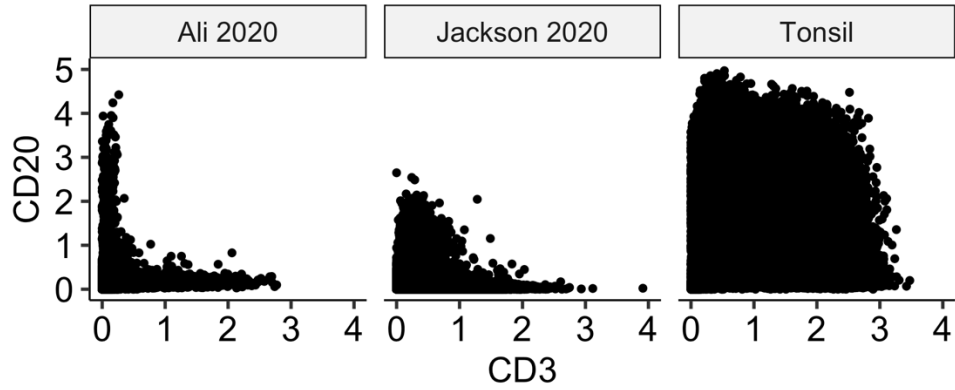
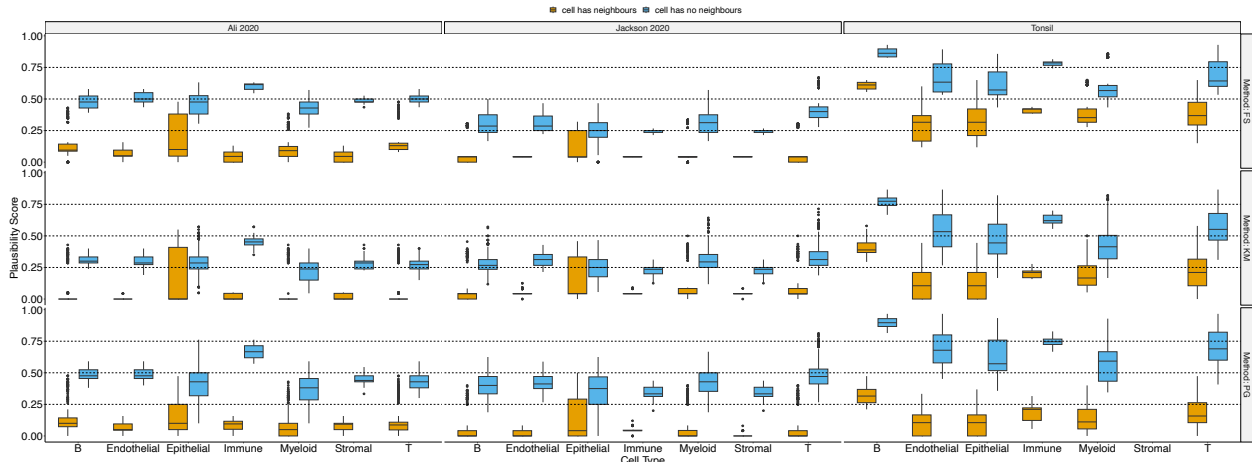
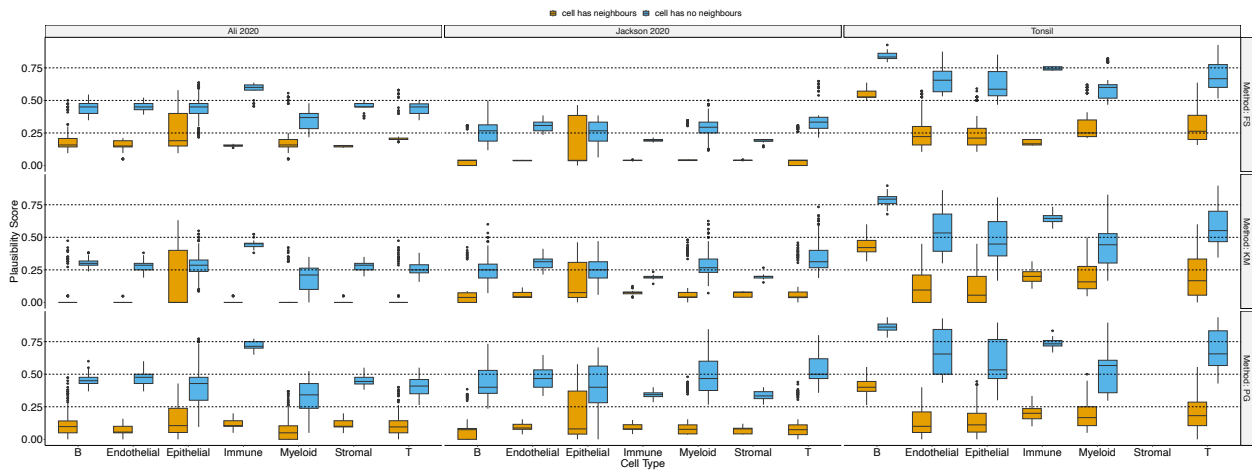




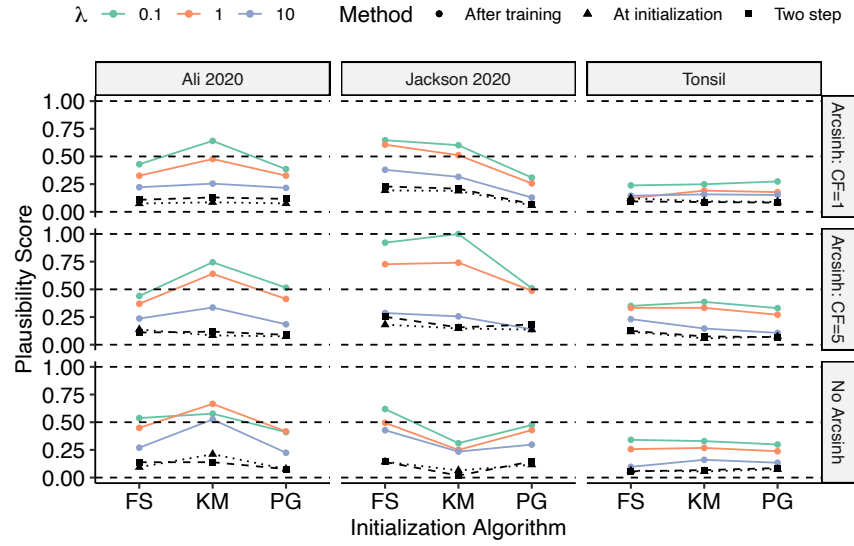
Supplementary Figure 1 Scatterplot of CD3 and CD20 across three IMC datasets. Number of cells: Jackson (2020): 805,675, Ali (2020): 589,992 cells, Tonsil (this paper): 243,738.



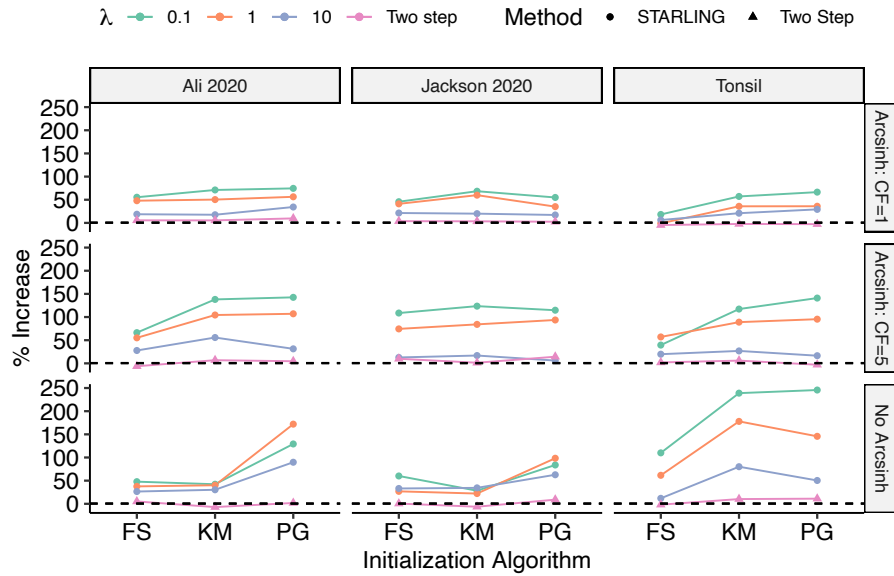
Supplementary Figure 2 Plausibility score for cells with neighbours vs cells with no neighbours separated by subsetting the markers used for calculation of the score to a given cell type (x-axis).



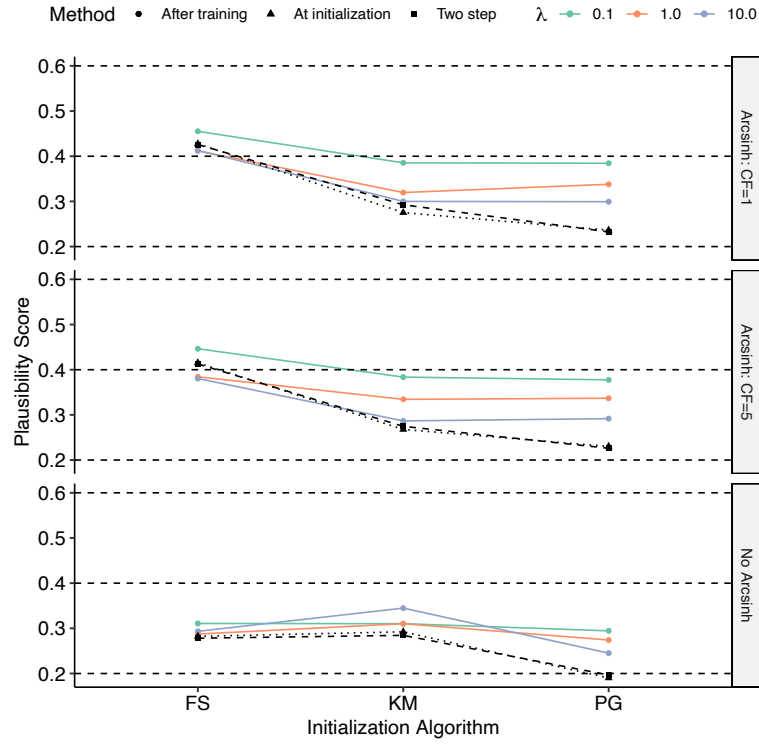
Supplementary Figure 3 As per S. Fig. 2 but randomly subsampling the marker pairs used to 50% at each iteration.



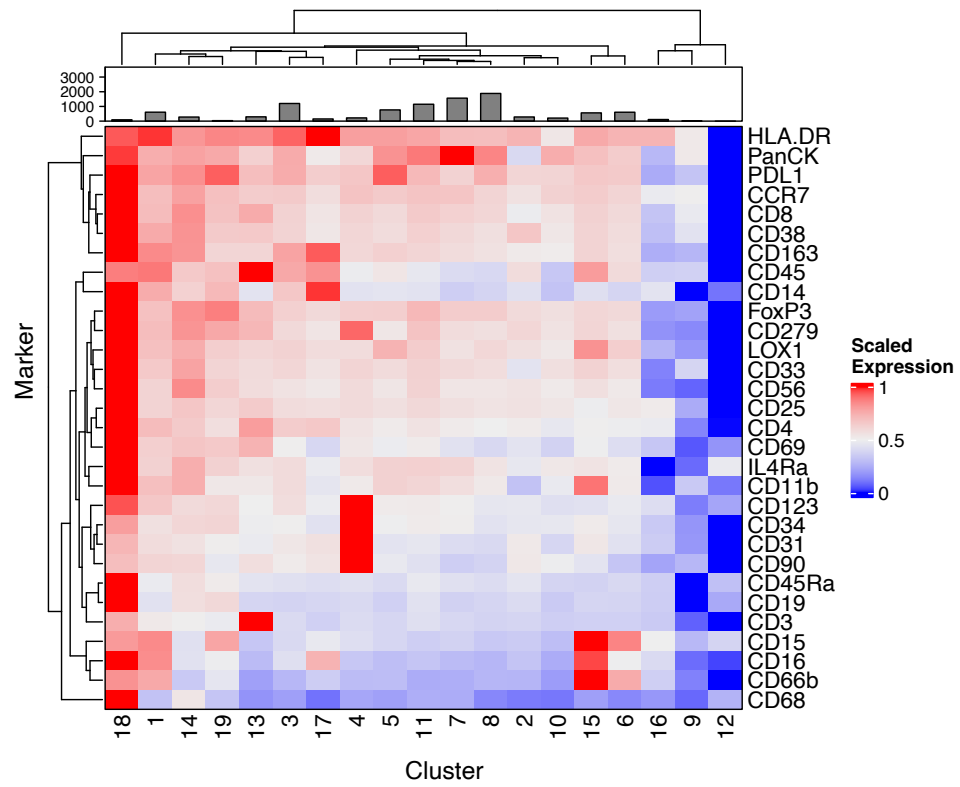
Supplementary Figure 6 Plausibility score scaled to be between 0 and 1, where 0 represents the average plausibility score for cells that have neighbours in the original data, and 1 represents the average plausibility score of cells that have no neighbours in the original data.



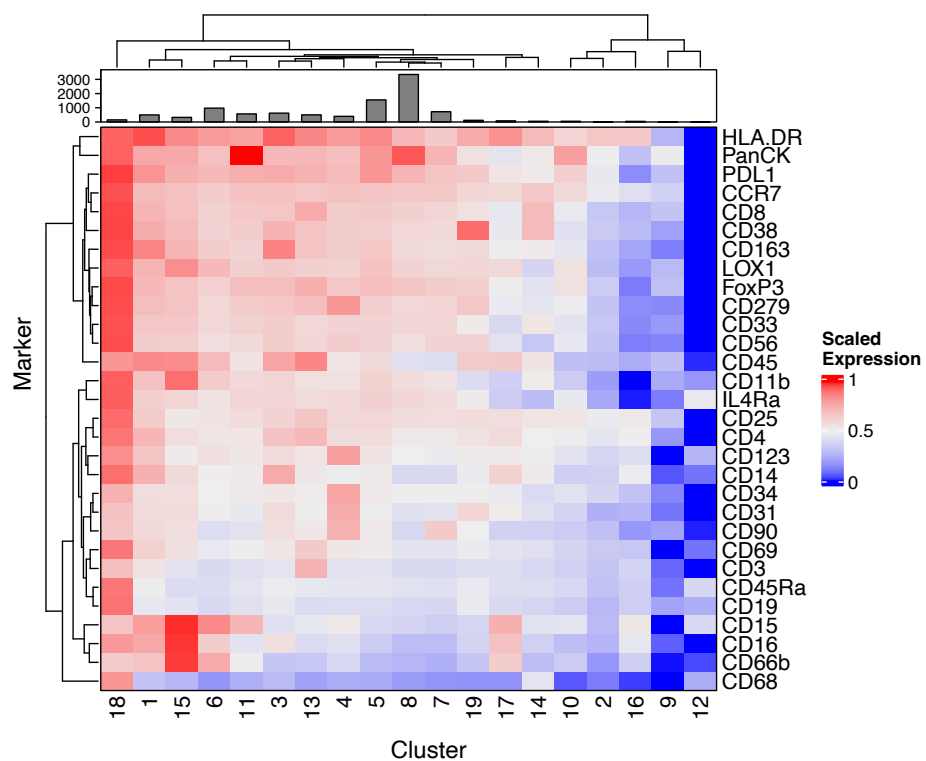
Supplementary Figure 7 As per S. Fig. 6 but computed as a percent improvement over the initialization.



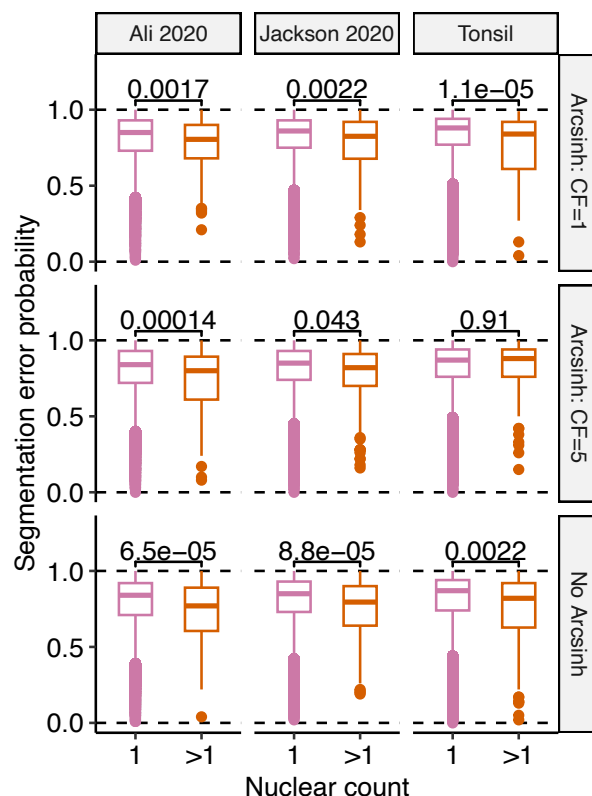
Supplementary Figure 8 Plausibility scores for STARLING applied to Akoya Phenocycler dataset.



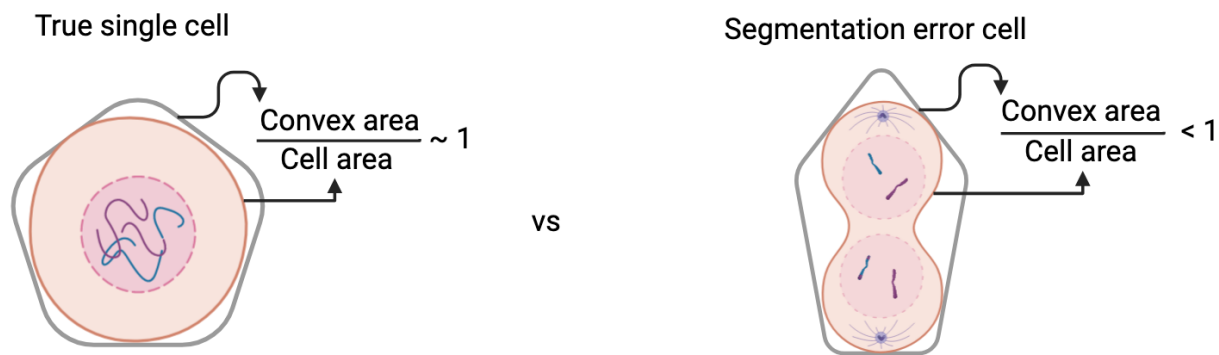
Supplementary Figure 9 Heatmap of cluster centroids after using STARLING with a FlowSOM initialization (which resulted in the lowest negative log likelihood loss over all initializations).



Supplementary Figure 10 The FlowSOM initialization used to run STARLING (see S. Fig. 9).

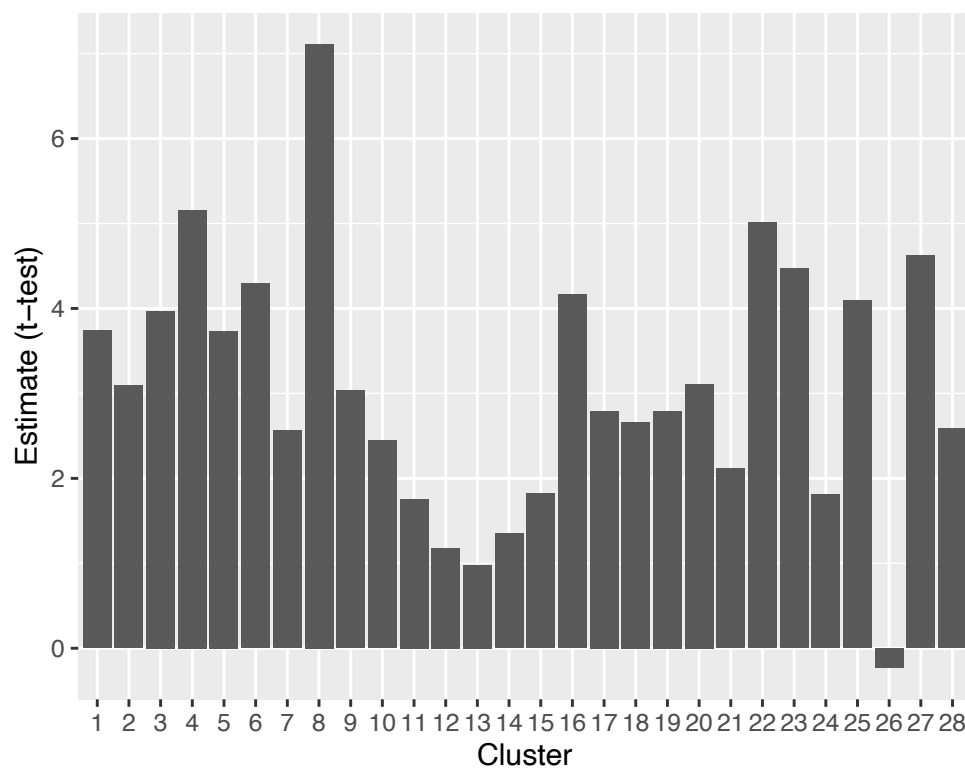


Supplementary Figure 11 The segmentation error probabilities estimated from a random forest baseline trained to discriminate singlet cells from synthetically mixed doublets, separated by the per-cell nuclear count following double segmentation (whole cell and nuclear only). 1,345,659 cells were identified as single-nucleus cells and 4,341 as multi-nuclear cells. Significance determined using a two-sided Wilcoxon rank-sum test.

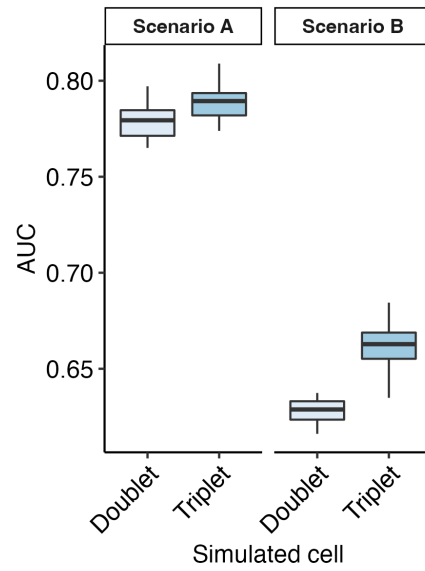


1. Convex/Cell ratio for all singlet & segmentation error prediction cells
2. Compare two prediction set differences via T-test

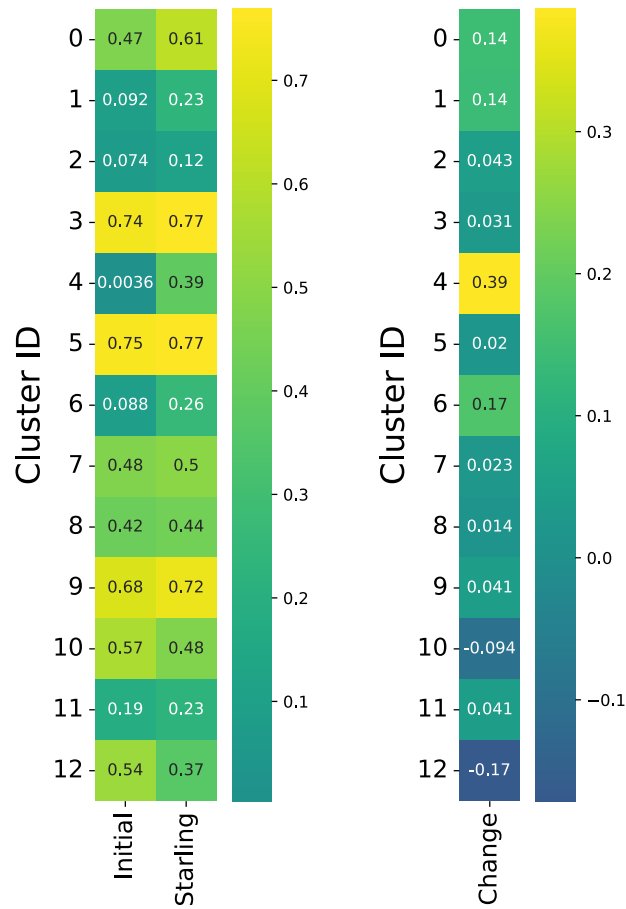
Supplementary Figure 12 Schematic showing the intuition for whole convex to total cell area will indicate likely doublet cells. Created in BioRender. Lee, Y. (2024) <https://BioRender.com/z59i885>



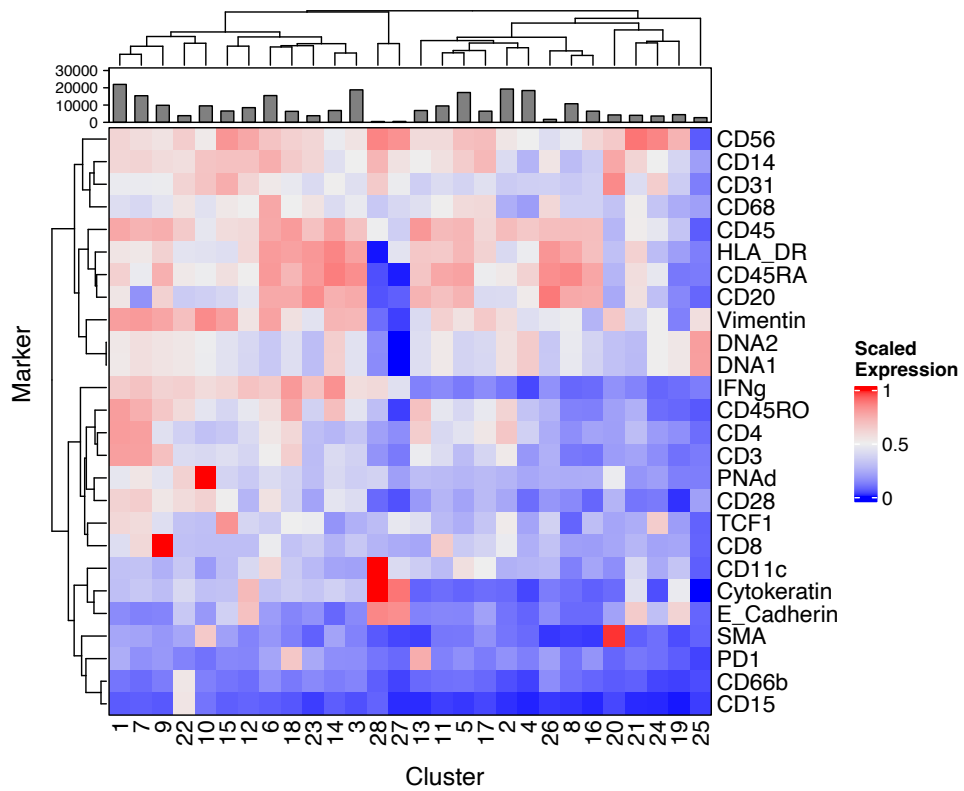
Supplementary Figure 13 The test statistic for a t-test for the ratio of convex to total cell area between likely segmentation errors vs no segmentation errors across the 28 clusters for the Tonsil dataset with STARLING clustering.



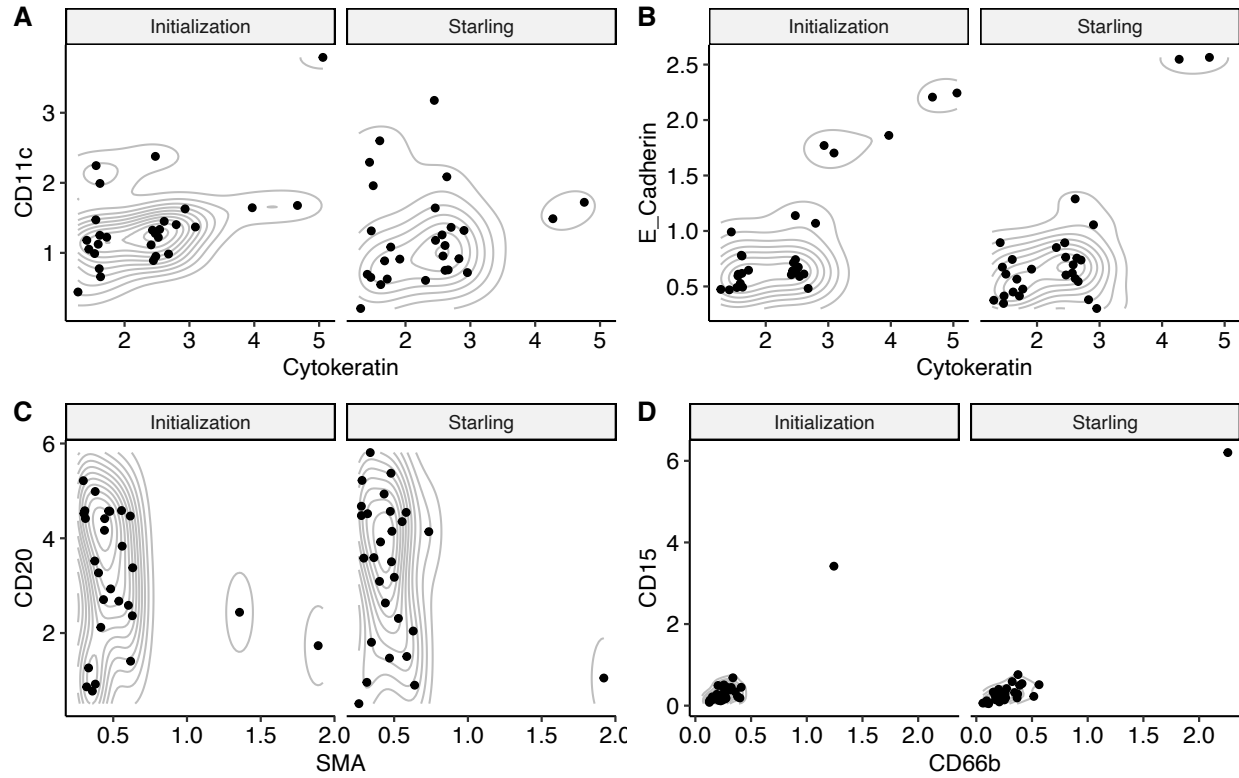
Supplementary Figure 14 The AUC for STARLING detecting simulated segmentation errors from a suspension mass cytometry dataset depending on if two cells were mixed to form the segmentation error ("doublet") or three ("triplet").



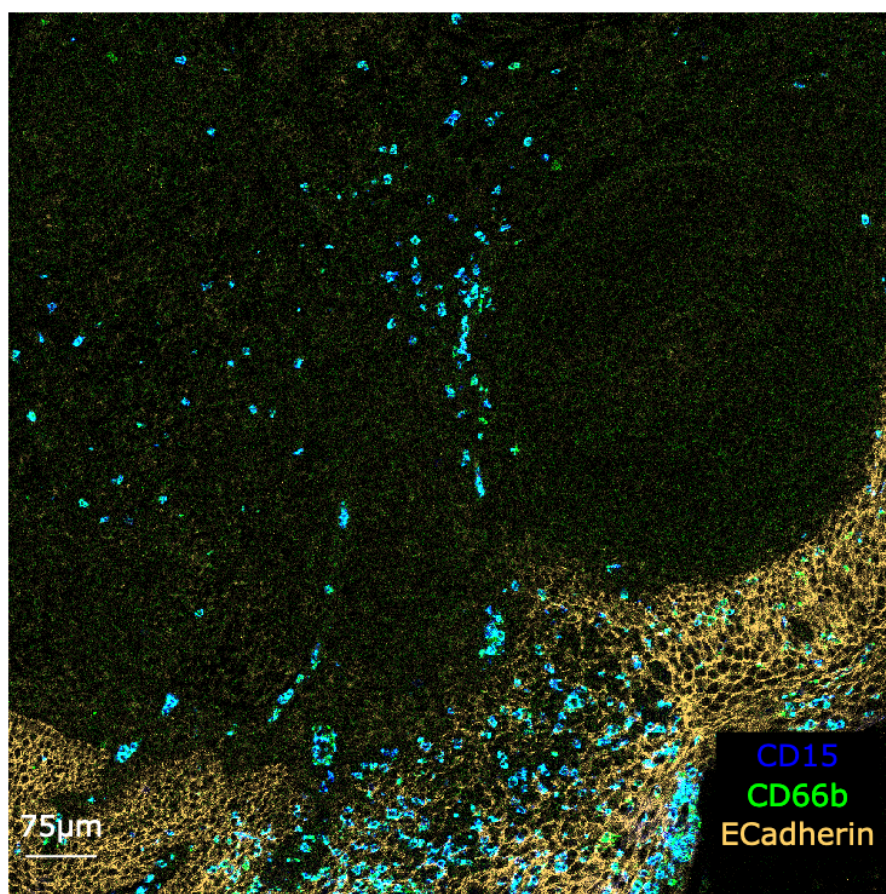
Supplementary Figure 15 The difference in expression between the highest and second highest expressed cell lineage marker of each cluster in the cell pallet data, with “Change” quantifying the difference in this quantity between the initial (PhenoGraph) and STARLING.



Supplementary Figure 16 Heatmap of initial cluster centroids generated with PhenoGraph used to subsequently train STARLING on the three-donor Tonsil dataset.



Supplementary Figure 17 Visualization of the co-expression of pairs of markers contrasting that at the PhenoGraph initialization (see S. Fig. 16) and after training using STARLING for CD11c and Cytokeratin (A), E-Cadherin and Cytokeratin (B), CD20 and SMA (C), and CD15 and CD66b (D).



Supplementary Figure 18 CD15, CD66b and ECadherin expression in ROI 1.

Supplementary Table 1. Marker pairs used for plausibility score calculations

Datasets	Pair Type	Marker 1	Marker 2
Jackson 2020/Alì 2020	Conditional	CD45	CD3
Jackson 2020/Alì 2020	Conditional	CD45	CD20
Jackson 2020/Alì 2020	Conditional	CD45	CD68
Jackson 2020/Alì 2020	Conditional	panCK	CK5
Jackson 2020/Alì 2020	Conditional	panCK	CK7
Jackson 2020/Alì 2020	Conditional	panCK	CK8&18
Jackson 2020/Alì 2020	Conditional	panCK	CK19
Jackson 2020/Alì 2020	Mutually exclusive	CD3	CD20
Jackson 2020/Alì 2020	Mutually exclusive	CD3	CD31
Jackson 2020/Alì 2020	Mutually exclusive	CD3	CD68
Jackson 2020/Alì 2020	Mutually exclusive	CD3	ECadherin

Jackson 2020/Ali 2020/Serafini 2023	Mutually exclusive	CD3	panCK
Jackson 2020/Ali 2020	Mutually exclusive	CD20	CD31
Jackson 2020/Ali 2020	Mutually exclusive	CD20	CD68
Jackson 2020/Ali 2020	Mutually exclusive	CD20	ECadherin
Jackson 2020/Ali 2020	Mutually exclusive	CD20	panCK
Jackson 2020/Ali 2020	Mutually exclusive	CD31	CD68
Jackson 2020/Ali 2020	Mutually exclusive	CD31	ECadherin
Serafini 2023	Mutually exclusive	CD31	panCK
Jackson 2020/Ali 2020/Serafini 2023	Mutually exclusive	CD45	panCK
Jackson 2020/Ali 2020	Mutually exclusive	CD68	ECadherin
Jackson 2020/Ali 2020	Mutually exclusive	panCK	Vimentin
Tonsil	Conditional	CD3	CD4
Tonsil/Serafini 2023	Conditional	CD3	CD8
Serafini 2023	Conditional	CD3	FoxP3
Tonsil/ Serafini 2023	Conditional	CD45	CD3
Tonsil/ Serafini 2023	Conditional	CD45	CD4
Tonsil/ Serafini 2023	Conditional	CD45	CD8
Tonsil	Conditional	CD45	CD20
Tonsil/ Serafini 2023	Conditional	CD45	CD68
Tonsil	Mutually exclusive	CD3	CD20
Tonsil/ Serafini 2023	Mutually exclusive	CD3	CD31
Tonsil/ Serafini 2023	Mutually exclusive	CD3	CD68
Tonsil	Mutually exclusive	CD3	ECadherin
Tonsil/Serafini 2023	Mutually exclusive	CD4	CD8
Tonsil	Mutually exclusive	CD4	CD20
Tonsil/ Serafini 2023	Mutually exclusive	CD4	CD31
Tonsil	Mutually exclusive	CD4	ECadherin
Tonsil	Mutually exclusive	CD8	CD20
Tonsil/ Serafini 2023	Mutually exclusive	CD8	CD31
Tonsil/Serafini 2023	Mutually exclusive	CD8	CD68
Tonsil	Mutually exclusive	CD8	ECadherin
Tonsil	Mutually exclusive	CD20	CD31
Tonsil	Mutually exclusive	CD20	CD68
Tonsil	Mutually exclusive	CD20	ECadherin
Tonsil/Serafini 2023	Mutually exclusive	CD31	CD68
Tonsil	Mutually exclusive	CD31	ECadherin
Tonsil	Mutually exclusive	CD68	ECadherin

Supplementary Table 2. Associated cell types for plausibility score calculation broken down by cell type.

Dataset	PS Type	Marker 1	Marker 2	Cell type 1	Cell type 2
---------	---------	----------	----------	-------------	-------------

Jackson 2020/Ali 2020	Conditional	CD45	CD3	T	
Jackson 2020/Ali 2020	Conditional	CD45	CD20	B	
Jackson 2020/Ali 2020	Conditional	CD45	CD68	Myeloid	
Jackson 2020/Ali 2020	Conditional	panCK	CK5	Epithelial	
Jackson 2020/Ali 2020	Conditional	panCK	CK7	Epithelial	
Jackson 2020/Ali 2020	Conditional	panCK	CK8&18	Epithelial	
Jackson 2020/Ali 2020	Conditional	panCK	CK19	Epithelial	
Jackson 2020/Ali 2020	Mutually exclusive	CD3	CD20	T	B
Jackson 2020/Ali 2020	Mutually exclusive	CD3	CD31	T	Endothelial
Jackson 2020/Ali 2020	Mutually exclusive	CD3	CD68	T	Myeloid
Jackson 2020/Ali 2020	Mutually exclusive	CD3	ECadherin	T	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	CD3	panCK	T	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	CD20	CD31	B	Endothelial
Jackson 2020/Ali 2020	Mutually exclusive	CD20	CD68	B	Myeloid
Jackson 2020/Ali 2020	Mutually exclusive	CD20	ECadherin	B	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	CD20	panCK	B	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	CD31	CD68	Endothelial	Myeloid
Jackson 2020/Ali 2020	Mutually exclusive	CD31	ECadherin	Endothelial	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	CD45	panCK	Immune	Endothelial
Jackson 2020/Ali 2020	Mutually exclusive	CD68	ECadherin	Myeloid	Epithelial
Jackson 2020/Ali 2020	Mutually exclusive	panCK	Vimentin	Epithelial	Stromal
Tonsil	Conditional	CD3	CD4	T	
Tonsil	Conditional	CD3	CD8	T	
Tonsil	Conditional	CD45	CD3	T	

Tonsil	Conditional	CD45	CD4	Immune	
Tonsil	Conditional	CD45	CD8	T	
Tonsil	Conditional	CD45	CD20	B	
Tonsil	Conditional	CD45	CD68	Myeloid	
Tonsil	Mutually exclusive	CD3	CD20	T	B
Tonsil	Mutually exclusive	CD3	CD31	T	Endothelial
Tonsil	Mutually exclusive	CD3	CD68	T	Myeloid
Tonsil	Mutually exclusive	CD3	ECadherin	T	Epithelial
Tonsil	Mutually exclusive	CD4	CD8	T	
Tonsil	Mutually exclusive	CD4	CD20	T	B
Tonsil	Mutually exclusive	CD4	CD31	T	Endothelial
Tonsil	Mutually exclusive	CD4	ECadherin	T	Endothelial
Tonsil	Mutually exclusive	CD8	CD20	T	B
Tonsil	Mutually exclusive	CD8	CD31	T	Endothelial
Tonsil	Mutually exclusive	CD8	CD68	T	Myeloid
Tonsil	Mutually exclusive	CD8	ECadherin	T	Epithelial
Tonsil	Mutually exclusive	CD20	CD31	B	Endothelial
Tonsil	Mutually exclusive	CD20	CD68	B	Myeloid
Tonsil	Mutually exclusive	CD20	ECadherin	B	Epithelial
Tonsil	Mutually exclusive	CD31	CD68	Endothelial	Myeloid
Tonsil	Mutually exclusive	CD31	ECadherin	Endothelial	Epithelial
Tonsil	Mutually exclusive	CD68	ECadherin	Myeloid	Epithelial

Supplementary Table 3. Threshold used for discriminate cell types

Clustering Method	Identifiability Threshold	Number of unidentifiable initial clusters	Number of unidentifiable STARLING clusters
Phenograph	0.1	4	0
Phenograph	0.15	4	1
Phenograph	0.2	5	1
FlowSom	0.1	4	2
FlowSom	0.15	6	4
FlowSom	0.2	6	5
K-means	0.1	2	1
K-means	0.15	3	1
K-means	0.2	5	2

Supplementary Table 4. Antibody information for tonsil section stains.

Marker	Metal	Clone	Company	Catalog #	Lot #	Final Concentration
SMA	Y89	1A4	Thermo	14-9760-82	2288516	5 µg/ml
E-Cadherin	In113	36/E-Cadherin	BD	610182	1040966	5 µg/ml
Pan-Cytokeratin	In115	AE1	Sigma	MAB1612	3460341	5 µg/ml
Pan-Cytokeratin	In115	AE3	Sigma	MAB1611	3382323	5 µg/ml
HLA-DR	Pr141	TAL 1B5	Abcam	ab176408	GR3384096-1	2.5 µg/ml
Vimentin	Nd142	EPR3776	Abcam	ab193555	GR3396611-7	1.25 µg/ml
CD28	Nd144	EPR22076	Abcam	ab243557	GR3358395-2	5 µg/ml
CD15	Nd145	HI98	BioLegend	301902	B265372	2.5 µg/ml
CD45RA	Nd146	HI100	Thermo	14-0458-82	2181694	5 µg/ml
CD66b	Sm147	G10F5	BioLegend	305102	B349411	5 µg/ml

CD20	Sm149	L26	Thermo	14-0202-82	2172592	5 µg/ml
CD68	Nd150	KP1	BioLegend	916104	B283618	5 µg/ml
CD4	Eu151	EPR6855	Abcam	ab181724	1023375-4	5 µg/ml
CD8	Sm152	C8/144B	BioLegend	372902	B306201	5 µg/ml
CD11c	Sm154	EP1347Y	Abcam	ab216655	GR335709 2-4	5 µg/ml
CD45RO	Dy162	55618BF	Cell Signaling Technology	UCHL1	2	5 µg/ml
CD3	Unconjugated	CD3-12	Thermo	MA5-16622	WG333339 6	5 µg/ml
Rat IgG	Dy163	Polyclonal	Thermo	B305020	61-172- 060320	2.5µg/ml
IFNγ	Tm169	IFNG/466	Abcam	ab218890	GR342466 0-1	5 µg/ml
TCF1	Er170	C63D9	Cell Signaling Technology	85942SF	2	5 µg/ml
CD14	Yb172	SP192	Abcam	ab230903	GR327365 0-5	5 µg/ml
CD56	Yb173	EPR2566	Abcam	ab214436	GR331747 6-5	2.5 µg/ml
PD1	Yb176	D4W2J	Cell Signaling Technology	63815SF	7	5 µg/ml
CD45	Pt194	D9M8I	Cell Signaling Technology	47937SF	11	5 µg/ml
PNAd	Pt195	MECA-79	BioLegend	120802	B305020	5 µg/ml
CD31	Pt196	RM1006	Abcam	ab282746	GR338958 5-7	5 µg/ml

Supplementary Table 5. Antibody information for cell pellet stains

Marker	Metal	Clone	Company	Catalog #	Lot #	Final Concentration
Pan-Cytokeratin	In115	C11	Thermo Fisher	MA1-12594	YH4021972	0.75ug/mL

Pan-Cytokeratin	In115	AE1	Sigma Aldrich	MAB1612	4002485	0.75ug/mL
Lamin B1	Nd143	polyclonal _ab16048	Abcam	ab16048	1042700-1	3ug/mL
b-Actin	Nd148	SP124	Abcam	ab242387	GR3454668 -1	1.5ug/mL
CD20	Sm149	L26	Thermo Fisher	14-0202-82	2526316	1ug/mL
CD68	Nd150	KP1	BioLegend	916104	B373258	0.75ug/mL
Rat IgG	Sm152	Polyclonal _A18873_ _Thermo	Thermo Fisher	A18873	61-172-060320	2ug/mL
Mitochondria	Gd155	113-1	Abcam	ab92824	1012031-1	1ug/mL
ERK (1/2)	Dy161	137F5	Cell Signaling Technology	68303SF	1	2ug/mL
CD3	Unconjugated	CD3-12	Thermo Fisher	MA5-16622	YE3922415	0.75ug/mL

Supplementary Table 6. Makers used for MESMER's Cytoplasm/Membrane computation

Marker	Basel	Metabric	Tonsil
B-Catenin	x	x	
CAIX	x	x	
CD3	x	x	x
CD4			x
CD8			x
CD11c			x
CD14			x
CD15			x
CD20	x	x	x
CD28			x
CD31	x	x	x
CD44	x	x	
CD45	x	x	x
CD45RA			x
CD45RO			x
CD56			x
CD66b			x
CD68	x	x	x
CK5	x	x	
CK7	x	x	

CK14	x	x	
CK8/18	x	x	
CK19	x	x	
cMyc	x	x	
cPARP/cCasp3	x	x	
Cytokeratin			x
ECadherin	x	x	x
EGFR	x	x	
EpCAM	x	x	
ER		x	
ERK	x	x	
Fibronectin	x	x	
GATA3	x	x	
HER2	x	x	
HLA-DR			x
IFNg			x
KI67	x	x	
mTOR	x	x	
p53	x	x	
panCK	x	x	
PD1			x
PNAAd			x
PR	x	x	
RabbitIgGHL	x		
S6	x	x	
Slug	x	x	
SMA	x	x	x
SOX9	x	x	
Twist	x	x	
Vimentin	x	x	x

Supplementary Table 7. Summary of each cohort

	Number of ROIs	Number of Cells (Provided)	Number of Cells (MESMER)
Basel (Jackson et al., 2020)	358	802591	805675
Metabrics (Ali et al., 2020)	548	536883	589992
Tonsil (Unpublished)	16	-	243738

Supplementary Table 8. Antibody information for tonsil section stains.

Marker	Clone	Company	Catalog #	Validation comment from company
--------	-------	---------	-----------	---------------------------------

SMA	1A4	Thermo	14-9760-82	This 1A4 antibody has been tested by immunohistochemistry of formalin-fixed paraffin embedded human tissue using low or high pH antigen retrieval and can be used at less than or equal to 1 µg/mL
E-Cadherin	36/E-Cadherin	BD	610182	Tissue culture supernatant is purified by either protein A/G or affinity purification methods. Both methods yield antibody in solution that is free of most other soluble proteins, lipids, etc. This format provides pure antibody that is suitable for a number of downstream applications including: secondary labeling for flow cytometry or microscopy, ELISA, Western blot, etc.
Pan-Cytokeratin	AE1	Sigma	MAB1612	This Anti-Cytokeratin Epithelial Antibody, clone AE1 is validated for use in IH(P) for the detection of Cytokeratin Epithelial.
Pan-Cytokeratin	AE3	Sigma	MAB1611	Anti-Keratin Epithelial Antibody, clone AE3 is an antibody against Keratin Epithelial for use in WB, IH(P).
HLA-DR	TAL 1B5	Abcam	ab176408	Positive control: IHC-P: Human skin and tonsil tissue sections.
Vimentin	EPR3776	Abcam	ab193555	Positive control: IHC-P: Human kidney, colon, breast adenocarcinoma, cervical carcinoma and ovarian cancer tissues,

CD28	EPR22076	Abcam	ab243557	Positive control: IHC-P: Human multiple myeloma and tonsil tissue
CD15	HI98	BioLegend	301902	Clone HI98 has been described to specifically react with 3-fucosyl-N-acetylactosamine (3-FAL), also called X-hapten, SSEA-1, CD15, or Lewis X. Additional reported applications (for the relevant formats) include: immunohistochemical staining of acetone-fixed frozen sections and formalin-fixed paraffin-embedded tissue sections.
CD45RA	HI100	Thermo	14-0458-82	The HI100 antibody has been reported for use in flow cytometric analysis, and immunohistochemical staining.
CD66b	G10F5	BioLegend	305102	Additional reported applications (for the relevant formats) include: immunohistochemical staining of acetone-fixed frozen, formalin-fixed paraffin-embedded tissue sections, and spatial biology (IBEX).
CD20	L26	Thermo	14-0202-82	This L26 antibody has been reported for use in immunohistochemical staining of frozen and paraffin-embedded tissue (IHC-F, IHC-P), western blotting, and immunoprecipitation.

CD68	KP1	BioLegend	916104	Each lot of this antibody is quality control tested by formalin-fixed paraffin-embedded immunohistochemical staining.
CD4	EPR6855	Abcam	ab181724	Positive control: IHC-P: Human tonsil, liver, spleen, thymoma and colon tissues.
CD8	C8/144B	BioLegend	372902	Each lot of this antibody is quality control tested by formalin-fixed paraffin-embedded immunohistochemical staining.
CD11c	EP1347Y	Abcam	ab216655	Positive control: IHC-P: Human tonsil, lymph node and spleen tissues.
CD45RO	55618BF	Cell Signaling Technology	UCHL1	CD45RO (UCHL1) Mouse mAb recognizes endogenous levels of total CD45RO protein. Application: Immunohistochemistry (Paraffin) Dilution: 1:400
CD3	CD3-12	Thermo	MA5-16622	Heat-mediated antigen retrieval using Tris/EDTA (pH 9) is recommended for the staining of paraffin sections. A suggested positive control for immunohistochemical applications is tonsil.
Rat IgG	Polyclonal	Thermo	A18873	Anti-Rat secondary antibodies are affinity-purified antibodies with well-characterized specificity for rat immunoglobulins and are useful in the detection, sorting or purification of its

				specified target. Secondary antibodies offer increased versatility enabling users to use many detection systems (e.g. HRP, AP, fluorescence).
IFNg	IFNG/466	Abcam	ab218890	Validated in immunohistochemical analysis of formalin-fixed, paraffin-embedded human renal cell carcinoma.
TCF1	C63D9	Cell Signaling Technology	85942SF	TCF1/TCF7 (C63D9) Rabbit mAb (BSA and Azide Free) detects endogenous levels of total TCF1/TCF7 protein. Application: IHC (paraffin).
CD14	SP192	Abcam	ab230903	Positive control IHC-P: Human tonsil and colon tissues.
CD56	EPR2566	Abcam	ab214436	Positive control - SH-SY5Y and Human fetal brain cell lysates; Human glioma tissue, Human cerebellum. Suitable for IHC-P
PD1	D4W2J	Cell Signaling Technology	63815SF	PD-1 (Intracellular Domain) (D4W2J) XP® Rabbit mAb (BSA and Azide Free) recognizes endogenous levels of total PD-1 protein. Application: IHC (paraffin).
CD45	D9M8I	Cell Signaling Technology	47937SF	CD45 (Intracellular Domain) (D9M8I) XP® Rabbit mAb (BSA and Azide Free) recognizes endogenous levels of total CD45 protein. Application: IHC (paraffin).

PNAd	MECA-79	BioLegend	120802	Each lot of this antibody is quality control tested by immunohistochemical staining on frozen tissue sections. For immunohistochemical staining on formalin-fixed paraffin-embedded tissue sections, the suggested use of this reagent is 5.0 - 10 µg/ml
CD31	RM1006	Abcam	ab282746	Positive control: IHC-P: Human placenta

Supplementary Table 9. Antibody information for cell pellet stains

Marker	Metal	Clone	Company	Catalog #	Lot #
Pan-Cytokeratin	In115	C11	Thermo Fisher	MA1-12594	The cytokeratin antibodies are not only of assistance in the differential diagnosis of tumors using immunohistochemistry on tissue sections, but are also a useful tool in cytopathology and flow cytometric assays.
Pan-Cytokeratin	In115	AE1	Sigma Aldrich	MAB1612	This Anti-Cytokeratin Epithelial Antibody, clone AE1 is validated for use in IH(P) for the detection of Cytokeratin Epithelial.
Lamin B1	Nd143	polyclonal_ab16048	Abcam	ab16048	Positive control: HC-P: Human liver tissue.
b-Actin	Nd148	SP124	Abcam	ab242387	Positive control IHC-P: Human Placenta, Human placenta

CD20	Sm149	L26	Thermo Fisher	14-0202-82	This L26 antibody has been tested by immunohistochemical staining of human FFPE tonsil with low pH antigen retrieval (cat. 00-4955) and can be used at less than or equal to 5 µg/mL.
CD68	Nd150	KP1	BioLegend	916104	Each lot of this antibody is quality control tested by formalin-fixed paraffin-embedded immunohistochemical staining.
CD68	Unconjugated	D4B9C	Cell Signaling Technology	26042SF	CD68 (D4B9C) XP® Rabbit mAb (BSA and Azide Free) recognizes endogenous levels of total CD68 protein. Application: IHC (paraffin).
Rat IgG	Sm152	Polyclonal_A18873_Thermo	Thermo Fisher	A18873	Anti-Rat secondary antibodies are affinity-purified antibodies with well-characterized specificity for rat immunoglobulins and are useful in the detection, sorting or purification of its specified target. Secondary antibodies offer increased versatility enabling users to use many detection systems (e.g. HRP, AP, fluorescence).

Mitochondria	Gd155	113-1	Abcam	ab92824	Positive control: IHC-P: Human breast cancer tissue.
ERK (1/2)	Dy161	137F5	Cell Signaling Technology	68303S F	p44/42 MAP Kinase (137F5) Rabbit mAb (BSA and Azide Free) detects endogenous levels of total p44/42 MAP kinase (Erk1/Erk2) protein. The antibody does not cross-react with JNK/SAPK or p38 MAP kinase. Application: IHC (paraffin).
CD3	Unconjugated	CD3-12	Thermo Fisher	MA5-16622	Heat-mediated antigen retrieval using Tris/EDTA (pH 9) is recommended for the staining of paraffin sections. A suggested positive control for immunohistochemical applications is tonsil.
Rabbit IgG	Yb171	Polyclonal_A27033_Thermo	Thermo Fisher	A27033	Anti-Rabbit secondary antibodies are affinity-purified antibodies with well-characterized specificity for rabbit immunoglobulins and are useful in the detection, sorting or purification of its specified target. Secondary antibodies offer increased versatility enabling users to use many detection systems (e.g. HRP, AP, fluorescence).

Supplementary Table 10. Cell lines for cell pellets

Cell line	Catalog Number	Source
-----------	----------------	--------

Jurkat	TIB-152	ATCC
BxPC-3	AMS.EP-CL-0042	amsbio
THP-1	TIB-202 (ATCC)	THP-1 (ATCC, TIB-202) were obtained from the McGuigan lab at the University of Toronto.
Ramos	CRL-1596 (ATCC)	RAMOS (ATCC, CRL-1596) were obtained from the Martin lab at the University of Toronto