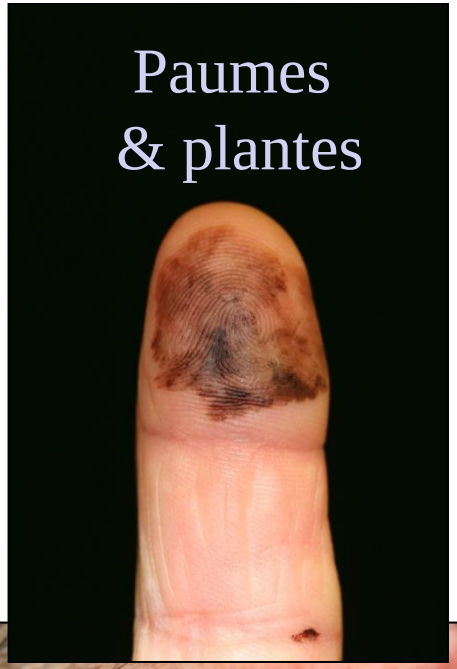
Hémangiome thrombosé

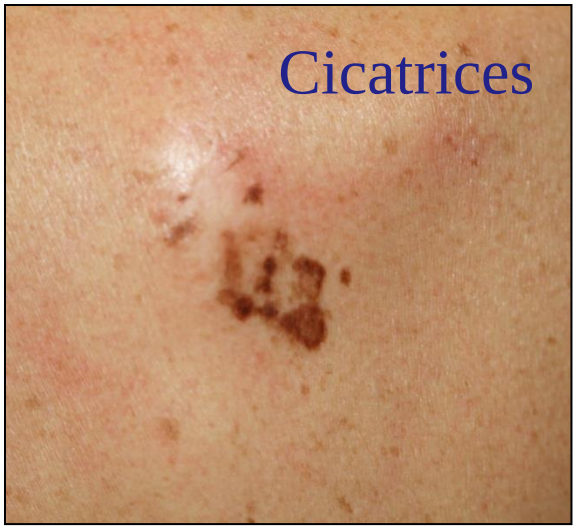


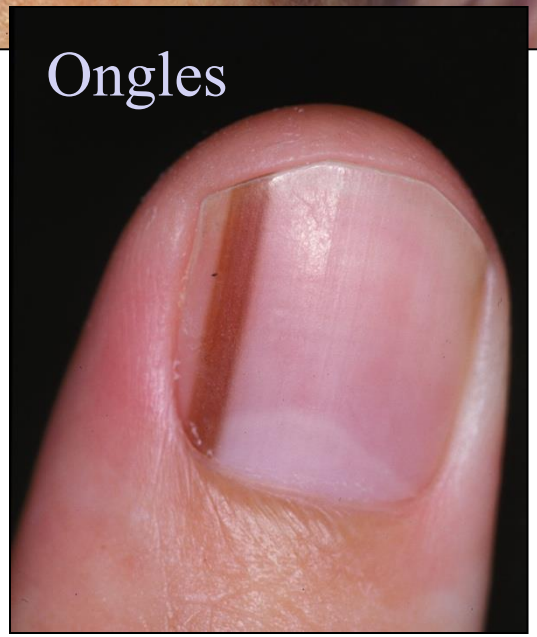
Complexité

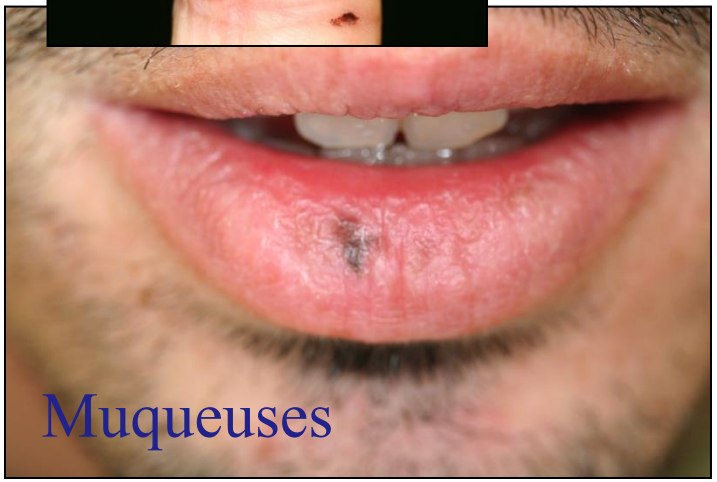
Exceptions topographiques



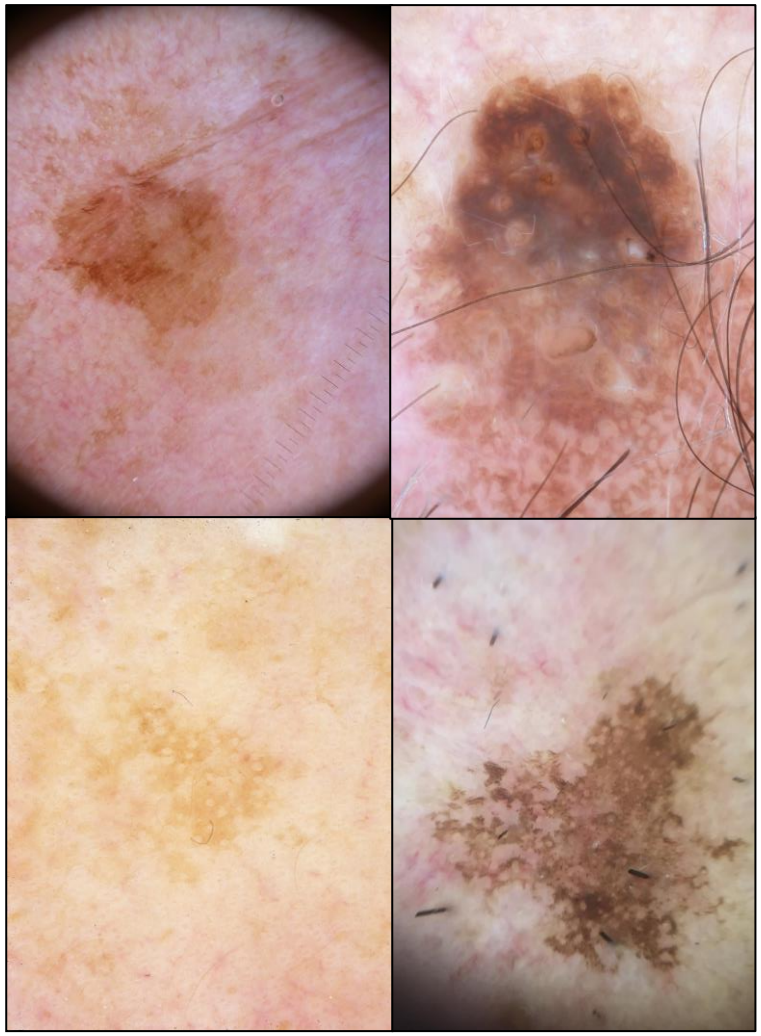


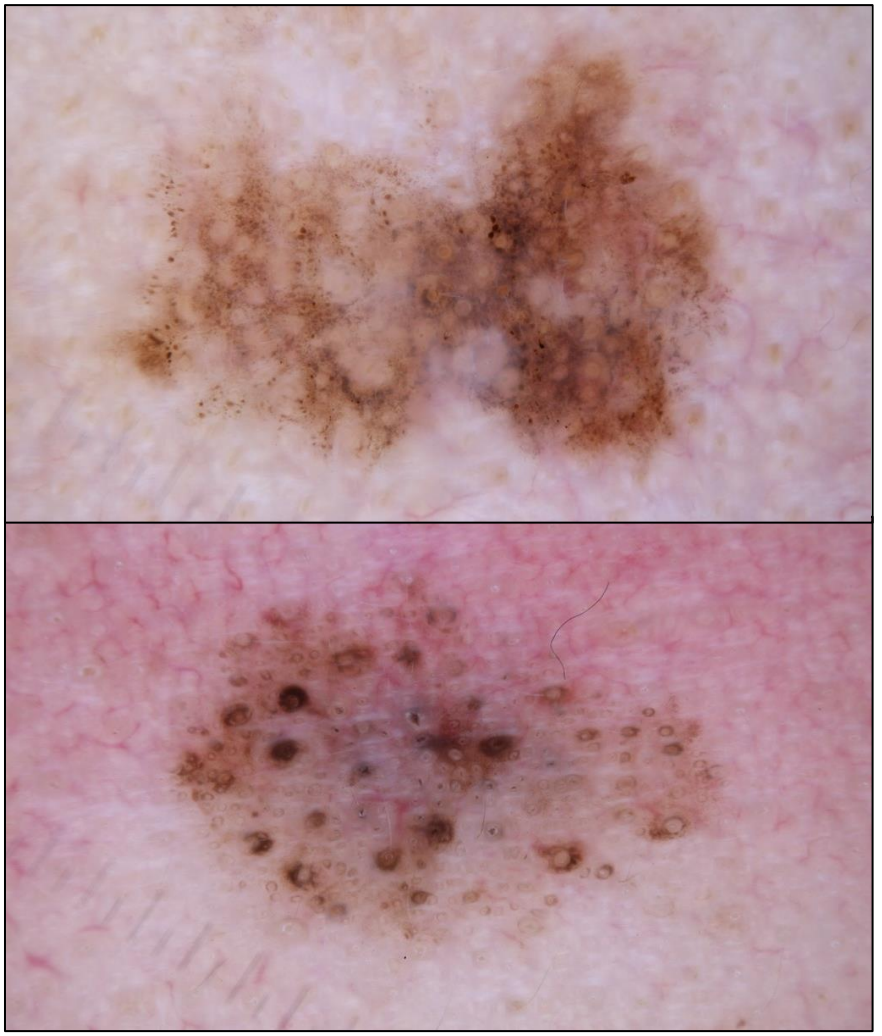




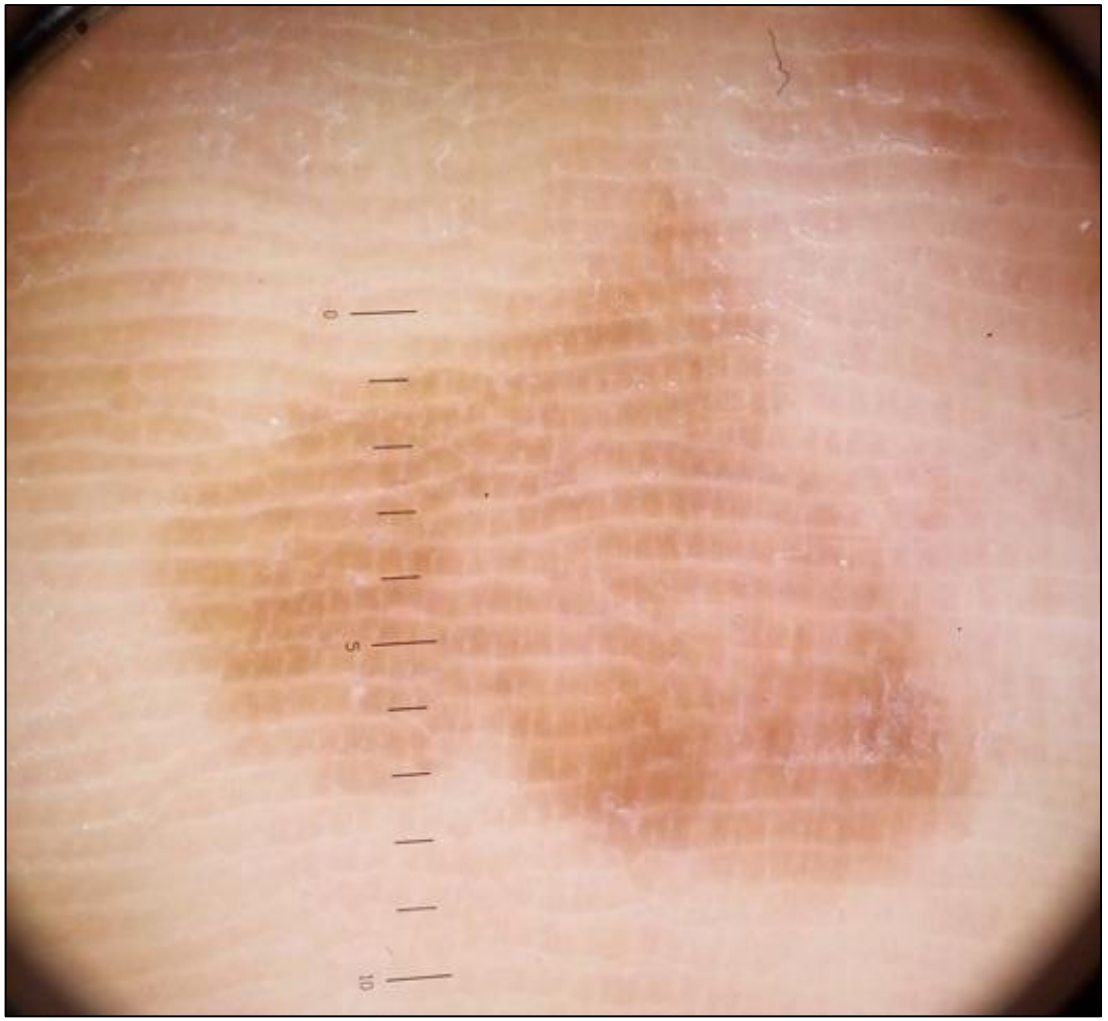


Visage

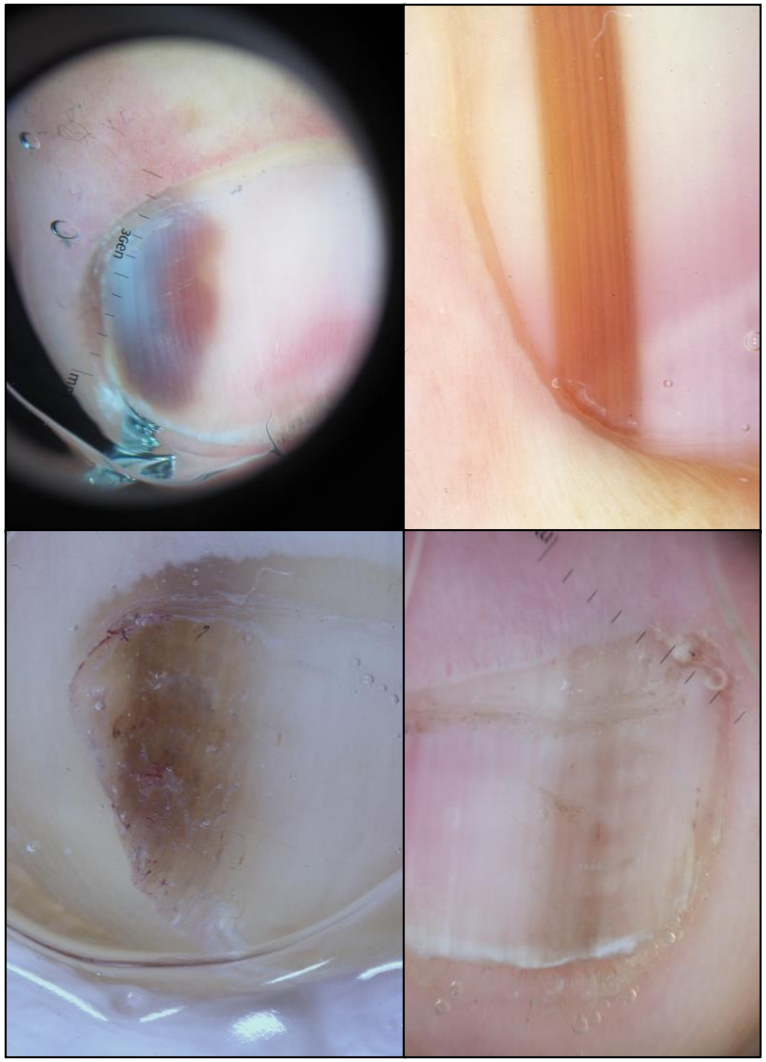




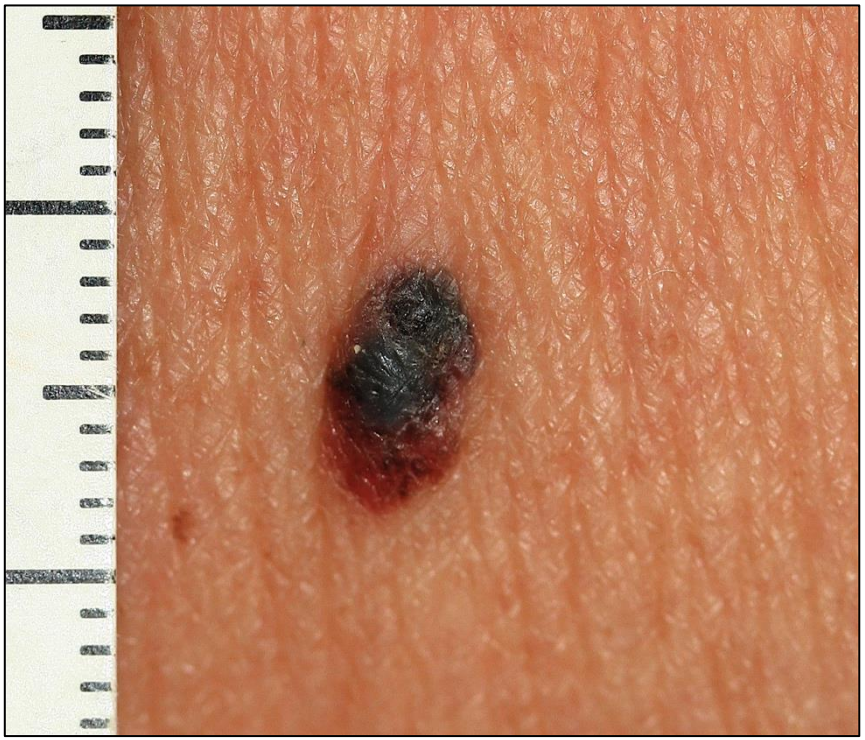
Paumes et plantes

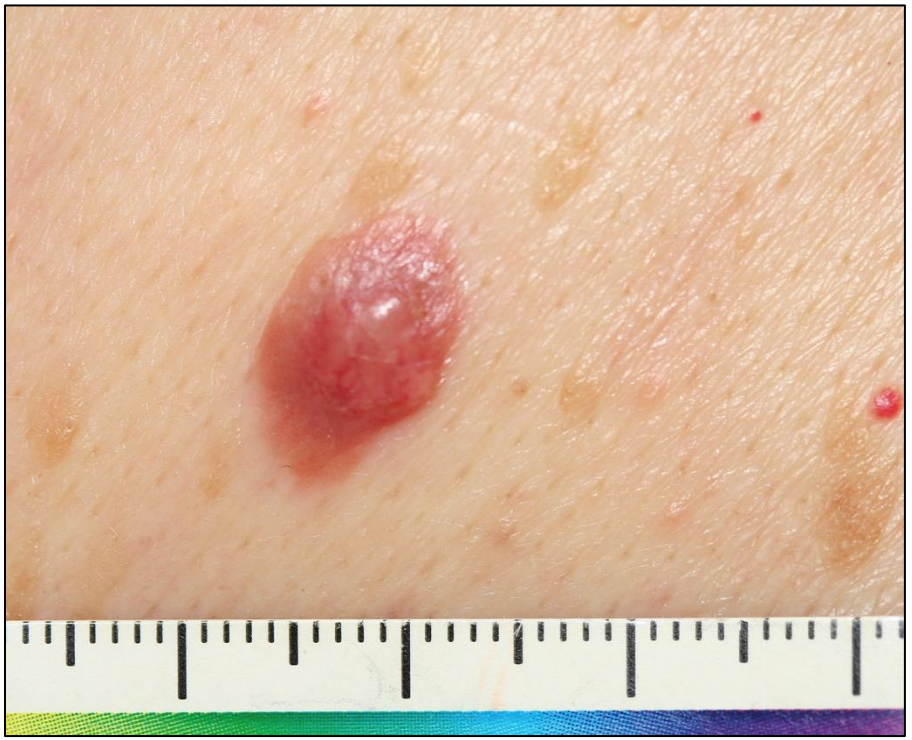


Ongles



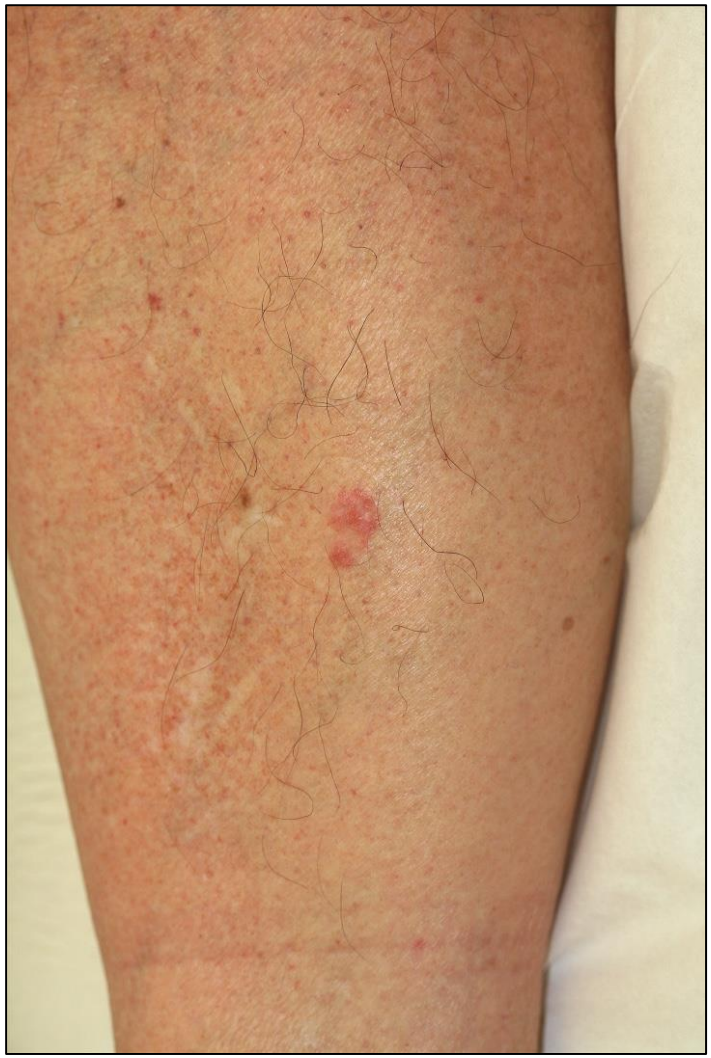
Exceptions sémiologiques

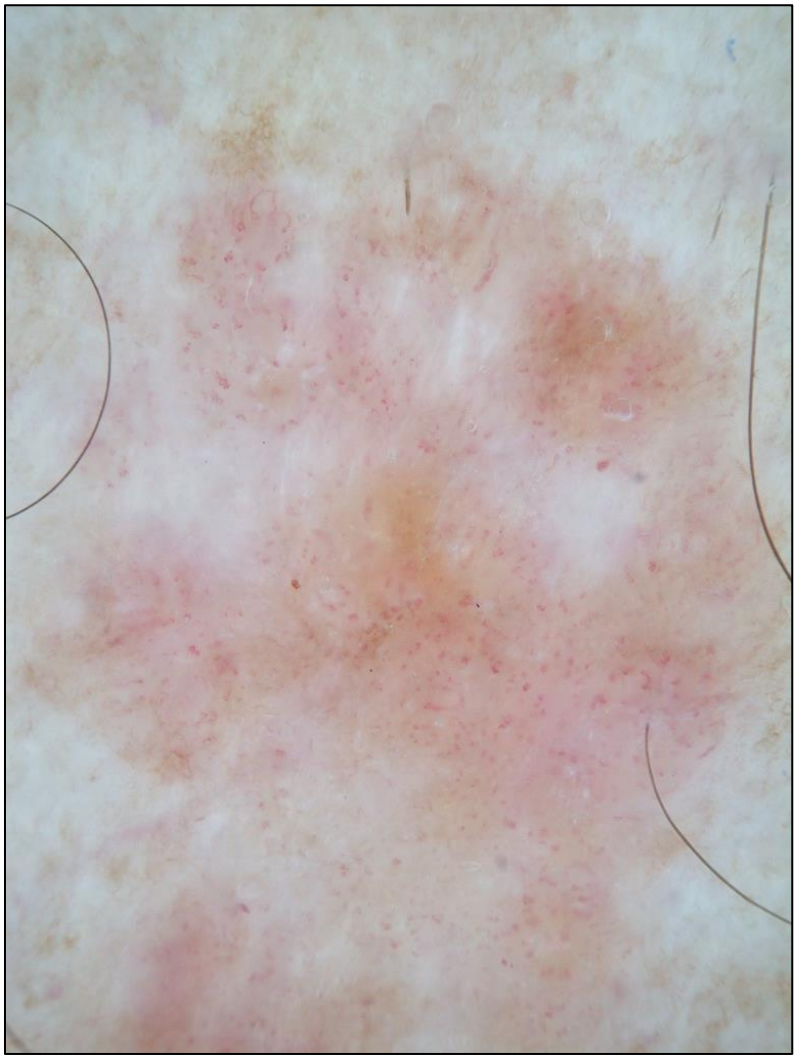




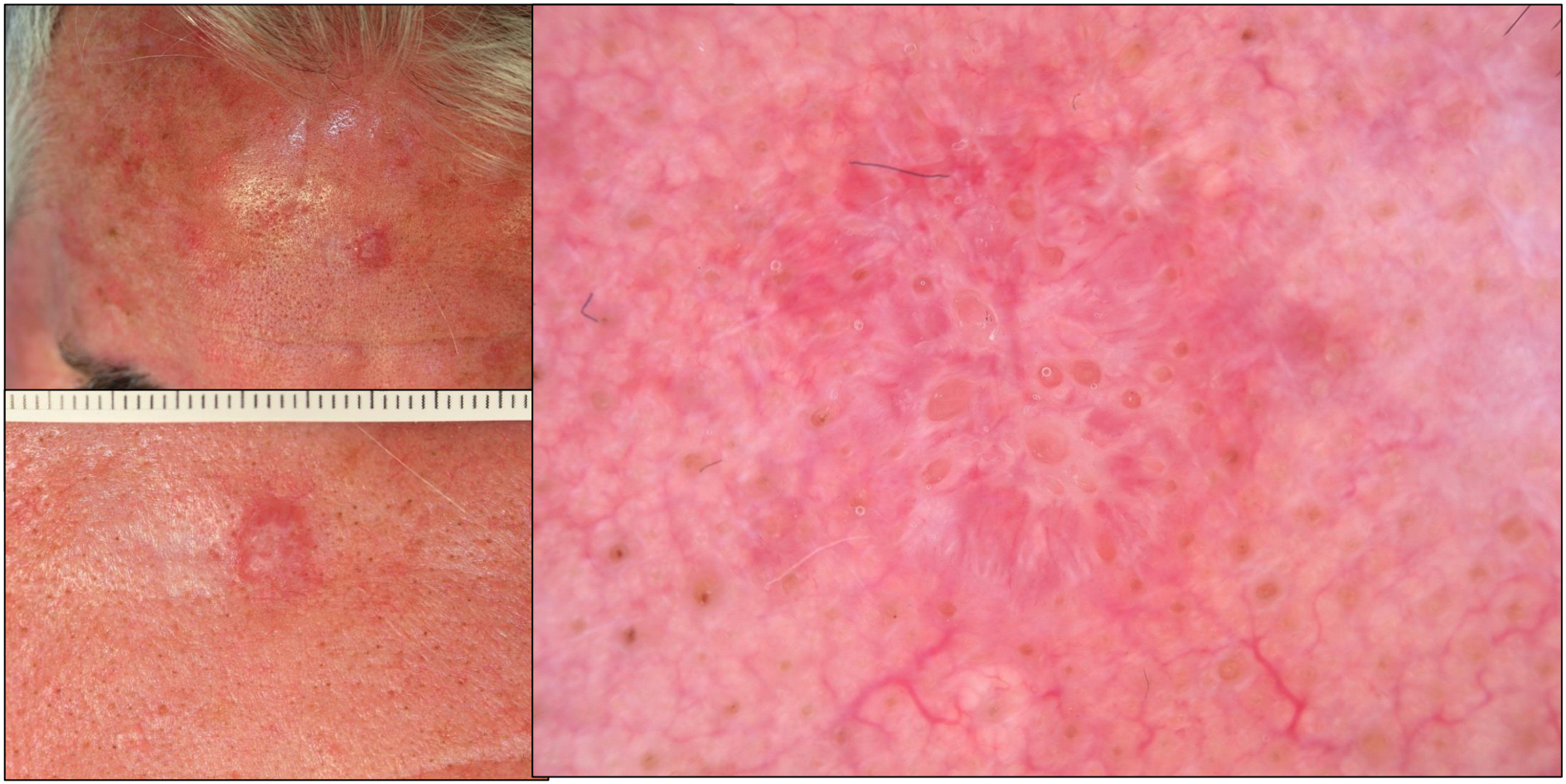
Bowen

(carcinome spinocellulaire *in situ*)

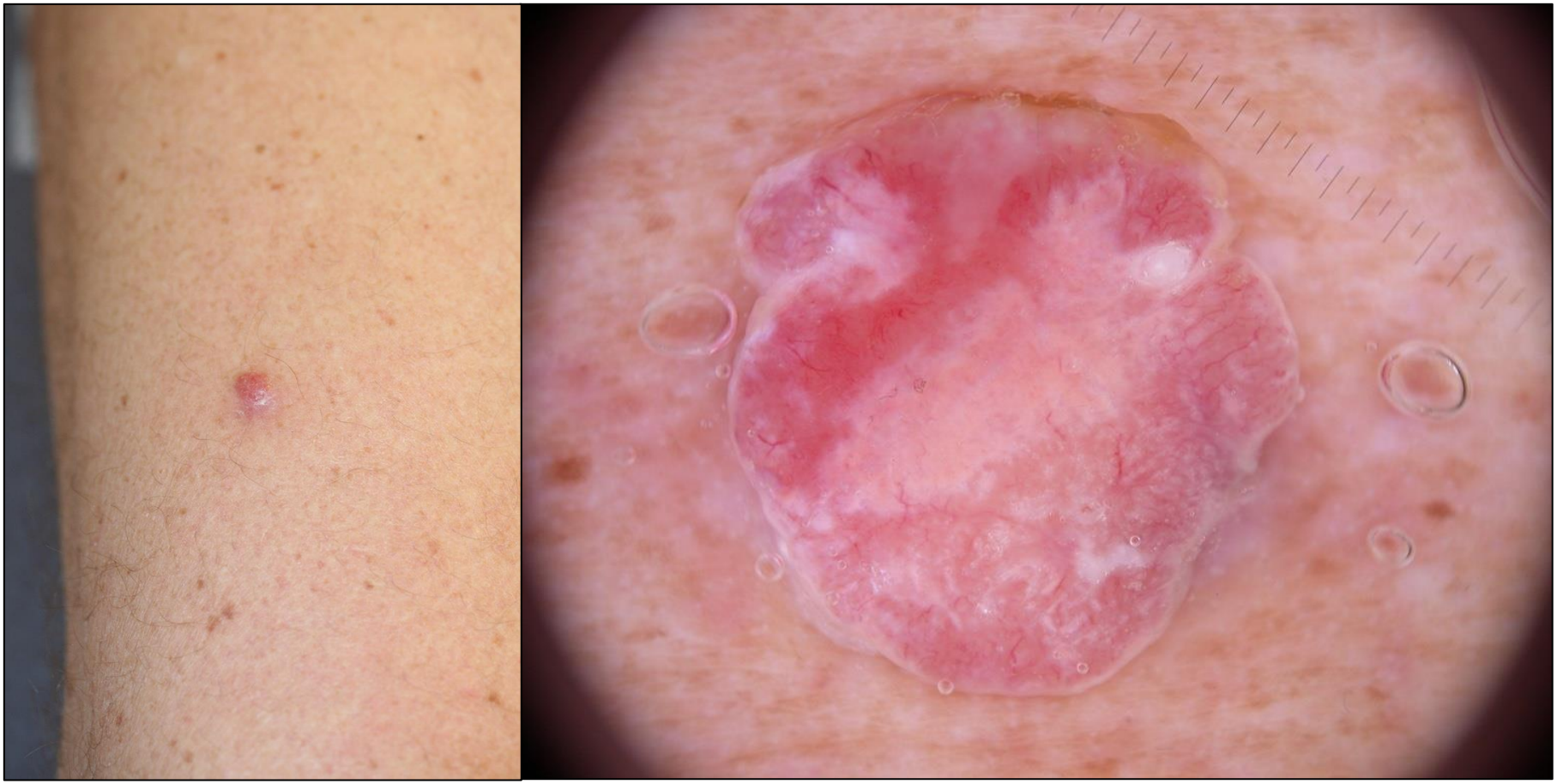


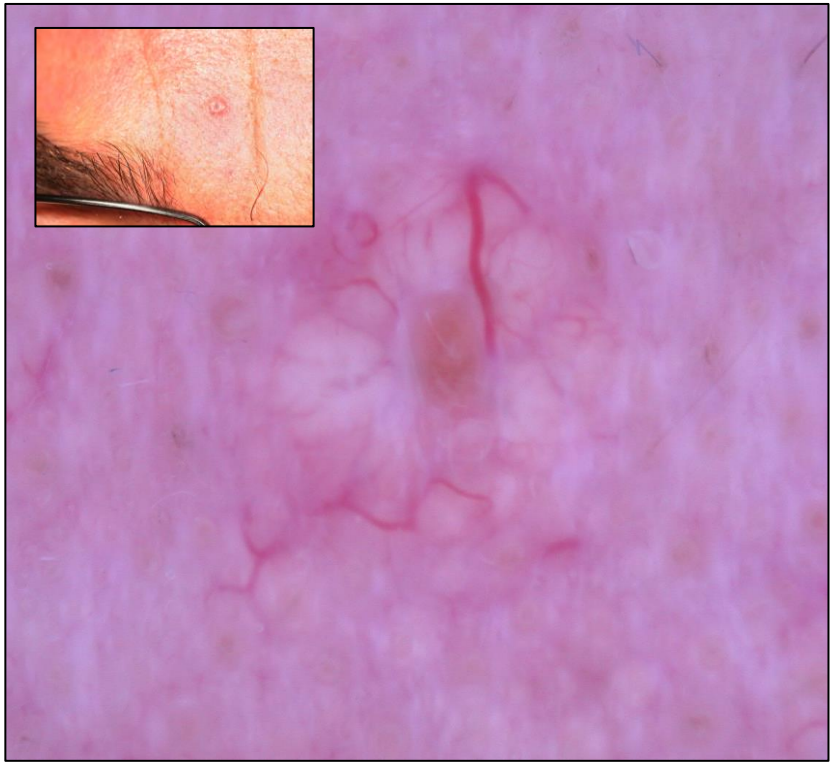


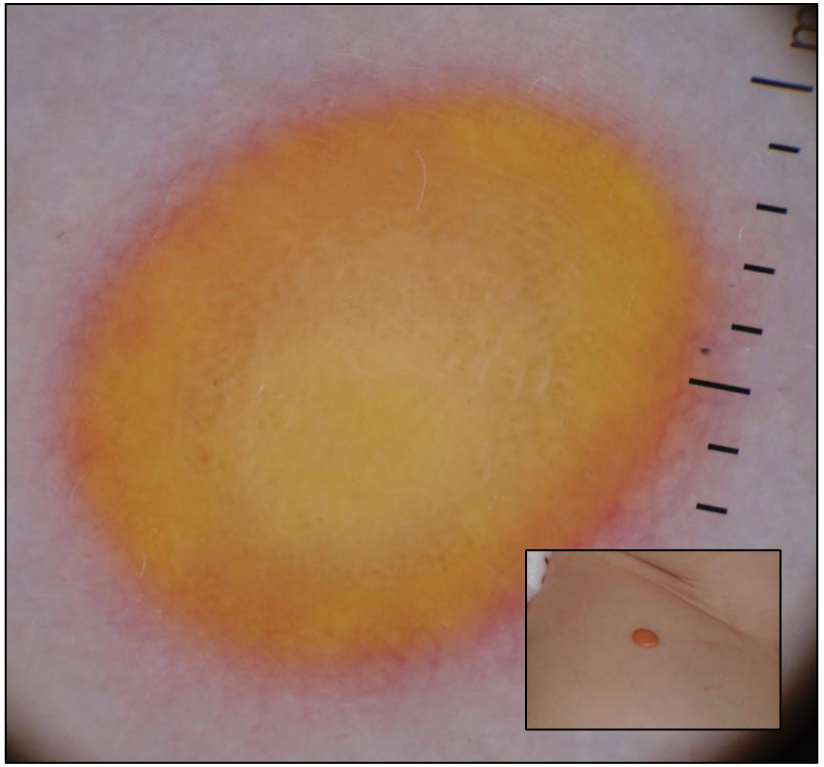
Carcinome spinocellulaire

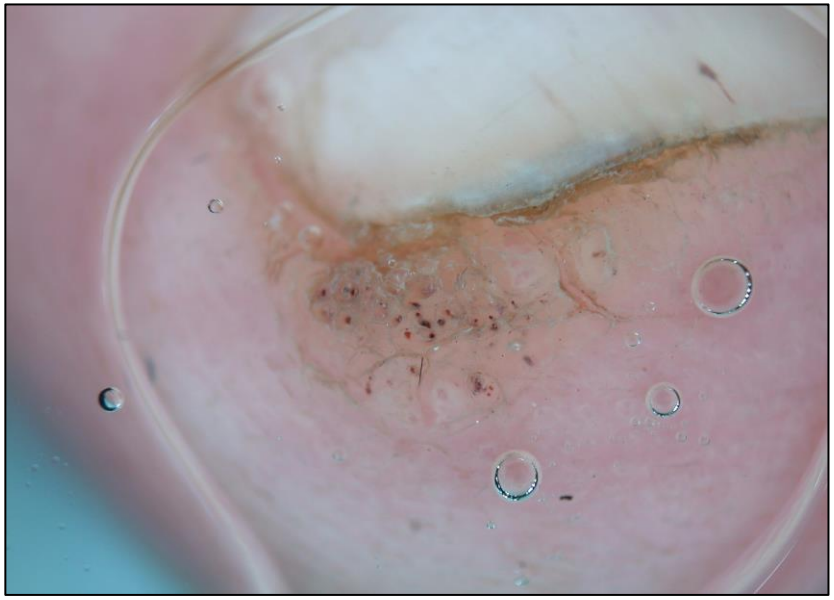


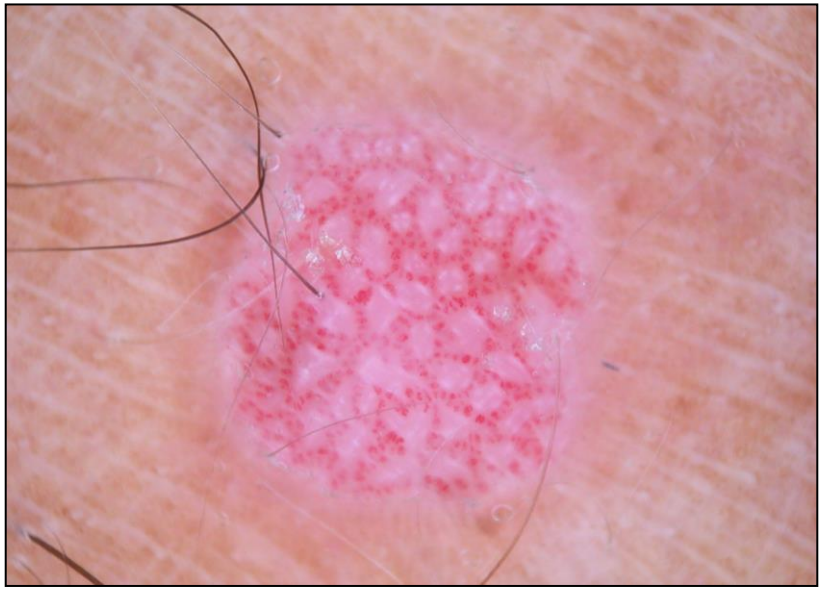
Mélanome



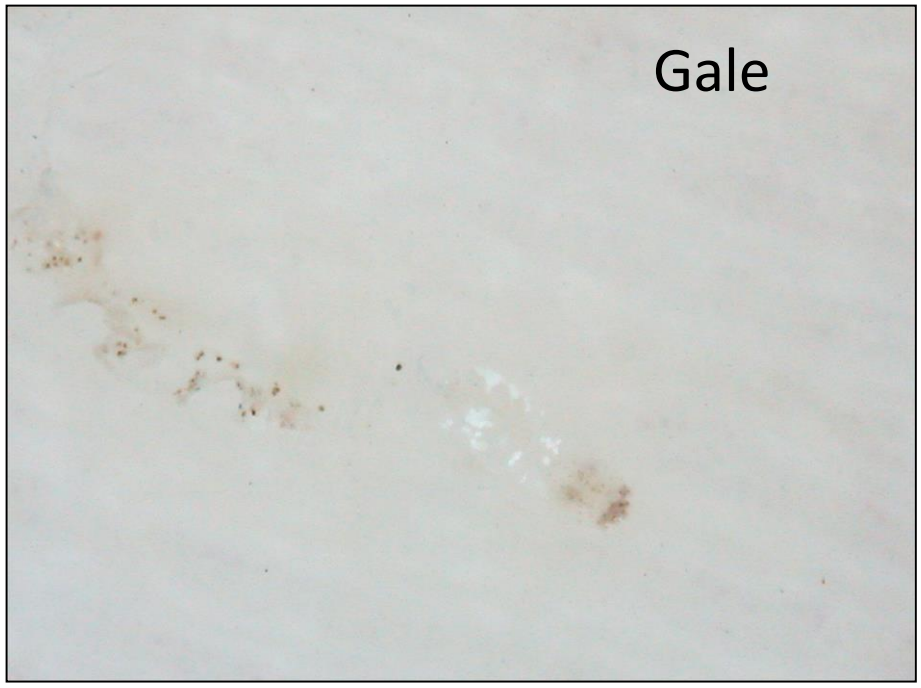


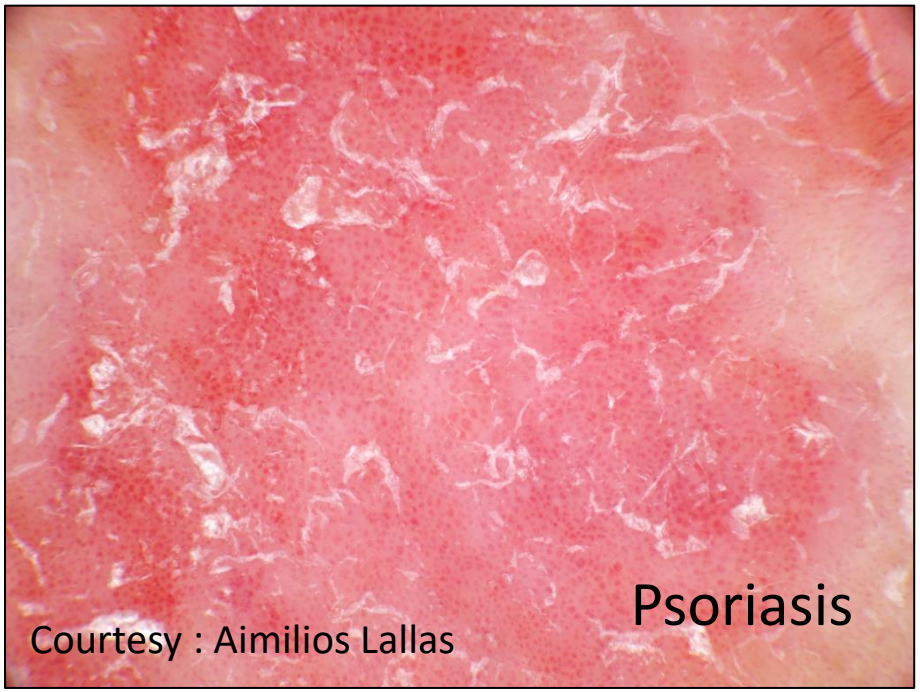


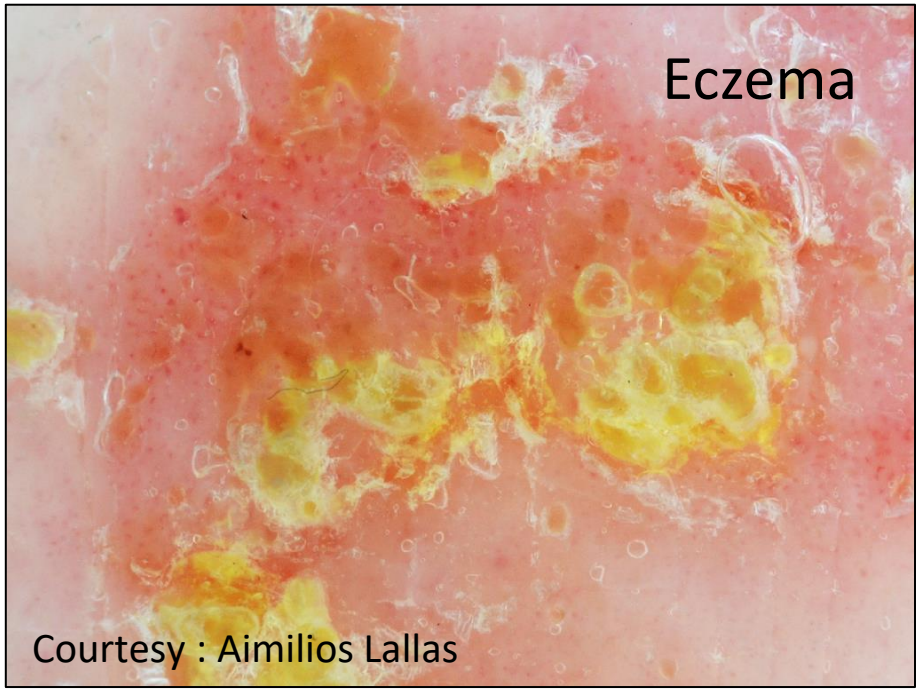


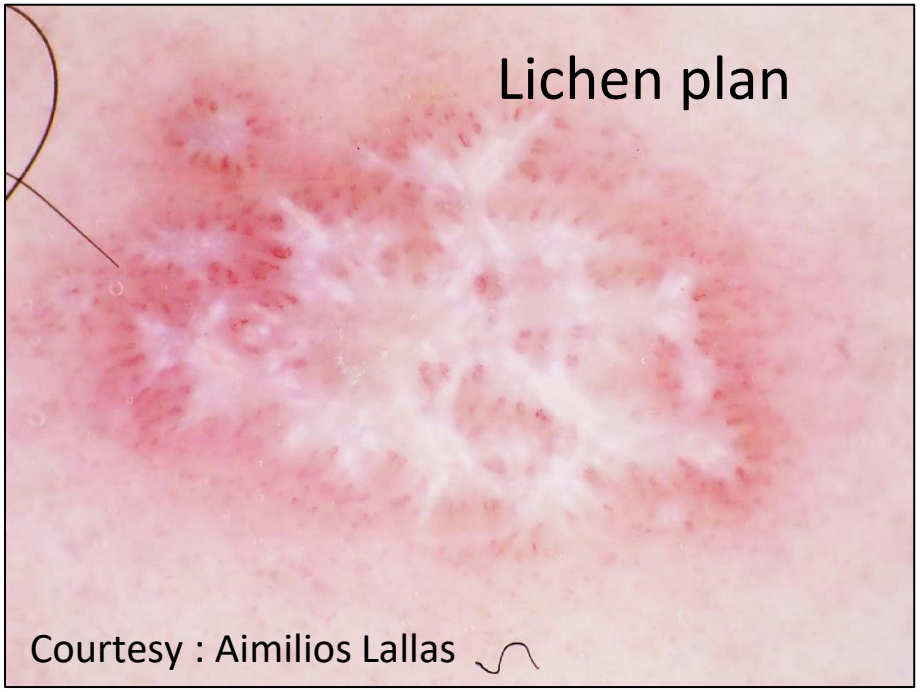



WANT MORE?

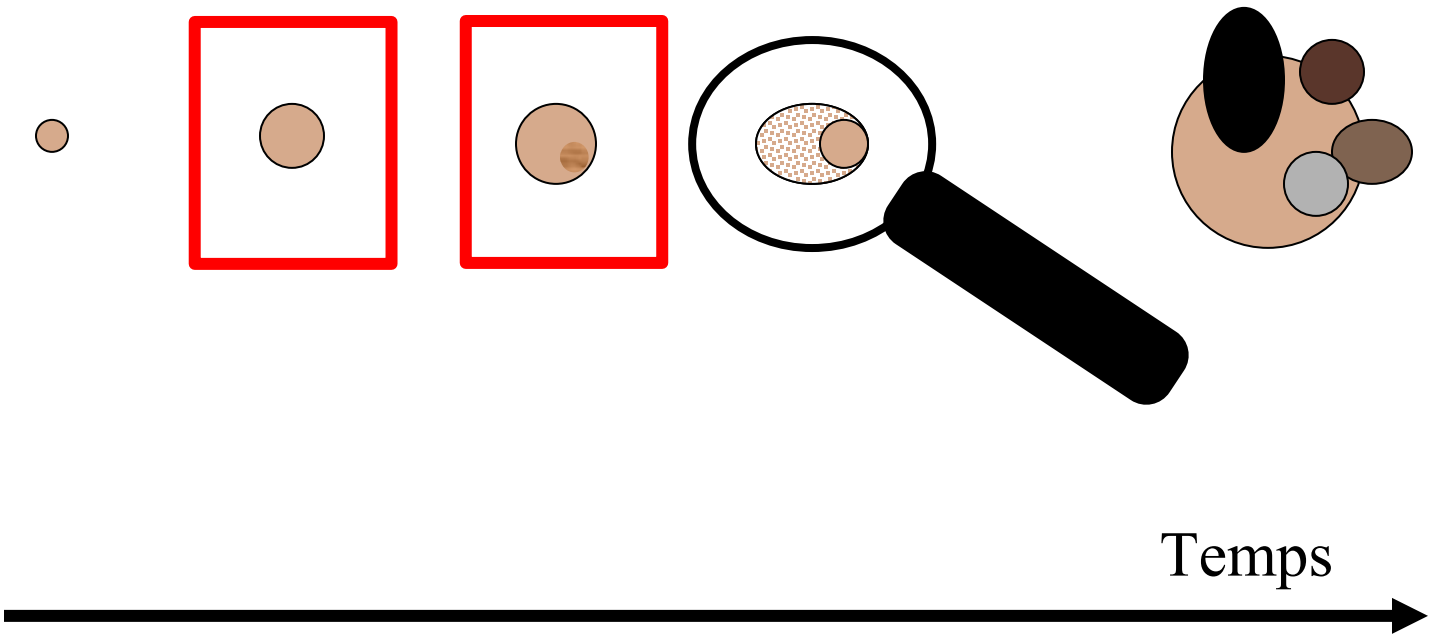

Gale

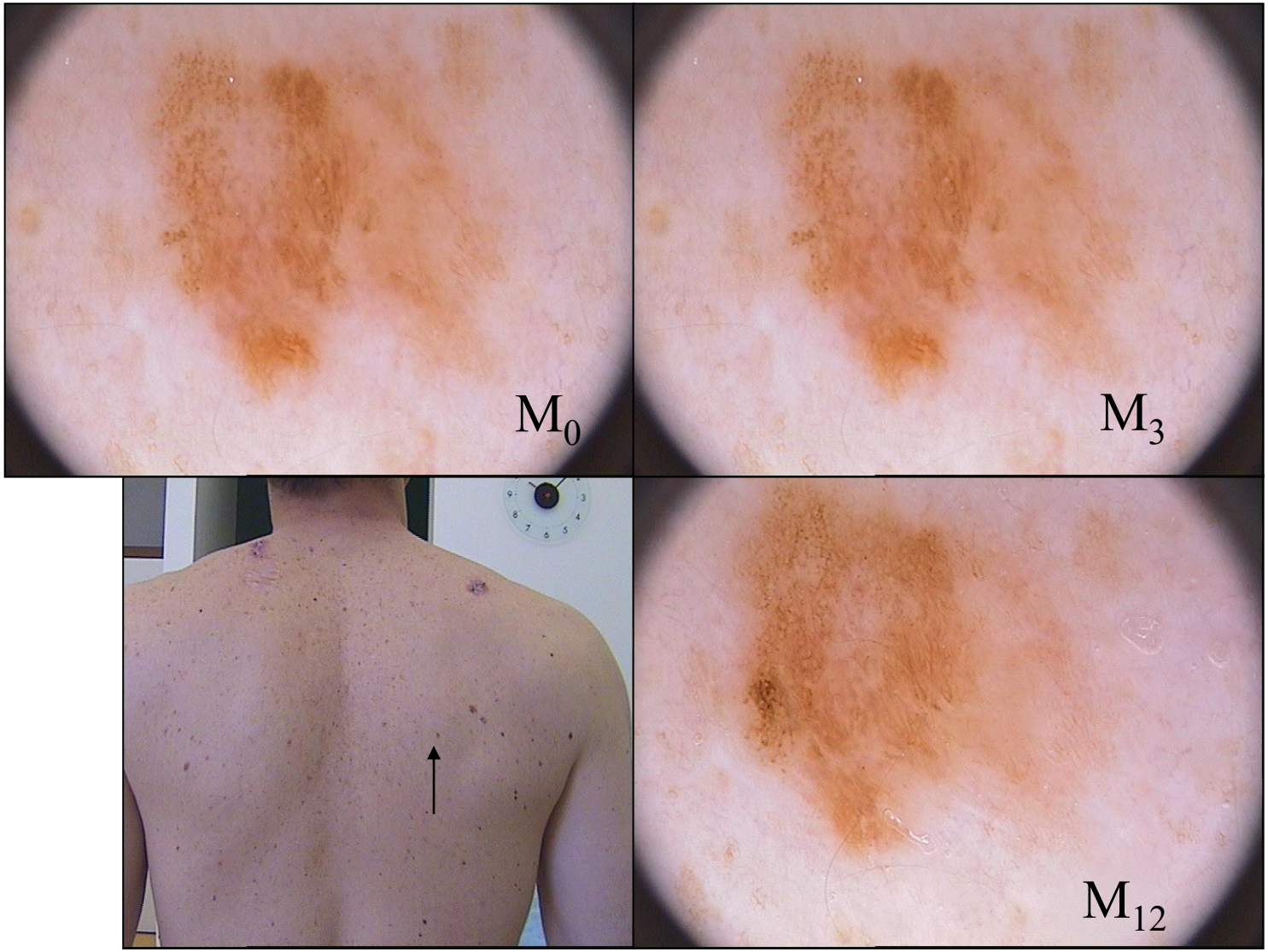

Psoriasis
Courtesy : Aimilios Lallas


Eczema
Courtesy : Aimilios Lallas

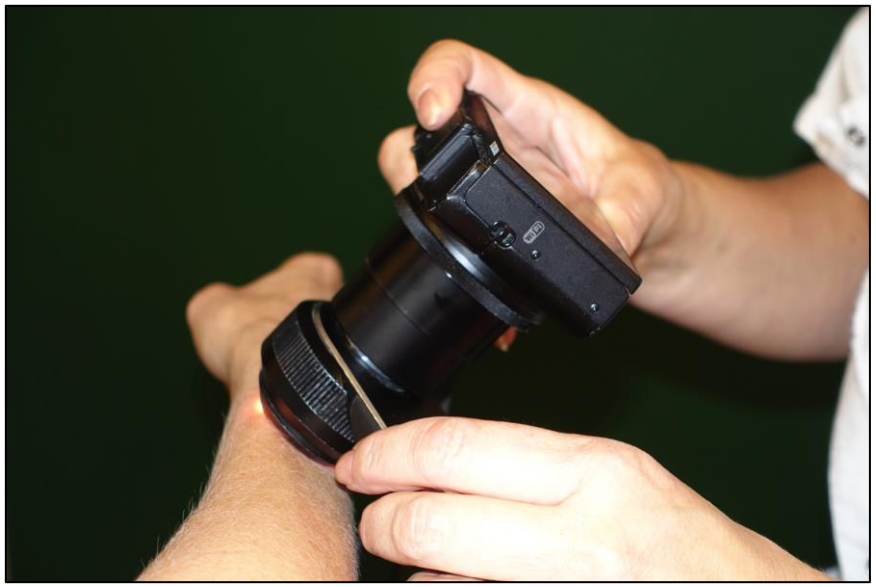

Lichen plan
Courtesy : Aimilios Lallas

Dermoscopie dynamique





Mélanome, II, 0,2 mm $pT_1\ N_0\ M_0$




CASIO


Santé
Formation
Médecine générale
Perspectives

BJD
British Journal of Dermatology

Dermoscopy, a useful tool for general practitioners in melanoma screening: a nationwide survey*

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[3]Lyon University, Institute Camille Jordan, UMR 5208, Université Jean Monnet, Lyon, France
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Linked Comment: Rosendahl. *Br J Dermatol* 2016; **175:**673–674.

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Conflicts of interest
None declared.

*Plain language summary available online

DOI 10.1111/bjd.14495

Summary

Background Dermoscopy improves diagnostic accuracy in melanoma, as shown by several meta-analyses. Although it is used by general practitioners (GPs) in Australia, Canada and Italy, no published data on this topic are available in France.
Objectives To review the opinions and use of dermoscopy by GPs in France and to understand their practice of skin examination.
Methods We designed a descriptive and cross-sectional survey and conducted it between 26 November and 26 December 2014. An anonymous, multiple-choice questionnaire about the demographic characteristics, skin examination modalities and use and training in dermoscopy was sent to 4057 GPs in four large regions of France. Pearson, χ^2, Student, Welch and Fisher tests were used for cross-tabulation statistical analysis.
Results Only 8% of respondents had access to a dermoscope; most were male practitioners and aged > 50 years. Dermoscopy increased self-confidence in analysing pigmented lesions (P = 0·004), and dermoscopy users referred fewer patients to dermatologists. The number of biopsies was reduced in the dermoscopy users group (P = 0·004). In total, 425 questionnaires were returned and analysed. Dermoscopy users took more time to evaluate a single pigmented lesion (P = 0·015). Only 16·9% of physicians declared having received some training on dermoscopy, yet this number reached 47% for those owning a dermoscope. Their training was mostly short and recent. Overall 29·2% of the respondents said the main advantage was to reduce the number of referrals to the dermatologists (P = 0·004), while its main disadvantage was the necessity of training (54·6%). Our responders declared they could spend seven working days on a dermoscopy training course.
Conclusions Our study demonstrates positive opinions regarding dermoscopy, despite a minority of French GPs using this technique in the areas surveyed. The need for formal training appears to be the main limitation to wider use. Appropriate and specifically designed training programmes should be offered.

What's already known about this topic?

- National surveys regarding the use of dermoscopy by general practitioners have been conducted mainly in Australia and Italy.
- The use by French general practitioners has never previously been described, despite dermoscopy being a useful tool for the diagnosis of melanoma.

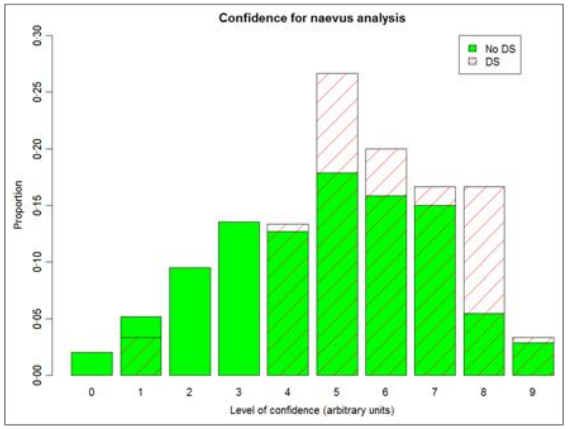
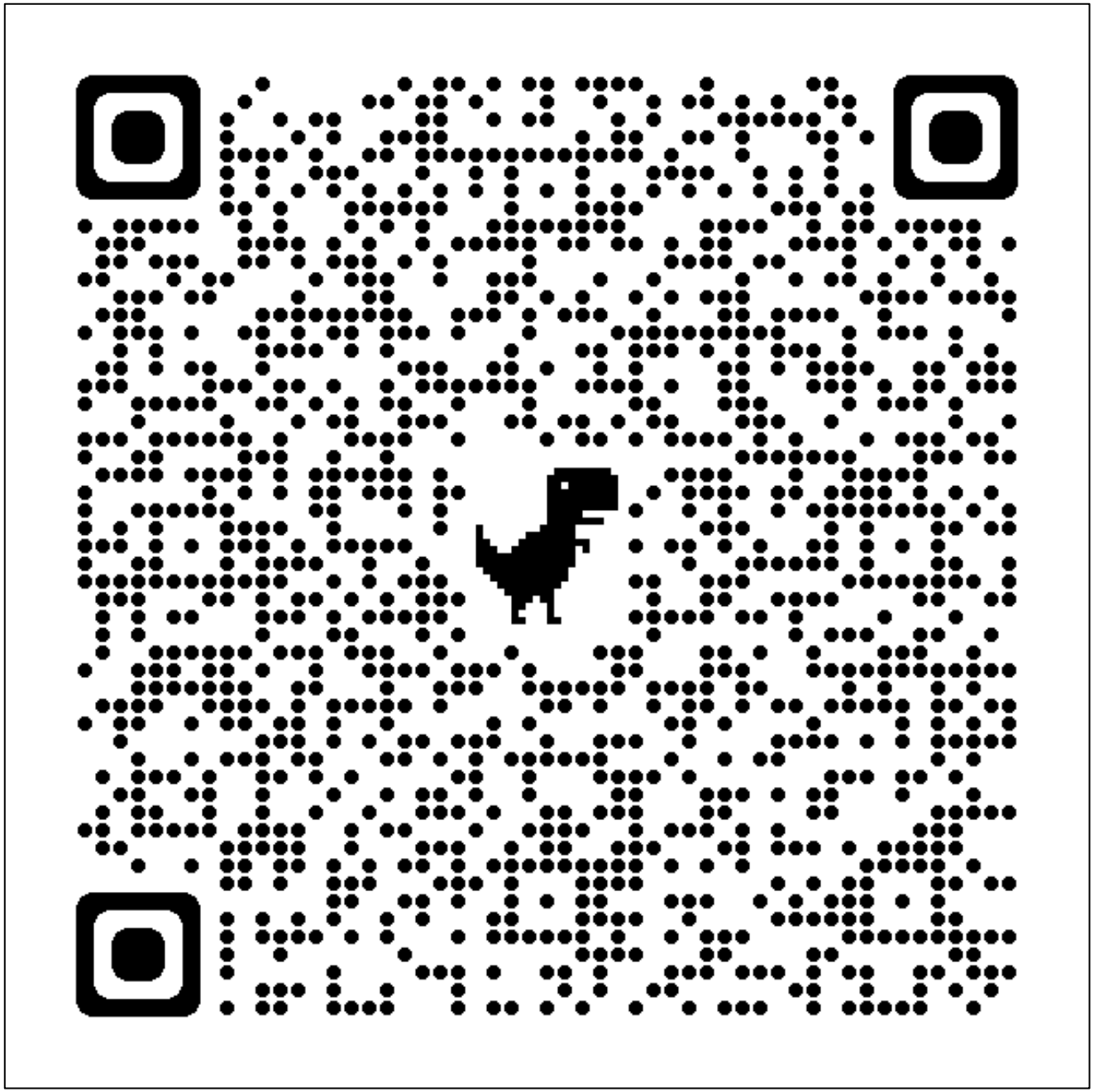


Fig 2. Level of confidence in the analysis of pigmented lesions by dermoscopy (DS) users and nonusers. Scale of 0–9, with a higher score representing greater confidence.

stephane.dalle@chu-lyon.fr

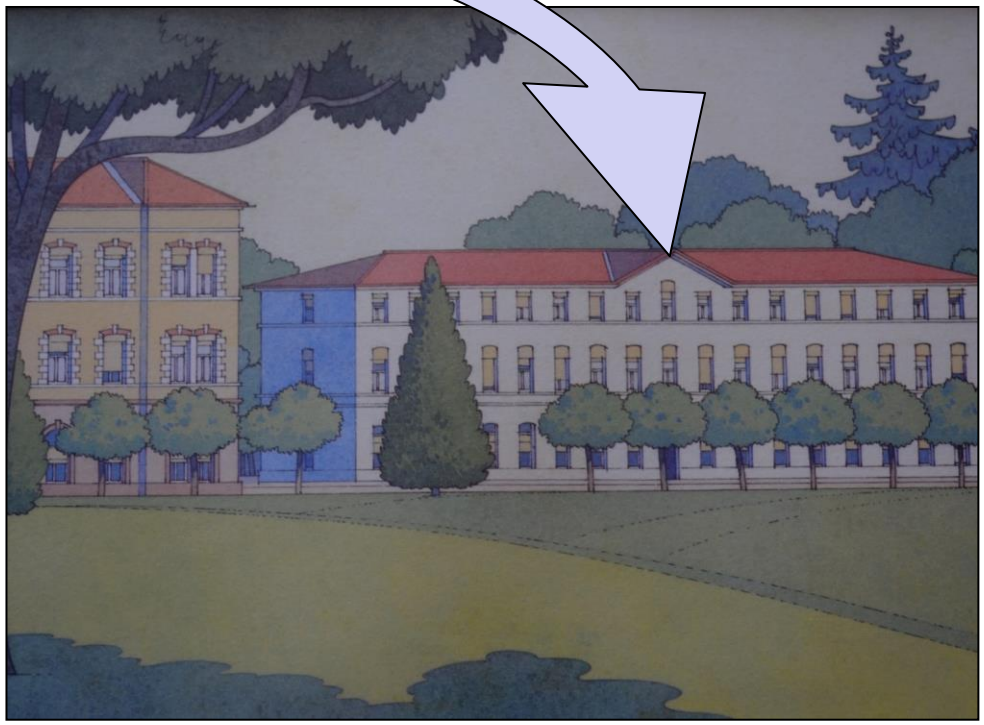


Association des Généralistes Dermoscopistes Français

Groupe (Privé) - 89 membres

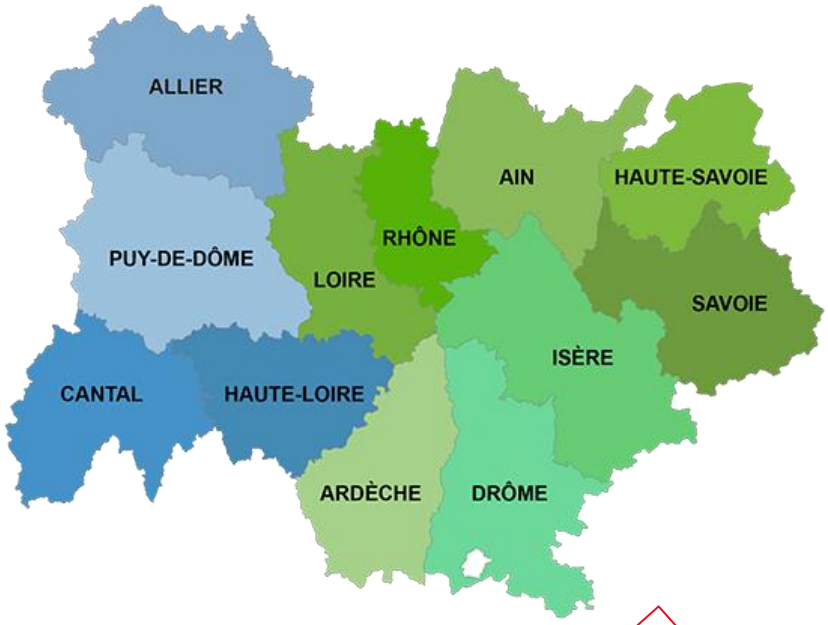
Rejoindre le groupe

Télémédecine



https://myhclpro.sante-ra.fr

Support : support.myhclpro@chu-lyon.fr


ALLIER
AIN
HAUTE-SAVOIE
RHÔNE
PUY-DE-DÔME
LOIRE
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ISÈRE
CANTAL
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ARDÈCHE
DRÔME


Lille
Hauts-
de-France
Rouen
Normandie
Paris
Île-de-France
Grand-Est
Strasbourg
Rennes
Bretagne
Orléans
Pays de
la Loire
Centre-
Val de Loire
Nantes
Dijon
Bourgogne-
Franche-Comté
Lyon
Auvergne-
Rhône-Alpes
Occitanie
Toulouse
Provence-Alpes-
Côte d'Azur
Marseille
Corse
Ajaccio
100 km
Sorry!


Purell
ADVANCED
HYGIENIC HAND RUB
GEL HYDRO-ALCOOLIQUE POUR LES MAINS
GEL ALCOHÓLICO PARA DESINFECCIÓN HIGIÉNICA DE MANOS ANTISÉPTICO PARA PIEL SANA
GEL ALCOÓLICO ANTISSÉPTICO PARA MÃOS
ONTSMETTENDE HANDGEL
HYGIENISCHES HÄNDEDESINFEKTIONSMITTEL
GEL TIL HÅNDDESINFEKTION
HYGIENISKT GEL
GEL IDROALCOOLICO PER LA DISINFEZIONE DELLE MANI
100 mL

Applications | easily - THOMAS, Luc - Médecin | Venkat Raman DOB 7/1/2016

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Applications | Research gate | Claroline | PubMed | Cisco Webex Meeti... | FileSender | SIGAPS | Liste de lecture

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lesion fesse

De **florence florence hoareau** À **THOMAS Luc** reçu le 06/04/2021 - réf. 137836

Retour

florence florence hoareau

florence.hoareau@gmail.com

SPÉCIALITÉ : DERMATOLOGIE ET VENEREOLOGIE

PROVENANCE : CABINET DE florence florence hoareau Galeries Benjamin Constant 1 1005 Lausanne Suisse

se souvient plus de la
café au lait sous jacente
foncée

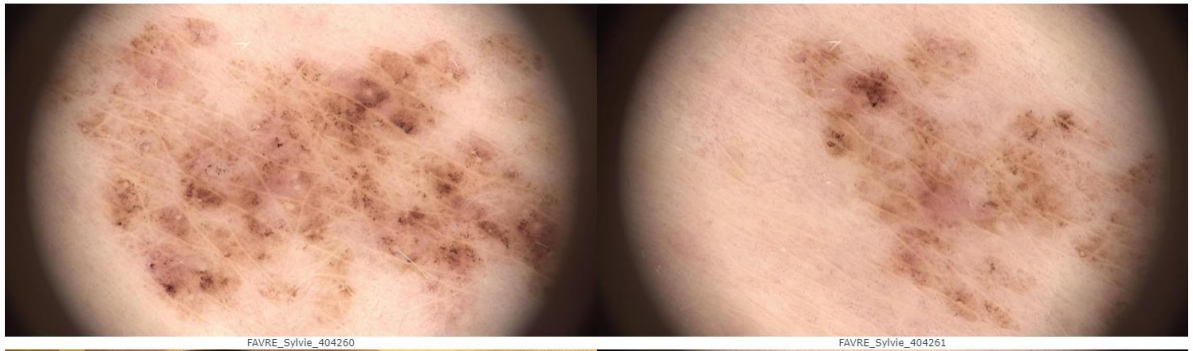
Q abstention?surveillance M3?M12?merci beaucoup

R THOMAS Luc, le 1/04/2021 :
Bonjour
Il s'agit d'un naevus agminé plan (spilus sans tache café au lait)
PAs suspect
pas d'indication opératoire
pas d'indication de surveillance
AMitiés
LT

Pièces jointes

Diaporama | Mur

Mur



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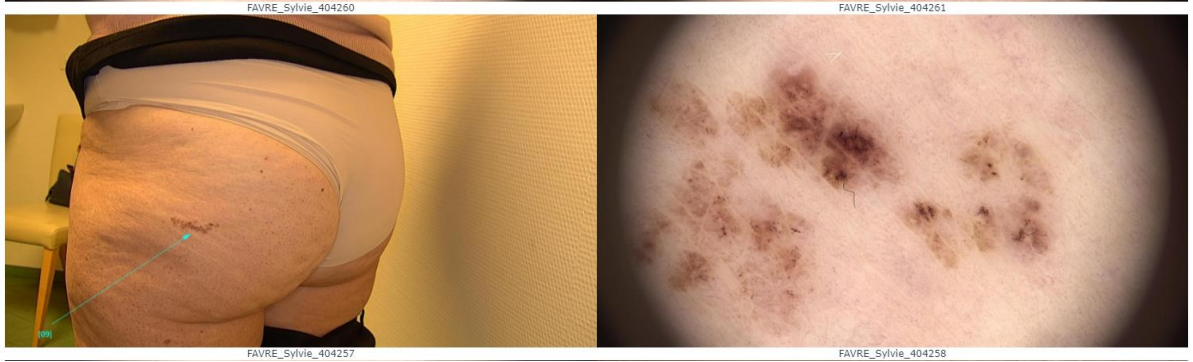

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Pigmented Nail Lesion Young Boy

De **Paul Fishburn** À **THOMAS Luc** reçu le 07/09/2021 - réf. 151888

Retour

♂ 5 ans 07/01/2016
Australia

Bonjour et salutations d'Australie Luc, merci beaucoup pour vos conseils. Slowly growing pigmented lesion distal index finger - please see attached PDF (I can send to you a PowerPoint via an email if you need to have larger images)

Q Clinical diagnosis

R THOMAS Luc, le 7/09/2021 :
Hi Paul
Your French is impeccable !

This case is highly suggestive of a congenital nevus (or a congenital-type nevus) of the nail unit
IN such cases
- irregular lines
- change over time
- periungual pigmentation
are very commonly observed
Your case also exhibit a distal periungual pigmentation with a fibrillar pattern we consider now as a "signature feature" for this diagnosis (see joined image)
Our publication about that is uneder second revision in the JAAD and will hopefully be soon available

Envoyer

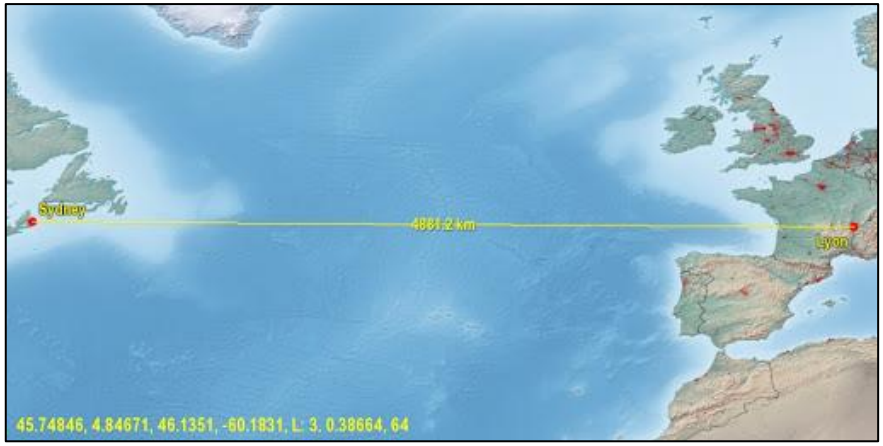
Actions

Archiver

Bloc-notes

Pièces jointes

Venkat_Raman_Nail_Presentation



Avez-vous eu des difficultés pour utiliser le service de télé-expertise ?

Très souvent	4 %
Souvent	18 %
Presque jamais	46 %
Jamais	33 %

Comment jugez-vous l'utilisation du service de télé-expertise ?

Inutilisable	2 %
Pas facile à utiliser	11 %
Facile à utiliser	69 %
Très facile à utiliser	18 %

L'utilisation du service de télé-expertise vous a-t-il permis de dégager du temps ?

Pas du tout	23 %
Un peu	25 %
Un temps appréciable	35 %
Considérablement	17 %

L'utilisation du service de télé-expertise a-t-il modifié dans un sens positif votre pratique ?

Aucune modification	9 %
Modifié un peu ma pratique	49 %
Modifié fortement ma pratique	41 %
Bouleversé ma pratique	2 %

Comment jugez-vous les délais de réponse du service de télé-expertise ?

Trop long	2 %
Long	2 %
Rapide	51 %
Très rapide	44 %

Continuerez-vous à utiliser le service de télé-expertise ?

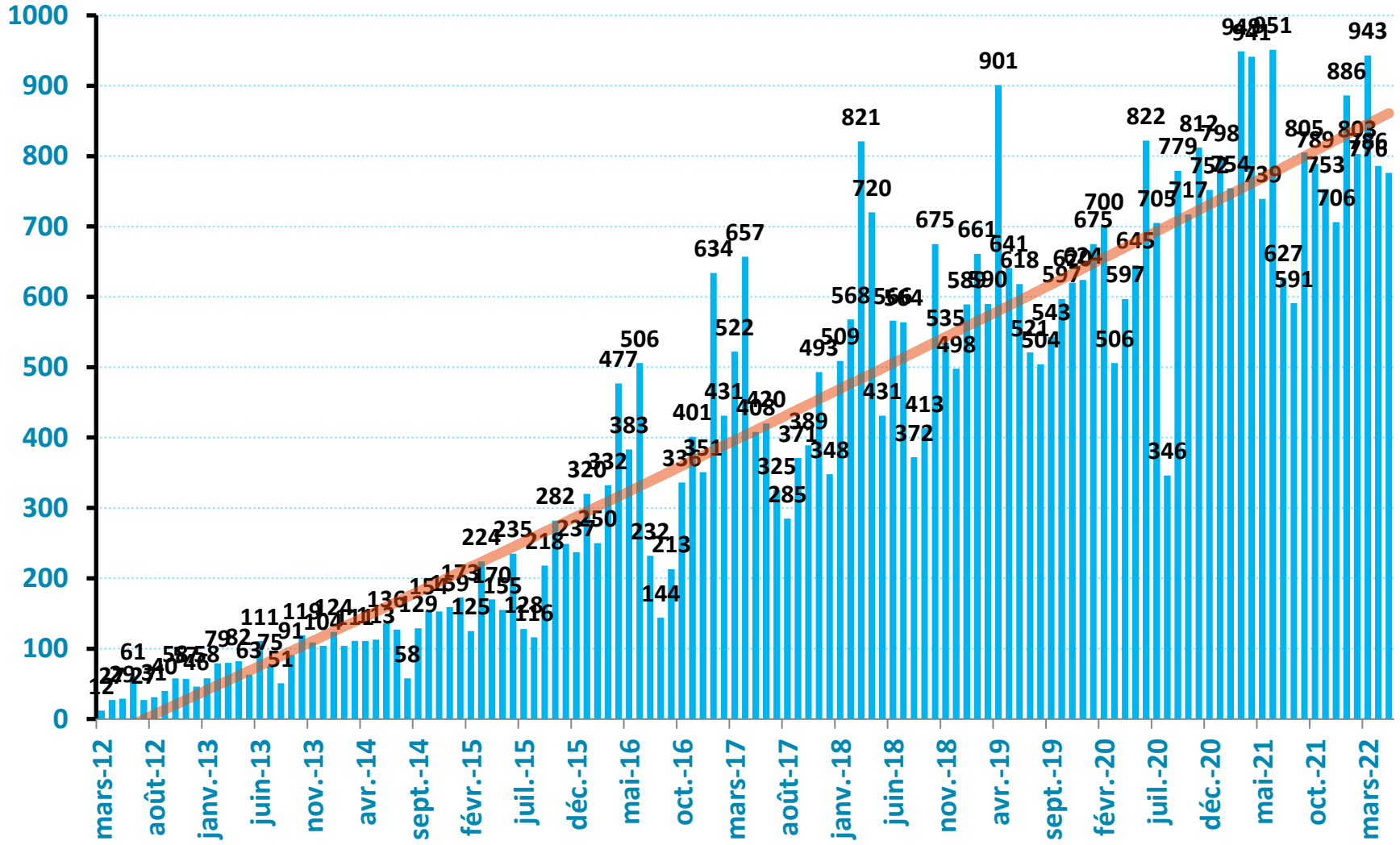
Certainement pas	2 %
Probablement non	0 %
Oui peut-être	8 %
Certainement	90 %

Quelle appréciation globale portez-vous sur le service de télé expertise ?

Très mauvaise	2 %
Mauvaise	2 %
Bonne	34 %
Très bonne	63 %

Recommanderiez-vous le service de télé expertise à vos confrères ?

Certainement pas	1 %
Probablement non	1 %
Oui peut-être	9 %
Certainement	89 %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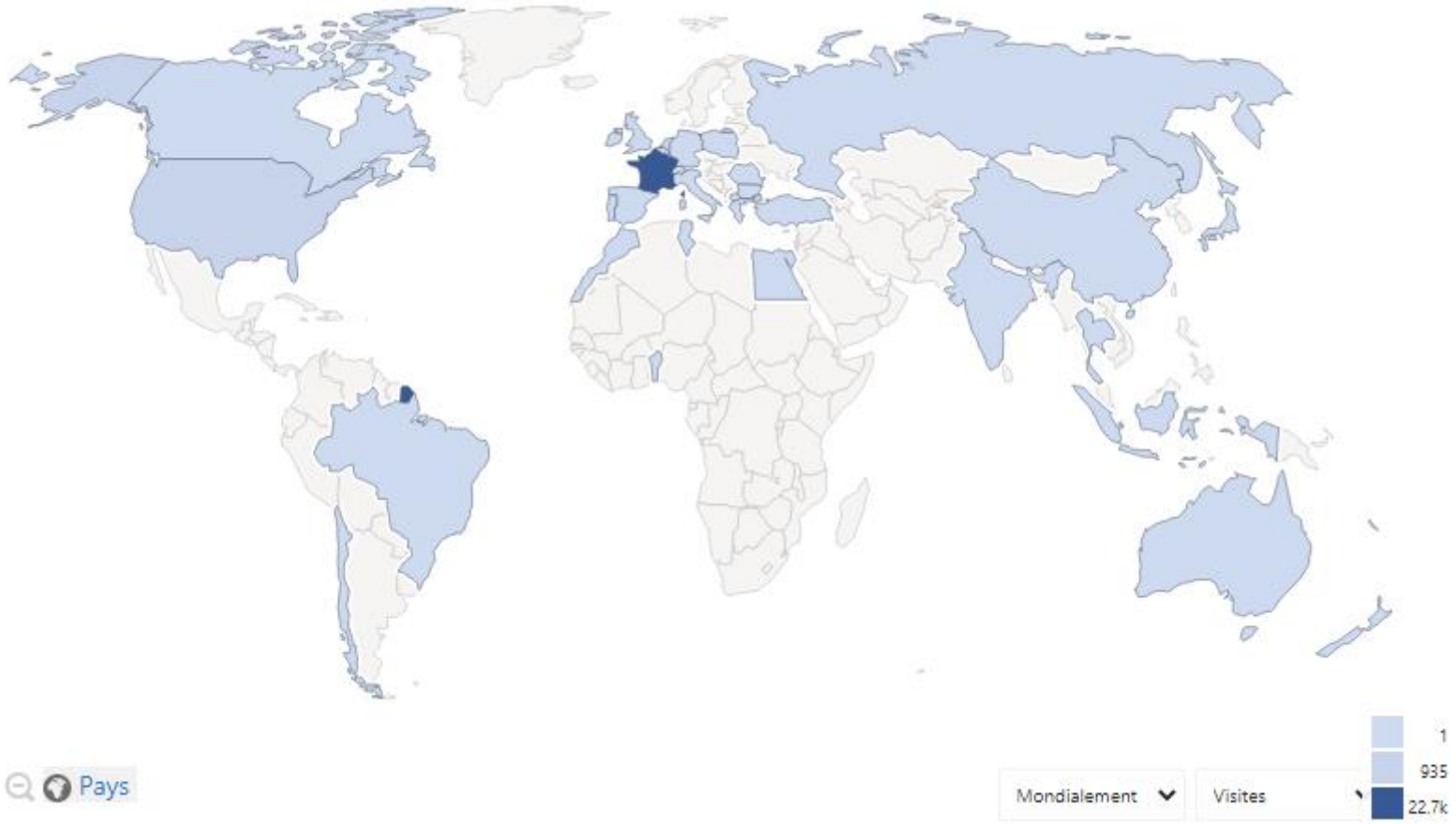
janv.-13
juin-13
nov.-13
avr.-14
sept.-14
févr.-15
juil.-15
déc.-15
mai-16
oct.-16
mars-17
août-17
janv.-18
juin-18
nov.-18
avr.-19
sept.-19
févr.-20
juil.-20
déc.-20
mai-21
oct.-21
mars-22

24 346 visites



EXPERT	N
THOMAS Luc	*19683*
PERIER-MUZET, Marie	11165
PHAN Alice	7643
DEBARBIEUX SEBASTIEN	4301
DALLE Stephane	3380
POULALHON NICOLAS	3371

2020	
France	14131
Belgium	610
Switzerland	390
Algeria	365
Luxembourg	174
Morocco	84
Senegal	23
Tunisia	89
Russian Federation	29
Portugal	152
Greece	62
Italy	187
Australia	147
United States	63
Israel	68
Spain	49
United Kingdom	37
Turkey	57

Celine LANGELLA	653
Carine DELALEU RAGUE	589
Genevieve CHOQUET	486
Marie Cecile LUAUTE MARCILLY	481
Fabienne LEGER POUSSET	454
Anne Laure RIVAL TRINGALI	446
Fabienne MARTIN	438
florence florence hoareau	426
Davide SALI	412
Celine GRAVERIAU	369
Elise ARBONA VIDAL	354
Nadia RUFFION	346
GERARD LESAGE	321
Carine FERRIERE	302
Philippe VIRARD	297
CELINA DUCHEMIN	288
Aude GOIRAND ODEON	286
Cecile BECUWE	269
AUDE ROUSSEL	255
Isabelle MIRONNEAU	232
Isabelle GUILLOT POUGET	230
Deborah Salik	225
Marie Charlotte DEROO BERGER	219
DUPIN Catherine	215
Francoise TRUCHOT	214
Patricia PERRET LIAUDET	199
Elsa THOMAS	197
Aimilios LALLAS	2

Dermatology Practical & Conceptual

Diagnostic Concordance in Tertiary (Dermatologists-to-Experts) Teledermoscopy: A Final Diagnosis-Based Study on 290 Cases

Anne Marchetti,[1] Stephane Dalle,[1,4,5,6] Delphine Maucort-Boulch,[2,3,4,5] Mona Amini-Adl,[1] Sébastien Debarbieux,[1] Nicolas Poulalhon,[1] Marie Perier-Muzet,[1] Alice Phan,[1] Luc Thomas[1,4,5,6]

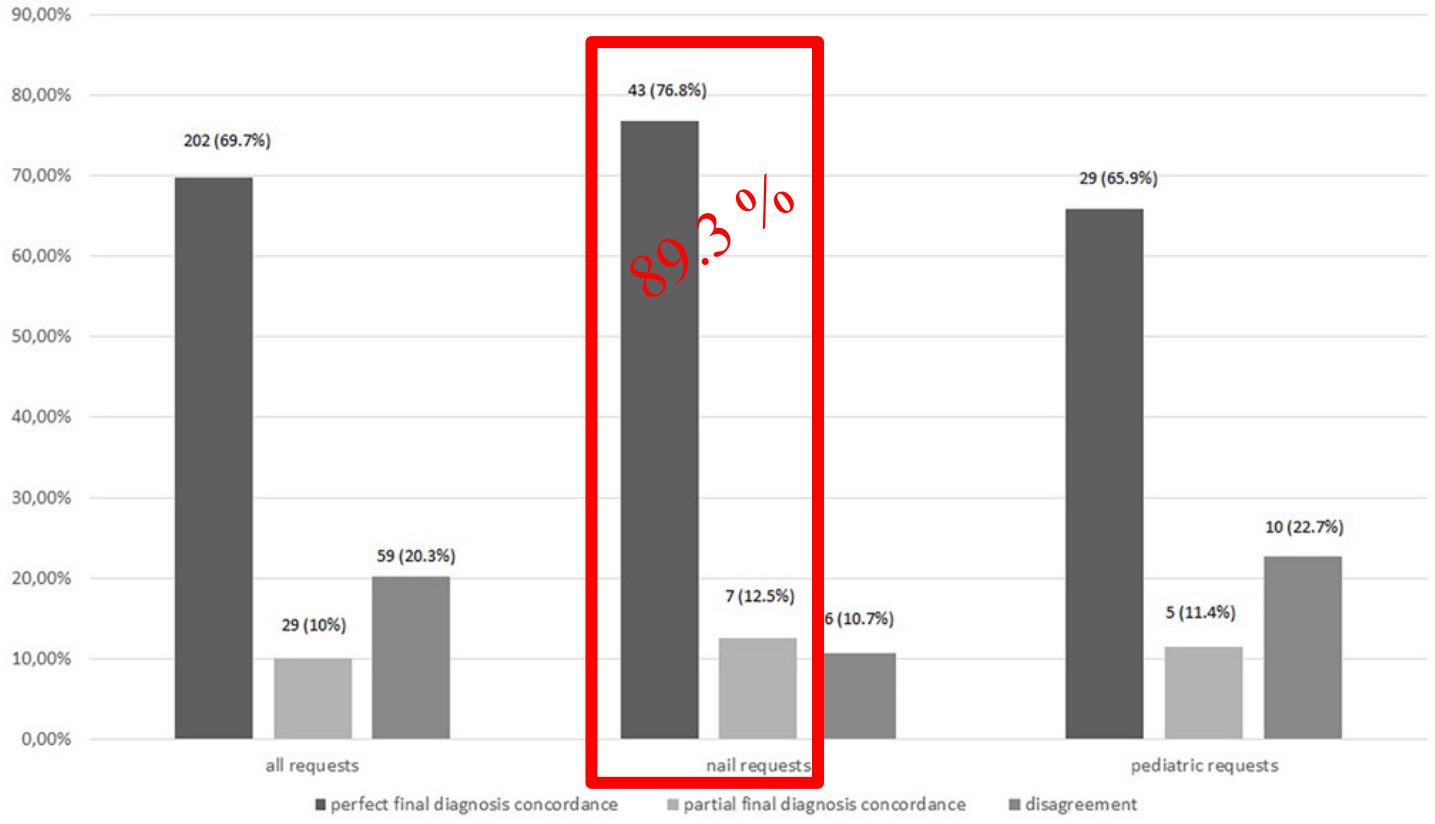


Figure 2. Perfect final diagnostic concordance between teledermoscopy expert and final diagnoses (histopathology or reasonable-delay benign follow-up).

Dermatology Practical & Conceptual

Diagnostic Concordance in Tertiary (Dermatologists-to-Experts) Teledermoscopy: A Final Diagnosis-Based Study on 290 Cases

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Table 3. Prediagnostic Concordance Between Teledermoscopy Expert and Referring Clinician

	All Requests (N = 290) (100%)	Nail Requests (n = 56) (19.3%)	Pediatric Requests (n = 44) (15.2%)
Perfect prediagnostic concordance	116 (40%)	16 (28.6%)	21 (47.7%)
Partial prediagnostic concordance	44 (15.2%)	12 (21.4%)	4 (9.1%)
Disagreement on prediagnosis	130 (44.8%)	28 (50%)	19 (43.2%)
No hypothesis from referring clinician	76 (26.2%)	21 (37.5%)	9 (20.5%)
No hypothesis from teledermoscopy expert	11 (3.8%)	0	3 (6.8%)

87.5 %

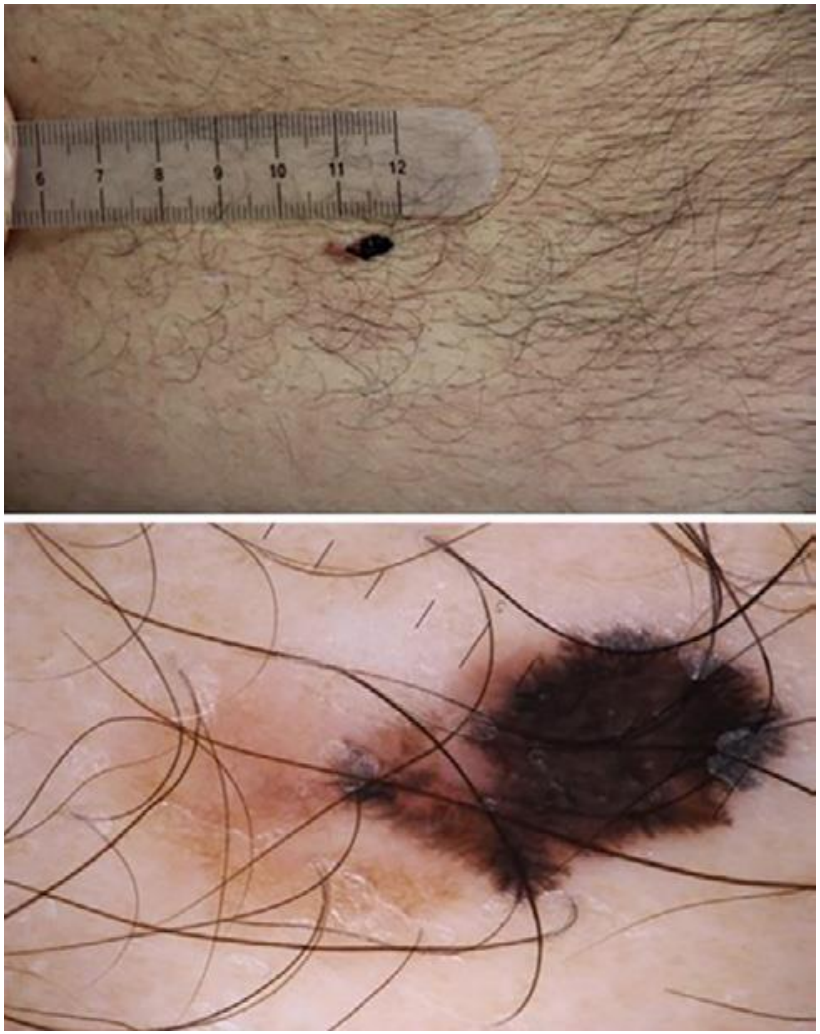

Figure 3. A 72-year-old man presented with a pigmented atypical lesion on the abdomen for 6 months. Expert and clinicians both diagnosed a melanoma and suggested excision of the lesion. Histology found a superficial spreading melanoma 0.35 mm thick.

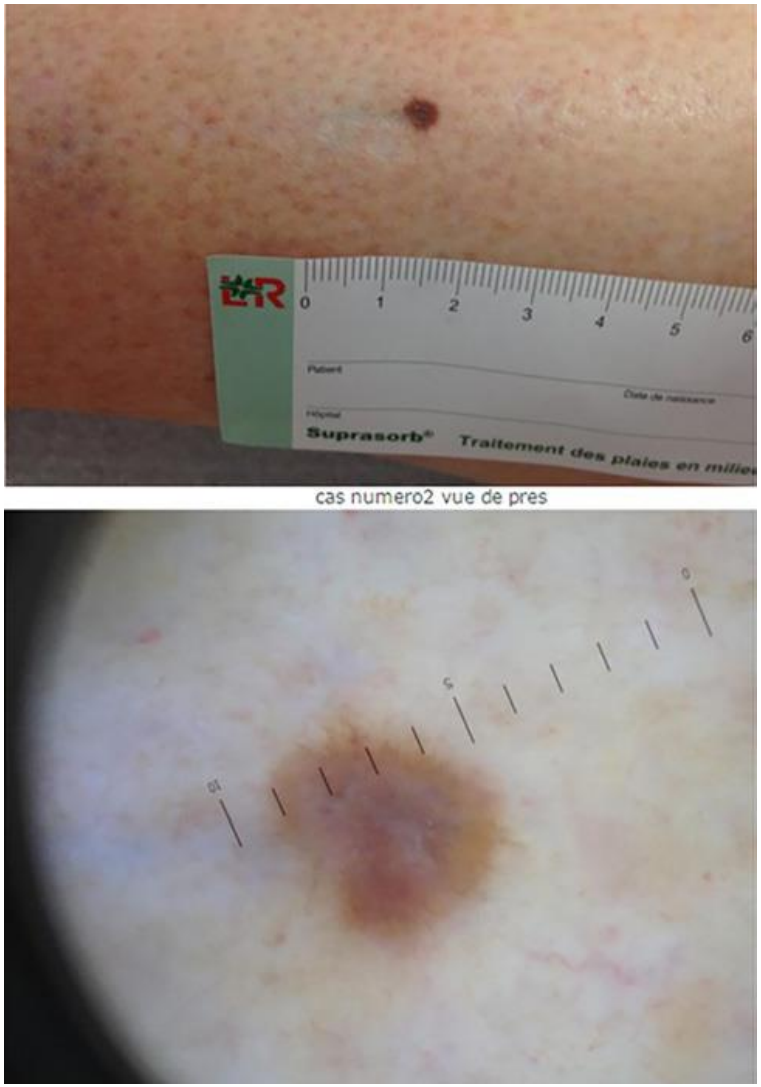

Figure 4. A 70-year-old woman presented with a pigmented atypical lesion on the leg. The referring clinician suggested excision for a possible melanoma. The diagnosis of dermatofibroma, suggested by the expert, was confirmed by histopathology.


ADDITIONAL
BENEFITS


10:20
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10:20
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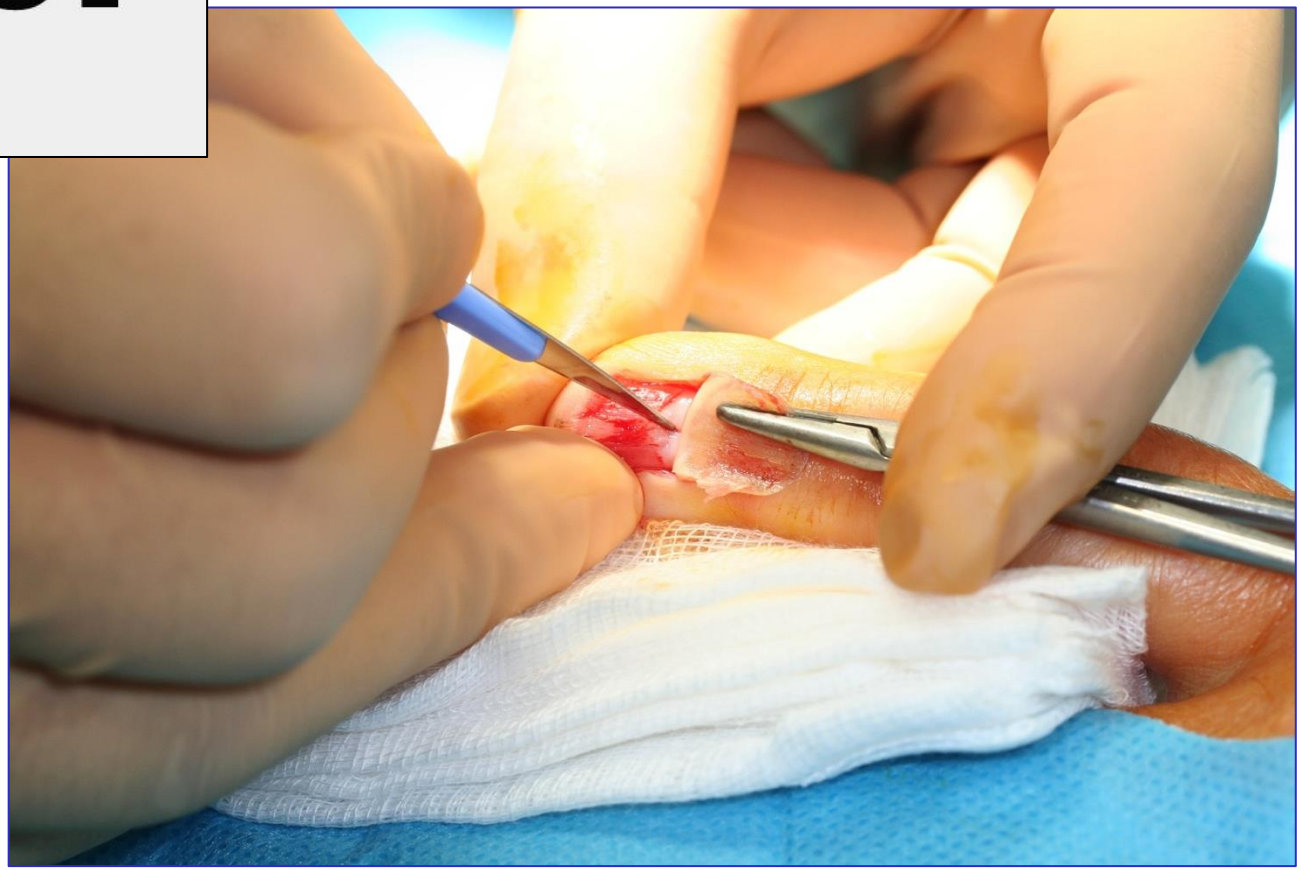
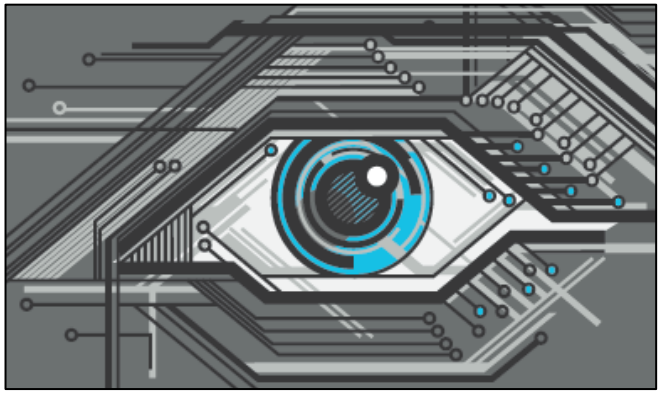
consultations

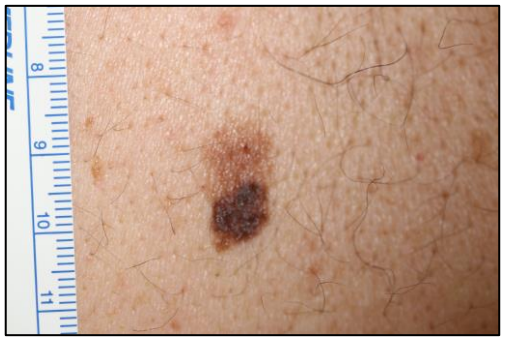

IMPACT

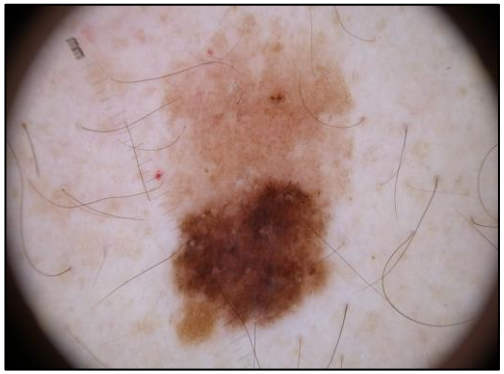


Time Consuming Tasks



Machine vision in melanoma





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Annals of Oncology 0: 1–7, 2018
doi:10.1093/annonc/mdy166

ORIGINAL ARTICLE

Man against machine: diagnostic performance of a deep learning convolutional neural network for dermoscopic melanoma recognition in comparison to 58 dermatologists

H. A. Haenssle[1*,†], C. Fink[1†], R. Schneiderbauer[1], F. Toberer[1], T. Buhl[2], A. Blum[3], A. Kalloo[4], A. Ben Hadj Hassen[5], L. Thomas[6], A. Enk[1] & L. Uhlmann[7]

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†Both authors contributed equally as co-first authors.

Background: Deep learning convolutional neural networks (CNN) may facilitate melanoma detection, but data comparing a CNN's diagnostic performance to larger groups of dermatologists are lacking.

Methods: Google's Inception v4 CNN architecture was trained and validated using dermoscopic images and corresponding diagnoses. In a comparative cross-sectional reader study a 100-image test-set was used (level-I: dermoscopy only; level-II: dermoscopy plus clinical information and images). Main outcome measures were sensitivity, specificity and area under the curve (AUC) of receiver operating characteristics (ROC) for diagnostic classification (dichotomous) of lesions by the CNN versus an international group of 58 dermatologists during level-I or -II of the reader study. Secondary end points included the

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Man against machine: diagnostic performance of a deep learning convolutional neural network for dermoscopic melanoma recognition in comparison to 58 dermatologists

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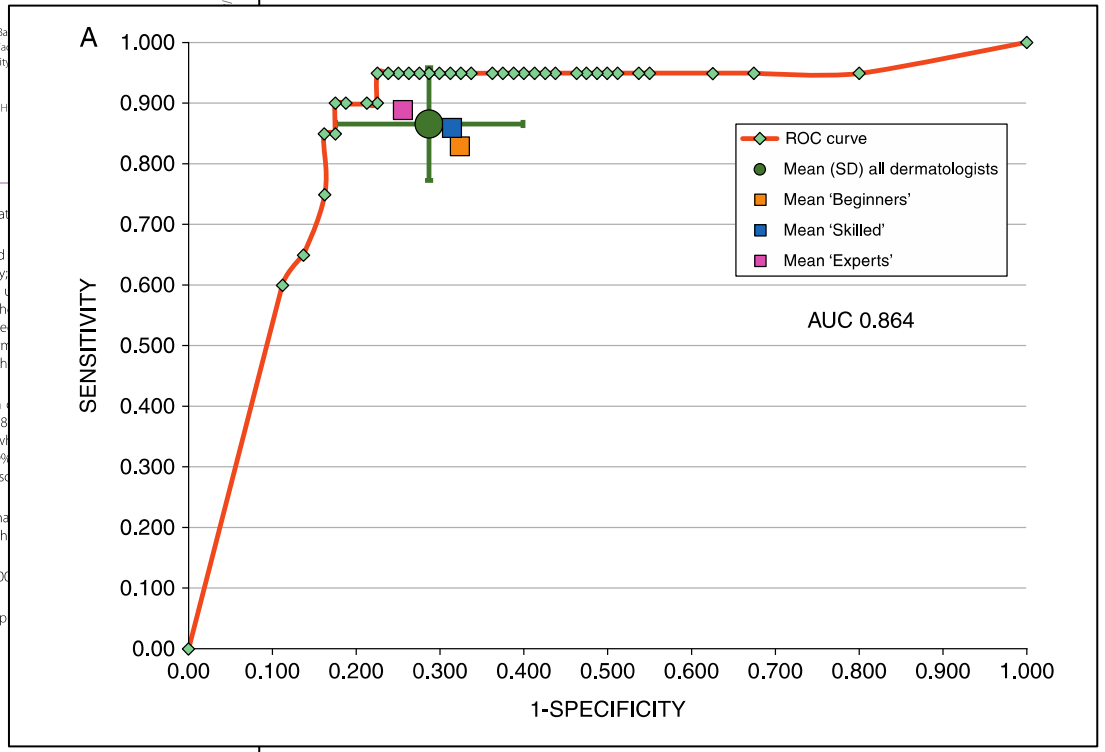
an international group of 58 dermatologists during level-I or -II of the reader study. Secondary end points include
dermatologists' diagnostic performance in their management decisions and differences in the diagnostic perform
dermatologists during level-I and -II of the reader study. Additionally, the CNN's performance was compared with
algorithms of the 2016 International Symposium on Biomedical Imaging (ISBI) challenge.

Results: In level-I dermatologists achieved a mean (±standard deviation) sensitivity and specificity for lesion
86.6% (±9.3%) and 71.3% (±11.2%), respectively. More clinical information (level-II) improved the sensitivity to 88
$P = 0.19$) and specificity to 75.7% (±11.7%, $P < 0.05$). The CNN ROC curve revealed a higher specificity of 82.5% wi
with dermatologists in level-I (71.3%, $P < 0.01$) and level-II (75.7%, $P < 0.01$) at their sensitivities of 86.6% and 88.9%
The CNN ROC AUC was greater than the mean ROC area of dermatologists (0.86 versus 0.79, $P < 0.01$). The CNN s
close to the top three algorithms of the ISBI 2016 challenge.

Conclusions: For the first time we compared a CNN's diagnostic performance with a large internationa
dermatologists, including 30 experts. Most dermatologists were outperformed by the CNN. Irrespective of any ph
experience, they may benefit from assistance by a CNN's image classification.

Clinical trial number: This study was registered at the German Clinical Trial Register (DRKS-Study-ID: DRKS000
www.drks.de/drks_web/).

Key words: melanoma, melanocytic nevi, dermoscopy, deep learning convolutional neural network, comp
automated melanoma detection



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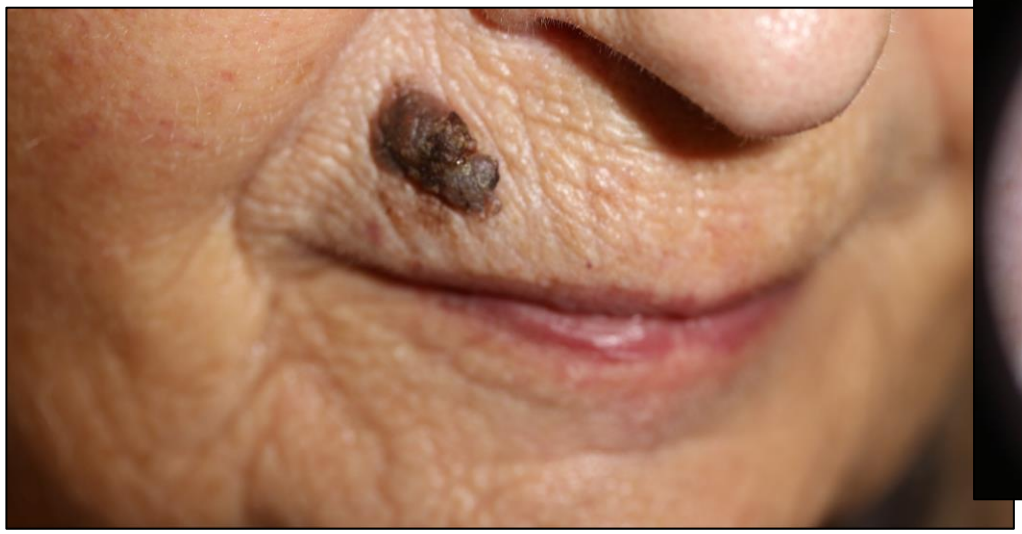

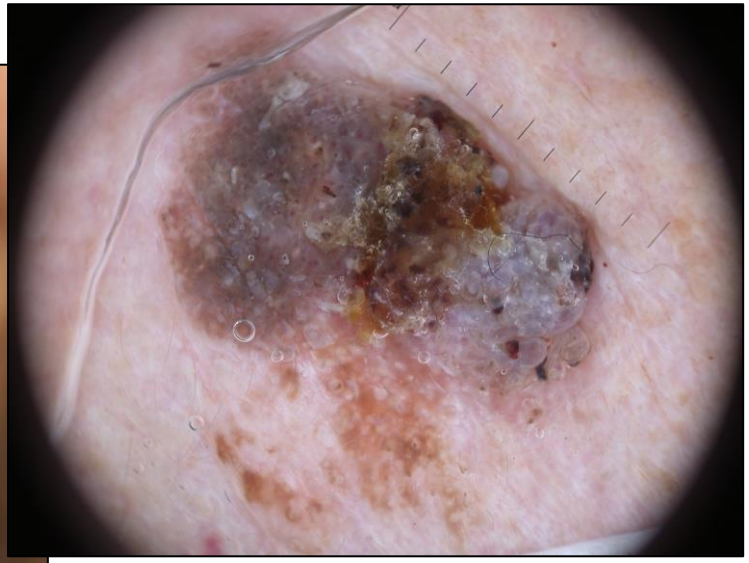

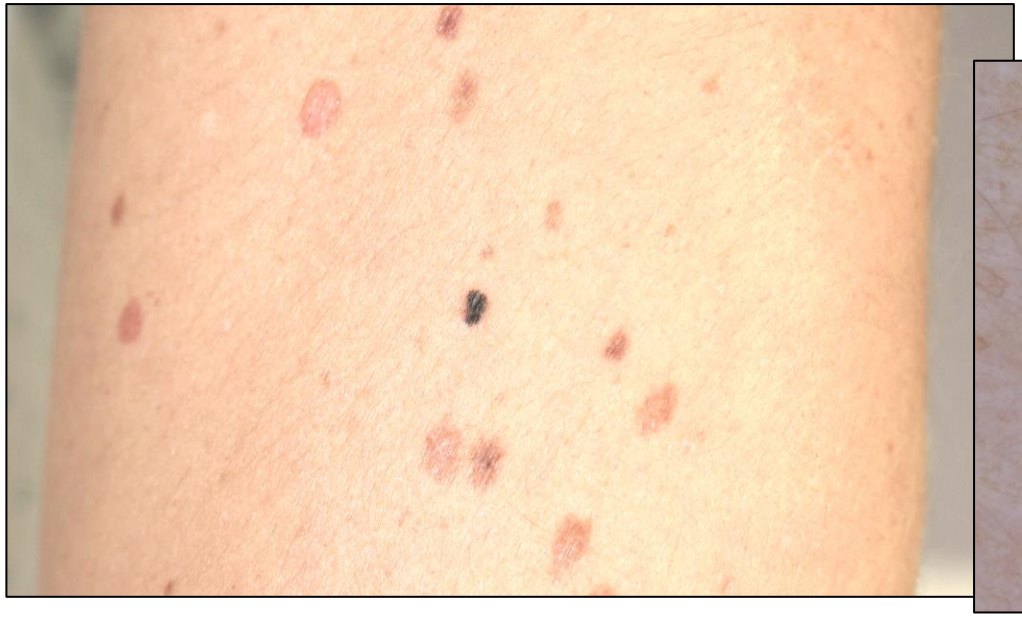

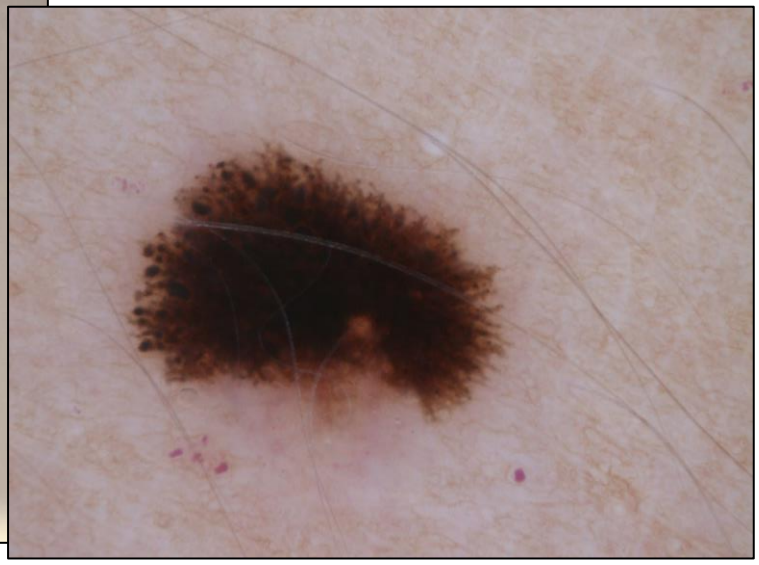

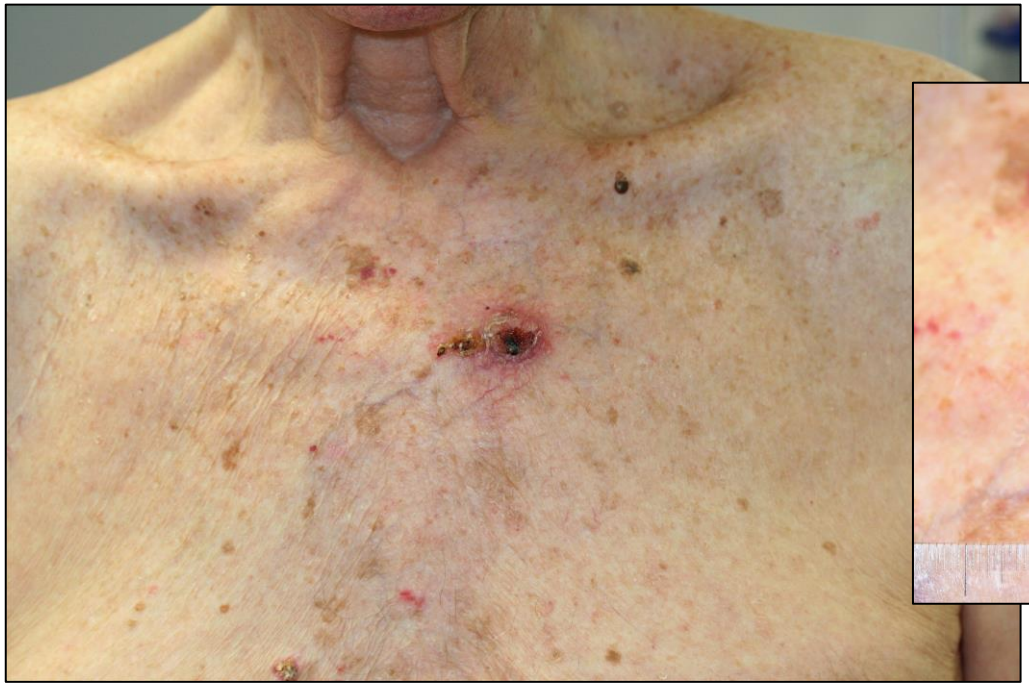

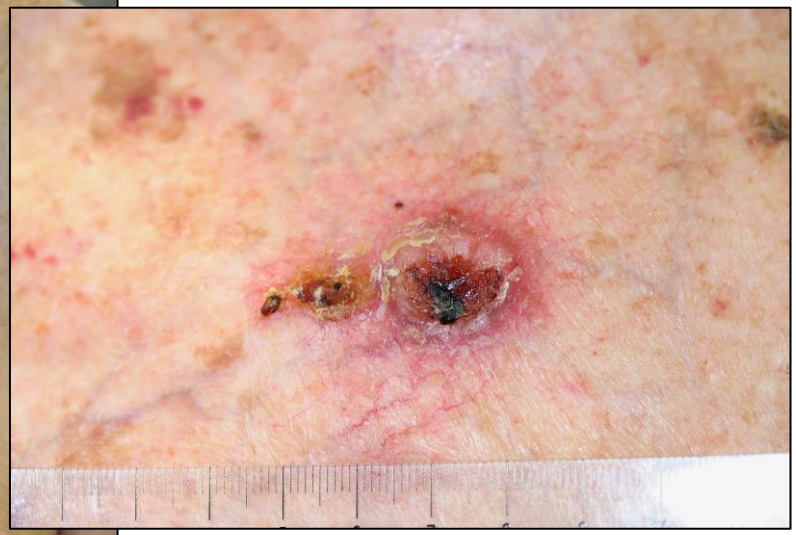

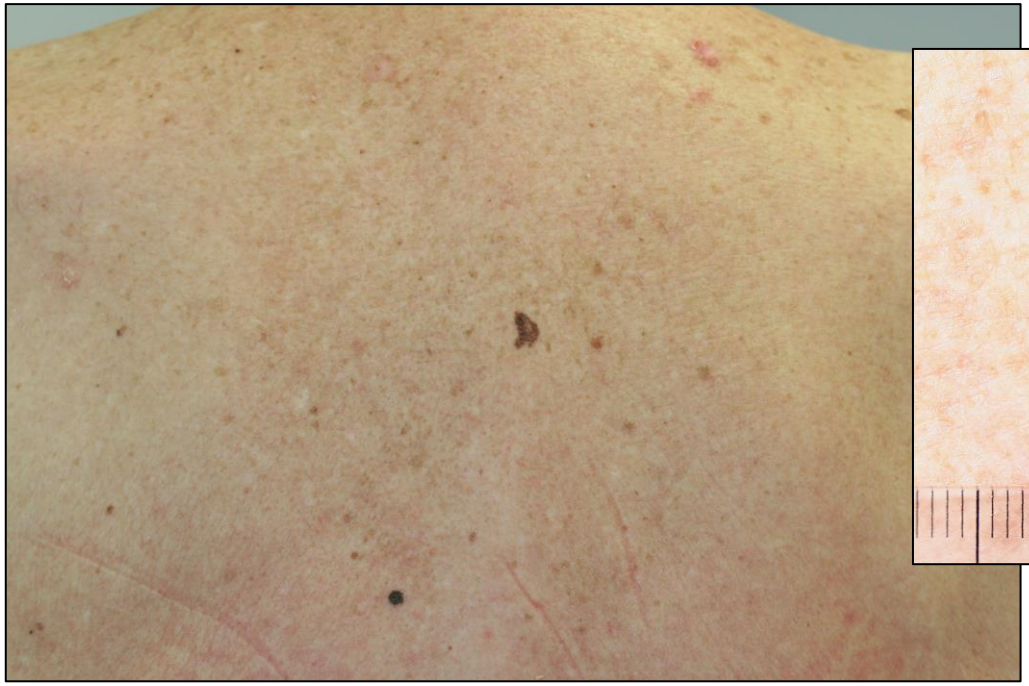

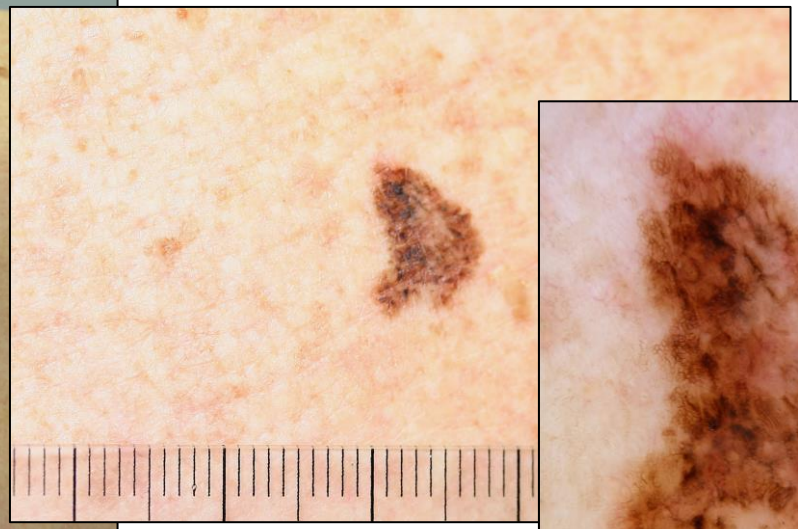

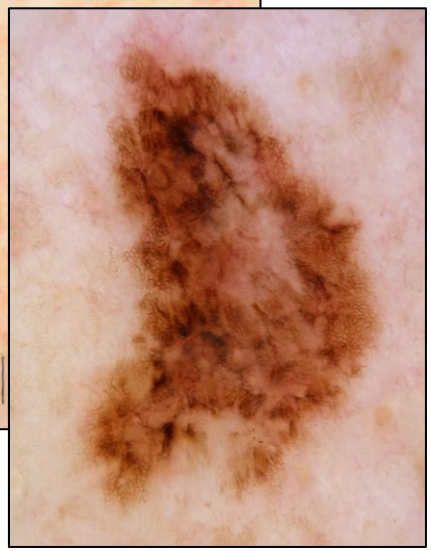


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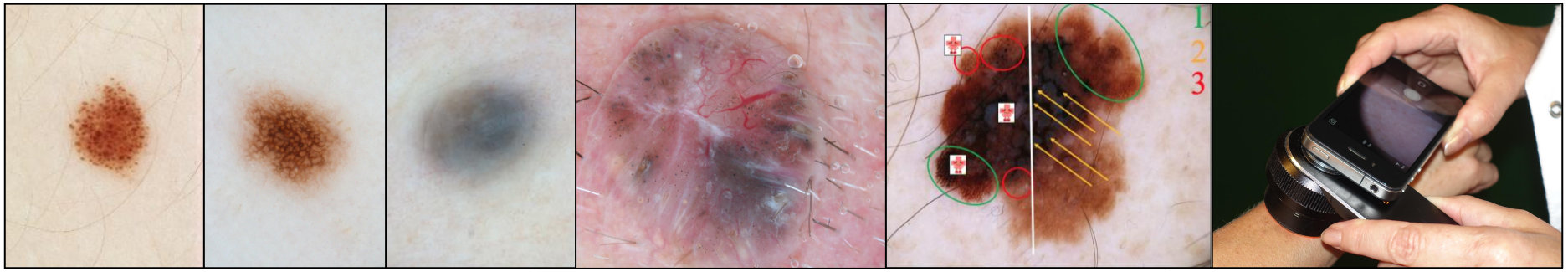
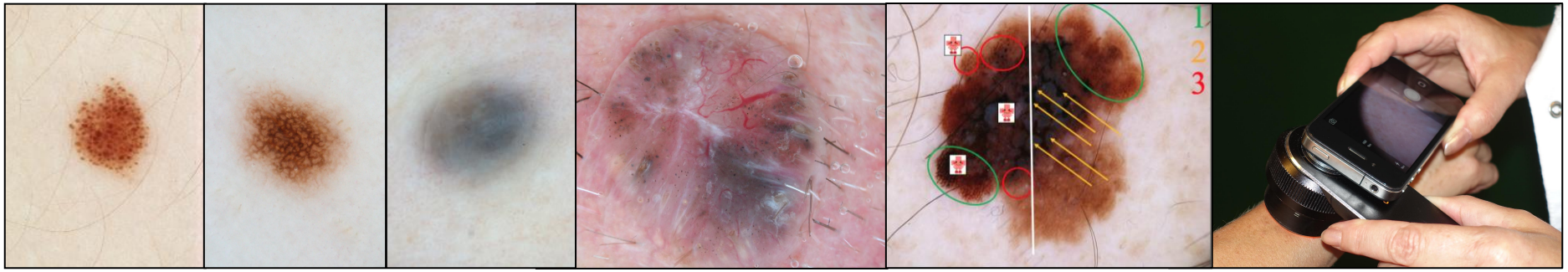


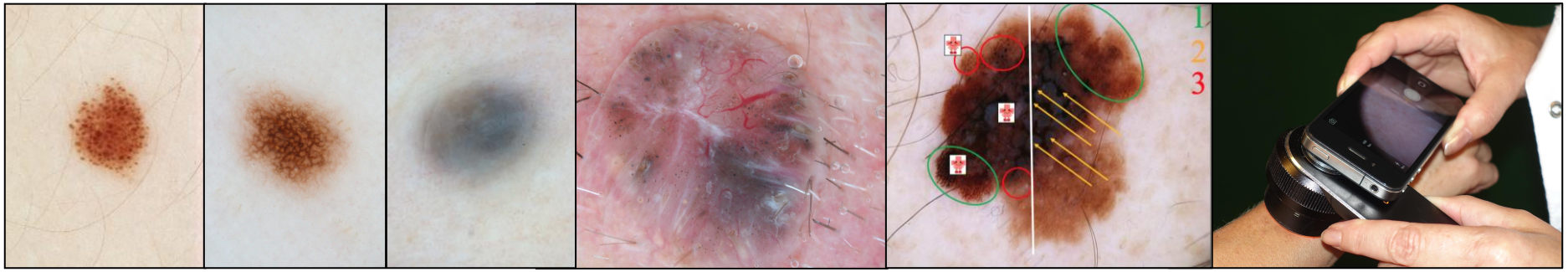
Conclusions 1

- La prise en charge du dépistage précoce des cancers de la peau est l'affaire de tous
- La dermoscopie renforce l'acuité diagnostique dans le difficile diagnostic différentiel des lésion pigmentées
- Sa pratique pourrait se développer en médecine de proximité
  - Médecine Générale
  - Médecine du travail
  - Pédiatrie …



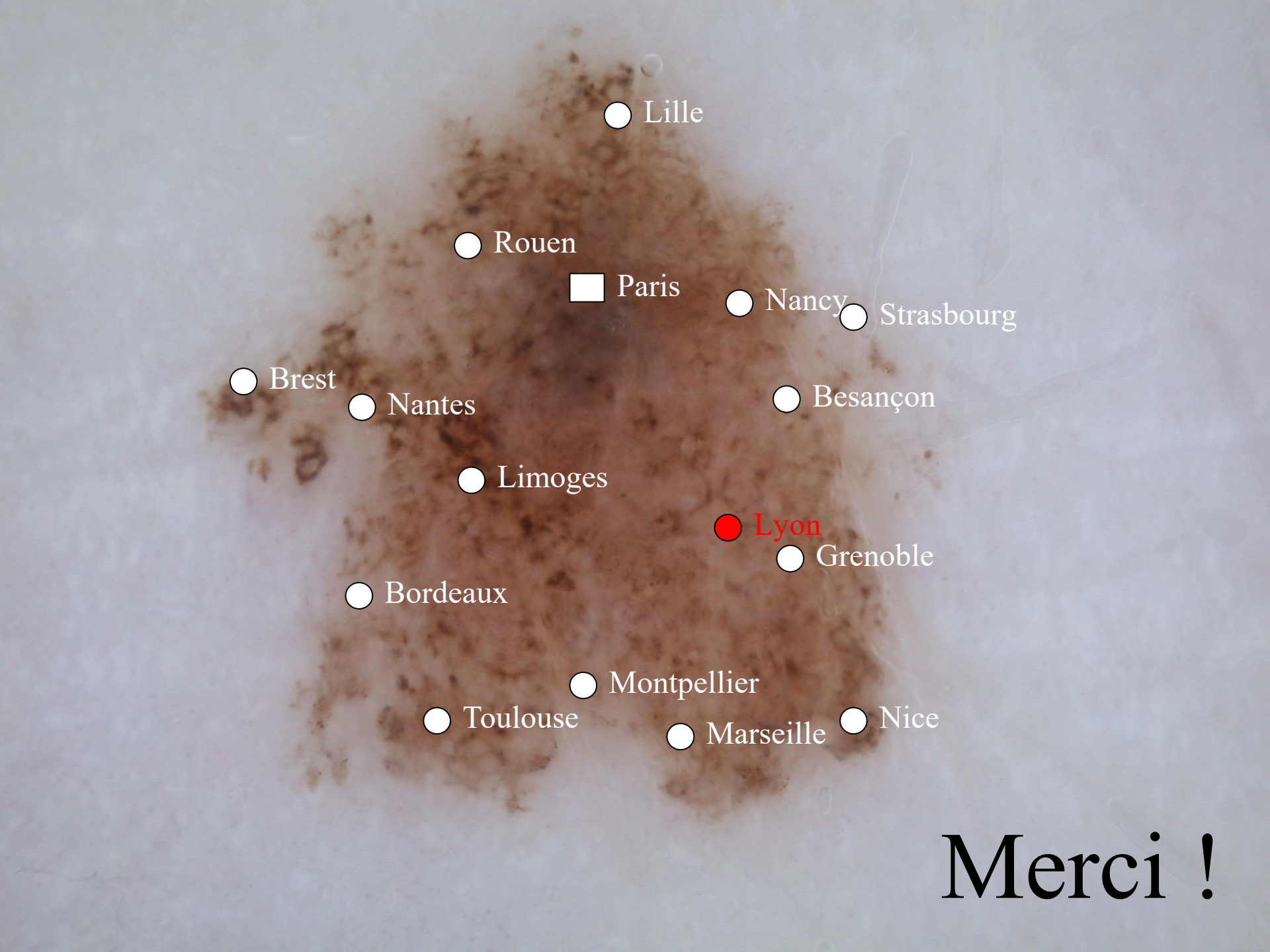
Conclusions 2

- La plupart des très nombreuses lésions bénignes de la peau sont faciles à reconnaitre en dermoscopie ce qui permet de rassurer immédiatement les patients
- La pratique de la dermoscopie dans certaines topographies (face, extrémités, muqueuses, cicatrices) et des lésions non pigmentées requiert une expertise supplémentaire
- La pratique de la dermoscopie dynamique requiert également une expertise supplémentaire



Conclusions 3

- Des formations de qualité en dermoscopie destinées à la médecine de proximité sont disponibles
- La pratique de la photodermoscopie est facile, ne requiert pas d'équipement supplémentaire et permet d'accéder à la téléexpertise
- Le développement des applications en I.A. permettra probablement un premier tri des lésions à considérer. Toutefois l'exhaustivité de l'examen cutané et la prise de décision nécessitera encore longtemps une « intelligence » naturelle…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Merci !