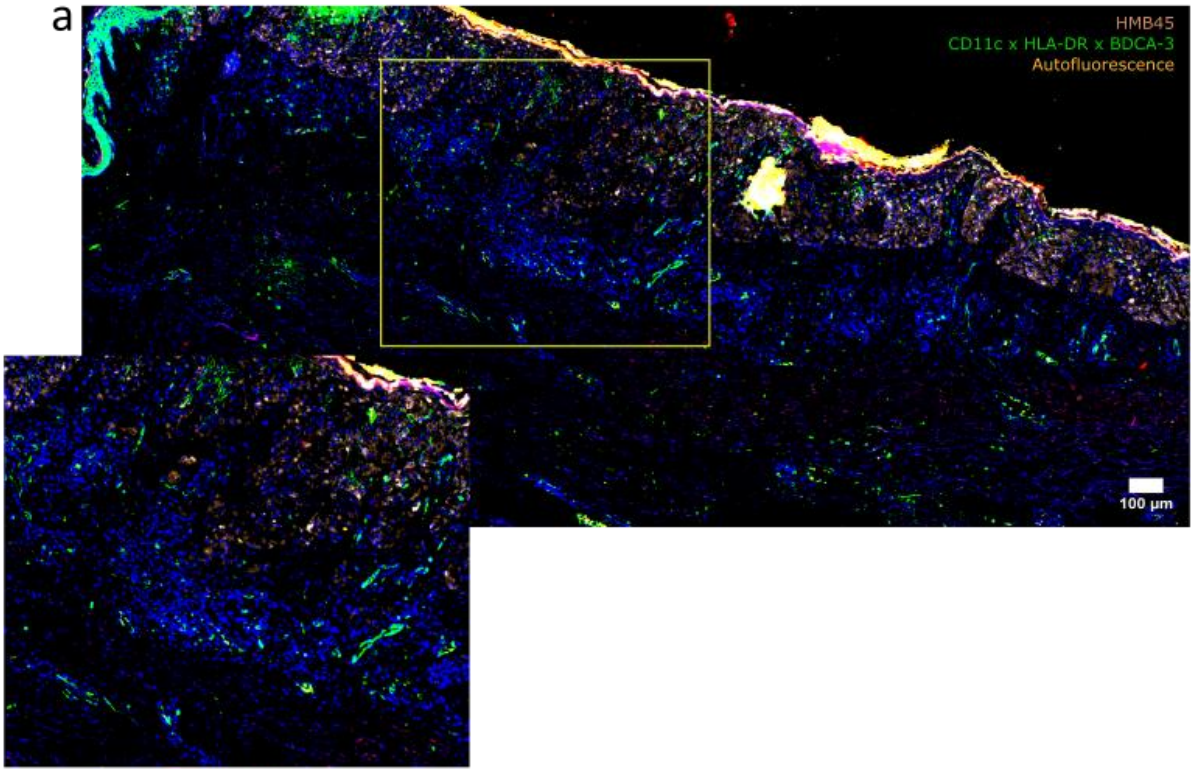
Supplementary Materials

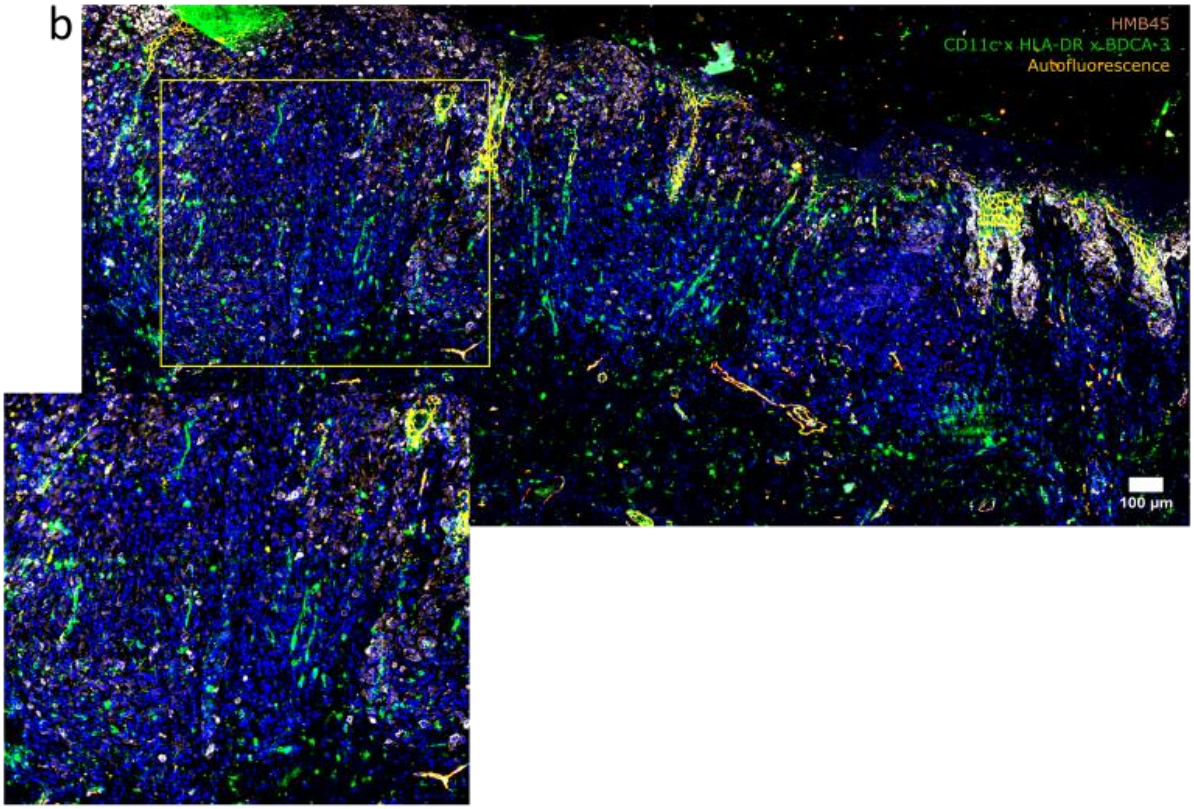
Table S1. Data set for Manual Annotation.

Image	Time of annotation	Nuclei annotated
5017-1	3 h 40 min	1560
2242-1	3 h 04 min	1354
8464-3	4 h 15 min	1748
6090-1	5 h 30 min	2184
1628-1	6 h 05 min	2501
1134-2	4 h 10 min	1774
5835-2	5 h 50 min	2406
7737-1	5 h 12 min	1792
9337-3	5 h 00 min	1805
2405-3	1 h 17 min	648
0101-3	2 h 00 min	1039
0900-1	1 h 00 min	469

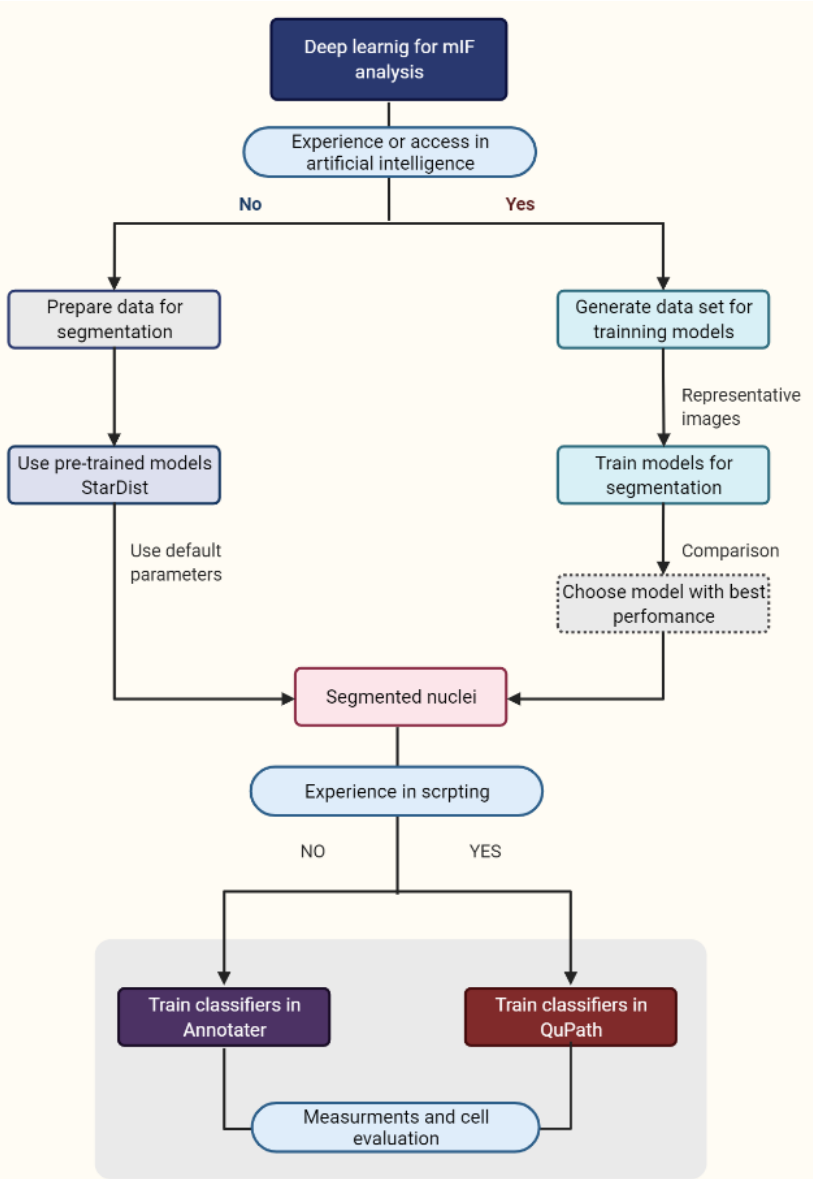
Table S2. Comparison between Annotater and QuPath

	Advantages	Disadvantages
Annotater	Integrated with ImageJ. Do not need programming skills. Training of classifiers is intuitive. Obtaining the results is an integrated function.	The time spent in the batch analysis is longer than QuPath.
QuPath	Automated analysis is easier to implement. The time spent in the batch analysis is shorter than the Annotator. Optimal visualization of markers. There are different options to normalize the data.	Need programming scripting skills. Only StarDist could be integrated to segment nuclei. Different masks of segmented nuclei requires different treatments Training of classifiers is less intuitive than Annotator


a
HMB45
CD11c x HLA-DR x BDCA-3
Autofluorescence
100 µm


b
HMB45
CD11c x HLA-DR x BDCA-3
Autofluorescence
100 µm

Supplementary figure 1. Expanded view of melanoma samples showing the distribution of cDC1s. Slide scanning of an expanded region of melanomas from a patient (a) metastatic at diagnosis and (b) disease free showing the distribution of cDC1 (green) respect to the tumor cell (HMB45pos-sepia). cDC1 were identified using CD11c, HLA-DR and BDCA3, these signals were treated mathematically to show only the areas of coincidence in green. The squares in yellow are areas magnified (below).



Supplementary Figure 2. A schematic diagram for decision-making to implement a deep learning-based workflow of image analysis.

Supplementary Video 1. Example of detections by machine learning classifier per each marker with Annotater.

https://drive.google.com/file/d/19jY3PnVd36EuP_Qdc1_Eb0ifyPQcmul9/view?usp=sharing