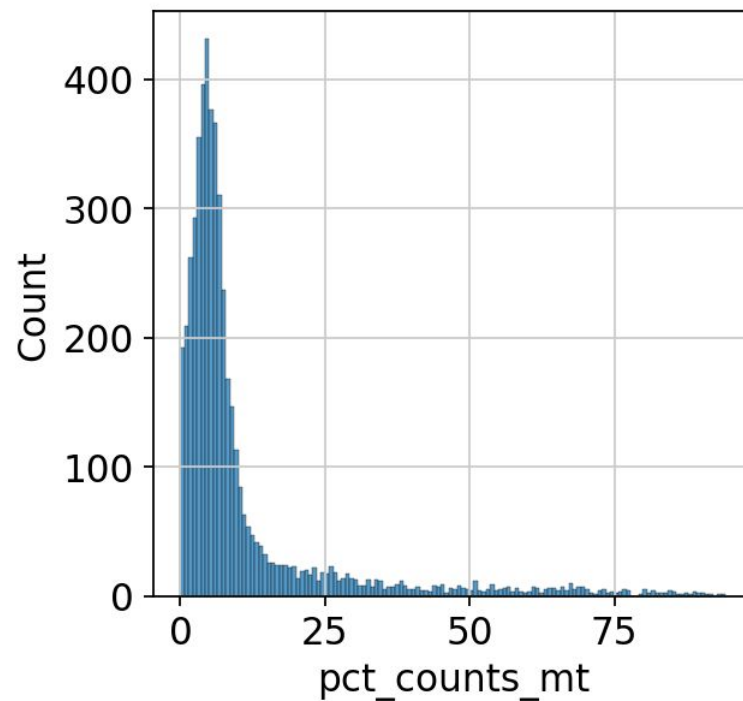
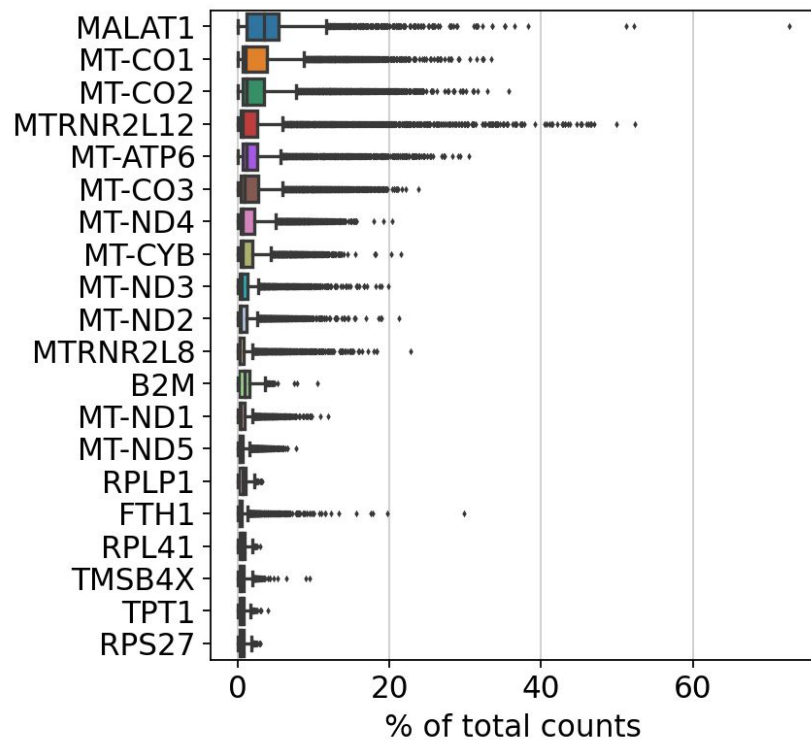
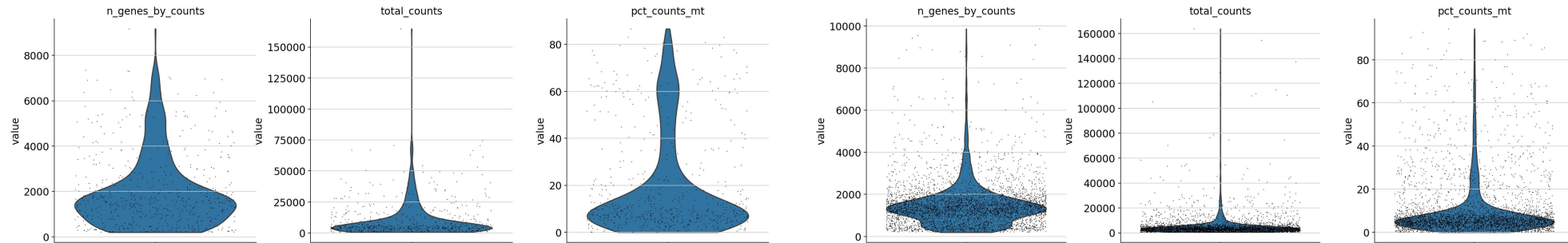
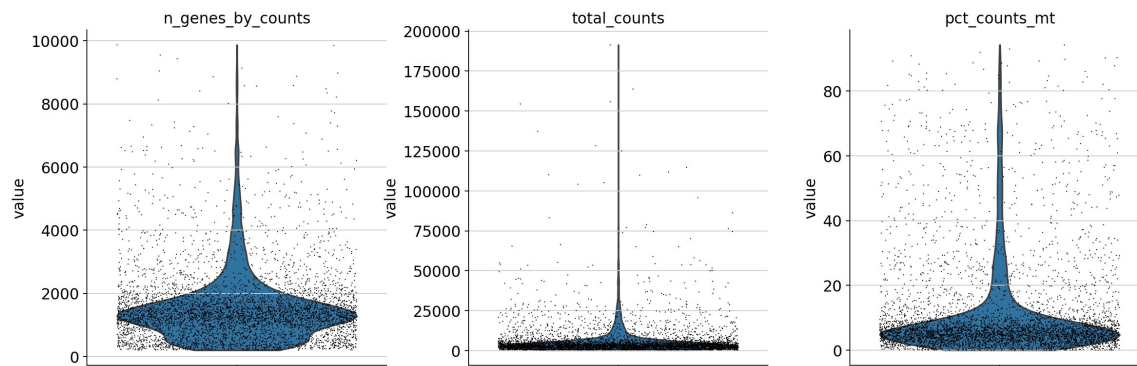


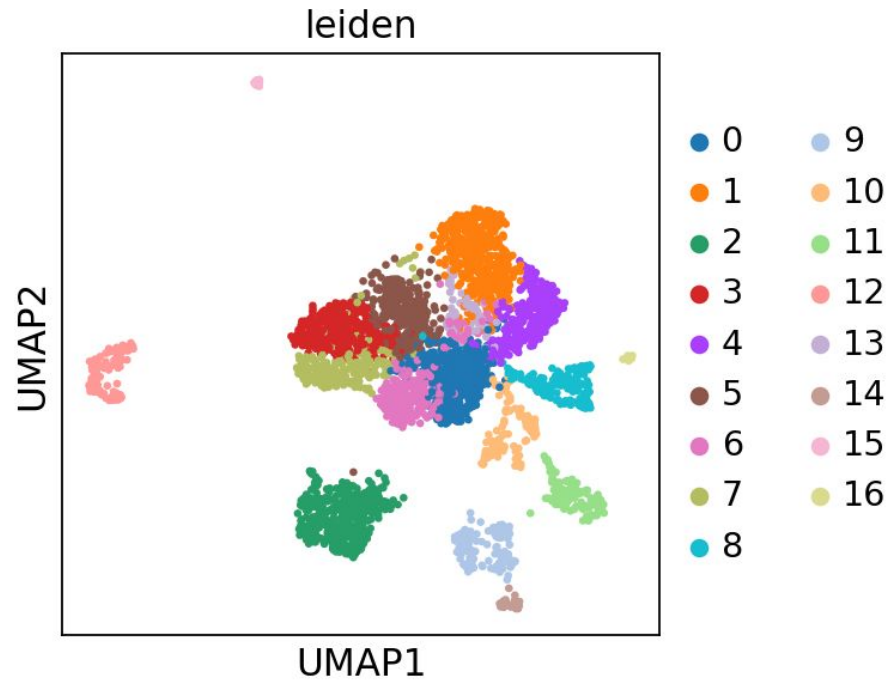
Preprocessing



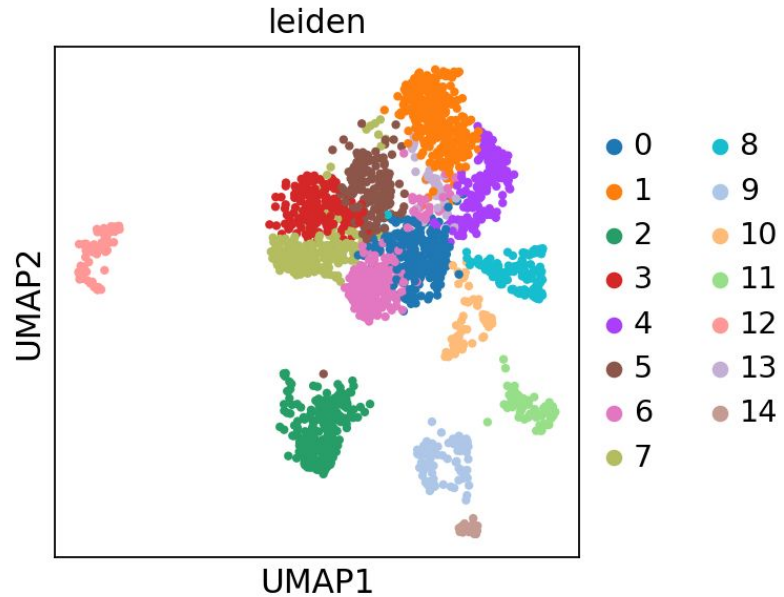
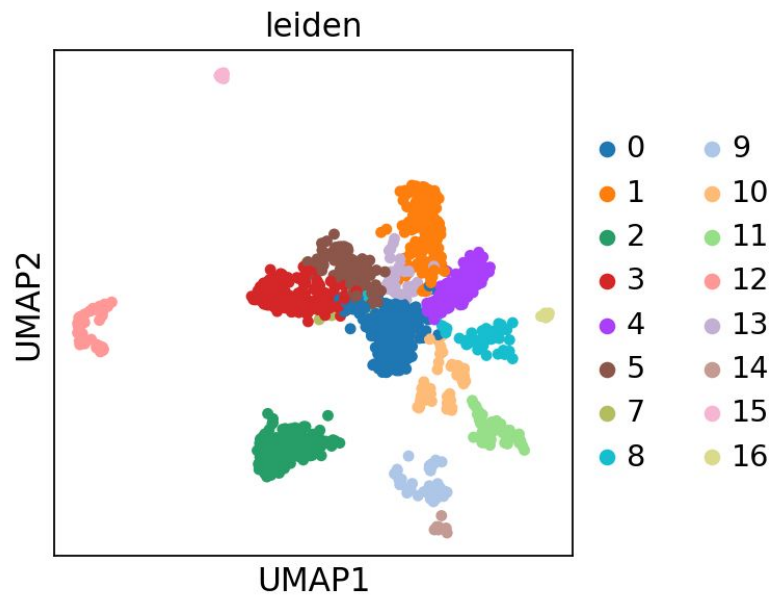
Violin plots of Quality Measures



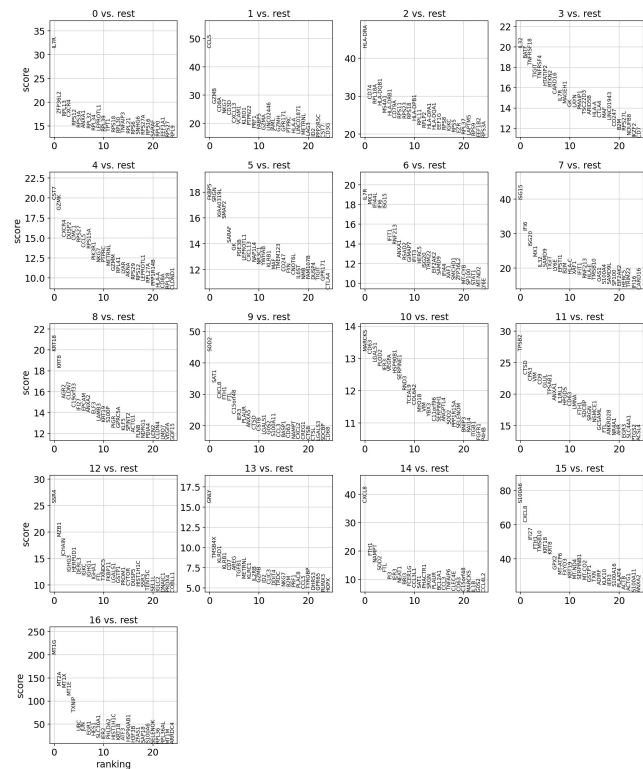
Clustering



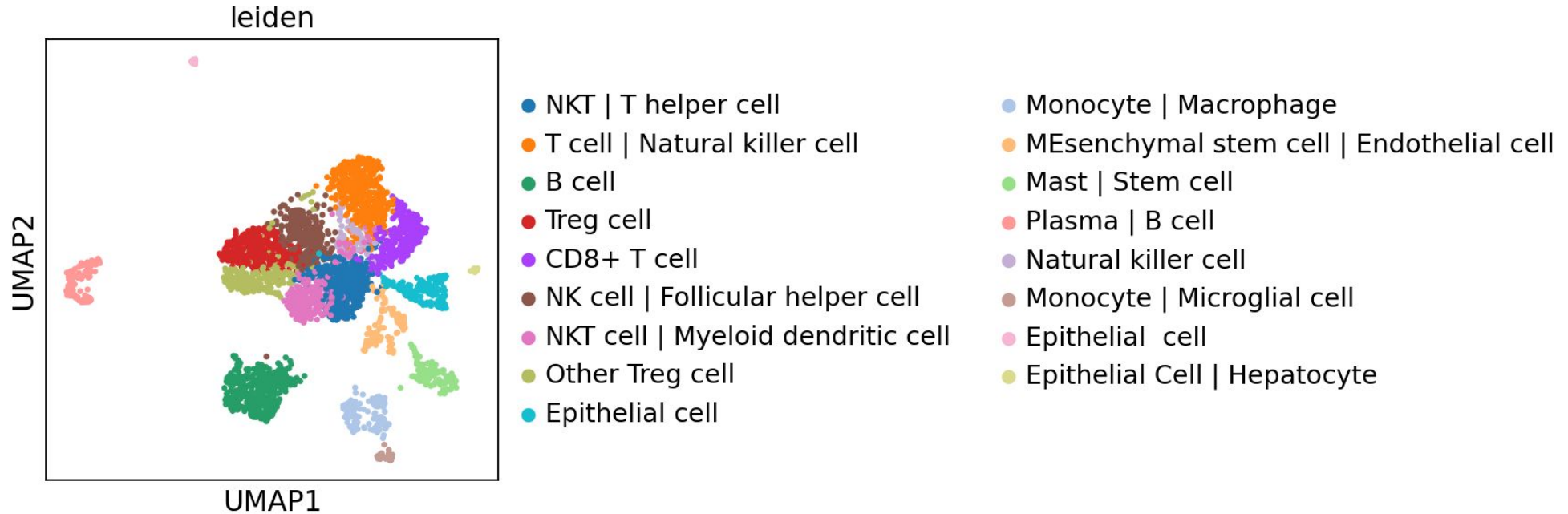
76M cells vs 76V cells



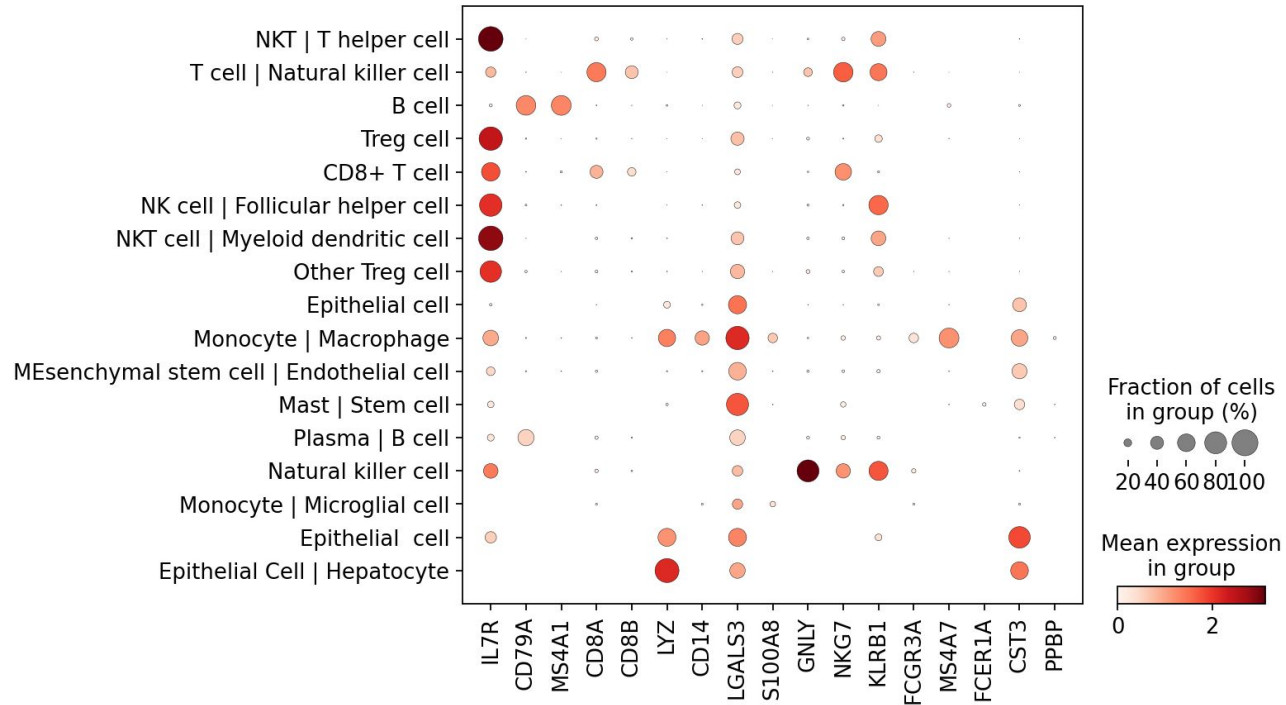
Ranking gene Groups



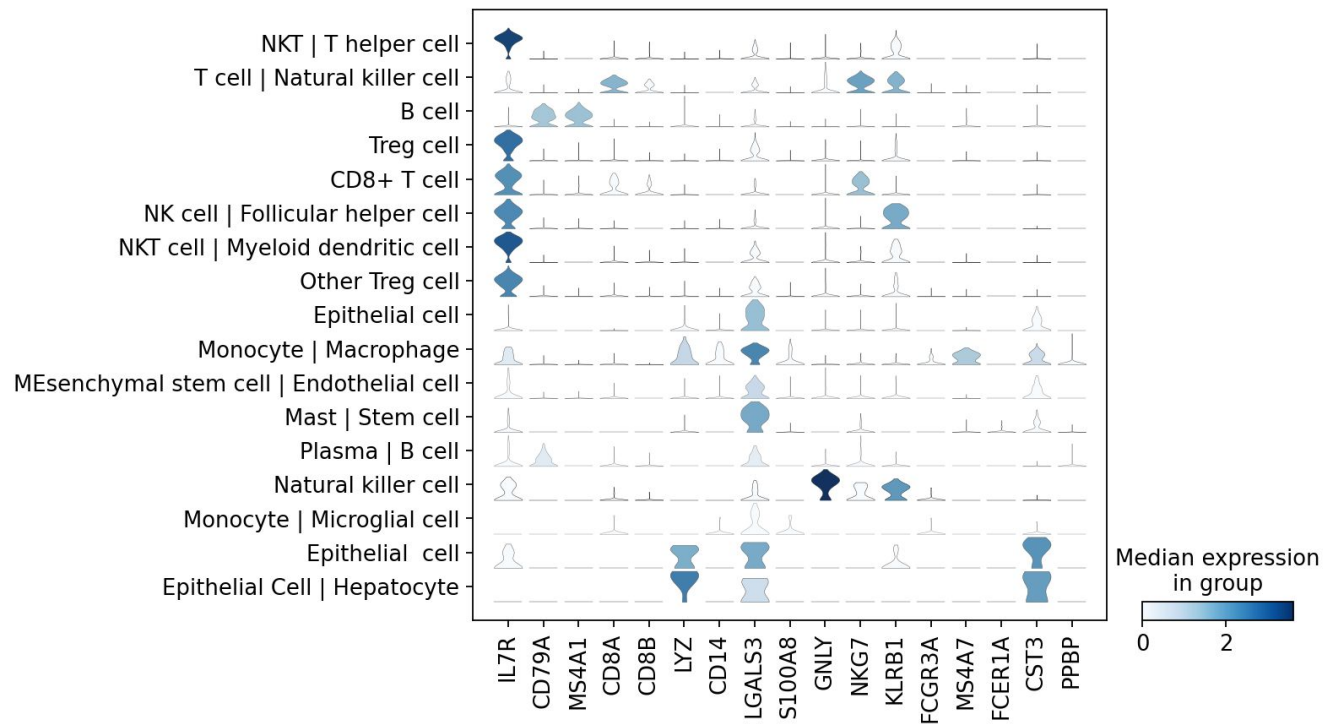
Labelling Clusters through SCSA



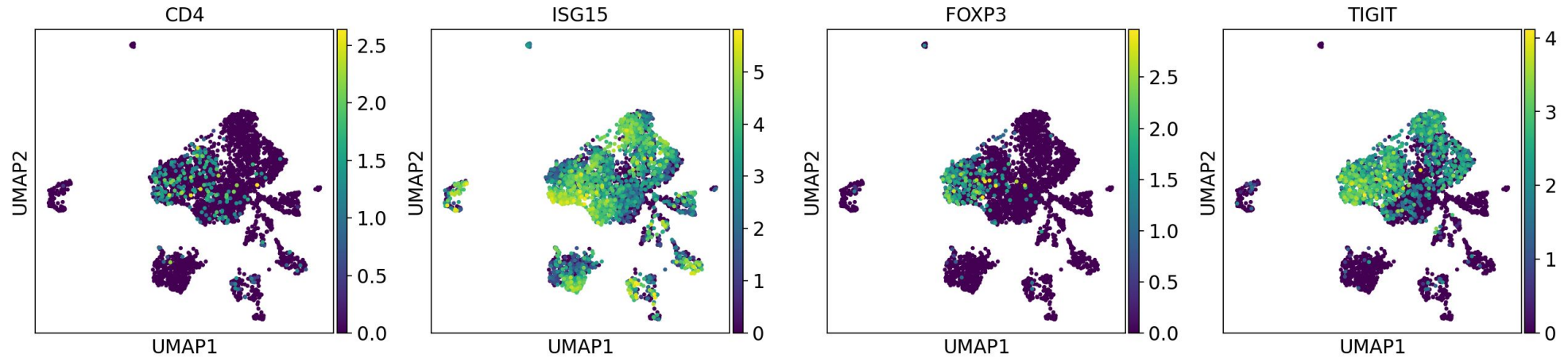
Gene Markers of labelled clusters



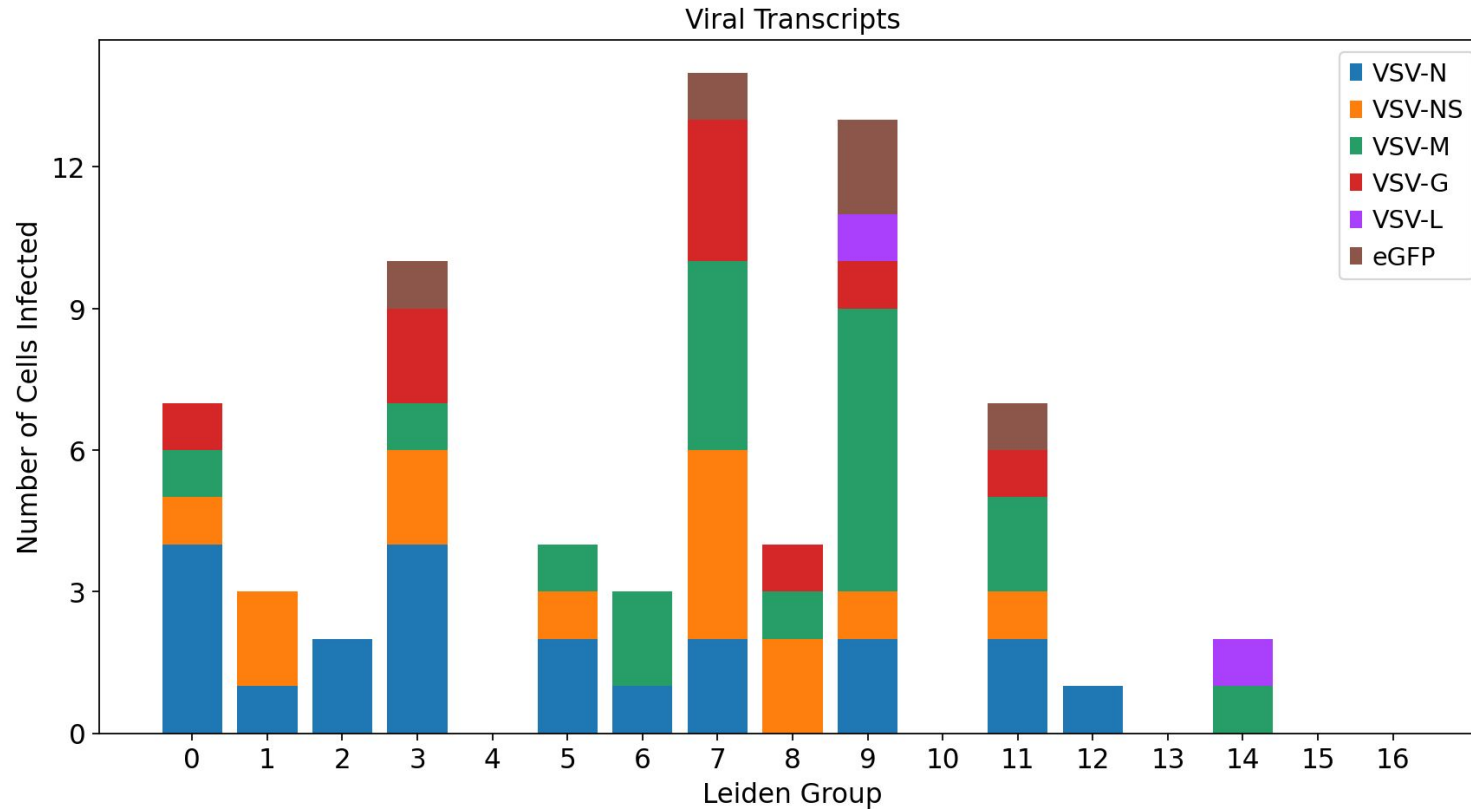
Cont.



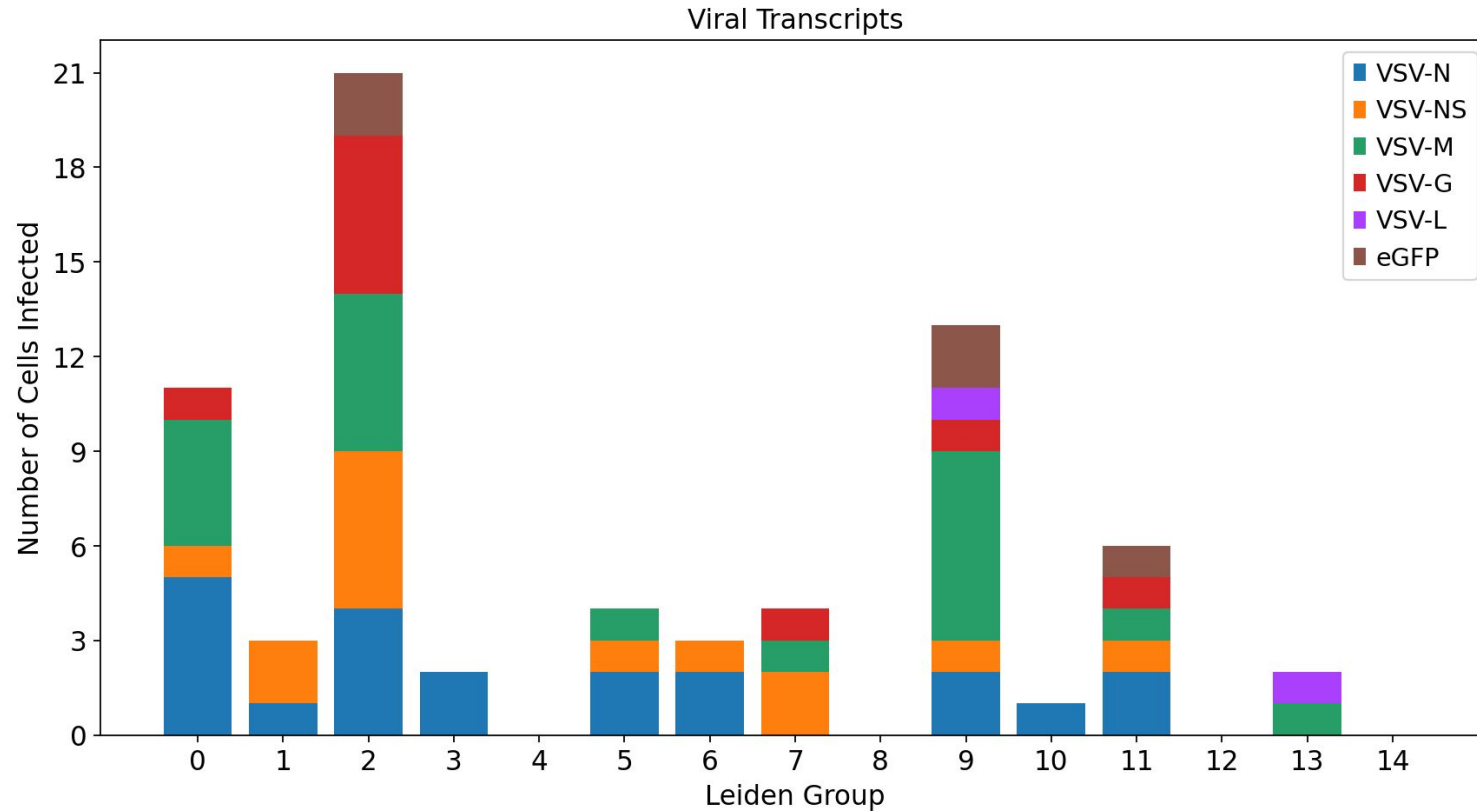
Viral Infection with VSVd51



Counts of Viral Transcripts



76V Transcripts



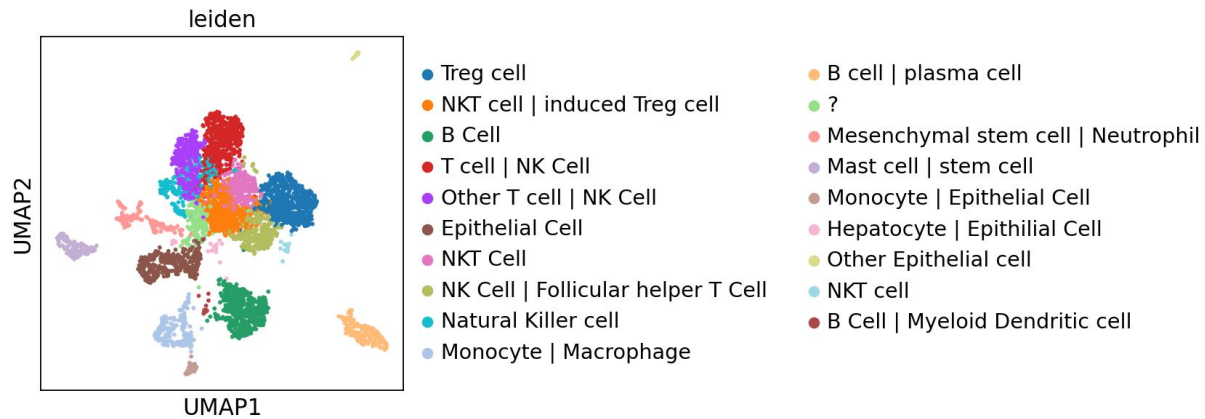
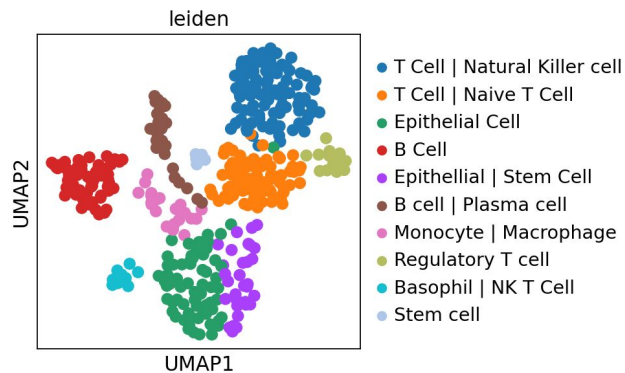
76 Aggregate Upregulated Genes by Cluster

NKT T helper cell	T cell Natural killer cell	B cell	Treg cell	CD8+ T cell	NK cell Follicular helper cell	NKT cell Myeloid dendritic cell	Other Treg cell	Epithelial cell	Monocyte Macrophage	MEsenchymal stem cell Endothelial cell	Mast Stem cell	Plasma B cell	Natural killer cell	Monocyte Microglial cell	Epithelial cell	Epithelial Cell Hepatocyte
IL7R	CCL5	HLA-DRA	IL32	CST7	FKBP5	IL7R	ISG15	KRT18	SOD2	MARCKS	TPSB2	SSR4	GNLY	CXCL8	S100A6	MT1G
ZFP36L2	GZMB	CD74	BATF	GZMK	SRGN	MX1	IFI6	KRT8	SAT1	CD63	CTSD	MZB1	TMSB4X	FTH1	CXCL8	MT2A
RPL13	CD8A	RPL18A	TNFRSF18	CXCR4	KIAA0319L	IFI44L	ISG20	AGR2	CXCL8	LGALS1	CPA3	JCHAIN	KLRD1	NAMPT	IFI27	MT1X
CXCR4	NRG7	HLA-DQB1	TIGIT	DUSP2	SMAP2	IFI6	MX1	CLDN7	FTH1	PLOD2	VIIM	IGHG3	KLRB1	SOD2	FTH1	MT1E
RPS12	CD3D	MS4A1	TNFRSF4	CMC1	SARAF	ISG15	IL32	C19orf33	FTL	IER3	CD9	HERPUD1	CD7	FTL	TMSB10	TXNIP
RPS3A	CXCL13	HLA-DRB1	HTATIP2	RPS27	GK	IFIT1	SAMD9	IFI27	C15orf48	VEGFA	GLUL	DERL3	AREG	PI3	KRT18	UBC
ANXA1	VCAM1	CD79A	RTKN2	CCL5	PDE3B	RNF213	TIGIT	EPCAM	IER3	HSP90B1	TPSAB1	IGKC	TGFB1	IER3	KRT8	JUN
RPL32	KLRD1	RPS11	CARD16	RPS15A	LEPROTL1	ANXA1	LY6E	ANXA2	PLAUR	SERPINE1	ANXA1	IGHG1	METRNL	NEAT1	GPX2	EGR1
RPL34	PTPN22	RPS23	IL7R	PIK3R1	CXCL13	RSAD2	EPSTI1	ELF3	ANXA5	RND3	IL1RL1	IGHA1	KLRC1	BRI3	MT-ATP6	HES1
LEPROTL1	PRF1	RPS18	MAGEH1	NRG7	NAP1L4	GIMAP7	B2M	LAMB3	CTSD	TCEAL9	HPGD5	FTL	IL2RB	FCER1G	FXYD3	SLC30A1
RPL39	FABP5	HLA-DPB1	GK	PTPRC	NR3C1	IFIT3	HLA-C	KRT19	CSTB	COL6A2	CD63	TXNDC5	GZMB	CCL3L1	KRT19	IER2
TPT1	GZMA	RPL11	LAYN	METRNL	YWHA8	HERC5	XAF1	S100P	LGALS1	MYO1B	LMNA	FKBP11	ID2	SAT1	MT-ND4	PHLDA2
RPS18	LINC02446	RPLP2	PMAIP1	GZMM	KLRB1	ISG20	IFIT1	PIGR	GOS2	VIIM	FTH1	LGALS1	CLIC3	PHACTR1	SERPINB1	HIST1H1C
RPL30	JAML	HLA-DPA1	TSC22D3	RPL41	MAF	TRIM22	RNF213	GPRC5A	S100A11	YBX3	SDCBP	GSTP1	DDIT4	SRGN	MT-CO2	KRT18
TNFAIP3	GZMH	HLA-DQA1	ARID5B	LYAR	TMEM123	EIF2AK2	HLA-E	KLF5	CCL3	C11orf96	SRGN	PRDM1	TRDC	PLAUR	GSTP1	ATF3
RPL21	GPR171	EEF1G	HLA-A	AKNA	CD247	SAMD9	TMSB10	SPINT2	BASP1	SERPINH1	NSMCE1	CYTOR	NRG7	BCL2A1	TXN	HSP90AB1
RPS6	PTPRC	RPS8	CTLA4	RPS29	FYN	IFI44	OAS1	ACTG1	CD63	ANGPTL4	GCSAML	DUSP5	B2M	CCL3	ADIRF	H3F3B
SNHG6	HLA-A	IGKC	MAF	RPS12	CNOT6L	XAF1	S100A4	FLNB	NAMPT	SOD2	FTL	HIST1H1C	PRF1	TNFAIP6	KLK10	ZFAS1
RPS27A	LINC01871	RPS5	LINC01943	LEPROTL1	IL6ST	SMCHD1	SAMD9L	NDRG1	CXCL2	PPP1R15A	ANKRD28	SSR3	PLAC8	CLEC4E	IER3	SAP18
RPS16	METRNL	EZR	CD247	RPL27A	NMB	ZFP36L2	SP100	PDI4A	CREG1	SELENOM	NR4A1	TENTSC	CCL5	CD63	S100A16	S100A6

76 Downregulated Genes By Cluster

NKT T helper cell	T cell Natural killer cell	B cell	Treg cell	CD8+ T cell	NK cell Follicular helper cell	NKT cell Myeloid dendritic cell	Other Treg cell	Epithelial cell	Monocyte Macrophage	MEsenchymal stem cell Endothelial cell	Mast Stem cell	Plasma B cell	Natural killer cell	Monocyte Microglial cell	Epithelial cell	Epithelial Cell Hepatocyte		
HLA-DRA	GPR183	CD3D	ANXA1	TNFRSF4		NKG7	MARCKS	ANXA1	CD3D		TRBC2	PTPRC	IL32	DEK	CTSB	COX7C	PNRC1	SRGN
MARCKS	LMNA	IL7R	CCL5	LAYN		CD8A	BASP1	MARCKS	GYPC	CD3D	PCED1B-AS1	CD3D	SESN3	RHBDD2	SARAF	IFI16	CXCR4	
BASP1	CCR7	IL32	ALOX5AP	TNFRSF18		MARCKS	HLA-DQB1	BASP1	PTPRC	SYNE2	SLA	SPOCK2	CD52	LY96	SNHG6	ARID5B	TSC22D3	
HLA-DQA1	MARCKS	CD2	NKG7	KLRB1		YBX3	HLA-DMA	THBS1	MSN	CD247	BICDL1	CD3E	CEMIP2	CD27	UQCXB	RG51	ISG20	
HLA-DRB1	FTH1	TNFAIP3	MARCKS	IRS2		PIK3AP1	HLA-DRB1	PLAC8	ARHGD1B	BCL11B	PTPN22	TRBC2	PDE3B	RTKN2	GA55	EIF1B	PTPRC	
HLA-DPB1	BASP1	ANXA1	IFIT2	GK		CD8B	HLA-DRA	RAB13	RG51	CD3E	CD7	KLRB1	TNFAIP3	MFHAS1	TOMM7	XIST	TNFAIP3	
HLA-DPA1	TNFRSF4	CD7	PLAC8	CCDC50		HLA-DQA1	HLA-DPB1	CCL5	SRGN	CD7	CD53	CD247	SH2D2A	TBC1D4	CALM2	HLA-F	PGK1	
PALM2-AKAP2	TIMP1	CD247	GZMA	MARCKS		GZMH	LYN	AREG	TRAC	PCED1B-AS1	SAMSN1	BCL11B	SH2D1A	CD79A	COX6C	EMP3	LEPROTL1	
HLA-DQA2	PHLDA2	FYN	CXCL13	ICA1		HLA-DRA	HLA-DQA1	LYN	SAMSN1	CNOT6L	LEPROTL1	CD3G	KLRB1	IFNAR2	CRIP1	WIPF1	PP1B	
PSMB9	SPART	TIGIT	AREG	HAPLN3		IER3	MS4A1	PTGS2	TRBC2	P2RY10	LAX1	TRBC1	SPOCK2	CHST7	LEPROTL1	TRBC2	LINC-PINT	

Leiden Clustering of 56 and Total Aggregate



Aggregated Upregulated Genes by Cluster

	Treg cell	NKT cell induced Treg cell	B Cell	T cell NK Cell	Other T cell NK Cell	Epithelial Cell	NKT Cell	NK Cell Follicular helper T Cell	Natural Killer cell	Monocyte Macrophage	B cell plasma cell	?	Mesenchymal stem cell Neutrophil	Mast cell stem cell	Monocyte Epithelial Cell	Hepatocyte Epithelial Cell	Other Epithelial cell	NKT cell	B Cell Myeloid	Dendritic cell
0	IL32	IL7R	HLA-DRA	CCL5	GZMK	KRT8	IFI6	SRGN	GNLY	SOD2	SSR4	RPS27	CD63	TP5B2	CXCL8	HSPA1B	S100A6	ATP5MG		HLA-DRA
1	TIGIT	ZFP36L2	RPL18A	GZMB	CST7	KRT18	ISG15	FKBP5	KLRD1	SAT1	MZB1	RPS15A	LGAL5	VIM	FTH1	HSPB1	IFI27	MZT2B		TXN
2	BATF	PTPRC	CD74	CD3D	CCL5	C19orf33	IL7R	KIAA0319L	CCL5	FTH1	JCHAIN	RPS19	HSP90B1	CTSD	SOD2	TXNIP	TMSB10	ANP32B		LGAL5
3	TNFRSF18	LEPROTL1	M54A1	CD8A	DUSP2	EPCAM	MX1	CXCL13	KLRB1	FTL	HERPUD1	RPS18	PLD2	CPA3	NAMPT	HSP90AB1	FTH1	SET		HLA-DPA1
4	B2M	CXCR4	RPS11	CXCL13	CXCR4	IFI27	ISG20	GK	TMSB4X	CXCL8	IGHA1	RPL39	MARCKS	CD9	FTL	HSPA1A	GPX2	SEM1		ACTB
5	CARD16	RPL13	HLA-DQB1	PTPN22	PTPRC	ANXA2	IFI44L	SMAP2	NGG7	C15orf48	FKBP11	RPL13	SERPINE1	GLUL	IER3	RHOB	KRT19	NDUFS6		TMSB10
6	HLA-A	SARAF	RPS23	NGG7	CMC1	SPINT2	RPL11	SARAF	PRF1	IER3	DERL3	RPL10	TCEAL9	TPSAB1	PI3	DNAJB1	FXD3	NDUFA4		CXCL16
7	RTKN2	RPL13A	RPS18	VCAM1	NGG7	KRT19	IFTI3	LEPROTL1	METRNL	PLAUR	TXNDC5	ZFA51	IER3	LMNA	SAT1	PPP1R15A	CXCL8	CKS1B		IDO1
8	ARID5B	RPL32	HLA-DRB1	PTPRC	CD8A	ELF3	IFTI1	PDE3B	MT-ATP6	ANXA5	IGKC	RPL28	YBX3	IL1RL1	BRJ3	IER3	MT-CO2	RHOA		TMSB4X
9	PMAIP1	SNHG6	CD79A	KLRD1	CD3D	CLDN7	RPS12	CD247	MT-CO2	CTSD	LGAL5	RPL41	VEGFA	HRGD5	CCL3L1	PHLDA2	MT-ND4	RAN		HLA-DPB1
10	TNFRSF4	RPS12	RPLP2	JAML	PIK3R1	LAMB3	GIMAP7	KLRB1	GZMB	CD63	HIST1H1C	RPS12	RND3	SRGN	FCER1G	IER5L	KRT8	ATP5F1D		SAT1
11	CTLA4	MT-ND1	RPS5	LINC01871	HLA-A	GPRC5A	RSAD2	NMB	CD7	LGAL5	SEC11C	TPT1	C11orf96	CD63	NEAT1	HE51	MT-ATP6	ACTB		LAMP3
12	MAF	MT-ND3	RPS8	FABP5	METRNL	CLDN4	TMSB4X	GPR171	TRDC	CCL3	DUSP5	RPS27A	VIM	ANXA1	PHACTR1	ATF3	KLK10	CBX3		MYL6
13	LINC01943	RPS6	HLA-DPB1	PRF1	GZMM	S100A6	RPL13	TIGIT	KLRC1	CTSB	SSR3	IL7R	SOD2	FTH1	CCL3	NR1D1	KRT18	CHCHD2		FTH1
14	CD7	PIK3R1	RPL11	LINC02446	TMSB4X	LMO7	RNF213	NR3C1	ID2	S100A11	FTL	RPLP1	ANXA5	NSMCE1	SRGN	DNAJB4	ACTG1	PARK7		HLA-DQA1
15	HLA-C	RPS16	EEF1G	GZMA	RUNX3	ACTG1	RPL34	DUSP4	CLIC3	CTSL	PRDX4	RPL32	SELENOM	SDCBP	C15orf48	KRT18	ANXA2	CFL1		HLA-DRB1
16	CD247	RPL21	HLA-DPA1	GZMH	LEPROTL1	S100A14	RPL30	MAF	TNFAIP3	G0S2	HSP90B1	RPL26	PPP1R15A	GCSAML	PLAUR	PLCG2	S100A16	HSP90AA1		CD74
17	TSC22D3	RPS29	LAPTM5	GPR171	RPS27	LCN2	RPS27A	CNOT6L	CEBPD	BASP1	TENT5C	RPL9	COL6A2	FTL	CLEC4E	IER2	TXN	C19orf53		IFI30
18	HTATIP2	KLF2	RPL37	CD2	RPS15A	DSTN	RPS14	IL6ST	CST7	CXCL2	LY96	RPL34	SERPINH1	AHR	BCL2A1	EGR1	S100A11	NDUF55		BIRC3
19	S100A4	MT-CYB	HLA-DQA1	METRNL	GZMA	MAL2	HERC5	FYN	MT-CO3	CSTB	DNAJC1	RPS2	MYO1B	ACSL4	G0S2	LINC01578	AREG	DEK		S100A11

Agregate Downregulated Genes By Cluster

Treg cell	NKT cell induced Treg cell	B Cell	T cell NK Cell	Other T cell NK Cell	Epithelial Cell	NKT Cell	NK Cell Follicular helper T Cell	Natural Killer cell	Monocyte Macrophage	B cell plasma cell	?	Mesenchymal stem cell Neutrophil	Mast cell stem cell	Monocyte Epithelial Cell	Hepatocyte Epithelial Cell	Other Epithelial cell	NKT cell	B Cell Myeloid Dendritic cell
SPINT2	IFI27	CD3E	PHLDA2	TCF4	CREM	HLA-DQB1	MS4A1	NECTIN2	BICDL1	KLRB1	HAPLN3	HCST	CD2	SOD1	PCED1B-AS1	SNRPB2	MAP2K7	TNRC6B
AREG	HLA-DQB1	TIGIT	GPR183	ICA1	IL7R	PIK3AP1	HLA-DRA	LAMB3	CD2	IL7R	MAP3K5	CD52	CD247	CRIP1	UBE2L6	WIPF1	AGPAT4	GCC2
VEGFA	HLA-DPA1	TNFAIP3	FTH1	SPINT2	WIPF1	NR4A1	CLIC4	LY96	PCED1B-AS1	PDE3B	PPP1R18	RG51	CD3G	CALM2	RPA3	RG51	RNPC3	CD7
NKG7	IFI6	CD247	BASP1	NCF4	CYTIP	LYN	PD LIM1	KRT8	BCL11B	SESN3	ARHGEF12	TRBC2	BCL11B	COX6C	TMEM14B	FOS	LG MN	CD2
LMO4	HLA-DQA2	CD7	VEGFA	TIMP1	SAMSN1	RAB13	PIK3AP1	MS4A1	P2RY10	SPOCK2	SMARCAD1	CD48	KLRB1	TOMM7	FAM162A	EMP3	ANTXR2	SNHG8
PLAC8	HLA-DQA1	ANXA1	TIMP1	MARCKS	TSC22D3	HLA-DMA	HLA-DQA1	PD LIM1	CD3E	SH2D2A	ECE1	CD53	CD3E	GA55	TIGIT	EIF1B	THBS1	TRBC2
BASP1	BASP1	IL7R	SPINT2	TNFRSF18	VIM	TCF4	YBX3	BASP1	CD3D	FYN	ACP5	EV12A	TRBC2	SNHG6	BAX	XIST	POLR3E	TRIM22
MARCKS	MARCKS	CD2	LMNA	IRS2	PTPRC	HLA-DQA2	CST3	CD79A	CD247	CD3E	DNAJC10	PCED1B-AS1	SPOCK2	UQCRB	IRF9	HLA-F	AL121944.1	CD3D
CCL5	HLA-DRB1	CD3D	CCR7	BASP1	CKCR4	MARCKS	CD8A	RTKN2	SYNE2	TNFAIP3	ST6GAL1	CD37	CD3D	SARAF	MX1	ARID5B	SLC50A1	SYNE2
ANXA1	HLA-DRA	IL32	MARCKS	TNFRSF4	SRGN	BASP1	MARCKS	FBXO32	TRBC2	DEK	CD38	PTPRC	IL32	COX7C	TRIM22	PNRC1	KLF9	LEPROTL1

Sample Normalized Ratios per Cluster

	56M	56V	76M	76V
0	0.092767	0.127132	0.309367	0.470733
1	0.362067	0.068703	0.356873	0.212357
2	0.303835	0.165068	0.291444	0.239653
3	0.126079	0.172785	0.303351	0.397785
4	0.223763	0.383318	0.227456	0.165464
5	0.525381	0.309178	0.058795	0.106647
6	0.010482	0.594723	0.000000	0.394795
7	0.106918	0.075356	0.405101	0.412626
8	0.348259	0.286361	0.203666	0.161714
9	0.188605	0.436172	0.193916	0.181306
10	0.271450	0.407590	0.174341	0.146618
11	0.213259	0.242800	0.330445	0.213497
12	0.186501	0.345046	0.318284	0.150169
13	0.151524	0.103828	0.440878	0.303770
14	0.000000	0.184275	0.263333	0.552392
15	0.422909	0.069549	0.340755	0.166787
16	0.000000	0.000000	0.968400	0.031600
17	0.286510	0.235587	0.336661	0.141242
18	0.000000	0.764607	0.052031	0.183362

56 Upregulated Genes

	T Cell Natural Killer cell	T Cell Naive T Cell	Epithelial Cell	B Cell	Epithelial Stem Cell	B cell Plasma cell	Monocyte Macrophage	Regulatory T cell	Basophil NK T Cell	Stem cell
0	CCL5	RPL32	C19orf33	HLA-DRA	S100A14	SSR4	FTH1	B2M	CD63	PFDN5
1	PTPRC	RPS12	KRT19	CD74	C19orf33	MZB1	C15orf48	MAF	ANXA5	GPAT4
2	TNFAIP3	RPS3A	CEACAM5	RPS11	KRT18	TXNDC5	FTL	IL2RA	DAD1	CREM
3	TMSB4X	RPL13	LCN2	TNFRSF13C	YWHAZ	DERL3	SAT1	SRGN	SEC61G	EEF1A1
4	CD3D	RPS2	CLDN4	RPL18A	ACTG1	HERPUD1	SOD2	LINC01943	C11orf96	FTH1
5	ZFP36L2	RPL34	LMO7	RPS23	SPINT2	LY96	CXCL8	HLA-A	FGFR1	VIM
6	CD8A	PTPRC	EPCAM	CD37	EPCAM	SEC11C	TYROBP	AC017002.3	TMED5	PLIN2
7	CST7	RPL27A	SPINT2	RPL13A	CYSTM1	IGHA1	TXN	TNFRSF18	PDIA3	RPL34
8	PTPN22	RPL28	KRT8	MS4A1	S100A6	PRDX4	CTSD	ITM2B	GEM	PSMB1
9	CD3G	RPS6	LAMB3	CD83	GPRC5A	GADD45A	CREG1	UQCRB	PHLDA1	RPS4X
10	CD7	RPS3	GPRC5A	HLA-DRB1	S100P	HIST1H1C	HLA-DRA	S100A4	LMAN1	CD63
11	NKG7	RPS23	IFI27	RPL23A	ELF3	ANKRD28	G0S2	TIGIT	HSP90B1	ENO1
12	CXCR4	RPS15A	ELF3	RPS18	CTTN	JCHAIN	CXCL3	IL32	CALU	ALKBH5
13	TRBC2	IL7R	DSTN	RPS27	CLDN3	TENT5C	GAPDH	RPL24	TCEAL9	TAGLN2
14	SRGN	SARAF	S100A14	RPL9	KRT19	FKBP11	CD14	CD2	SQSTM1	SAMSN1
15	CD2	RPL13A	ANXA3	CD79A	KRT8	VOPP1	PLEK	CALM1	VEGFA	HNRNPC
16	SRSF7	RPL11	CLDN7	MEF2C	ANXA2	CUTA	LGALS1	C17orf49	ARF4	SRGN
17	PIK3R1	RPS8	CEACAM6	LAPTM5	S100A16	DANCR	SPP1	GBP5	GSTO1	TPSB2
18	RUNX3	RPL36	SDCBP2	RPS27A	CEACAM5	SPCS2	FCER1G	CD247	NEAT1	EMP3
19	FYN	RPS27A	IGFBP3	HLA-DPB1	RNF114	FCRL5	NPC2	TMSB10	IER3	PTP4A2

56 Downregulated Genes

T Cell Natural Killer cell	T Cell Naive T Cell	Epithelial Cell	B Cell	Epithelial Stem Cell	B cell Plasma cell	Monocyte Macrophage	Regulatory T cell	Basophil NK T Cell	Stem cell
EPCAM	FAM3C	CD52	CAMK2N1	GMFG	TNFAIP3	GSPT1	TUBA1C	SAMSN1	MRPL41
C19orf33	KRT8	LAPTM5	KRT18	LAPTM5	PIK3R1	CD7	TSC22D1	MBP	PPA1
S100A14	CD63	CD53	CD3G	TUBA1A	CD3D	CD2	NPEPPS	IL2RG	KRAS
CLDN4	GPRC5A	CYTIP	ID2	CYTIP	CD7	NSMCE3	CD9	CD74	CD47
KRT18	CD74	CREM	CD2	VIM	CD3E	CNOT6L	TES	OCIAD2	MT1X
KRT8	C19orf33	TSC22D3	CD3E	CD53	REL	PIK3IP1	SUCO	LAPTM5	ANXA2
VEGFA	MARCKS	PTPRC	CD7	CXCR4	CD52	CD3D	GARS	CYTIP	STK17A
KRT19	VEGFA	SRGN	CD3D	TSC22D3	TRBC2	SYNE2	SPINT2	STK17B	CHURC1
MARCKS	HLA-DRB1	CXCR4	ANXA1	SRGN	FOXP1	TUBA1A	HMGA1	CD53	IL32
SPINT2	HLA-DRA	VIM	IL32	PTPRC	ETS1	RESF1	RHOB	PTPRC	ISG20

Heatmap of Upregulated Genes

