Table S1. Gene markers, used for annotation of the 10x Frozen BMMCs.

Cell Type	**Markers**
B cells	CD19, MME, MS4A1
T cells	CD3D
CD14+ Monocytes	LYZ, CD14
NK cells	GZMA, GZMB, GNLY, NKG7
Dendritic cells	FCER1A, CST3
Monocyte progenitors	LYZ, CD34
Epithelial cells	EPCAM, CD226-, APOE
Erythroblasts	GYPA, CD36, TFRC
Cytotoxic T cells	NKG7, GZMA, GZMH, GZMK
T cells	CD3E, CD8B, IL7R
Immature B cells	MS4A1, CD40, IL4R, IL7R-
Pre-pro B cells	CD34, CD38, MME, CD24-, IL7R-
Pre B cells	CD34-, CD40-, IL7R+, IL4R-, CD19+
Non-dividing Pre B cells	CD34, IGLL5

Table S2. Gene markers, used for annotation of the 10x 8k PBMCs dataset.

Cell Type	**Markers**
B cells	MS4A1
T cells	CD3D, CD3E
CD14+ Monocytes	LYZ, CD14
NK cells 1	GNLY, NKG7
NK cells 2	GZMB, NKG7
FCGR3A+ Monocytes	FCGR3A, MS4A7
Dendritic cells	FCER1A, CST3
Megakaryocytes	PPBP
Naive T cells	CCR7
CD8 T cells	CD8A, CD8B
CD4+ T cells	IL7R, CD4
Cytotoxic T cells	NKG7, GZMA, GZMH, GZMK

Table S3. Gene markers, used for annotation of the inDrop mouse BMCs dataset.

Cell Type	**Markers**
Maturing neutrophils	Mmp9, Srgn, Cxcr2
Maturing macrophages	Cd14, Ly6c2
T cells	Cd7
B cells	Cd79a, Cd79b
B cells, mature	Cd74, Cd83
B cells, immature	Vpreb1
pre-B cells	Vpreb3
Progenitors	Cd34, Kit
NK cells	Nkg7, Il2rb, Thy1

Table S4. Fraction of rescued cells for the 10x Frozen BMMCs dataset.

Cell type	**Total num. of cells**	**Num. of rescued**	**Fraction of rescued, %**
CD14+ Monocytes	305	164	53.77
Cytotoxic T cells	105	37	35.24

Dendritic cells	90	16	17.78
Epithelial cells	135	22	16.3
Erythroblasts	510	264	51.76
Immature B cells	277	133	48.01
Monocyte progenitors	157	33	21.02
NK cells	179	47	26.26
Non-dividing Pre B cells	93	82	88.17
Pre B cells	76	8	10.53
Pre-pro B cells	65	30	46.15
T cells	1098	269	24.5

Table S5. Fraction of rescued cells for the 10x 8k PMMCs dataset.

Cell type	Total num. of cells	Num. of rescued	Fraction of rescued, %
B cells	1239	23	1.86
CD14+ Monocytes	1833	40	2.18
CD4+ T cells	956	15	1.57
CD8 T cells	972	16	1.65
Cytotoxic T cells	1153	21	1.82
Dendritic cells	224	4	1.79
FCGR3A+ Monocytes	197	0	0
Megakaryocytes	44	5	11.36
Naive T cells	1452	42	2.89
NK cells 1	322	4	1.24
NK cells 2	69	2	2.9

Table S6. Fraction of rescued cells for the inDrop mouse PCs dataset.

Cell type	Total num. of cells	Num. of rescued	Fraction of rescued, %
activated stellate	10	0	0
alpha	199	18	9.05
B cell	8	0	0
beta	623	75	12.04
delta	137	6	4.38
ductal	41	2	4.88
endothelial	68	1	1.47
gamma	29	2	6.9
immune other	4	0	0
macrophage	24	5	20.83
quiescent stellate	18	1	5.56
schwann	3	0	0
T cell	3	0	0

Table S7. Fraction of rescued cells for the inDrop mouse BMCs dataset.

Cell type	Total num. of cells	Num. of rescued	Fraction of rescued, %
B cells, immature	99	0	0

B cells, mature	457	1	0.22
Cycling cells	192	5	2.6
Mast cells	48	1	2.08
Maturing macrophages	653	1	0.15
Maturing neutrophils	2876	113	3.93
NK cells	61	0	0
pre-B cells	120	0	0
Progenitors	222	4	1.8
T cells	82	1	1.22

Table S8. Runtimes of dropEst pipeline.

Dataset	**Phase**	**Can be parallel**	**Size**	**#Cores**	**Time**
InDrop Mouse BMCs	dropTag	Yes	244759580 reads	1	1h 14m
	dropEst	No	69420268 reads	1	27m
	CB Merge	No	78282 CBs	1	9m 40s
	UMI Collisions	No	7619389 UMIs	1	10.0s
	UMI Errors	Yes		10	621.1s
	UMI Errors “directional”	Yes		10	38.5s
	Quality scoring	No	6536 cells	1	11.5s
InDrop Mouse ES Cells	dropTag	Yes	413138104 reads	1	1h 25m
	dropEst	No	184395185 reads	1	38m
	CB Merge	No	90168 CBs	1	11m 20s
	UMI Collisions	No	13738402 UMIs	1	10.4s
	UMI Errors	Yes		10	879.4s
	UMI Errors “directional”	Yes		10	51.2s
	Quality scoring	No	6234 cells	1	4.7s

Here, processor Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz was used.