

From Principles to Practice: Managing a Medical Research Data Repository

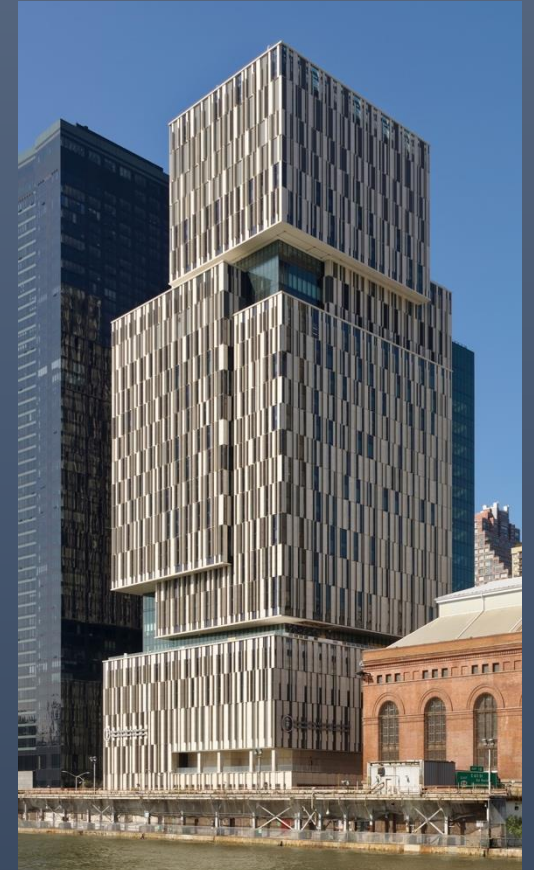


Nicholas Kurtansky

Memorial Sloan Kettering Cancer Center

Self-introduction – Nicholas Kurtansky

- MSKCC Dermatology Service
- Sr. Data Analyst
- Statistics
- 6+ years ISIC Archive admin
- Skin cancer research



Memorial Sloan Kettering
Cancer Center

> J Invest Dermatol. 2022 Dec;142(12):3274-3281. doi: 10.1016/j.jid.2022.06.011. Epub 2022 Jul 14.

Analyzing the Spatial Randomness in the Distribution of Acquired Melanocytic Neoplasms

Emmanouil Chousakos¹, Kivanc Kose², Nicholas R Kurtansky², Stephen W Dusza², Allan C Halpern², Ashfaq A Marghoob²

Distribution

> J Eur Acad Dermatol Venereol. 2022 Dec;36(12):2379-2387. doi: 10.1111/jdv.18470. Epub 2022 Aug 5.

The long-term evolution of melanocytic nevi among high-risk adults

O Reiter^{1,2}, N R Kurtansky¹, S T Musthaq¹, S Dusza¹, A C Halpern¹, M A Marchetti¹, A A Marghoob¹, A Scope^{1,2,3}, V Rotemberg¹

Morphology and risk factors

> J Am Acad Dermatol. 2025 Mar;92(3):480-486. doi: 10.1016/j.jaad.2024.10.070. Epub 2024 Nov 9.

Differentiating seborrheic keratosis from melanoma among lesions exhibiting blue-white veil: A retrospective study

Isabella N Dana¹, Nicholas R Kurtansky², Larissa M Pastore³, James R Xu⁴, Zaeem H Nazir⁵, Stephen W Dusza², Emmanouil Chousakos⁶, Ofer Reiter⁷, Cristian Navarrete-Dechent⁸

Dermoscopy

> J Eur Acad Dermatol Venereol. 2021 May;35(5):1111-1118. doi: 10.1111/jdv.17133. Epub 2021 Feb 23.

The differences in clinical and dermoscopic features between in situ and invasive nevus-associated melanomas and de novo melanomas

O Reiter^{1,2}, N Kurtansky¹, J K Nanda¹, K J Busam³, A Scope^{1,2}, S Musthaq¹, A A Marghoob¹

> J Eur Acad Dermatol Venereol. 2021 Apr;35(4):892-899. doi: 10.1111/jdv.17035. Epub 2020 Dec 23.

Association between the dermoscopic morphology of peripheral globules and melanocytic lesion diagnosis

O Reiter^{1,2}, E Chousakos¹, N Kurtansky¹, J K Nanda¹, S W Dusza¹, M A Marchetti¹, N Jaimes³, A Moraes⁴, A A Marghoob¹

Epidemiology of melanoma

> [J Invest Dermatol](#). 2022 Jul;142(7):1804-1811.e6. doi: 10.1016/j.jid.2021.12.003.

Epub 2021 Dec 11.

An Epidemiologic Analysis of Melanoma Overdiagnosis in the United States, 1975–2017

Nicholas R Kurtansky ¹, Stephen W Dusza ¹, Allan C Halpern ¹, Rebecca I Hartman ², Alan C Geller ³, Ashfaq A Marghoob ¹, Veronica M Rotemberg ¹, Michael A Marchetti ⁴

> [Br J Dermatol](#). 2022 Sep;187(3):430–432. doi: 10.1111/bjd.21251. Epub 2022 May 15.

Risk of nonacral cutaneous melanoma after the diagnosis of acral melanoma

Nicholas R Kurtansky ¹, Rachel N Mancini ¹, Danielle M Bello ², Adewole S Adamson ³, Alexander N Shoushtari ¹, Mackenzie R Wehner ⁴, Charlotte E Ariyan ², Ashfaq A Marghoob ¹,

Primary diagnosis

> NPJ Digit Med. 2023 Jul 12;6(1):127. doi: 10.1038/s41746-023-00872-1.

Prospective validation of dermoscopy-based open-source artificial intelligence for melanoma diagnosis (PROVE-AI study)

Michael A Marchetti ^{# 1}, Emily A Cowen ¹, Nicholas R Kurtansky ¹, Jochen Weber ¹, Megan Dauscher ¹, Jennifer DeFazio ¹, Liang Deng ¹, Stephen W Dusza ¹, Helen Haliasos ¹, Allan C Halpern ¹, Sharif Hosein ¹, Zaeem H Nazir ¹, Ashfaq A Marghoob ¹, Elizabeth A Quigley ¹, Trina Salvador ¹, Veronica M Rotemberg ^{# 2}

> Lancet Digit Health. 2022 May;4(5):e330-e339. doi: 10.1016/S2589-7500(22)00021-8.

Validation of artificial intelligence prediction models for skin cancer diagnosis using dermoscopy images: the 2019 International Skin Imaging Collaboration Grand Challenge

Marc Combalia ¹, Noel Codella ², Veronica Rotemberg ³, Cristina Carrera ¹, Stephen Dusza ⁴, David Gutman ⁵, Brian Helba ⁶, Harald Kittler ⁷, Nicholas R Kurtansky ⁴, Konstantinos Liopyris ⁸, Michael A Marchetti ⁴, Sebastian Podlipnik ¹, Susana Puig ¹, Christoph Rinner ⁹

> J Invest Dermatol. 2025 May 29:S0022-202X(25)00539-1. doi: 10.1016/j.jid.2025.05.019.
Online ahead of print.

Noninvasive Diagnosis of Melanoma Using Machine Learning and Reflectance Confocal Microscopy

Jonathan Kentley ¹, Nicholas Kurtansky ², Manu Jain ², Miguel Cordova ², Jochen Weber ², Ucalene Harris ², Anabel Alfonso ², Allan C Halpern ², Veronica Rotemberg ²,

> J Am Coll Surg. 2024 Jan 1;238(1):23-31. doi: 10.1097/XCS.0000000000000886.
Epub 2023 Oct 23.

Clinical Utility of Melanoma Sentinel Lymph Node Biopsy Nomograms

Harrison M Drebin ¹, Sharif Hosein ², Nicholas R Kurtansky ², Emily Nadelmann ², Andrea P Moy ³, Charlotte E Ariyan ¹, Danielle M Bello ¹, Mary S Brady ¹, Daniel G Coit ¹,

> Ann Surg Oncol. 2025 Mar;32(3):1463-1472. doi: 10.1245/s10434-024-16698-4.
Epub 2024 Dec 16.

Declining Clinical Utility of Tools for Predicting Sentinel Lymph Node Biopsy Status: A Single Institution Experience from 2000 to 2021

Harrison M Drebin ^{1 2}, Nicholas R Kurtansky ³, Sharif Hosein ³, Emily Nadelmann ³, Andrea P Moy ⁴, Charlotte E Ariyan ¹, Danielle M Bello ¹, Mary S Brady ¹, Daniel G Coit ¹,

> J Surg Oncol. 2023 Jun;127(7):1167-1173. doi: 10.1002/jso.27231. Epub 2023 Mar 11.

Are the MIA and MSKCC nomograms useful in selecting patients with melanoma for sentinel lymph node biopsy?

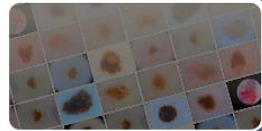
Sharif Hosein ¹, Harrison M Drebin ², Nicholas R Kurtansky ¹, Roger Olofsson Bagge ^{3 4 5},

Sentinel lymph node biopsy

kaggle ISIC Grand Challenges

SIIM-ISIC Melanoma Classification

Identify melanoma in lesion images



2020

> [Sci Data](#). 2021 Jan 28;8(1):34. doi: 10.1038/s41597-021-00815-z.

A patient-centric dataset of images and metadata for identifying melanomas using clinical context

Veronica Rotemberg ^{# 1}, Nicholas Kurtansky ^{# 2}, Brigid Betz-Stablein ³, Liam Caffery ³, Emmanouil Chousakos ^{2 4}, Noel Codella ⁵, Marc Combalia ⁶, Stephen Dusza ², Pascale Guitera ⁷, David Gutman ⁸, Allan Halpern ², Brian Helba ⁹, Harald Kittler ¹⁰, Kivanc Kose ², Steve Langer ¹¹, Konstantinos Liopyris ⁴, Josep Malvehy ⁶

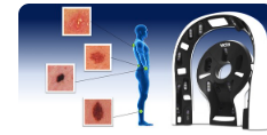
> [J Eur Acad Dermatol Venereol](#). 2025 Aug;39(8):1489-1499. doi: 10.1111/jdv.20479. Epub 2024 Dec 8.

Effect of patient-contextual skin images in human- and artificial intelligence-based diagnosis of melanoma: Results from the 2020 SIIM-ISIC melanoma classification challenge

Nicholas R Kurtansky ¹, Clare A Primiero ², Brigid Betz-Stablein ², Marc Combalia ³, Pascale Guitera ⁴, Allan Halpern ¹, Jonathan Kentley ^{1 5}, Harald Kittler ⁶

ISIC 2024 - Skin Cancer Detection with 3D-TBP

Identify cancers among skin lesions cropped from 3D total body photographs



2024

> [Sci Data](#). 2024 Aug 14;11(1):884. doi: 10.1038/s41597-024-03743-w.

The SLICE-3D dataset: 400,000 skin lesion image crops extracted from 3D TBP for skin cancer detection

Nicholas R Kurtansky ¹, Brian M D'Alessandro ², Maura C Gillis ³, Brigid Betz-Stablein ⁴, Sara E Cerminara ⁵, Rafael Garcia ⁶, Marcela Alves Girundi ⁷, Elisabeth Victoria Goessinger ⁵, Philippe Gottfrois ⁵, Pascale Guitera ^{7 8}, Allan C Halpern ³, Valerie Jakrot ⁷, Harald Kittler ⁹, William Matus ³, Konstantinos Liopyris ¹⁰, Joseph L Koss ^{11 12}, Alexander S. K. Lee ^{13 14}



npj | digital medicine

CURRENT STATUS

Your revised submission is in peer review

Automated triage of cancer-suspicious skin lesions with 3D total-body photography

Dermatology and skin cancer

- Incidence
- Prognosis
- Imaging trends

International Skin Imaging Collaboration

- Mission
- Working Groups
- Promoting Standards
- Engagement

ISIC Archive

- How to use most effectively
- Thought process behind new features

Preview

1-in-5 Americans will develop skin cancer in their lifetime¹

Type	Survival ¹
Melanoma	Highly treatable if detected early 75% 5yr survival if spread to regional lymph nodes 35% 5yr survival if spread to distant lymph nodes
Basal cell carcinoma	Highly treatable if detected early
Squamous cell carcinoma	Highly treatable if detected early

¹ <https://www.aad.org/media/stats-skin-cancer>

Digital imaging techniques in dermatology

Jenny L. Stone, MD,^a Robert L. Peterson, MD,^b and John E. Wolf, Jr., MD^a
Houston, Texas

Digital imaging is a versatile technique that has been infrequently used in dermatology to record visual images. We have used this technology for 10 patients to follow cutaneous lesions, including alopecia mucinosa, psoriasis, and dysplastic nevi. The setup included a personal computer, digitizer board, monitor, video camera, and lights. An introduction to electronic (digital) imaging is given and some of the many possible applications in dermatology are discussed. (*J AM ACAD DERMATOL* 1990;23:913-7.)

JAAD - 1990

>80% of dermatologists capture digital photos

> *J Am Acad Dermatol*. 2013 Nov;69(5):837-838. doi: 10.1016/j.jaad.2013.07.010.

The use of digital cameras by US dermatologists

Peter Accetta ¹, Julia Accetta ², James Kostecki ³

Table I. Physician and practice characteristics by use of photography in practice

Characteristic	Photographers	Non-photographers	Total
Gender			
Male	80.1%	19.9%	56.0%
Female	84.9%	15.1%	44.0%
Age (yr)			
< 40	90.1%	9.9%	24.1%
40-49	80.6%	19.4%	26.0%
50-59	80.9%	19.1%	29.2%
60+	76.9%	23.1%	20.7%
Practice setting			
Solo	74.0%	26.0%	34.7%
Dermatology group	85.7%	14.3%	42.7%
Multispecialty group	86.3%	13.7%	13.5%
Academic	93.9%	6.1%	8.8%
NR			0.3%
Total	82.2%	17.8%	100.0%

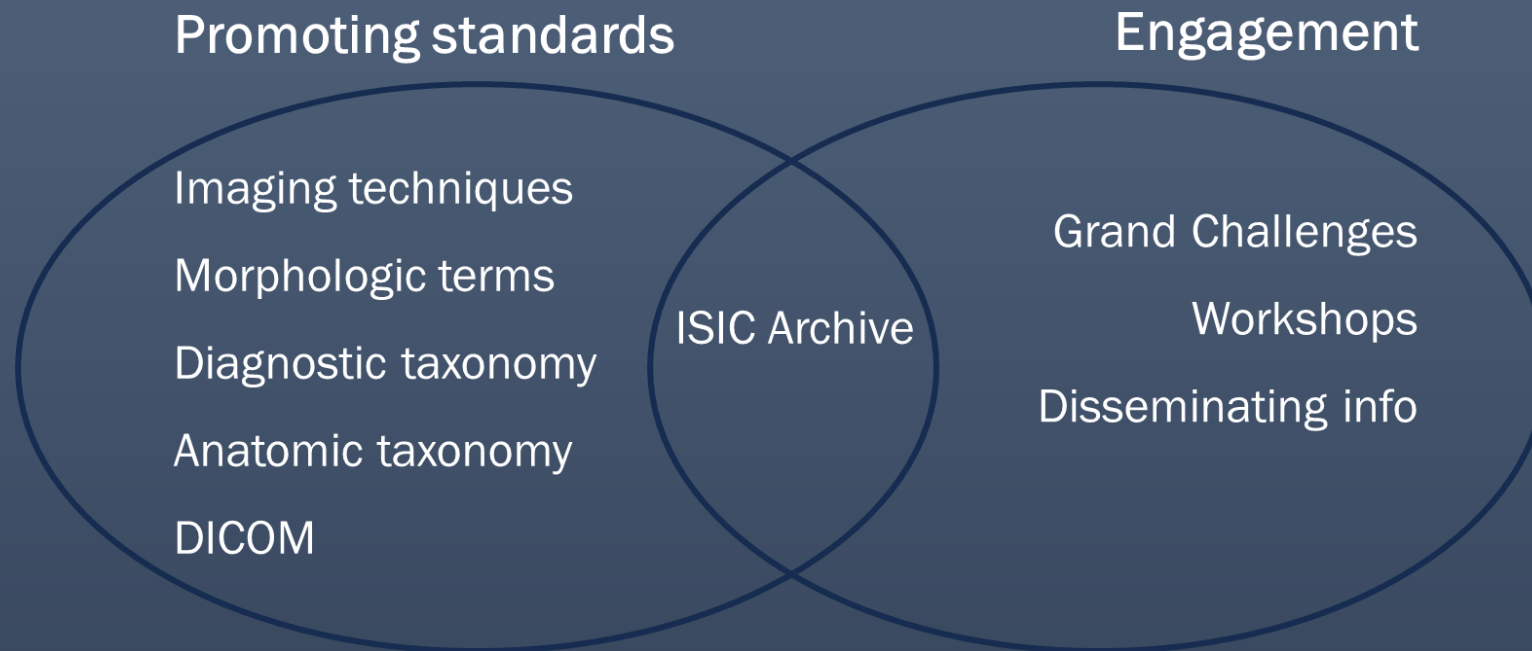
NR, No response.

JAAD - 2013

International Skin Imaging Collaboration



Mission: Advance digital skin imaging to reduce skin cancer burden.



Working Groups: Technology – Technique – Terminology – Privacy – DICOM – AI – Education – Community Engagement

What is the ISIC Archive?

1. Archive of individual skin images

With structured data elements (data dictionary)

2. Repository of skin image datasets

May contain unstandardized/study-specific data

Image total (public)	549,575
Image total (public + embargoed)	1,203,229
Public datasets	53
Datasets DOIs	17
Total users	10,592
Sessions per month	20,000

Registry of Open Data on AWS


International Skin Imaging Collaboration (ISIC) Archive

biology
cancer
classification
computational pathology
dicom
grand-challenge.org
health
Homo sapiens
imaging
life sciences
machine learning
medical image computing
medical imaging
medicine
microscopy
segmentation

Description

A public-access archive of skin lesion images, supporting teaching, research, and the development and evaluation of diagnostic algorithms.

Update Frequency

Upon new data ingest from contributors.

License

Creative Commons licenses (CC-0, CC-BY, or CC-BY-NC) are defined per-image.

Documentation

<https://www.isic-archive.com/>

Managed By

International Skin Imaging Collaboration (ISIC)
See all datasets managed by [International Skin Imaging Collaboration \(ISIC\)](#).

Contact

support@isic-archive.com

How to Cite

International Skin Imaging Collaboration (ISIC) Archive was accessed on DATE from <https://registry.opendata.aws/isic-archive>.

Usage Examples

Tutorials

- ISIC Archive Data Dictionary by International Skin Imaging Collaboration (ISIC)

Tools & Applications

- ISIC Archive Gallery by International Skin Imaging Collaboration (ISIC)
- isic-cli - The official command line tool for interacting with the ISIC Archive by International Skin Imaging Collaboration (ISIC)

Publications

- A patient-centric dataset of images and metadata for identifying melanomas

Resources on AWS

Description
Images of skin lesions and associated metadata

Resource type
S3 Bucket

Amazon Resource Name (ARN)
`arn:aws:s3:::isic-archive`

AWS Region
`us-east-1`

AWS CLI Access (No AWS account required)
`aws s3 ls --no-sign-request s3://isic-archive/`



Last updated
Download format
Croissant
Usage rights
Topic
Provider
Saved datasets
Free

24 datasets found



International Skin Imaging Collaboration (ISIC) Archive
registry.opendata.aws
Updated Aug 12, 2025



DERM12345
api.isic-archive.com
Updated 2025



Skin Cancer: Malignant vs. Benign
kaggle.com
Updated Jun 19, 2019



MILK10k
api.isic-archive.com

International Skin Imaging Collaboration (ISIC) Archive

Explore at: registry.opendata.aws

255 scholarly articles cite this dataset ([View in Google Scholar](#))

Dataset updated

Aug 12, 2025

Dataset provided by

International Skin Imaging Collaboration (ISIC)

License

[CC0 1.0 Universal Public Domain Dedication](#)
License information was derived automatically

Description

A public-access archive of skin lesion images supporting teaching, research, and the development and evaluation of diagnostic algorithms.



Sustainability reassured by
AWS sponsorship

Indexed in Google dataset-
search

3 questions
for when considering
NEW FEATURES

1. Why is it important?
2. Does it break anything?
3. Who is it for?

- User feedback & demand
- Working group initiatives
- Scalability
- Research vision



M-ISIC: A MULTIMODAL OPEN-SOURCE INTERNATIONAL SKIN IMAGING COLLABORATION INFORMATICS PLATFORM FOR AUTOMATED SKIN CANCER DETECTION

- Funding agent vision



ISIC-REPO; ISIC SKIN IMAGING REPOSITORY ENHANCEMENTS FOR PROMOTING INTEROPERABILITY AND UTILIZATION

1. Why is it important?

Mission: Advance digital skin imaging to reduce skin cancer burden.

1. Promote standards 2. Engagement

2. Does it break anything?

Align with built infrastructure?

Maintainability

Scalability

3. Who is it for?

Data Users

Model developers, educators, & presenters

- Looking for existing benchmark datasets
- Looking for certain types of cases

Data Publishers

Researchers & image-contributors

- Uploading new images
- Publishing a study
- Using a custom subset of existing data

Examples

Multiple ways to access

1. Gallery  gallery.isic-archive.com
2. Collection Site  api.isic-archive.com
3. Challenge Site  challenge.isic-archive.com
4. Official CLI & API  <https://pypi.org/project/isic-cli/>



ISIC Archive

Multiple ways to access:

1. Gallery



Search by filters ☐ Search by name

challenge 2019

APPLIED FILTERS [Clear applied filters](#)

BENIGN BENIGN MELANOCYTIC PROLI... Nevus

Collection: Challenge 2019: Training

Download ZIP

DIAGNOSTIC ATTRIBUTES

▼ LESION DIAGNOSIS

▼ ☒ BENIGN (12871 / 1136546)

- ▶ ☐ MAST CELL PROLIFERATIONS (0 / 4)
- ▶ ☐ INFLAMMATORY OR INFECTIOUS DISEASE...
- ▶ ☐ BENIGN - OTHER (0 / 2498)
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN EPIDERMAL PROLIFERATIONS (0 / ...)
- ▶ ☐ BENIGN SOFT TISSUE PROLIFERATIONS - F...

▼ ☒ BENIGN MELANOCYTIC PROLIFERATIONS (...)

- ▼ ☒ Nevus (12871 / 59701)
 - ☒ Nevus, Spitz (16 / 111)
 - ☒ Nevus, Spilus (1 / 9)
 - ☒ Nevus, Reed (2 / 102)
 - ☒ Nevus, Recurrent or persistent (23 / 9...
 - ☒ Nevus, Of special anatomic site (0 / 2)
 - ☒ Nevus, NOS, Junctional (18 / 3285)
 - ☒ Nevus, NOS, Dermal (30 / 1092)
 - ☒ Nevus, NOS, Compound (76 / 4107)
 - ☒ Nevus, Lentiginous (27 / 121)
 - ☒ Nevus, Halo (2 / 10)
 - ☒ Nevus, Deep penetrating (0 / 15)
- ▶ Nevus, Congenital (162 / 761)
- ☒ Nevus, Combined (29 / 113)
- ☒ Nevus, Balloon cell (0 / 2)

Shown images: 49-64. Filtered images: 12871. Total amount of images: 1203229.

Select All on the Page for Download
Unselect 6 images

Automatic width compilation

ISIC_0000068 x

ISIC_0000075 x

ISIC_0000073 x

ISIC_0000082 x

ISIC_0000081 x

ISIC_0000069 x

Download ZIP

Faceted search

Faceted filter

Download filter

Image selection

Download selection

Search by filters ☐ Search by name ☐

challenge 2019

APPLIED FILTERS [Clear applied filters](#)

BENIGN BENIGN MELANOCYTIC PROLI... Nevus

Collection: Challenge 2019: Training

Download ZIP

DIAGNOSTIC ATTRIBUTES

▼ LESION DIAGNOSIS

▼ ☒ BENIGN (12871 / 1136546)

- ▶ ☐ MAST CELL PROLIFERATIONS (0 / 4)
- ▶ ☐ INFLAMMATORY OR INFECTIOUS DISEASE...
- ☐ BENIGN - OTHER (0 / 2498)
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN ADNEXAL EPITHELIAL PROLIFERA...
- ▶ ☐ BENIGN EPIDERMAL PROLIFERATIONS (0 / ...)
- ▶ ☐ BENIGN SOFT TISSUE PROLIFERATIONS - F...
- ▼ ☒ BENIGN MELANOCYTIC PROLIFERATIONS (...)
- ▼ ☒ Nevus (12871 / 59701)
 - ☒ Nevus, Spitz (16 / 111)
 - ☒ Nevus, Spilus (1 / 9)
 - ☒ Nevus, Reed (2 / 102)
 - ☒ Nevus, Recurrent or persistent (23 / 9...
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Select All on the Page for Download
Unselect 6 images

Automatic width compilation

ISIC_0000068 x

ISIC_0000075 x

ISIC_0000073 x

ISIC_0000082 x

ISIC_0000081 x

ISIC_0000069 x

Download ZIP

International Skin Imaging Collaboration- Designated Diagnoses (ISIC-DX): Consensus terminology for lesion diagnostic labeling

Alon Scope ^{1 2}, Konstantinos Liopyris ^{2 3}, Jochen Weber ², Raymond L Barnhill ⁴,
Ralph P Braun ⁵, Clara N Curiel-Lewandrowski ⁶, David E Elder ⁷, Gerardo Ferrara ⁸,
Jane M Grant-Kels ^{9 10}, Thiago Jeunon ¹¹, Aimilios Lallas ¹², Jennifer Y Lin ¹³,



“Nevus” branch
of taxonomy tree

- 1. Why is it important?
- 2. Does it break anything?
- 3. Who is it for?

Filter with new diagnostic taxonomy

DIAGNOSTIC ATTRIBUTES

▼ LESION DIAGNOSIS

- ▶ ☐ BENIGN (0 / 1136546)
- ▼ ☒ INDETERMINATE (387 / 3798)
 - ▼ ☒ INDETERMINATE MELANOCYTIC PROLIFERATIONS (387 / 631)
 - ☒ Atypical melanocytic neoplasm (387)
 - ☐ Atypical intraepithelial melanocytic proliferation (0 / 235)
 - ☐ Atypical Spitz tumor (0 / 5)
 - ☐ Atypical proliferative nodules in congenital melanocytic nevus (0 / 4)
 - ▶ ☐ INDETERMINATE EPIDERMAL PROLIFERATIONS (0 / 3160)
- ▶ ☐ MALIGNANT (0 / 31528)
- ▶ TYPE OF DIAGNOSIS (387 / 358234)
- ▶ MELANOCYTIC
- ▶ MELANOMA MITOTIC INDEX
- ▶ MELANOMA THICKNESS (MM)
- ▶ MELANOMA ULCERATION

1. Why is it important?
2. Does it break anything?
3. Who is it for?

Incorporating multimodal imaging

Dermoscopy



Clinical Close-up & Overview



3D TBP

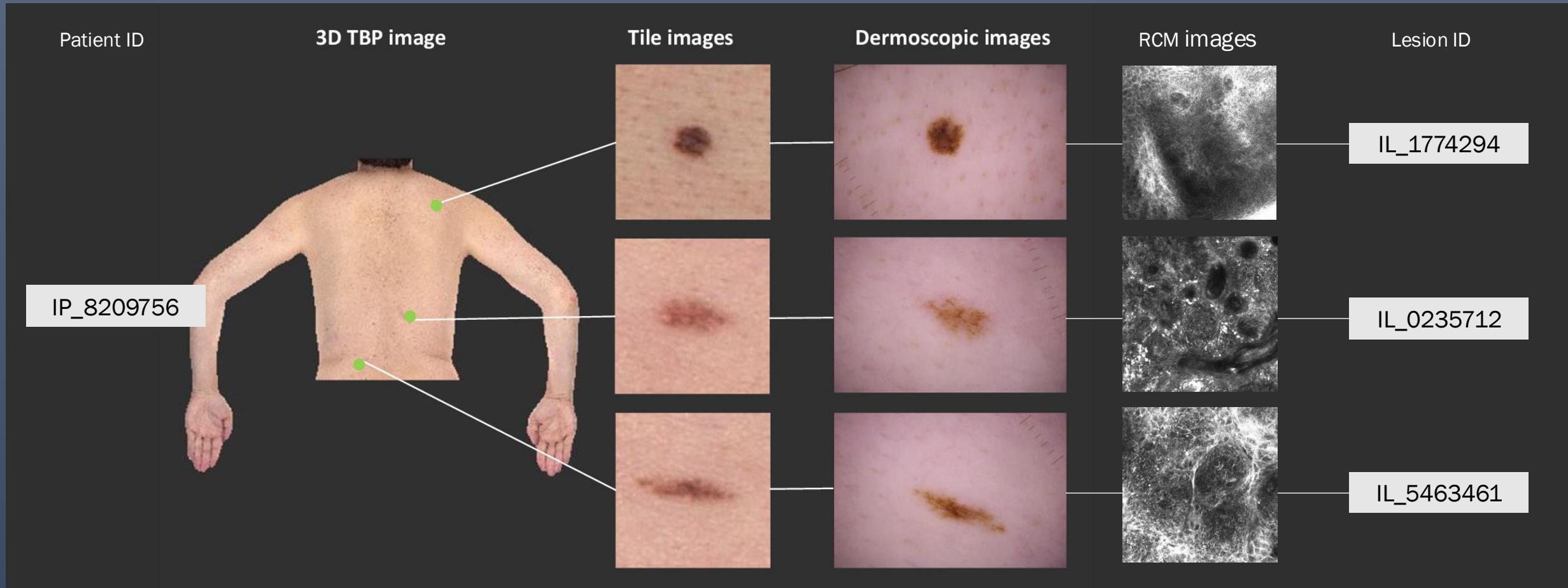


Reflectance Confocal Microscopy



- 1. Why is it important?
- 2. Does it break anything?
- 3. Who is it for?

Supporting image relations



1. Why is it important?
2. Does it break anything?
3. Who is it for?

Multi-image case viewer

ISIC_1767451

Lesion

ISIC_2746016

Group by: Modality

ISIC_9465412

Group by: Modality

Lesion ID: IL_2039298

Time point: undefined

of total lesion images: 8

Number of unique time points: 2

Modality: TBP tile: close-up

Availability of multiple modalities: Yes

Lesion ID: IL_2039298

Time point: undefined

of total lesion images: 8

Number of unique time points: 2

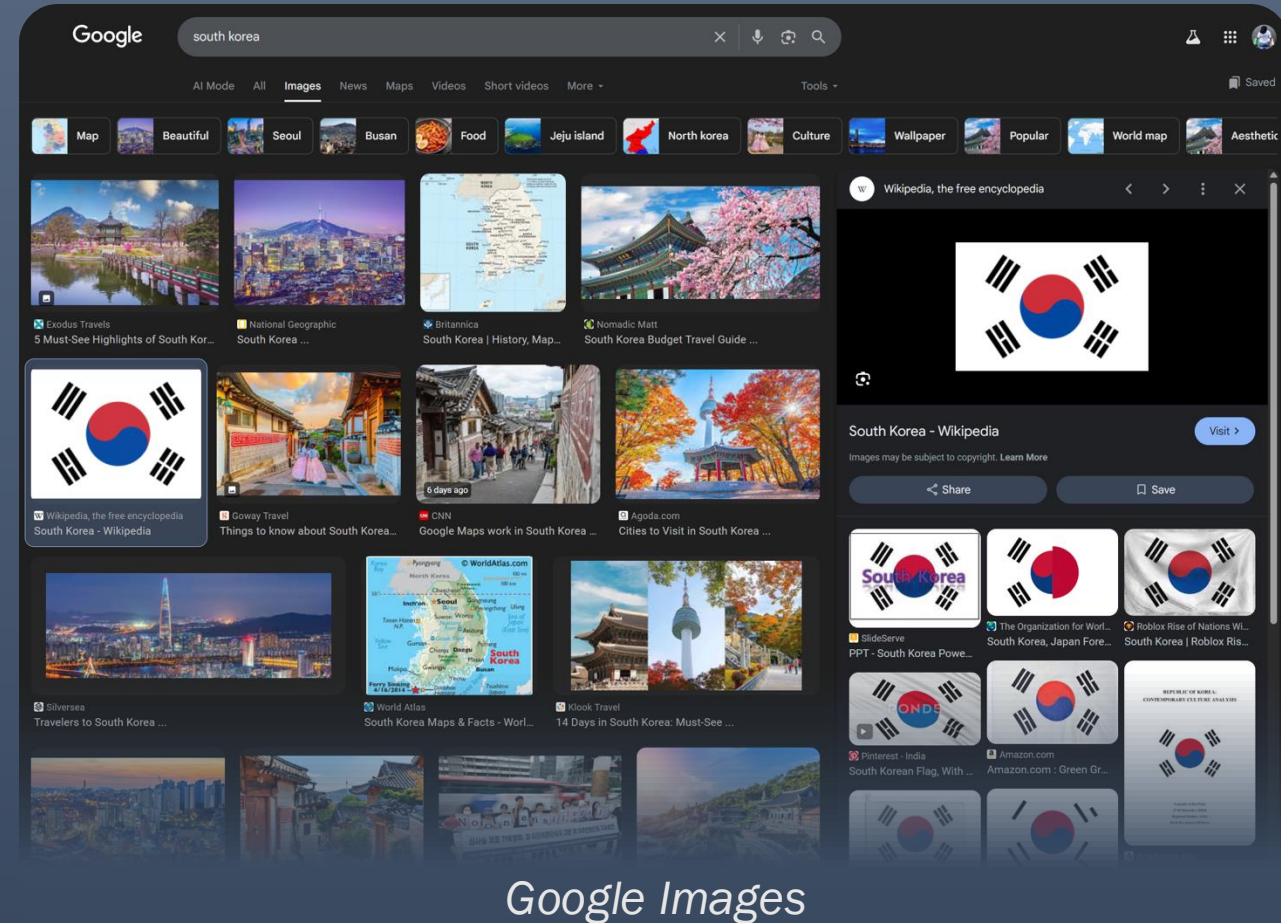
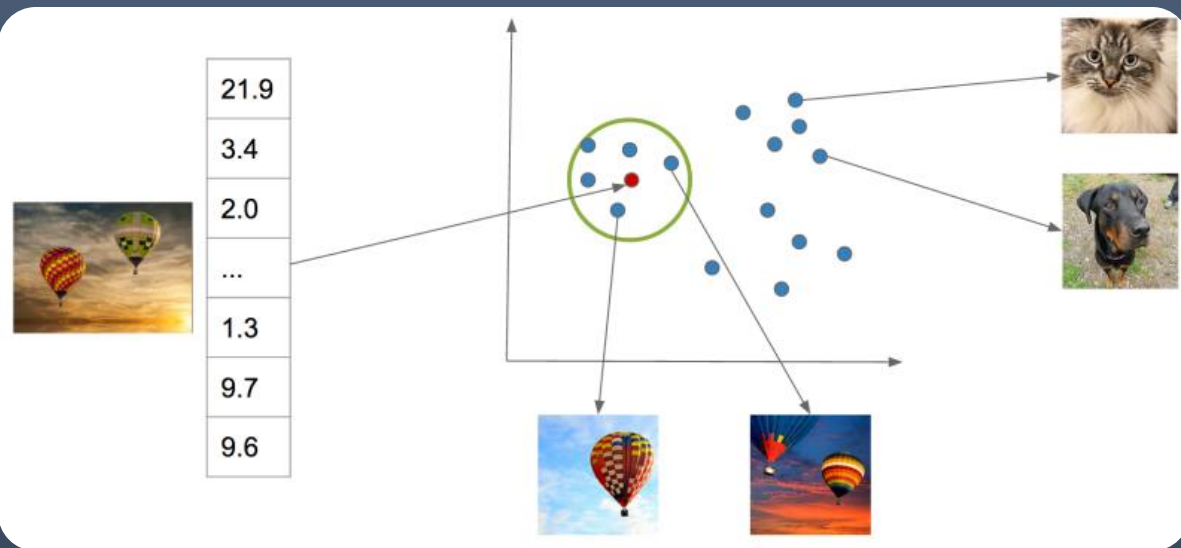
Modality: RCM: mosaic

Availability of multiple modalities: Yes

Visual similarity search

1. Why is it important?
2. Does it break anything?
3. Who is it for?

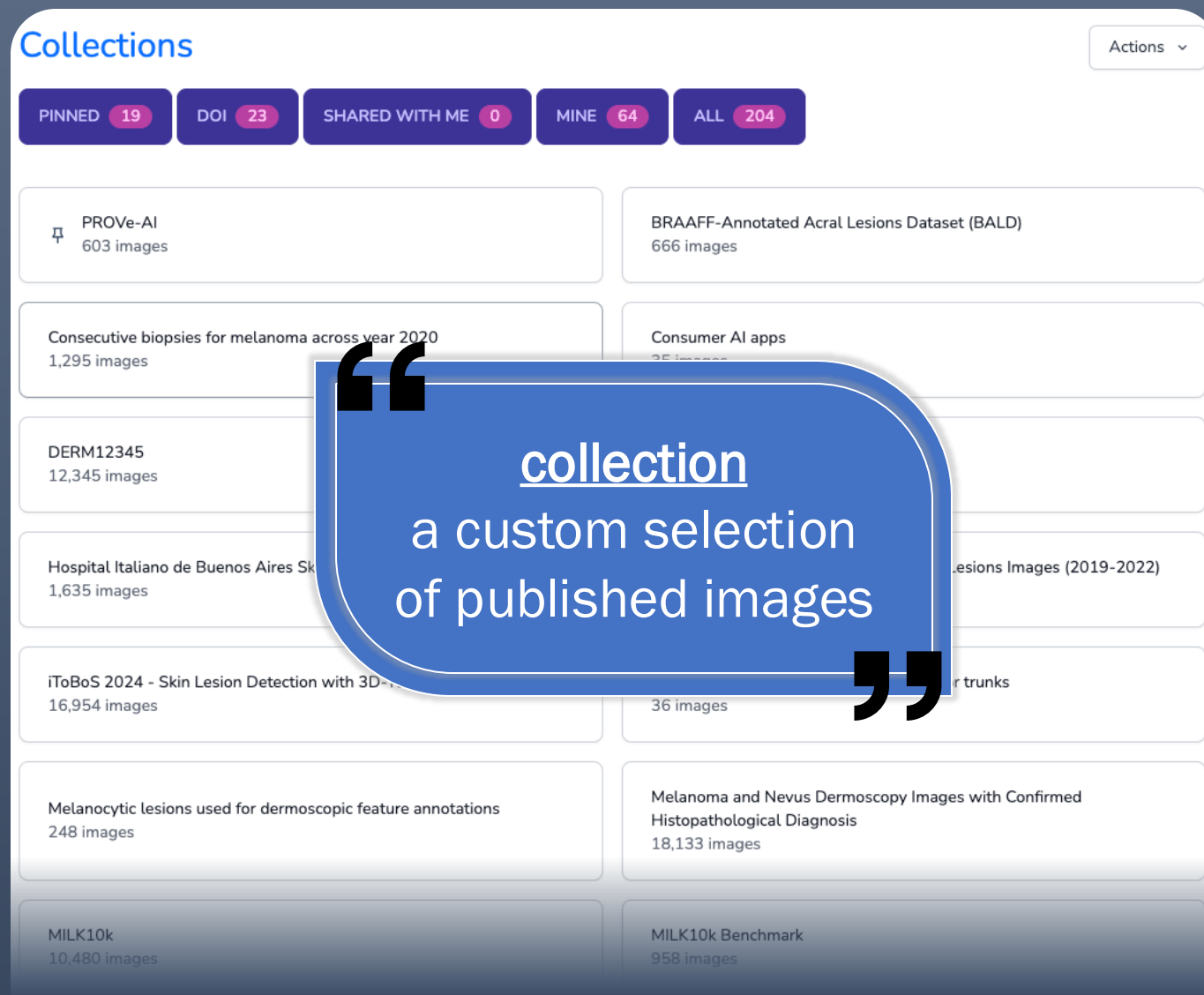
- *Future capability*
- Storing vector representations
- More control over Gallery search



Multiple ways to access:

1. Gallery
2. Collection Site

Finding & creating
datasets



Curated datasets

📌 PROVe-AI
603 images

BRAAFF-Annotated Acral Lesions Dataset (BALD)
666 images

Consecutive biopsies for melanoma across year
2020
1,295 images

Consumer AI apps
35 images

DERM12345
12,345 images

HIBA Skin Lesions
1,635 images

Hospital Italiano de Buenos Aires Skin Lesions
1,635 images

Hospital Italiano de Buenos Aires - Skin Lesions
Images (2019-2022)
1,616 images

iToBoS 2024 - Skin Lesion Detection with 3D-TBP
16,954 images

Longitudinal overview images of posterior trunks
36 images

Melanocytic lesions used for dermoscopic feature
annotations
248 images

Melanoma and Nevus Dermoscopy Images with
Confirmed Histopathological Diagnosis
18,133 images

From Research Studies

📌 BCN20000
18,946 images

📌 Challenge 2016: Test
379 images

📌 Challenge 2016: Training
900 images

📌 Challenge 2017: Test
600 images

📌 Challenge 2017: Training
2,000 images

📌 Challenge 2017: Validation
150 images

📌 Challenge 2018: Task 1-2: Test
1,000 images

📌 Challenge 2018: Task 1-2: Training
2,594 images

📌 Challenge 2018: Task 1-2: Validation
100 images

📌 Challenge 2018: Task 3: Test
1,512 images

📌 Challenge 2018: Task 3: Training
10,015 images

📌 Challenge 2018: Task 3: Validation
193 images

📌 Challenge 2019: Test
8,238 images

📌 Challenge 2019: Training
25,331 images

From Grand Challenges

Conducting research?

☐ Annotating an existing dataset?

☐ Focused selection of images?

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File download links

MILK10k

MILK10k consists of 10480 images, each representing a paired clinical close-up and dermatoscopic image for 5240 lesions. The dataset's metadata include age (in 5-year intervals), sex, anatomic site, skin tone, diagnosis, method of ground truth establishment (histopathology or other means), and, if a dermatoscopic image of the same lesion was previously included in ISIC, its corresponding ISIC identifier. Skin tone is categorized into six levels, ranging from very dark (0) to very light (5), intentionally distinct from the Fitzpatrick skin types to avoid confusion. Most patients had skin tones in the middle ranges. Of the 5240 lesions, 95.7% were biopsied or excised, with histopathology serving as the gold standard for diagnosis. Diagnoses were mapped to both the ISIC-Dx diagnostic scheme and a simplified classification based on the ISIC2018/2019 challenge and HAM10000 diagnostic categories. The dataset includes 11 broad diagnostic categories:

1. Basal cell carcinoma (bcc)
2. Melanocytic nevus (nv)
3. Benign keratinocytic lesion (bkl)
4. Squamous cell carcinoma/keratoacanthoma (sccka)
5. Melanoma (mel)
6. Actinic keratosis/intraepidermal carcinoma (akiec)
7. Dermatofibroma (df)
8. Inflammatory and infectious conditions (inf)
9. Vascular lesions and hemorrhage (vasc)
10. Other benign proliferations including collision tumors (ben_oth)
11. Other malignant proliferations including collision tumors (mal_oth)

Additionally, we provide the most specific ISIC-Dx diagnosis and its parent branch in the ISIC-Dx diagnostic tree. In cases where a dermatoscopic image of the same lesion was already included in the ISIC archive, its ISIC identifier is reported in the metadata. Furthermore, all images have been annotated using the MONET framework, with probabilities for the following concept term groups included in the metadata:

1. Ulceration, crust
2. Hair
3. Vasculature, vessels
4. Erythema
5. Pigmentation
6. Gel, water drop, fluid, dermoscopy liquid
7. Skin markings, pen ink, purple pen

In addition to *MILK10k*, we have curated a smaller benchmark dataset, called *MILK10k Benchmark* derived from the same sources and covering the same diagnostic categories. This dataset is available as part of a live challenge within the ISIC framework and can be accessed on ISIC.

Images were provided by the following institutions:

- Department of Dermatology, Medical University of Vienna, Vienna, Austria
- Medicine Faculty Department of Dermatology, Ankara University, Ankara, Turkey
- Mayne Academy of General Practice, Medical School, The University of Queensland, Australia
- Dermatology Service, Memorial Sloan Kettering Cancer Center, New York, USA
- Independent Researcher, 1000 Skopje, North Macedonia

VIEW IN ISIC ARCHIVE

Dataset Details

Published

Jul 1, 2025 10:19 AM

DOI

10.34970/648456

Images

10,480

Attributions

- MILK study team

Licenses

CC

BY

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How to Cite

APA

MILK study team. (2025). *MILK10k* [Data set]. ISIC Archive. <https://doi.org/10.34970/648456>

COPY CITATION

Files

DESCRIPTION	SIZE	TYPE	ACTION
The complete bundle of all images, metadata, and supplemental files related to this dataset.	341.5 MB	ZIP	DOWNLOAD
The metadata for this dataset.	2.0 MB	CSV	DOWNLOAD
Model input metadata containing non-diagnostic image-level attributes	2.5 MB	CSV	DOWNLOAD
Ground truth file containing one-hot encoded lesion-level diagnostic labels	184.3 KB	CSV	DOWNLOAD
Image-level diagnostic attributes absent from the model input file	626.1 KB	CSV	DOWNLOAD

¹ MILK study team. (2025). *MILK10k* [Data set]. ISIC Archive. <https://doi.org/10.34970/648456>

Benefits of Collections DOIs

1. Why is it important?
2. Does it break anything?
3. Who is it for?

Discoverability

- Indexed on Google dataset search

Machine readability

- Related identifiers - standard DataCite property
- Facilitates links to related study article, descriptor, or GitHub repo

Supplemental data

- Study-specific annotations

Data consistency

- “Frozen ZIPs” ensure data won’t be impacted by future changes

Draft pages

- Adjust the hidden page prior to study publication

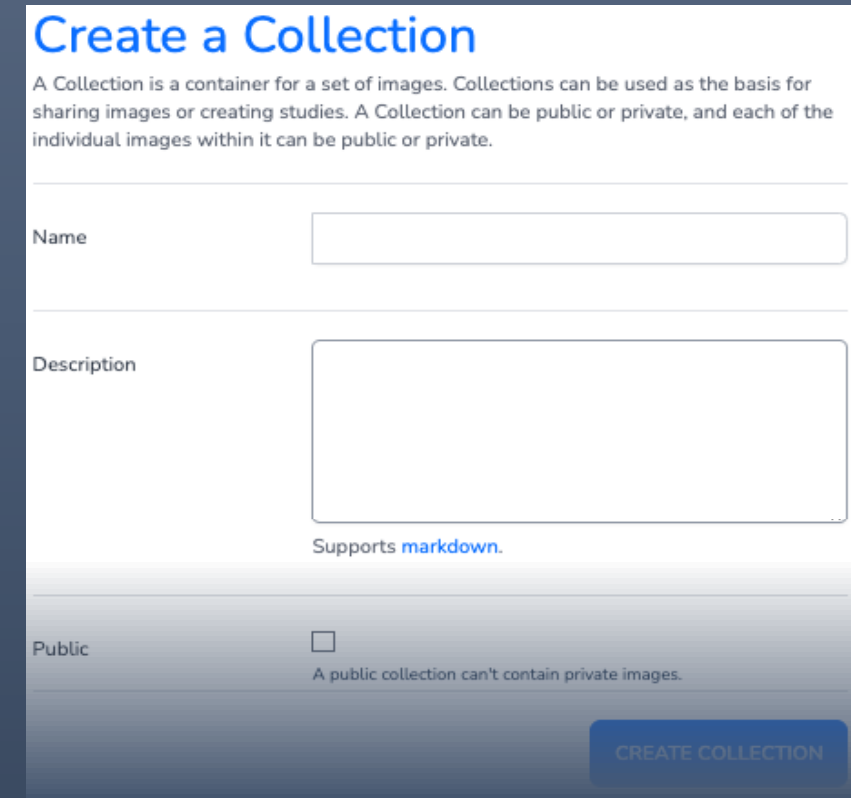
1. Why is it important?
2. Does it break anything?
3. Who is it for?

Create custom collection from existing data:

1. Initialize on the Collection Site
2. Create a line-separate file of select ISIC_IDs
 - *Utilize image search functionality*
3. Add images to the collection using ISIC-CLI
 - *Mentioned later*

If minting a DOI:

4. Prepare supplemental files (if necessary)
5. Contact us at support@isic-archive.com



Create a Collection

A Collection is a container for a set of images. Collections can be used as the basis for sharing images or creating studies. A Collection can be public or private, and each of the individual images within it can be public or private.

Name

Description

Supports [markdown](#).

Public ☐ A public collection can't contain private images.

[CREATE COLLECTION](#)

Multiple ways to access:

- 1. Gallery
- 2. Collection Site
- 3. Challenge Site

Benchmarking models & downloading competition data

ISICCHALLENGE

[ISIC Home](#) [Data](#) [Stats](#) [Challenges](#) [Leaderboards](#) [SUBSCRIBE](#) [LOGIN](#) [SIGN UP](#)

ISIC Challenge Datasets

201620172018201920202024MILK10k

Task	Training Data	Training Ground Truth	Validation Data	Validation Ground Truth	Test Data	Test Ground Truth	License
1	Download (10.4GB) 2594 images and 12970 corresponding ground truth response masks (5 for each image).	Download (26MB)	Download (228MB)	Download (742KB)	Download (2.2GB) 1000 images.	Download (9MB)	CC-0
2		Download (33MB)		Download (1MB)		Download (11MB)	
3	Download (2.2GB) 10015 image response C5 row and 100 rows).						
	Download (4.2GB) 10015 entries image and further explanation data can be						

ISIC Live

TEAMS:2,042

SUCCESSFUL APPROACHES:6,112
approaches with at least 1 successful submission

TOTAL SUBMISSIONS PROCESSED:22,599

Tasks	Success/Total
2018.1: Lesion Boundary Segmentation	668/2,160
2018.2: Lesion Attribute Detection	50/54
2018.3: Lesion Diagnosis	3,835/15,451
2019: Lesion Diagnosis	1,632/4,036
2020: SIIM-ISIC Melanoma Classification	456/898

REPORT AN ISSUE

HAM10000 dataset released in 2018

- 10,000 dermoscopic images
- Austria & Australia
- 7 diagnostic classes
- 2018 & 2019 Grand Challenges
- Thousands of citations

Data Descriptor | [Open access](#) | Published: 14 August 2018

The HAM10000 dataset, a large collection of multi-source dermoscopic images of common pigmented skin lesions

[Philipp Tschandl](#) , [Cliff Rosendahl](#) & [Harald Kittler](#)

[Scientific Data](#) **5**, Article number: 180161 (2018) | [Cite this article](#)

119k Accesses | **2847** Citations | **27** Altmetric | [Metrics](#)

“MILK10k”

A new benchmarking platform

➤ J Invest Dermatol. 2025 Jul 21:S0022-202X(25)02270-5. doi: 10.1016/j.jid.2025.06.1594.
Online ahead of print.

MILK10k: A hierarchical multimodal imaging learning toolkit for diagnosing pigmented and non-pigmented skin cancer and its simulators

Tschandl Philipp¹, Akay Nisa Bengü², Rosendahl Cliff³, Rotemberg Veronica⁴,
Todorovska Verche⁵, Weber Jochen⁴, Wolber Anna Katharina⁶, Müller Christoph⁶,
Kurtansky Nicholas⁴, Halpern Allan⁴, Weninger Wolfgang⁶, Kittler Harald⁷

Affiliations + expand

PMID: 40701400 DOI: 10.1016/j.jid.2025.06.1594

Data descriptor

MILK10k Benchmark

[VIEW IN ISIC ARCHIVE](#)

Dataset Details

Published	Jul 1, 2025 10:24 AM
DOI	10.34970/262082
Images	958
Attributions	MILK study team

Licenses

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How to Cite

APA

MILK study team. (2025). *MILK10k Benchmark* [Data set]. ISIC Archive.
<https://doi.org/10.34970/262082>

[COPY CITATION](#)

MILK10k

[VIEW IN ISIC ARCHIVE](#)

Dataset Details

Published	Jul 1, 2025 10:19 AM
DOI	10.34970/648456
Images	10,480
Attributions	MILK study team

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<https://doi.org/10.34970/648456>

[COPY CITATION](#)

DOI Collections

“MILK10k”

Multi-modal dataset

Two parts

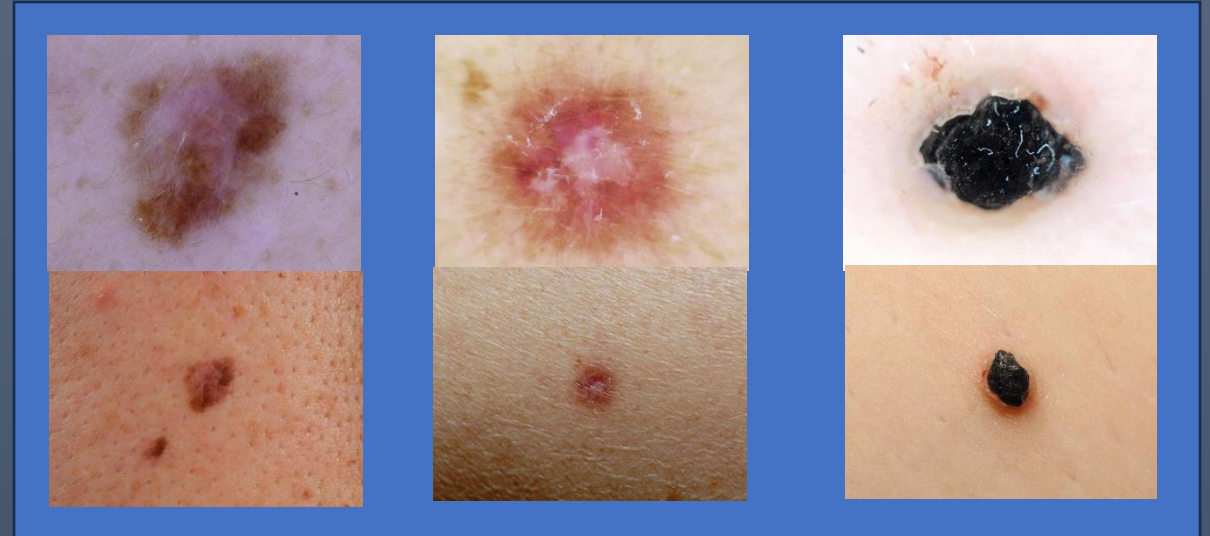
1. Training¹
2. Test² (dx labels hidden)

Lesions contain two images

- Dermoscopic
- Clinical close-up

Metadata

- Diagnosis (ISIC-DX schema³)
- Age, sex, anatomical site
- Skin tone
- MONET⁴ framework annotations
 - (1) ulceration/crust,
 - (2) hair,
 - (3) vasculature,
 - (4) erythema,
 - (5) pigmentation,
 - (6) gel/fluid,
 - (7) pen/skin markings



	Train <i>MILK10k</i>	Test <i>MILK10k Bench</i>
Lesion count	5,240	479
Image count	10,480	958

¹ MILK study team. (2025). *MILK10k* [Data set]. ISIC Archive. <https://doi.org/10.34970/648456>

² MILK study team. (2025). *MILK10k Benchmark* [Data set]. ISIC Archive. <https://doi.org/10.34970/262082>

³ Scope A, Liopyris K, Weber J, et al. International Skin Imaging Collaboration-Designated Diagnoses (ISIC-DX): Consensus terminology for lesion diagnostic labeling. *J Eur Acad Dermatol Venereol*. 2025;39(1):117-125.

⁴ Kim C, Gadgil SU, DeGrave AJ, et al. Transparent medical image AI via an image-text foundation model grounded in medical literature. *Nat Med*. 2024;30(4):1154-1165.

“MILK10k” Challenge Submission Platform

1. Why is it important?
2. Does it break anything?
3. Who is it for?

challenge.isic-archive.com/landing/milk10k/

ISICCHALLENGE ISIC Home Data Stats Challenges Leaderboards

The MILK10k Challenge is open!

[Join the competition!](#)

MILK10k 2025 Challenge

Get Started

[SUBMIT TO CHALLENGE](#) [DOWNLOAD DATA](#)

REPORT AN ISSUE

Summary

The overarching goal of the benchmark is to develop image analysis tools that classify the diagnosis of skin lesions using the following set of information for each case:

- Clinical close-up image
- Dermatoscopic image
- Metadata (more detail below)

This live challenge features the MILK10k training dataset (5,240 lesions) and a blind held-out test dataset (479 lesions) called the MILK10k Benchmark.

Task

The task is multi-category lesion diagnosis classification. Submissions are required to provide eleven probability estimates for each lesion identifier (**lesion**), one for each of the following diagnostic categories:

1. Actinic keratosis / intraepidermal carcinoma (**AKIEC**)
2. Basal cell carcinoma (**BCC**)
3. Other benign proliferations, including collision tumors (**BEN_OTH**)
4. Benign keratinocytic lesion (**BKL**)
5. Dermatofibroma (**DF**)
6. Inflammatory and infectious conditions (**INF**)
7. Other malignant proliferations, including collision tumors (**MAL_OTH**)
8. Melanoma (**MEL**)
9. Nevus (**NV**)
10. Seborrheic keratosis (**SKCA**)
11. Vascular lesion (**VASC**)

ISICCHALLENGE ISIC Home Data Stats Challenges Leaderboards

SUBSCRIBE LOGIN SIGN UP

The MILK10k Challenge is open!

[Join the competition!](#)

MILK10k 2025 Leaderboards

Group By Team

REPORT AN ISSUE

Lesion Diagnosis

Rank	Team	Approach	Manuscript	Used External Data	Primary Metric Value
3 total	3 unique teams				Dice Coefficient
1	PanDerm Team AIM for Health Lab, Monash University	PanDerm V2	-	No	0.524

Details

Category Metrics	Mean Value	Diagnosis Category										
		AKIEC	BCC	BEN_OTH	BKL	DF	INF	MAL_OTH	MEL	NV	SKCA	VASC
AUC	0.927	0.899	0.963	0.924	0.886	0.979	0.919	0.793	0.958	0.955	0.936	0.991
AUC, Sens > 80%	0.868	0.804	0.937	0.872	0.768	0.957	0.871	0.636	0.920	0.935	0.871	0.981
Average Precision	0.583	0.682	0.802	0.111	0.745	0.544	0.340	0.114	0.720	0.837	0.846	0.675
Accuracy	0.948	0.896	0.927	0.983	0.887	0.990	0.979	0.979	0.950	0.954	0.887	0.994
Sensitivity	0.480	0.483	0.902	0.000	0.630	0.333	0.364	0.000	0.564	0.682	0.701	0.600
Specificity	0.978	0.966	0.931	0.998	0.955	0.998	0.994	1.000	0.984	0.986	0.948	0.998
Dice Coefficient	0.524	0.583	0.759	0.000	0.700	0.444	0.444	0.000	0.647	0.766	0.752	0.667
PPV	0.688	0.714	0.855	0.000	0.787	0.667	0.571	1.000	0.759	0.857	0.812	0.750
NPV	0.962	0.916	0.985	0.985	0.907	0.992	0.985	0.979	0.962	0.963	0.907	0.996

ROC

PanDerm V2

Click to toggle

Aggregate Metrics

Metric	Value
Balanced Multiclass Accuracy	0.537

<https://challenge.isic-archive.com/landing/milk10k/>

Multiple ways to access:

1. Gallery
2. Collection Site
3. Challenge Site
4. Official CLI & API

Interact programmatically
with the ISIC Archive

The image shows a composite of two screenshots. The background is a screenshot of the ISIC Archive website, which has a blue header with a search bar and navigation links (Help, Docs, Sponsors, Log in, Register). The main content area is titled 'ISIC Archive' with a 'v2 OAS 3.1' badge. It lists API endpoints for collections, images, and lesions, each with a 'GET' button and a brief description. The foreground is a semi-transparent overlay showing CLI documentation for 'isic-cli 12.4.0'. It includes a code block for 'pip install isic-cli' and sections for 'Downloading images' and 'Downloading metadata' with example commands.

isic-cli 12.4.0

```
pip install isic-cli
```

Downloading images

```
isic image download  
  
# optionally filter  
isic image download  
isic image download
```

Downloading metadata

```
isic metadata download  
  
# find a collection  
isic collection list  
isic metadata download
```

ISIC Archive v2 OAS 3.1

collections

- GET** `/api/v2/collections/` Return a list of collections.
- GET** `/api/v2/collections/{id}/` Retrieve a single collection by ID.

images

- GET** `/api/v2/images/` Return a list of images.
- GET** `/api/v2/images/search/` Search images with a key:value query string.
- GET** `/api/v2/images/{isic_id}/` Retrieve a single image by ISIC ID.

lesions

- GET** `/api/v2/lesions/{id}/` Retrieve a single lesion by ID.
- GET** `/api/v2/lesions/` Return a list of lesions with diagnoses.



Mission of ISIC

- Creating & promoting standards
- Engaging clinical and computer vision communities

How to find existing data on the ISIC Archive

- ISIC Gallery
- Pre-built collections
- Benchmarking platform

Benefits of creating your own DOI Collection

- How to create a custom image-selection
- Supplemental data,
- Draft DOIs
- Linking/machine-readability

In Summary

Acknowledgments



National Institute of Health (NIH)

- [P30] Cancer Center Support Grant
- [U24] M-ISIC: Multimodal ISIC Informatics Platform for Skin Cancer Detection
- [U24] ISIC-REPO: Repository Enhancements for Promoting Interoperability



Melanoma Research Alliance (MRA)

- Team Science Award



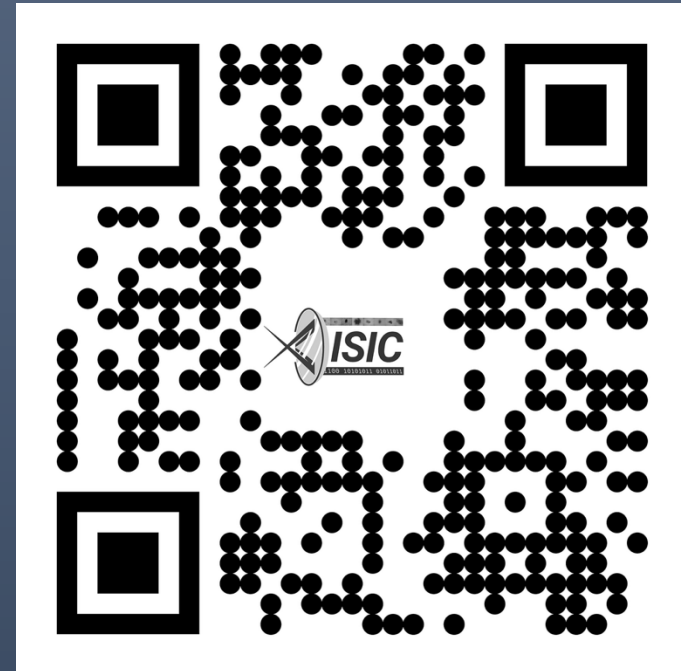
Department of Defense (DOD)

- Melanoma Scholar
- MRP Team Science Award

Send us a message or visit our website



support@isic-archive.com



<https://www.isic-archive.com/>