Supplemental Table 1.

Demographics, clinicopathological, and operative characteristics of archived iCCA specimens included in immunohistochemical survival correlative analyses. Patients with perioperative mortality (within 30 days) were excluded from survival analysis.

Supplemental Table 2.

Demographics, clinicopathological, and treatment characteristics of patients with unresectable CCA treated at the University of Rochester Medical Center with complete blood counts included for peripheral monocyte and neutrophil to lymphocyte ratio analysis. Univariate and Multivariate Models constructed using the Cox Proportional Hazard method [risk ratio (95% Confidence interval)].

Supplemental Table 3.

Antibodies used for IHC, IHF, and flow cytometry analysis. IHC, immunohistochemistry; IHF, immunofluorescence; FC, flow cytometry.

Supplemental Table 4

Enrollment characteristics of spontaneous tumour bearing mice enrolled into therapeutic trial. P value determined by Mann-Whitney *U* or χ^2 test.

Supplemental Table 5

Differentially expressed protein coding genes (DEGs) from RNA-sequencing analysis of bone marrow derived macrophages educated with tumour supernatant. DEGs compare anti-GM-CSF and IgG control treated conditions.Genes filtered to include DEGs with Log_2(Fold Change) < -1.0 or >1.0 and p< 0.05.

Supplemental Table 6

Pathway enrichment analysis of downregulated Gene Ontology Biological Processes from RNA-sequencing analysis of bone marrow derived macrophages educated with tumour supernatant. Pathways compare anti-GM-CSF and IgG control treated conditions. Gene sets were filtered based on p value <0.05 and Log_2(Fold Change) >1.5.

Supplemental Table 7

Differentially expressed protein coding genes (DEGs) from RNA-sequencing analysis of URCCA4.3 treated tumours. DEGs compare anti-GM-CSF and IgG control treated conditions. Genes filtered to include DEGs with Log_2(Fold Change) < -1.0 or >1.0 and p< 0.05.

Supplemental Table 8

Pathway enrichment analysis of downregulated Gene Ontology Biological Processes from RNA-sequencing analysis of URCCA4.3 treated tumours. Pathways compare anti-GM-CSF and IgG control treated conditions. Gene sets were filtered based on p value <0.05 and Log_2(Fold Change) >1.5.

Supplemental Table 9

Pathway enrichment analysis of upregulated Gene Ontology Biological Processes of bone marrow derived macrophages educated with tumour supernatant. Pathways compare anti-GM-CSF and IgG control treated conditions. Gene sets were filtered based on p value <0.05 and Log_2(Fold Change) >1.5.

Supplemental Table 10

Pathway enrichment analysis of upregulated Gene Ontology Biological Processes from RNA-sequencing analysis of URCCA4.3 treated tumours. Pathways compare anti-GM-CSF and IgG control treated conditions. Gene sets were filtered based on p value <0.05 and Log_2(Fold Change) >1.5.

Supplemental Figure 1.

(A) Representative normal liver and human intrahepatic cholangiocarcinoma (iCCA) immunohistochemistry (IHC) staining for CD68 and automated chromogen intensity markup with the Aperio Positive Pixel Count algorithm (V9). **(B)** Graphs compare the IHC staining intensities of CD68, CD15, and CD8 in tumour-adjacent liver tissue (n=29) versus normal liver parenchyma (n=15). **(C,D,E)** Graphs compare CD68, CD15, and CD8 IHC staining intensities within the normal liver parenchyma (C, n=15), margin of invasion (D, n=28), and tumour (E, n=35) of iCCA. **(F)** Kaplan-Meier survival analysis of patients with unresectable CCA after pre-screening CBC percent neutrophils and lymphocytes were stratified into cohorts with low (n=126) versus high (n=26) neutrophil to lymphocyte ratios (N:L). Arrows indicate median overall survival of patients with low versus high N:L. **(G)** CD15 IHC staining in tissue sections from surgically resected patient tumour specimens was digitally quantified and a Kaplan-Meier survival analysis was performed after patient tumour CD15 staining intensities were stratified into low (n=20) and high (n=10) cohorts. Arrows indicate median overall survival of patients with low versus high CD15 staining. Kaplan-Meier p values determined by log-rank test. **(H)** Kaplan-Meier analysis shows survival after CD8 IHC staining intensity in patient tissue sections was digitally quantified and stratified into low (n=20) versus high (n=10) staining cohorts. Arrows indicate median overall survival of patients following curative intent resection with low versus high CD8 staining. **(I)** Kaplan-Meier analysis shows survival after CD68 IHC staining intensity in patient tissue sections was stratified into low (n=8) versus high (n=23) staining cohorts. Arrows indicate median recurrence-free survival of patients following curative intent resection with low versus high CD68 staining. Patients with mortality within 30 days after surgery were excluded from any analyses using resectable tissue. All bar graphs depict means ± SEM and p values were determined by Mann-Whitney *U* test. ns = not significant, * = $p < 0.05$, ** = $p < 0.01$, and *** = $p < 0.001$.

Supplemental Figure 2.

(A,B) Graphs compare patients' Model of End-Stage Liver Disease (MELD) score and pre-treatment monocyte (A, n=140) and neutrophil (B, n=140) to lymphocyte ratios (MLR and NLR respectively). Linear regression with 95% confidence interval overlaid in solid and dashed lines respectively. Correlation between parameters analysed utilising Spearman's ρ. **(C)** Heatmap shows Microenvironment Cell Population (MCP) counter analysis of human archival iCCA specimens from the URMC cohort that yielded sufficient quality RNA for sequencing (n=12). **(D)** Heatmap shows hierarchical clustering analysis of 14 gene signatures derived from the MCP counter previously used to stratify human iCCA into immune subtypes.

Supplemental Figure 3.

(A) Representative flow cytometry plots show gating strategy for identifying inflammatory leukocytes and myeloid cells in normal livers of littermate controls and spontaneous iCCA tumours from KPPC mice. **(B)** Graph compares the prevalence of CD45+ inflammatory leukocytes by flow cytometry analysis in normal livers of littermate controls (n=13) versus those infiltrating iCCA tumours from KPPC mice (n=12). **(C)** Graph compares the prevalence of CD11b+ myeloid cells in normal livers of littermate controls (n=13) versus those infiltrating iCCA tumours from KPPC mice (n=12). **(D)** Heatmap shows murine MCP (mMCP) counter analysis of DEGs from established iCCA tumours (n=8) after bulk RNA sequencing was performed. **(E)** Graph shows qRT-PCR analysis of normalized mRNA expression for arginase 1 (*Arg1*) and mannose receptor (*Mrc1*) after bone marrow derived macrophages were cultured for 72 hours in standard media versus media conditioned by murine iCCA cell lines derived from different spontaneously occurring KPPC tumours (n=6 per cell line conditioned media). **(F,G,H)** Representative flow cytometry plots show gating strategies for T cells (F), Natural Killer Cells (G), and B cells (H) in established iCCA tumours from KPPC mice. Bars depict means ± SEM and p values were determined by Mann-Whitney *U* test. ** = $p<0.01$ and **** = $p < 0.0001$.

Supplemental Figure 4.

(A) Representative B-mode image of new hepatic mass on surveillance; dashed line depicts maxial diameter; PV, Portal Vein; IVC, Inferior Vena Cava. **(B)** Representative B-mode with circumferential tracing of hepatic mass using Vevo LAB Software. **(C)** Day 0 3D wire-reconstruction of hepatic mass generated by automated interpolation between 2D circumferential tracings. **(D)** Day 27 3D wire-reconstruction.

Supplemental Figure 5.

(A) Schema depicting the generation of syngeneic cell lines from spontaneously occurring iCCA tumours. **(B)** Heatmap compares concentrations of secreted colony stimulating factors by various syngeneic murine University of Rochester Cholangiocarcinoma (URCCA) cell lines. The KP2 syngeneic cell line derived from a spontaneously occurring tumour from the KPPC mouse model of pancreatic cancer is included as a reference. ND, Not detected. **(C)** Representative images show H&E, CK7 IHC, trichrome, and CD45 IHC staining of tissue sections from normal murine

livers, an established spontaneous iCCA tumour from a congenic KPPC mouse, and an URCCA4.3 orthotopically injected tumour at Day 14. Images were acquired at 200X magnification.

Supplemental Figure 6.

(A) Graph compares the prevalence of tumour-infiltrating G-MDSC by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=7) or anti-GM-CSF (n=8) for 28 days. **(B)** Graph compares the prevalence of tumour-infiltrating myeloid cell subsets by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(C)** Representative flow cytometry plots demonstrate gating strategy for identifying dendritic cells in orthotopic URCCA4.3 tumours after treatment for 28 days as indicated. **(D)** Graph compares the prevalence of tumour-infiltrating dendritic cells by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=7) or anti-GM-CSF (n=8) for 28 days. **(E)** Representative flow cytometry histogram of CD3+ T cells from an orthotopic tumour sample show PD1 staining intensities in a fluorescence minus-one (FMO) control compared to positive sample. **(F)** Graph compares the prevalence of tumour-infiltrating $CD4^+$ T cells by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(G)** Graph compares the prevalence of tumour-infiltrating $PD1^+$ $CD4^+$ T cells by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(H)** Graph compares the prevalence of tumour-infiltrating $CD8^+$ T cells by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(I)** Representative flow cytometry plots demonstrate gating strategy for identifying T regulatory cells in orthotopic URCCA4.3 tumours after treatment for 14 days as indicated. **(J)** Graph compares the prevalence of tumour-infiltrating T regulatory cells after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(K)** Graph compares the prevalence of splenic myeloid cell subsets by flow cytometry analysis after mice bearing established orthotopic URCCA4.3 tumours were treated with IgG control (n=8) or anti-GM-CSF (n=8) for 14 days. **(L)** Kaplan-Meier analysis comparing survival of URCCA4.3 tumour-bearing mice treated with IgG control compared to mice depleted of CD4 and CD8 T cells (n=10 per group). p-value determined by log-rank test. All bar graphs depict means ± SEM and p values determined by Mann-Whitney *U* test. ns = $p > 0.05$, * = $p < 0.05$, ** = $p < 0.01$. G-MDSC, granulocytic myeloid derived suppressor cell; Mo-MDSC, monocytic myeloid derived suppressor cell; TAM, tumour associated macrophage; PD1, programmed cell death protein 1; CTLA-4, cytotoxic T-lymphocyte antigen 4.

Supplemental Figure 7.

(A) Heatmap shows differentially expressed protein coding genes (DEGs) by RNA-seq of bone marrow-derived macrophages cultured in URCCA4.3 conditioned media with IgG control (n=6) or anti-GM-CSF neutralising antibody (n=6) for 72 hours. Results were filtered to include differentially expressed protein coding genes (DEGs) with Log_2(Fold Change) < -1.0 or >1.0 and $p< 0.05$. **(B)** Graph shows qRT-PCR analysis of select downregulated DEGs determined by RNA-seq that are involved in M2 polarisation and immune modulation in orthotopic URCCA4.3 tumours

treated with IgG control (n=6) or anti-GM-CSF (n=5) for 14 days. **(C,D)** Ridgeplots show Molecular Signature Database Hallmark gene set enrichment analyses of DEGs determined by RNA-seq in bone marrow-derived tumour-educated macrophages (C) and URCCA4.3 tumours (D) after neutralisation of GM-CSF. **(E)** Representative Sirius Red images of URCCA4.3 tumours treated with IgG control or anti-GM-CSF for 28. Images taken at 200x magnification. **(F)** Graph compares the intensity of Sirius Red staining after established orthotopic URCCA4.3 tumours were treated with IgG control (n=7) or anti-GM-CSF (n=8) for 28 days. Sirius Red staining was digitally quantified using the Aperio Positive Pixel Count algorithm (V9). All bar graphs indicate means ± SEM and p values determined by Mann-Whitney *U* test. ** = $p < 0.01$, # = $p = 0.052$, and ns = not significant.

Characteristics	Liver Invasive CCA (n=31)
Age	48.1 (25.20)
Race	
AA	5 (16%)
Caucasian	26 (84%)
BMI	27 (3.98)
Female Gender	14 (45%)
Eatiology	
Sporadic	25 (81%)
PSC	3 (10%)
Hepatitis C Infection	1 (3%)
Wilson's Disease	1 (3%)
Cryptogenic Cirrhosis	2 (6%)
Procedure	
Wedge Resection	1 (3%)
Sectionectomy	7 (23%)
Lobectomy	13 (42%)
Trisectionectomy	5 (16%)
Transplantation	4 (13%)
Adjuvant Chemotherapy	15 (48%)
Margin Status	
R0	27 (87%)
R1	4 (10%)
R2	1 (3%)
T Stage	
T1	11 (35%)
T2	13 (41%)
T3	5 (16%)
T4	2 (6%)
N Stage	
NX	12 (39%)
N0	11 (35%)
N1	7 (23%)
N2	1 (3%)
LVI Present	16 (52%)
PNI Present	12 (39%)

BMI, body mass index; LVI, lymphovascular invasion; PNI, perineural invasion

Unresectable CCA Characteristics (n: 140)	mean (SD); n (% of total)	Univariate Cox Proportional Hazard Model	Univariate p-Value	Multivariate Cox Proportional Hazard Model	Multivariate p-Value
Age (years)	67.58 (11.84)	1.00 (0.98-1.02)	0.63		
Race			0.96		
Caucasian	119 (89%)	reference			
AA	13 (10%)	1.08 (0.59-1.97)			
Asian	1 (0.7%)	0.94 (0.13-6.77)			
Unknown/Not Disclosed	7 (5%)	1.01 (0.41-1.42)			
BMI	28.78 (5.83)	0.49 (0.14-1.80)	0.28		
Gender			**0.44**		0.81
Female	67 (48%)	reference		reference	
Male	73 (52%)	1.44 (1.01-2.05)		0.93 (0.81-0.53)	
Anatomy of Lesion			0.72		
Liver Invasive CCA	101 (72%)	reference			
Perihilar CCA	14 (10%)	1.25 (0.70-2.25)			
Extrahepatic CCA	25 (18%)	1.08 (0.68-1.74)			
Chemotherapy			**<0.001**		**0.003**
Yes	78 (56%)	reference		reference	
No	62 (44%)	2.10 (1.46-3.03)		2.47 (1.36-4.50)	
Radiation Therapy			**<0.001**		**0.001**
Yes	29 (21%)	reference		reference	
No	111 (79%)	2.50 (1.58-3.96)		2.43 (1.39-4.28)	
Neutrophil-Lymphocyte Ratio	5.95 (6.11)	1.03 (1.01-1.06)	**0.01**	1.03 (0.98-1.07)	0.24
Monocyte-Lymphocyte Ratio	0.62 (0.39)	2.01 (1.28-3.03)	**0.003**	0.84 (0.36-1.99)	0.69
Albumin	3.58 (0.60)	0.54 (0.41-0.72)	**<0.001**	0.88 (0.52-1.50)	0.64
MELD	13.77 (7.9)	1.03 (1.01-1.06)	**<0.001**	1.01 (0.97-1.06)	0.64
CA-19-9	16,374 (124,592)	1.00 (1.00-1.00)	0.21		
ECOG Performance Status			**<0.001**		**0.006**
0	20 (14%)	reference		reference	
1	66 (47%)	1.66 (0.96-2.88)		1.37 (0.66-2.86)	
2	26 (19%)	2.37 (1.28-4.43)		2.76 (1.23-6.21)	
3	18 (13%)	3.77 (1.88-7.59)		3.40 (1.23-9.36)	
4	6 (4%)	6.30 (2.44-16.3)		1.79 (0.35-9.15)	
Unknown/Not Disclosed	4 (3%)	3.30 (1.09-9.94)			
Contraindication to Resection			0.29		
Locally Advanced	67 (48%)	reference			
Distant Metastases	56 (40%)	1.1 (0.75-1.61)			
Comorbidities Preclude Surgery	17 (12%)	0.74 (0.40-1.36)			

CCA, cholangiocarcinoma; AA, African American; BMI, body mass index; MELD, Model for End-Stage Liver Disease; ECOG, Eastern Cooperative Oncology Group

Description	Company	Host	Clone	Application	Dilution / Concentration
Anti-human CD8	ThermoFisher Scientific	Mouse	C8/144B	IHC	1:100
Anti-human CD15	Abcam	Mouse	MY-1	IHC	1:10
Anti-human CD45	ThermoFisher Scientific	Mouse	AF114	IHC	1ug/ml
Anti-human CD68	Agilent Technologies, Inc.	Mouse	PG-M1	IHC	1:200
Anti-human Cytokeratin 7	ThermoFisher Scientific	Mouse	OV-TL 12/30	IHC	1:50
Anti-GM-CSF	LifeSpan Biosceinces	Rabbit	polyclonal	IHC	0.125ug/ml
Anti-mouse CD45	R&D Systems	Goat	polyclonal	IHC	1:200
Anti-mouse Cytokeratin 7	Abcam	Rabbit	EPR17708	IHC	1:8000
Anti-mouse F4/80	ThermoFisher Scientific	Rat	CI:A3-1	IHF/FC	1:500/1:10
Anti-mouse Ly6G	Abcam	Rat	RB6-8C5	IHF	1:250
Anti-mouse MHCII	Biolegend	Rat	M5/114.15.2	FC	1:200
Anti-mouse Ly6G	Biolegend	Rat	1A8	FC	1:40
Anti-mouse CD68	Biolegend	Rat	FA-11	FC	1:40
Anti-mouse CD11c	Biolegend	Rat	N418	FC	1:20
Anti-mouse ARG1	ThermoFisher Scientific	Rat	A1exF5	FC	1:333
Anti-mouse CD45	Biolegend	Rat	30-F11	FC	1:125
Anti-mouse Ly6C	Biolegend	Rat	HK1.4	FC	1:200
Anti-mouse CD206	Biolegend	Rat	C068C2	FC	1:100
Anti-mouse PD-L1	Biolegend	Rat	B7-H1	FC	1:100
Anti-mouse CD3	Biolegend	Hamster	145-2C11	FC	1:40
Anti-mouse CD8	Biolegend	Rat	53-6.7	FC	1:20
Anti-mouse CD49b	Biolegend	Rat	DX5	FC	1:50
Anti-mouse CD19	Biolegend	Rat	6D5	FC	1:40
Anti-mouse FoxP3	ThermoFisher Scientific	Rat	FJK-16S	FC	1:20
Anti-mouse CD4	SouthernBiotech	Rat	GK1.5	FC	1:50
Anti-mouse CTLA-4	Biolegend	Hamster	UC10-4B9	FC	1:200
Anti-mouse PD-1	Biolegend	Rat	RMP1-30	FC	1:20

Characteristics	IgG (n=12)	αGM-CSF (n=12)	Statistic
Age at Diagnosis (days)	98 (13.6)	108 (31.4)	p=0.62
Primary Lesion Size (mm^3)	19.69 (21.55)	36.33 (22.45)	p=0.51
Female Gender	7 (58%)	8 (67%)	p=0.18
Anatomy of Lesion			p=0.77
Right Lobes	3 (25%)	3 (25%)	
Left Lobes	4 (33%)	5 (42%)	
Middle Lobes	4 (33%)	4 (33%)	
Caudate Lobe	1 (8%)	0 (0%)	

IgG, Isotype antibody; αGM-CSF, anti-granulocyte-macrophage colony stimulating factor

Gene_Name	log2FoldChange	padj
Rnase2a	-11.91902539	4.33940042936117e-09
Retnla	-11.55843871	1.56849535902227e-08
Car4	-9.235107876	2.63871804673317e-05
Cd209e	-8.177390115	0.00192021851657735
Erv3	-8.099006483	0.0685545459437713
Mucl1	-7.90039617	0.00227461895919434
Arhgap8	-7.898652382	0.00169576075553321
Rnase12	-7.320123298	0.0187023178840156
Ccl17	-7.307823984	7.51550269184774e-14
Scn2b	-7.20494255	0.0147709568638463
Il33	-7.14854781	0.0254568506562393
Tmem215	-7.086173142	0.0222639240584773
Gja5	-7.01619882	0.0190997773213805
Sectm1a	-6.993255899	0.0525929856769819
Dgkk	-6.949901451	0.0220179352356764
Tnni3k	-6.941991659	0.0558089319415464
Aurkc	-6.938095005	0.0396494515423916
Usp51	-6.80492585	0.0438298723976394
Klk15	-6.750967467	0.0480622041577349
Klk8	-6.740260253	0.0524224971334394
Klk1b9	-6.712776203	0.0764523797981786
Alox12e	-6.605935885	0.0874163493075054
Rec8	-6.60423054	0.0580516374391761
Pla2g4f	-6.336973375	0.0845877094781539
Clec2l	-6.319032013	0.0915561557603499
Cd209d	-6.268941555	8.66368944654856e-16
B3galt2	-6.137603963	9.26679405949091e-08
Gstp3	-6.136709848	0.107481732621753
Gm8773	-6.08751868	0.115548663183879
Amigo2	-5.978899641	2.01363906497947e-24
Epx	-5.776794773	8.37327358089653e-12
Rasgrp1	-5.750791939	7.62527241017549e-59
Prex2	-5.700705156	0.0675486965155445
Ms4a8a	-5.625185439	3.33550653144175e-35
Sorcs2	-5.614510626	0.0494787181712617
Anxa8	-5.577317592	0.0201846091068261
Ptx3	-5.57343324	4.4200599300715e-11
Bex6	-5.527920831	0.0495342576921568
Sctr	-5.484426362	0.057176204243387
Tmem53	-5.252669515	1.32995734421683e-36
Plet1	-5.185583458	2.20151812322795e-18
Serpina3k	-5.166060141	0.0976811604186687
Spint1	-5.117696659	2.93178871067809e-25
Pdcd1lg2	-5.050965347	3.58560330775534e-23
Vdr	-4.970669613	2.57261805560685e-205
Scel	-4.932329939	6.90233471057653e-35

F830016B08Rik	-4.884359362	9.4385337999758e-11
C4bp	-4.857374194	0.134169215203617
Ear6	-4.834467449	5.82834880652627e-38
Slc6a2	-4.83278422	0.114892698219194
Serpina3f	-4.785215645	0.0491351431118607
Amer3	-4.781597785	0.0339482159624562
Arg1	-4.679291883	0
Ccl22	-4.653655112	3.49194642625976e-293
Cdh1	-4.615845536	2.04156383615218e-33
Cd6	-4.587024556	0.0419846335662644
Cldn23	-4.578143691	0.0489331946682712
Il6	-4.522847427	0.0224916774743408
Cish	-4.466623836	5.89839348378348e-272
Snai3	-4.410243448	0.0336361653230272
Ffar4	-4.388802418	1.93525490227073e-12
Nrg1	-4.325226461	6.3795232981444e-51
Bcl2a1a	-4.30428555	7.06911901494561e-196
Slc36a2	-4.273431223	3.93261514695602e-177
Cxcl3	-4.244074807	2.10073689152744e-66
Olr1	-4.203328218	1.17002402766918e-20
Gpr62	-4.177610504	0.00278337538759358
Socs2	-4.109816001	0
Adgrg5	-4.094696484	0.0732171067788978
Ccl6	-4.064476881	0
Kcnn3	-4.024352342	1.77367225111943e-14
Gipc3	-4.019279357	0.0809874786543211
Ly6i	-4.015597252	1.23122464107412e-46
Klk1b1	-3.949919232	1.01389654190453e-53
Clec9a	-3.919364819	2.06041451987176e-13
Klk1b11	-3.887398034	9.60419665253426e-73
Dazl	-3.87633086	0.0447696298151836
Gbp4	-3.86216896	2.33642063336309e-19
1700061G19Rik	-3.860747127	2.38995386137579e-07
Slc6a12	-3.857773511	7.33242614343355e-30
Cfb	-3.839618024	0.0680037154816396
Dlx4	-3.808124471	0.07862457695056
Nnmt	-3.7835591	9.55767581736006e-11
Esyt3	-3.771458904	0.00161062890516574
Ear1	-3.729635323	1.6066706694474e-31
Ankrd63	-3.658275381	0.0667842426308048
Irgc1	-3.641367519	3.8063122185952e-07
Slc6a4	-3.628836831	0.0187137419118895
Vcan	-3.627841728	1.39223430955216e-47
Rcvrn	-3.609786621	0.0547207268605245
Mmp8	-3.609271344	0
Klrk1	-3.605939005	1.2773048609292e-06
Mgl2	-3.57609818	6.10371808763335e-227

Elovl7	-3.547730809	9.52229914981648e-39
Col24a1	-3.540694786	2.04458356112501e-07
Fst	-3.532113184	2.04111789252884e-05
Itgam	-3.505694376	0.000287812979153863
Cyp2ab1	-3.500739181	4.79496605626862e-12
Cd209c	-3.493214498	5.81899014439122e-06
Tlr11	-3.485204808	0.000666178331618547
Hr	-3.479688965	6.79864458214429e-23
Hal	-3.47417841	5.09057676951415e-23
Gpr171	-3.453668992	1.80047271915936e-142
Il1rl2	-3.443430961	1.24976060713477e-217
Selp	-3.425184788	3.53451513848712e-09
Cd200r3	-3.424620097	2.46163950361111e-07
Cp	-3.417278315	7.85193187089802e-127
Plekha6	-3.416012498	1.06271439222856e-06
Gm4951	-3.405084589	8.27771044687658e-41
Tnfsf8	-3.403988805	1.3122854225108e-18
Il23a	-3.373209733	0.0916860201854412
Fn1	-3.359435291	0
Spry1	-3.307459655	9.02329007007894e-36
Aplnr	-3.257477839	0.000717824108403965
Prg2	-3.252757507	1.01187202442092e-35
Tnn	-3.242753299	0.126945384212517
Tdrd12	-3.22364902	0.146884751250143
Lmo1	-3.220233651	0.0132175959247064
Kazn	-3.219970979	2.007612059095e-06
Acpp	-3.21900827	3.30803084068909e-42
Ear2	-3.217685585	1.50923156280939e-145
Nr4a3	-3.214285901	2.29406081887836e-05
Itga1	-3.214102565	7.88455515243311e-66
Cd226	-3.194134837	0.06751063163916
Gbp8	-3.171526909	4.411886499963e-86
P2rx5	-3.156549896	0.000132438340139897
Bcl2a1d	-3.127231262	1.28611869057191e-206
Adra2a	-3.120641539	0.000483718229901936
Flrt3	-3.112332147	3.81987900144996e-19
Myh3	-3.104399458	0.0568639470289187
Gbp6	-3.098832278	2.28080878425741e-07
Tnfrsf9	-3.088961005	1.0883628599905e-06
Bcas1	-3.060309896	8.59681578541405e-05
Hs3st3b1	-3.050772067	3.971433717537e-35
A930004D18Rik	-3.031680254	0.00344508953688608
Unc93a	-3.011396206	0.136312539970402
Slc52a3	-2.963943863	5.4894071801513e-05
Edn1	-2.96304721	2.71280666928235e-05
Mt3	-2.955149939	0.0109731245957073
Lmod3	-2.953409174	1.55970219423539e-05

Scn4b	-2.9523195	0.13251377351719
Camk2n1	-2.935755755	6.94450677119983e-29
Syt7	-2.933210109	0.0148527487707251
Plxdc2	-2.927726181	6.12744732042528e-264
Shcbp1l	-2.922924289	1.89063565365583e-09
Siglec5	-2.892533832	2.10038346304674e-61
Fkbp11	-2.862838431	4.90328089049186e-18
Ppef2	-2.849626607	0.00854650184230444
F10	-2.848176446	0
Rnase2b	-2.816901214	0.000243211764374117
F3	-2.783703813	6.84649137776239e-31
C530008M17Rik	-2.757843153	0.0976300604181752
Scimp	-2.753267399	1.64696772273528e-15
Enkur	-2.748626587	0.0994752530558749
Sphk1	-2.744615879	2.76765739126936e-44
Htra4	-2.735582105	1.57814302141496e-10
Myom3	-2.724404914	0.0123160200496858
Epha4	-2.716883266	1.93212278005152e-05
Smim5	-2.715510524	4.33883080685683e-07
Bst1	-2.697861376	1.43632045594473e-252
Flywch2	-2.681518517	1.00425875045555e-11
Rbp4	-2.679001203	0.10202527385147
Perp	-2.671108812	0.145028599465817
Wfdc17	-2.661261314	5.32486892239272e-219
Il1a	-2.649950584	7.69449159639476e-43
Prg3	-2.636725549	1.89196486161873e-06
Awat1	-2.635280882	5.75819654833333e-06
Lipg	-2.622215441	0.000177514467815955
Mmp13	-2.614404312	2.8582038333948e-125
Ppm1n	-2.611529386	0.004848289950975
Gda	-2.594730117	5.2628657041444e-287
Rarb	-2.557700542	0.04134731935206
Lgi3	-2.546936795	0.043682297231297
Myrf	-2.508352979	1.80269732951609e-54
Fam167a	-2.495378614	0.000144550147226181
Ass1	-2.491971557	9.23087441183145e-20
Alpk2	-2.491032201	0.132030946344443
Gpr55	-2.489875549	4.36509488196928e-09
Il1b	-2.478539146	8.94439885075042e-88
Gabbr1	-2.473498309	2.74591388805922e-26
Gbp5	-2.449141398	2.22009327343965e-43
Gfi1b	-2.435514267	0.0494642866519847
Hcar2	-2.421484247	4.32501753936787e-37
Alox15	-2.414603894	6.26485319739234e-05
Irf4	-2.40745115	1.50095410201531e-43
Src	-2.396307311	6.24679384150486e-93
AA467197	-2.394730614	2.20253945870744e-46

Nabp1	-2.366492499	1.23796701497059e-214
Hp	-2.36318503	5.90578785150129e-119
Naaa	-2.356375543	3.97171245207693e-140
Slpi	-2.353995264	6.95782087670276e-54
Tnfsf14	-2.329650957	4.219171237286e-59
Gbp9	-2.329625998	3.07855572092127e-166
Asb11	-2.327499007	0.118231916292449
Fam124a	-2.321234389	0.00560587726798844
Hepacam2	-2.312840963	0.0370001434181501
Met	-2.306966183	3.27813663474022e-74
Wfdc18	-2.287375639	6.9257095108747e-10
Pgpep1l	-2.286193262	0.00182709843320909
Serpinf2	-2.282640635	0.13967991694284
Rras2	-2.26676747	1.28868887255323e-54
Art2b	-2.265134225	0.0113773457061184
Stum	-2.262004357	0.00456613818037809
Sec16b	-2.259782385	0.00961872184962678
Foxq1	-2.257631218	1.63123912757607e-05
Plcb1	-2.233979138	1.0861786817367e-24
C3	-2.231007385	4.81365635923769e-156
Ttll11	-2.225081244	2.40861574933727e-05
Prkca	-2.219818476	1.30289383176294e-41
Ccl9	-2.216081729	1.90068999592808e-197
Dok7	-2.212587899	0.000216040231026891
Slc7a2	-2.208430062	2.25640794768151e-136
Tnfrsf18	-2.203439239	2.01262374634685e-05
Dennd3	-2.194389582	2.19953491133269e-22
Mcf2l	-2.185972914	1.41746475473501e-147
Tg	-2.182332295	0.0459946341333623
Pdlim1	-2.175275355	2.94431324246486e-09
Gm10647	-2.171578265	0.147291411061572
Ntn4	-2.168815211	0.000880596079085729
Aldh1a2	-2.157111781	0.00152989051375884
Cxcl2	-2.154888877	2.24287530120291e-69
F7	-2.150489217	3.69546421251584e-177
Cideb	-2.141826244	4.74896082944384e-05
Casp12	-2.140484564	0.00110143479520273
Ccdc80	-2.124158658	4.38209975088924e-10
Clu	-2.11608569	0.00610214705820626
Csf1	-2.113148921	2.55457069446811e-89
Saa3	-2.09462408	1.19276162878593e-17
G430095P16Rik	-2.088013051	7.40155810533465e-06
Clmn	-2.082869115	1.70747857529931e-07
Tcp10b	-2.077822727	0.000136338788358908
Cd300lf	-2.076553659	5.0176887037989e-102
Tmem151a	-2.066378556	0.00724310966972291
Trim72	-2.066173107	0.100513204635534

Cxcl1	-2.062570689	0.0719302226678945
Prr15	-2.062246153	2.14361836709435e-11
Ak8	-2.058782166	5.56068513426948e-53
Kynu	-2.0576942	8.79869437898483e-17
Uck2	-2.050949949	2.5081778041647e-146
Cables1	-2.050213265	8.70650776204239e-41
Mmp12	-2.046669701	1.93854774121842e-140
Ttpa	-2.032936072	0.0771362598556111
Cited4	-2.024100367	0.129045777242197
Adgre4	-2.023600159	2.09747247004688e-38
Il1r2	-2.023351693	2.27997283344048e-11
Cd209a	-2.012332994	8.19747141596601e-10
Acy1	-2.012262669	9.07346471951128e-31
Mmp19	-2.011402902	5.84605710681904e-192
Serpina3g	-2.004293876	0.00835928726818797
Gbp7	-2.001910011	1.46806189626231e-60
Aqp9	-1.985850124	1.35356652944257e-22
Gm8113	-1.98250593	1.46505222147566e-07
Penk	-1.982221293	8.31283319113669e-20
Gpld1	-1.976873774	0.146587257282198
Slc39a2	-1.973771009	1.39448349326872e-06
Fam169b	-1.973422418	0.00571009774741618
Ly75	-1.966796314	5.99982699767965e-13
Klf4	-1.963601088	1.97901390935868e-63
Cyp26b1	-1.96335902	0.0699022637419263
Mcemp1	-1.963290906	6.21923011636299e-48
St7	-1.962799643	6.68226202181405e-60
Fpr2	-1.962789664	4.19691595688791e-44
Egr2	-1.962743863	2.63664473644494e-176
C1s1	-1.947068136	0.0507971225362328
Gm9733	-1.941848661	1.09240850359408e-06
Eps8	-1.939203114	3.63732973877509e-164
Fcor	-1.938948562	1.3122854225108e-18
Upp1	-1.931106483	8.32499322286385e-06
Grik4	-1.930934077	0.00643779585222298
P2ry14	-1.917811261	6.08081254593735e-86
Cd274	-1.913376619	1.76515040988177e-235
Atp10a	-1.912949693	6.24682536403442e-34
Akap7	-1.903675236	1.85440752716212e-70
Fpr1	-1.9034198	3.12891611422805e-35
Slc18a1	-1.899378595	1.1294313787519e-10
Relt	-1.898840424	8.77970481319459e-47
Fxyd7	-1.892152041	0.0784118840764761
Ltb4r1	-1.877644221	6.13013465455406e-11
Clec1b	-1.866103878	1.48829714335129e-10
Prss30	-1.863908604	0.0442186286104118
Mreg	-1.862234307	1.46516435212882e-08

Ccr7	-1.860322713	3.28359916191615e-10
Cd300lg	-1.859512798	2.59843393074909e-07
Slc9a3r2	-1.85943168	0.000409969080297645
Fcrlb	-1.855418984	0.0252441781590998
Gpr15	-1.843607934	0.0223966011522116
Ryr1	-1.842438086	6.55927089993458e-09
F5	-1.841836743	2.59166657402295e-12
St8sia6	-1.841254729	0.0029777785264091
Ly6c2	-1.838934998	5.90848082746351e-24
Tfec	-1.831994535	2.20751443868685e-100
Naip1	-1.785076771	2.94093246677589e-14
Gpr68	-1.773163876	6.57234485367744e-18
Klrg2	-1.768866169	0.0484357977769958
Gvin1	-1.767386191	4.68623731866355e-13
Gm4070	-1.763738823	4.06959604618291e-20
Tma16	-1.762978694	1.62169284303411e-71
Tnfsf15	-1.762218214	0.00470301434259451
Slfn1	-1.760092995	3.48193446676506e-18
Gpr141	-1.750464453	7.80060301318615e-59
Ocstamp	-1.735335508	1.63144758146274e-07
Spns2	-1.729813856	0.0137389787615224
9130230L23Rik	-1.72014027	0.000191518389025585
Slc6a13	-1.717785118	0.127854003433465
Dmd	-1.716679947	0.00808233538139009
Selenbp2	-1.713046673	0.0360788413306155
Synpo	-1.711704304	4.94971545214916e-05
Rmi2	-1.710444112	0.00571808935032194
Hopx	-1.704041669	1.46379039368259e-20
Gm20075	-1.69721155	0.0927340243670331
D330045A20Rik	-1.693023506	4.44354764828534e-21
Atp6v0d2	-1.690070955	8.59267098529343e-127
Ramp3	-1.689109425	0.119794170913951
Tcf7l2	-1.682133891	2.16037079215048e-50
Il27ra	-1.667951573	5.0051930201237e-16
Vsig8	-1.66605259	1.60282600579178e-10
Rgl1	-1.664381845	1.0732202013705e-137
Adgrf1	-1.660900409	0.0449805049234335
Gbp2	-1.643149285	7.37961811659904e-51
Ptpn3	-1.640598716	2.19993509003447e-09
Ccr1	-1.630845873	1.0129699297507e-141
Asb4	-1.624662177	8.13988425084556e-36
H2-M2	-1.62367176	3.26782149619321e-05
Tmem154	-1.623589537	4.48750120866446e-86
Fzd4	-1.621639931	1.95223864307658e-05
H2-DMa	-1.620579183	8.32360189462908e-80
Rph3a	-1.618972812	0.0200801674504121
Lcat	-1.618268742	0.00339344745603324

Rab44	-1.615673495	2.41943386245955e-46
Dpp4	-1.608087392	0.127979642585875
Pim1	-1.607355537	2.05883456048033e-148
Zfp532	-1.605556521	1.84033835476519e-24
Tnfrsf26	-1.604590054	3.77832520868892e-58
Lrrc32	-1.599958297	4.55446351964749e-13
Pard3b	-1.597243472	0.00231406911172644
Fn3k	-1.594343758	0.00294008859649421
Wnk2	-1.59219694	7.43637574169924e-05
Muc2	-1.585692846	2.96330357225952e-06
Mfsd6l	-1.580901096	8.56995441735526e-05
Glipr2	-1.57269437	6.31007731693029e-65
Clec4n	-1.559389992	3.36977225250764e-91
Cdc42ep2	-1.55843914	3.83566226174599e-23
Rab19	-1.554752504	9.56768093070536e-17
Marveld2	-1.55027228	0.0215958555177971
Vldlr	-1.548831665	1.2118399662422e-06
Klrb1a	-1.546066078	0.0270019630467128
Rgcc	-1.538606853	3.45763297028557e-06
Cacnb4	-1.537433235	0.041203479461816
Tchh	-1.533723475	0.00518464663976752
H2-DMb2	-1.526845628	1.4771154772218e-13
Trim30c	-1.524971543	2.78078674189985e-06
Arg2	-1.512585946	2.89226630348442e-40
Ttc25	-1.509423735	0.0266892099682334
Serpinb2	-1.50344802	0.0254224328362684
Alas1	-1.497211853	2.13176862896318e-111
Stap2	-1.495596763	0.0893974616783296
Egr3	-1.491810338	3.78293477484287e-05
Acod1	-1.481470955	8.5722143376121e-20
Nfe2	-1.480187287	1.40585430401979e-09
Pkdcc	-1.467560257	2.15186147502503e-61
Cd164	-1.465327546	4.32844266153664e-80
4930590J08Rik	-1.462052416	0.122803918855314
Papss2	-1.458869527	4.14843003857771e-44
Lrrc66	-1.456659339	0.000371684764865023
Jaml	-1.451521457	0.000194838715219589
Marco	-1.449795694	4.80152710935879e-19
Sec14l2	-1.449716983	0.0686590871880763
Ddhd1	-1.448043317	1.19753406002314e-83
Prr5l	-1.44383486	1.2287240383422e-19
Fam43a	-1.442228015	3.4814764392024e-27
Bex1	-1.440130481	0.000140118071644095
Gpr85	-1.431854558	1.13335793948129e-10
Mag	-1.422448583	5.98775010724911e-12
Gm10778	-1.421335695	0.0931557193201113
Slc27a3	-1.417968043	0.000184140217373108

Sell	-1.414279476	5.56039520062387e-07
Batf3	-1.412338909	8.70447564984501e-18
Cysltr2	-1.410936286	0.00123080567203914
Efna2	-1.409071546	0.105726916094064
Tgm1	-1.407672335	1.33854890752869e-10
4933430I17Rik	-1.40519733	1.57914515582472e-05
Sh2d1b1	-1.405054823	3.72962881363926e-17
Ptgir	-1.394740429	2.69739994934247e-35
Filip1	-1.383655059	0.0866760046302071
Itgax	-1.37406694	5.60087053443663e-56
Btg1	-1.370428936	1.05575208015932e-122
Pkp2	-1.364923449	1.10047580490181e-07
Ppp1r32	-1.363894765	0.079465782333143
Ppbp	-1.35364952	4.98188301255331e-13
Actr3b	-1.349095156	0.00425917749949361
Hebp2	-1.348986651	0.0241509727551475
Thbs1	-1.340417183	3.87824765696629e-51
Mgst2	-1.325717684	7.35641392917751e-29
Adora2b	-1.325714713	3.29457584791449e-12
Lipn	-1.325138797	0.00806517262580739
P2ry1	-1.324874248	5.34360195620561e-12
Tenm4	-1.319937701	4.13915824075949e-07
Chd5	-1.307975713	0.0117016106370636
Plekhg1	-1.306576173	8.12040674665383e-23
Cdkl5	-1.301297284	0.00351196962183191
Adamtsl4	-1.299402732	2.59907184905806e-35
Adrb1	-1.297811523	0.103477604652274
Cd38	-1.297406937	8.90949426863666e-24
Ccr2	-1.289453357	4.127415025355e-48
Camk2a	-1.28849621	1.54249633969257e-07
Fas	-1.287287158	5.13155341025075e-30
Gstm2	-1.286039116	8.09052184014913e-19
Agmo	-1.285710557	1.69271271529612e-05
Mamdc2	-1.283513392	2.67415203801092e-21
Mmp2	-1.281735877	4.55560696532396e-07
Wfdc21	-1.278107259	1.62706748456626e-08
Ahr	-1.277973252	2.70446456109585e-27
Ly6e	-1.276547907	4.25570993900253e-81
S100a11	-1.272019003	7.25578940355153e-55
Msr1	-1.265213837	4.29037725551204e-68
Fzd1	-1.261638446	2.53403356016285e-80
Npas2	-1.253978315	7.67195644810803e-15
Rasgrf2	-1.25107734	0.0147291415203669
Plbd1	-1.247292482	7.91606835071014e-15
Sh3d21	-1.243272531	0.0300983190823691
Maoa	-1.241827387	2.66100120612205e-27
Lpp	-1.237936392	6.03250332158551e-35

Add3	-1.233653317	5.68705482256213e-47
Magee1	-1.232267357	4.21197796329602e-20
Ramp1	-1.232260312	3.52667961290935e-35
Sgms2	-1.224807996	1.26179802596211e-28
Serpinb12	-1.220411666	0.0173699883571486
Clmp	-1.219155829	6.28000993924405e-07
Acp5	-1.217373013	1.49504811673133e-42
Sntb1	-1.21576751	9.02656829841756e-06
Adora2a	-1.210712825	0.00172463980731318
Gm21188	-1.210342222	2.63217018392735e-29
Mvd	-1.208524615	3.80123970333999e-48
A530032D15Rik	-1.207952209	0.00476678313350814
Vwf	-1.206172388	1.20061648012883e-40
Eaf2	-1.203129817	0.0378350502799102
Ifit1bl1	-1.197001031	0.0684302180246094
Il4i1	-1.1952165	0.00017463745341651
Bhlhe40	-1.191235493	1.26563733150486e-116
Slc7a11	-1.187271297	5.89678170598798e-22
Ifi203	-1.185002924	7.67382830293263e-23
Ephx1	-1.184079609	1.98403285494165e-62
Pstpip2	-1.178655432	3.61550106743416e-43
Spp1	-1.176973015	1.94425376846613e-17
Kctd12	-1.176851222	4.36946733192984e-77
Emb	-1.176592357	5.02207116220296e-73
Fabp7	-1.175354132	2.67846008430101e-13
Csf2rb	-1.173560408	5.42557013975847e-74
Klra3	-1.171486423	0.0198294281446917
Stxbp6	-1.170655465	0.133820045381867
Smpdl3b	-1.170436436	6.26981955087947e-15
Slamf6	-1.166777295	7.70023134471192e-11
Abcg3	-1.161209167	2.08846268357538e-16
Spa17	-1.160362711	0.132243448935765
Gfra2	-1.159135094	0.0606360875082238
A930033H14Rik	-1.158812578	0.00318347110694006
Heg1	-1.158387474	2.32103791571613e-05
Alox5	-1.157845949	1.23701381389553e-10
Grtp1	-1.15405854	0.00475348344203233
Bend6	-1.152838193	0.00664702158202361
Nod2	-1.152020455	2.16142142126855e-21
Mfsd2b	-1.150573713	0.0209170279732934
Mlkl	-1.144678128	5.69031768529355e-43
Pced1b	-1.143278312	6.60079980248157e-21
Dhcr24	-1.142585415	5.09904043688701e-29
Arhgef37	-1.141330067	0.00200832791296756
Trnp1	-1.139324222	0.0169367105049692
BC030499	-1.139237959	0.0832095995914113
Bmx	-1.134937466	0.000305483922757735

Tspan5	-1.133393526	9.59840091260604e-56
Cybb	-1.133315042	1.74218241379857e-56
Slc9a4	-1.132653144	0.0131256276962862
H2-Q6	-1.132005583	0.000205379587706844
Samsn1	-1.124560679	7.47230852867554e-34
Atrnl1	-1.119891702	2.49135677843292e-44
Dram1	-1.114975371	4.65720484497648e-69
Ptgs1	-1.114536034	1.73787847552746e-60
Ccl2	-1.11401802	5.24901641957024e-07
Tgfbr3	-1.113857301	0.0011651548498678
Clec4b1	-1.112987009	8.73050866224121e-10
Ier3	-1.109511721	8.86921580880234e-36
Pdgfc	-1.10589286	7.75030027392898e-16
Spef2	-1.104012282	0.00179402468115722
Zfp558	-1.102899955	0.00302859936576307
Gbp3	-1.090647422	7.21190937789824e-13
Dusp18	-1.08994467	9.14722801200774e-13
Lrp12	-1.087036801	1.77972095026065e-67
Il11ra1	-1.085813814	2.53332673673451e-41
Il1rl1	-1.084871156	8.58134591819524e-05
Pilra	-1.083301793	3.6395882689943e-52
Ctsk	-1.081477872	2.49940531811621e-37
Ksr1	-1.081024824	3.22790787446822e-15
Tifab	-1.075919472	2.49862602688939e-84
Il20rb	-1.069974211	0.00013545021946597
Zfp507	-1.068948797	0.049448489934131
Il12rb2	-1.068060737	0.000399296089906842
Gas7	-1.067350345	1.49597961989632e-59
Itgam	-1.065110014	1.07823666473038e-37
Lrrc3	-1.061689941	0.121980183298686
Slamf8	-1.061196063	4.56273917670512e-28
Bok	-1.052132727	0.084816390052658
Gprc5c	-1.051498981	4.83864121052427e-10
Il27	-1.042126934	0.00140644879814251
Mrc1	-1.041247531	1.20839101604801e-30
Tlr2	-1.035139812	5.28723702728705e-47
Tarm1	-1.034095558	0.00270249580912331
Galnt9	-1.033552584	2.55225465309109e-08
Pmepa1	-1.030015856	1.68932370328381e-09
Nedd9	-1.026530314	9.51257729065157e-29
Clec4e	-1.024091913	4.7832516221858e-31
Cd24a	-1.023729759	1.70036138592831e-21
Plaur	-1.019530281	9.68986300214177e-27
Ccl3	-1.01597332	1.10665503428739e-21
Col23a1	-1.015784548	0.113755941096308
Hif1a	-1.010759247	2.264479761062e-48
Cage1	-1.010649849	0.0122664593137328

Cd86	-1.006732324	2.96604075505754e-26
Mfsd7a	-1.00599602	4.04580297871161e-31
Slc2a6	-1.00027093	1.94238281813921e-15
Pik3ap1	1.00145809	1.43788209810382e-31
Cela1	1.001726193	2.4766782095819e-14
Isg20	1.003027703	0.0160305649132706
Cryba4	1.003701636	0.0129771893972117
Arhgap27	1.004744109	6.62650177919493e-29
Slc28a2	1.005768377	5.81143797613209e-15
Gas6	1.008374135	1.82680355348556e-67
Xylt2	1.010365261	9.50630691597572e-58
Syne1	1.011377681	8.11863929956848e-20
Lama3	1.01354917	0.00764878543984043
Itgav	1.015034758	1.4644438128305e-50
Ccdc85b	1.020165081	0.132735967825275
Mthfd2	1.020373497	4.44354764828534e-21
Treml4	1.021116006	3.52909505433958e-06
Smad6	1.02128384	8.06747417911161e-05
Lpar5	1.022770538	5.47811073386115e-12
Anks6	1.024121124	1.86110928842147e-09
Vipr1	1.024150177	0.00140560630028705
Tfrc	1.024335593	1.39879814161633e-38
Loxl3	1.026511609	1.7073046558009e-08
Efr3b	1.029448284	4.89983625658322e-08
Irf2bpl	1.030872392	6.21559352911736e-07
Prkaa2	1.032354076	0.100513204635534
Zfpm1	1.038021403	3.25088642430236e-06
Elane	1.041527208	0.0166121703913045
Ms4a7	1.043681991	8.27461373938146e-66
Fkbp10	1.047538551	0.090543099832475
Inpp5j	1.047584971	7.37528263177006e-07
Cdk18	1.047852917	4.95956215463316e-30
Mmp9	1.053062611	0.0010846810968792
Cacna1b	1.053080497	0.122872730714423
Abcb4	1.053545457	6.60460776980801e-15
Fgd2	1.054102664	3.65835991888909e-27
Mid1	1.054136943	9.64120992900021e-08
St3gal5	1.054302211	5.7130486576555e-33
Kif18a	1.060995881	0.00350771527426502
Fam83f	1.061763095	1.12571699473064e-13
Ankdd1a	1.065567969	0.0010600631085544
Abcc3	1.067190836	2.43332660364805e-83
Syt11	1.06909067	8.000559934569e-23
Crip2	1.070141861	0.000847516417125589
Mmp10	1.071625776	0.0441925351031374
Armcx2	1.07954762	0.00530364731349609
Plau	1.082256909	2.14293223226357e-11

Akr1b8	1.084079038	2.26033416641358e-27
Sh3pxd2a	1.084268213	2.46929970513897e-26
Acta2	1.089315508	2.55092835004663e-07
Srp54	1.091144993	0.0078103483226203
Gabbr2	1.093842902	0.0202624835411206
Rims3	1.096853044	2.05098034399501e-14
Fam26f	1.09721658	6.08245691074918e-07
Tpbgl	1.102378695	9.55570340293535e-07
Arl4d	1.102382986	0.0472141243555289
Mfsd6	1.106461776	1.8432566533701e-35
Mpo	1.106829759	2.40796358036212e-05
Nav2	1.111597961	7.77701523857212e-26
Smyd4	1.117756552	3.46472647410151e-10
Dlec1	1.11973943	0.148268210487242
Ttc39a	1.120851224	0.00336017697615841
Mylip	1.12261536	1.81442045582876e-38
Mxra8	1.126109087	0.03224107048028
Plppr2	1.126238025	0.000218320033566033
Gm1673	1.127959296	0.105887645812995
Col11a2	1.13002222	2.58682161853041e-07
Nes	1.130346371	1.91743210052068e-19
Zbtb16	1.131209758	0.00420239247505977
Smo	1.131892512	1.85159210353923e-07
Ctse	1.132230733	0.00112052199791411
A530064D06Rik	1.138375029	5.26277315453414e-28
Fam129a	1.139773164	1.85519093269323e-37
Arfgef3	1.143849261	0.000962824012054171
Unc5b	1.143865277	2.481566770271e-05
Ccdc85c	1.145700878	0.0619864525698602
Fstl1	1.147104892	0.000490657249489562
Bcam	1.147704923	0.0226600569967361
Pdgfb	1.148901294	1.98137616178984e-25
Nr1h3	1.154097129	7.1264861165629e-23
Ccl12	1.155984918	5.11323432214897e-06
Fbln2	1.157848287	0.00813557802863342
Ralgps1	1.166993057	7.39511603373657e-13
Col8a1	1.169238264	0.115193908471538
Grem1	1.172165537	0.0399804496309105
Camk2n2	1.176550951	0.0158137186671428
Rin1	1.178694862	0.020040680104032
Fam102a	1.179112575	1.71353399836422e-33
Ust	1.179177263	0.00097986400140903
Spsb1	1.179414081	1.09172324159033e-14
Plod2	1.181493798	1.51485116652864e-06
Itpr3	1.182237092	1.00824390407477e-27
Gm5160	1.18930176	0.0762528006910852
Rpgrip1	1.193789658	0.0156318052911353

Me1	1.194230717	1.36551818759847e-07
Gsdme	1.196207265	1.00187856709979e-08
Rnf144a	1.196966291	0.00509378639631346
Npdc1	1.213898969	0.000963484554545542
Tnk2	1.215214886	6.73694489259013e-07
Hyal1	1.216975079	2.53733151851844e-13
Igfbp7	1.218484231	0.0031092099490537
Cdk15	1.224705458	9.04085646578979e-05
Plekhh2	1.226027016	9.58852479536652e-08
Endou	1.229310794	0.10526632187127
Ms4a3	1.229633477	0.114439832186901
Insl3	1.232633604	0.102067482539559
Col12a1	1.244555509	0.0364839113842988
Pbx4	1.246077249	0.0375216111783055
Serpinb6b	1.255735491	1.7073046558009e-08
Col1a2	1.257245683	0.000218320033566033
Adcy3	1.258509511	5.17210072649809e-22
Mefv	1.268101218	1.84504220983128e-26
Tmem171	1.268215009	1.64333089217733e-12
Rab4b	1.268462604	0.00304269716839517
Cd40	1.275366967	2.03377399052429e-14
Pcdhgb7	1.275885547	0.113265160795293
Col5a2	1.27598139	0.000256453251314419
Ankrd22	1.276346464	0.140046583955277
Dbn1	1.278864776	0.00436141880923394
Tmem8	1.284926504	7.83213785642014e-61
St3gal6	1.288455456	0.00464549264551581
Zc3h12d	1.290053816	8.68296598451934e-52
Tom1l1	1.291390123	0.000126360458904349
Slc24a5	1.294025542	0.000273880270304763
Rab42	1.294374728	0.100850878324978
Tle1	1.295989813	2.17910116474069e-22
Il18bp	1.301595076	4.50315438212759e-24
Mageh1	1.30385807	0.0320422284285983
Hcn2	1.306202056	0.00607647444323251
2900026A02Rik	1.308713434	3.7788073325832e-41
CAAA01147332.	1.318954967	0.116723318820108
Prag1	1.331381601	3.49588527816556e-21
Ddr2	1.337221365	0.0818164703450715
Ctnnd2	1.347610241	6.06289511852154e-05
Cdk5r1	1.349816248	0.00200210404022964
Ube2v1	1.353063226	0.146884751250143
Acsbg1	1.35485071	0.00817307318550128
Hmox1	1.355773911	1.9222228239943e-150
Cfap126	1.356360462	0.00140581779890069
B9d1	1.363109906	0.0784118840764761
Adam8	1.365543229	1.01281762773621e-47

Raet1e	1.366194954	0.000877303647445344
Wnt9a	1.374717538	0.0386786190551543
Tmem158	1.377566912	0.00269350348168682
Ctgf	1.382454498	3.89753801945079e-09
Cxcr3	1.382511858	1.49111141515454e-17
Tspan33	1.385432165	0.00275522323610833
Rps12-ps3	1.387341052	0.0622313673069207
Amotl1	1.391046297	0.000420137521178019
Aox2	1.391955497	0.119953285205363
Col14a1	1.394038722	0.00013862397788372
Dpysl3	1.399859695	0.118299562969497
B3gnt2	1.402519078	0.0490881696796183
Apbb1	1.403014925	0.00713458694461359
Tagln	1.412351053	1.51964697909671e-08
Cox6a2	1.417843331	0.021457972418262
Pdgfrb	1.418428631	0.00934354615615842
Gm10358	1.421490536	0.0453517063376449
Sdc2	1.423105981	0.00122717358437992
Hap1	1.424223799	0.000119402461593886
Por	1.425175001	3.92225363147247e-67
Edil3	1.426412088	2.90907752043185e-11
Mtmr11	1.434952017	3.28296198980255e-20
Tmem26	1.439305732	9.65138092711949e-18
Ssc5d	1.441983276	0.114439832186901
Ptar1	1.444548094	1.03496948089898e-05
Slc13a3	1.446169675	7.38151539708395e-06
Gdf15	1.448844952	1.82733734478933e-05
Tspan13	1.450108323	4.50095461821762e-30
Grap	1.453740864	1.56818869070565e-37
Cd300ld5	1.455775642	0.0022919225376955
Gja1	1.457247417	2.97216195149024e-09
Epor	1.457471055	0.00705850911357319
Arhgap22	1.461164664	4.86693795698557e-112
Ociad2	1.465419029	2.69557078045766e-09
Ctla2b	1.466476806	3.56162555060729e-06
Rundc3a	1.46833002	0.0899051873482836
Mroh6	1.469297032	0.0152342418216975
Cxcr2	1.470341201	0.0185140986729545
Loxl2	1.474488241	0.00408114095500257
Dusp1	1.476913854	1.2028450318691e-25
Cacna1a	1.482864563	8.81417992742364e-18
Gng10	1.483968058	0.0878919199526999
Gdap1l1	1.488624711	0.0432260374138074
Samd11	1.490903712	0.144735529949342
Bmp1	1.491804645	0.0337953072783864
Trib3	1.494812416	9.53228363010665e-09
Glrp1	1.496292245	0.0461779208031968

Shc2	1.501038122	0.13403406342778
Fermt2	1.502666019	0.0582625948938583
Pip5k1b	1.50671657	6.43479151353807e-05
Raet1d	1.507026085	1.40229477682558e-08
Vash2	1.509048242	0.00108285127176419
Cx3cr1	1.510246288	1.53821457040686e-54
Igfbp6	1.522603355	0.0445238587530005
Col4a1	1.523201044	0.000483812580286397
Serpinh1	1.525006631	1.56771980737033e-05
Rhoj	1.526494556	1.61109787423774e-12
Col16a1	1.527232501	0.119373948720265
Bgn	1.529794865	4.31370067981053e-05
Phldb2	1.530075065	0.0849965129789769
Rasgrp3	1.539886257	1.22759328552929e-30
Gipc2	1.541616184	0.0190997773213805
Havcr2	1.544692883	1.45693033948366e-32
Carmil1	1.545290517	2.56708410563671e-27
Cspg5	1.545432919	0.0462716156165565
Zfp771	1.545982974	0.0325136552181605
C4b	1.548364709	2.93194892121984e-17
Rab43	1.555640572	1.92667477763758e-05
Zfp827	1.5563568	0.10893885697219
Il10	1.556644172	0.0329496075129556
St6galnac2	1.564884995	0.0131311711623167
Ccnd1	1.566767895	1.67843807634743e-40
Grasp	1.567255969	0.120110416646544
Tinagl1	1.567345892	0.118299562969497
Map3k9	1.570856448	3.94460144473603e-21
Itgb3	1.580504029	5.82583087830816e-12
B3galt5	1.584506534	0.0549593057022737
Rdh12	1.585551237	5.90882709435919e-06
Adgrg1	1.589796523	1.33635449135284e-07
Gdpd5	1.598249775	2.82335810134535e-37
Ptpn14	1.598719951	0.127891740067686
Thbs2	1.603298881	0.000474752233865174
Bdh2	1.60478966	0.0186837163669458
Scand1	1.615185027	0.0648514513186038
Fosb	1.621340654	0.00463377776922344
Fhod3	1.623276817	0.00043199030362674
Ltbp1	1.623344643	0.101044202989202
Ptprf	1.625872457	0.0246068384062632
Ndrg4	1.626817898	0.0140006705711061
Fcrls	1.629169094	1.11492673171114e-73
Fat1	1.629685894	0.0113829456754428
Pla2g2e	1.632174389	0.00093668865218882
Col1a1	1.644345895	1.73967644531302e-11
Slc24a3	1.650239899	5.1509119279659e-17

Sparc	1.651322444	5.9114541005545e-09
Col4a5	1.651461359	2.54317099364037e-05
Lyzl4	1.653030394	1.64600900567549e-09
Jag1	1.675988957	3.68910759590214e-68
Fosl1	1.679652877	1.82144319526839e-07
Atl1	1.681701125	2.73328117869674e-05
Mrvi1	1.683283211	0.0720182584698831
Cd5	1.687324198	0.00343008520403808
Aox1	1.705299342	0.000166331054981061
Pgbd5	1.713570899	0.0431785512945559
Pcdhgc3	1.713794105	2.84237670969299e-08
Cd244	1.714460339	3.39329710453476e-09
Htr2a	1.71468838	0.00177694925609183
Cd5l	1.719728468	2.08140546153893e-127
Rtn4rl1	1.731302823	1.35379368881355e-11
Cdh11	1.734514539	0.00397324756950888
Plcb4	1.734864002	0.00060138286214454
Smoc1	1.735596465	0.0906192150229801
Cmtm8	1.73665843	0.00039930136040998
Plxna4	1.739342074	0.00116348721889425
Serpine2	1.739912796	2.85172777527168e-08
Capn3	1.744190965	0.0350541182762788
Antxr1	1.746050323	0.000128491868694763
2010300C02Rik	1.74818106	0.015356559714726
Pcdhgb2	1.750016067	0.0154914807653722
Dusp8	1.766363494	5.47050168802399e-08
Myadml2	1.774624067	0.10469514397256
Zfyve28	1.777566422	2.98240531230655e-52
Htr2b	1.78314519	4.09089458055601e-13
Vsig4	1.789594393	4.30359492952342e-20
Bcar1	1.790067001	0.0365612643362608
Bcl6	1.792524584	3.46286129354357e-91
Gm42517	1.792551997	3.99630670709019e-06
Emp2	1.803055472	3.83677891464465e-19
Adamts14	1.820432365	0.0699022637419263
Hspg2	1.826639744	0.000216890530977696
Serpinb1c	1.832285521	0.016139674611216
Fhad1	1.834945627	2.47536642352437e-09
Akap12	1.83504778	0.0396946148173334
Angptl2	1.838175748	2.46307023225043e-84
Hspb1	1.844042124	0.123256792624504
Gm996	1.856612628	0.0989791942461486
Phgdh	1.86121858	6.8047687531105e-22
Myl9	1.867889823	0.0271194011807651
Adra1a	1.868077488	1.04208000188152e-47
Col3a1	1.874073633	9.79225356797725e-05
Prss23	1.87956871	0.000893930310458068

Actg2	1.895880966	0.0102369358999448
Slc1a3	1.896070893	1.73436956905964e-06
Adgrl4	1.910217641	0.127212890143781
Fbxl16	1.925331527	0.00321426214355369
Svs1	1.92771308	0.0578721615303085
Asns	1.933179033	3.73042056840604e-51
Fhit	1.938099452	0.0522264393820295
Itga11	1.94725041	0.146156418380813
Serpine1	1.957019558	2.4826206314828e-24
Adgra2	1.957933293	0.0190457195979348
Dmwd	1.967238991	1.77782542013427e-24
Crlf1	1.969994237	0.125620500365514
Rd3	1.976920954	0.0485384735448447
Slc6a19	1.9784595	6.60997173301081e-08
Sarm1	1.982869082	0.0599697227221476
Sez6l2	1.999797949	1.31038875219365e-06
Aldoa	2.005085325	0.0110209281771141
Gpr183	2.016938239	3.31887863969624e-29
Kdr	2.03051077	0.000242111586648174
F830045P16Rik	2.04250051	0.0289573566540941
Col6a1	2.042748551	0.0918754417829636
Fbln5	2.066596901	0.0344792942333151
Dcbld1	2.068834241	0.0692868866822005
Soat2	2.073575261	4.5943007330588e-06
Smpd3	2.07429717	5.98682374034075e-18
Pacrg	2.086274706	4.29280412312375e-05
Pxdc1	2.097943642	0.0132953842305471
Ntn1	2.104647423	0.000214590705775786
Pcdh7	2.106364919	2.5441084760737e-14
Nid2	2.110033521	0.000992197842518977
Zdhhc23	2.11266158	0.0389980187362333
Rhobtb3	2.112971919	0.00702312379573534
Ptchd1	2.123667539	9.35907711119942e-10
Folr2	2.136301045	4.31947652857248e-35
Epn2	2.151617969	8.83554837789228e-26
Col5a1	2.153911787	0.0409292743872277
Slc6a9	2.160658475	0.0143743908214677
Fbn1	2.172400021	0.081522809107193
Asb10	2.177240268	3.67401538975628e-05
Ankrd29	2.182947213	0.0476103924379674
Jag2	2.188691807	0.0104694844057845
Ccr3	2.196725603	2.2954993143767e-24
Cdkn1c	2.212481678	3.25640944100122e-18
Itga9	2.235892522	4.90141473154465e-54
Shisa9	2.258556525	1.35803103058071e-25
P4htm	2.268646099	0.121050974675121
Pltp	2.27077948	1.14508335001895e-170

Rab4a	2.281373586	2.30048984781287e-18
Dusp9	2.290959649	1.12396085094566e-06
Ctla2a	2.291823015	8.9978651367386e-21
Pcp4l1	2.300169271	4.36446771416834e-33
Ephb3	2.330319922	0.00769012679849858
Npy	2.339474713	2.94250190191618e-32
Grb10	2.340578104	0.133625824137927
Fcrl1	2.34784602	3.80760869328782e-59
Prss46	2.349831521	2.13230833872544e-06
Rapgef3	2.35079585	2.47046861163684e-27
Cdkn2a	2.399511854	2.43075186503885e-07
Fmod	2.405370997	0.125139061744029
Lamb1	2.415285863	0.00219796081903924
Csgalnact1	2.44588618	0.12439743442531
Ccdc87	2.447588385	0.127829398230271
Fgf1	2.451316096	0.0495342576921568
Rab33a	2.456215814	0.10630013584873
Kirrel	2.458284015	0.0179337860354268
Ncam1	2.459082575	0.00512510393383341
Cdkn2b	2.466694075	1.57829269155679e-10
Tgfb2	2.477670769	0.0139796900723509
Gm826	2.480875372	0.0279746318288142
Nrcam	2.483070093	2.96698036330844e-07
Pla2g5	2.490040832	0.0040694387717213
Tnc	2.497282931	6.57234485367744e-18
Chst13	2.518774323	0.101753128692209
Osbp2	2.524499302	0.0115002044018064
Cd72	2.525863329	3.12955854446291e-137
Slc1a4	2.529889369	1.43746773609734e-07
Sptb	2.541120878	0.0762528006910852
Olfml3	2.541136453	1.80450011833302e-102
Dusp27	2.541790332	0.116798330095554
Fhl1	2.547697122	0.114108235041844
Rbms3	2.559759069	0.133820045381867
Srpx2	2.565484096	0.0600515817240013
Tbx15	2.575207328	0.110780278624024
Tm4sf1	2.579941083	0.0373878022513844
Gzmd	2.588133024	0.0720389948460196
Cspg4	2.607741717	9.35090247661918e-21
Chac1	2.611050949	1.13375730758544e-11
Dusp4	2.623660771	1.88267258120917e-72
Plcd3	2.63527518	3.64707921792342e-05
Asb2	2.641364395	7.14001081036737e-11
Vstm4	2.651332088	0.00137431846651404
9530053A07Rik	2.655347294	0.11594807362762
Syt13	2.665138229	0.0268327868135596
Cavin2	2.669864107	0.0886157923058641

Saxo2	2.693341338	0.0968217459206012
Epdr1	2.700401497	1.71844106506042e-05
Sytl4	2.712729282	0.060849467127931
Cd300e	2.71738769	0.00140644879814251
Tgfb3	2.744346642	0.0019245343779073
Prss50	2.759593552	0.127829398230271
Gm21887	2.760760116	0.00562312820562541
Zdhhc15	2.792160533	0.0156127764178517
Ebf1	2.81300544	0.13018103322374
Sncaip	2.816270046	6.24372665285105e-17
BC051142	2.821108014	0.0750739664008869
Enpp2	2.827859533	0.0726275660252634
Pcdhga5	2.831356677	0.00509378639631346
Tmem163	2.867777591	6.29960977600503e-06
Dmpk	2.879071313	7.01708964505393e-25
Loxl1	2.906429588	0.00168667688438126
Csdc2	2.921870081	0.0369892101984427
Ifitm10	2.960225199	0.0175212666816793
Chst2	2.970716898	0.0262011296959641
Amotl2	2.971116047	0.000193373137335985
Phf24	2.990790551	0.0285888130671675
Sema3c	2.996100078	0.000483682976682674
Dnah1	3.016969402	0.0689326059641157
Dner	3.021690391	1.48466714364585e-15
A4galt	3.034192219	0.0233765635282012
Dusp14	3.05096177	0.00144740568594336
Pcsk1	3.071294541	0.00689643913705346
Slc6a17	3.104796625	0.00225612160496353
Bik	3.108709686	0.0120227660681229
Id3	3.109941369	1.67978355898193e-25
Ptprn	3.111138518	6.37085407136579e-26
Hmga2	3.123138291	1.78310951642841e-37
Serping1	3.124924114	0.054672134279865
Nanos1	3.129333763	3.16817439176059e-39
Tmem178	3.135414074	0.00109005329028087
Gnao1	3.152567304	0.118207023677906
Fam19a3	3.159709133	0.0437047420244952
Galnt2	3.175258311	0.0188235696406726
Ccr1l1	3.178724238	0.0119890038409499
Arhgap42	3.214648241	0.113919657439577
Igdcc4	3.234199691	0.0567895639444807
Klrb1c	3.24701831	0.00529772860227889
Ppm1e	3.260865804	1.37287027069102e-10
Lgr6	3.285581661	0.00561979730788259
Smoc2	3.286887141	0.13240998886795
Flnc	3.287408648	0.000506638075952289
Camsap3	3.304549246	0.000200840201181351

Kcnn1	3.311161307	2.45981036769944e-07
Arhgef19	3.341536372	0.0112637085821245
Mapk11	3.34877458	9.47264798296348e-14
Cdcp1	3.368076907	0.0643147454505886
Pcdh18	3.378105254	0.00724724630651116
Tcte2	3.397080681	0.0338337053035402
Notch4	3.46314575	4.90289180258768e-06
A830005F24Rik	3.480182442	0.0465263227361819
Foxc1	3.512020426	0.0402229249702606
Tppp	3.554507987	0.103549414546019
Grem2	3.568868421	0.0083150060086598
Tpbg	3.584691458	0.141186539447974
Adcy2	3.587390699	7.82116160999307e-05
Hist1h1a	3.62147932	0.131723548090694
Tox2	3.622608524	1.59100878947644e-06
Sh2d6	3.638946498	1.65448121530076e-05
Olfml2a	3.667407357	0.114669536043347
Gpm6b	3.687850593	0.00952812320797981
Igsf11	3.691054731	0.00105450406042316
Katnal2	3.697981265	0.0297542221297676
Gprc5a	3.736891585	0.0107921041507521
Col18a1	3.774913224	1.54863871850659e-43
Pcdhga2	3.784964341	0.0105997908403365
Prelid3a	3.792646877	1.32317203114418e-08
Syndig1l	3.800141397	0.0194752420386809
Mgat3	3.81553935	0.00683010952228774
Etv4	3.870489852	0.00211639706142194
Cpe	3.931925689	1.01305285944052e-13
Zfp618	4.004089998	3.76380465889575e-10
Hao1	4.038646634	0.000120420322499292
Fjx1	4.046711601	0.0688991408588822
Ankrd6	4.102797701	0.00210223269565695
Prrg4	4.135912377	0.00456807898855578
Enho	4.151230436	4.0405422891939e-07
Nxnl1	4.179236894	0.124893663908428
Slc17a8	4.248314807	0.00131343546414734
Zdhhc2	4.297601576	1.74815188043498e-07
Kcna4	4.338811111	0.00508791061315887
Kcnh2	4.345414638	2.40994953724e-07
Prkg2	4.421399808	0.0267883208291076
Kcnk12	4.431629684	4.15206212993017e-05
Obsl1	4.451070498	0.0930283411990827
Crybb1	4.467747086	0.0714972551545126
Pear1	4.477217382	1.76239916816299e-05
Prss39	4.485548329	0.115548663183879
Atp8b5	4.485997671	0.0915915152427747
Rgs4	4.498103533	0.106154749876611

Pxdn	4.508504191	0.000145912518349065
Aldh1a1	4.560954208	0.111579824364575
Steap4	4.594288594	2.48266266135423e-10
Fzd2	4.633001579	0.0662600899002877
Nyx	4.656831474	0.115711994970624
Fsip1	4.675315849	0.000474752233865174
Gdf11	4.691206774	0.0584665723556525
Akap5	4.721490588	0.071823113546144
Dnali1	4.736252879	0.068550426138519
Gper1	4.742000577	0.105178007501499
Ccdc96	4.765470122	0.00248953185836542
Des	4.877735737	0.0527456465620845
Tnfrsf11b	4.883810477	0.066594789275122
Hist1h4b	4.889402531	0.0906348996927058
Smad9	4.892444866	0.0562668161561728
Ret	4.947120443	0.0432026827641644
Pgm5	4.976761838	3.37024933658298e-09
Dpep1	5.131676646	0.0515681666156702
Fbln1	5.133063853	0.0360596346018786
Jph2	5.167817326	0.0232836987252533
Pcdhb4	5.192344644	0.02423284335362
Gpx8	5.196562955	0.00035507591979064
Trim17	5.325948025	0.0112867362265836
S100a3	5.429482634	0.018382624084649
Gm9887	5.441217858	0.0378669701550904
Ephb4	5.479900821	0.0140969540752996
Gas1	5.508582819	0.0162330458398982
Adam12	5.526421714	0.0128213022319375
Gata3	5.531705196	0.0113709904990947
Tfr2	5.642604219	0.00440588257689916
Gm3854	5.6608907	0.145369088139576
Thy1	5.6693406	0.137006968476591
Tll1	5.756435251	0.130768690485364
Cyp2s1	5.775935459	2.92614829466027e-05
Trpc6	5.848905793	0.115191380183509
Actl10	5.852020481	0.116751391115491
Clic5	5.859904478	0.00340654701146963
Cr2	5.863773862	0.116122221263885
Heph	5.865682529	0.00530364731349609
Klhdc8a	5.86629382	0.141110220588029
Foxd4	5.884173195	0.112557847600105
Fcrl5	5.90770998	0.00393983975427729
Spock2	5.930257673	0.111840782592394
Hist2h3b	5.938265905	0.129426470466149
Popdc2	5.961037242	0.134873967461428
Pcdhb18	5.961856186	0.123111339550971
Hist1h4m	5.986027053	0.1257932214237

Rprm	5.992948643	0.0877419157386519
Col4a6	5.998203176	0.120654905844718
Foxs1	6.00647526	0.00218457321562429
Fgf17	6.024469842	0.0927340243670331
Apol8	6.026045408	0.0808096960298775
Slc1a6	6.034334761	0.12226989173663
Col6a4	6.040951117	0.0869611480154851
Fcmr	6.04403566	0.00206741472169757
Tspan12	6.044235948	0.115424198023199
Nfasc	6.051918689	0.112690103267988
Syce1l	6.072258222	0.1174359065147
Zfhx4	6.072532668	0.124821856192102
Atp1b1	6.080161206	0.00177802106883421
Serpina3c	6.091546645	0.0805081891165056
Plvap	6.093814878	0.0788545453298962
Ebf2	6.114935507	0.146165972994747
Lrp3	6.120015535	0.115241263393865
Aqp3	6.12984944	0.0766856464884833
Zfp114	6.133570911	0.0578744146015402
Clec4g	6.139616145	0.101019560765861
Myct1	6.144797231	0.145384294620834
Hus1b	6.14938213	0.0569486951153052
Ccr10	6.168373298	0.0755984817384005
Sema3a	6.170326312	0.138786438539598
Qprt	6.181448791	0.135933203797091
Pamr1	6.184438817	0.079465782333143
Rimbp3	6.184884712	0.0989923130492076
Mum1l1	6.190616847	0.0954829038869593
Pcdhga8	6.201492826	0.0548388297559579
Cth	6.231577222	0.0642850694683083
Kcnq5	6.24362022	0.0638523134478236
Cabcoco1	6.247608892	0.0988371357640535
Gykl1	6.271282576	0.064740990147924
Gulp1	6.278804228	0.0684302180246094
Cox4i2	6.279717861	0.00105852049724201
Pak3	6.286173274	0.0889633510338584
Zswim5	6.292784861	0.0405627995061077
Ednra	6.301590899	0.0826107668410045
Serpina3n	6.302441708	0.122449721097395
Gjb3	6.303160275	0.119685771616955
Reep1	6.320128278	0.0861430480654767
Myh11	6.320698834	0.0312285257555854
Morn5	6.358191728	0.0583422936185414
Twist1	6.36234451	0.0408551824592754
Hcn1	6.371691841	0.0530421953614445
Blk	6.382792456	0.0367012665813684
Dtna	6.390259038	0.107745488288421

Adgrf5	6.43376654	0.00115688243253635
Medag	6.443640759	0.0226373613740055
Sla2	6.465941622	0.0650297027399152
1500009L16Rik	6.466954365	0.0985121468574837
Nrxn1	6.485135579	0.0301303819970481
Cnga4	6.495244522	0.0764327933150092
Spats2l	6.529009738	0.0545733950718182
Gm17349	6.543903322	0.0339281495393859
Ttc36	6.565401155	0.0895384448838106
Hes1	6.594253403	0.000315100606347929
Aif1l	6.596417334	0.017705353987905
Prelp	6.597467149	0.0394999785064578
Irx5	6.608584759	0.0403741073548348
AY074887	6.615882197	0.0271871267539045
Echdc2	6.626151025	0.0246586300430839
Kctd15	6.626722556	0.05719272786846
Slc6a1	6.630705364	0.0569691010983063
Tmem151b	6.638341862	0.0341198120296173
Ranbp17	6.640166359	0.0203011513674912
Krt18	6.661295517	0.0521139562441494
Negr1	6.665634761	0.0199813964747879
Nrip3	6.681024136	0.0485609501476145
Rnf207	6.706875126	0.0234610616579061
Adgrf2	6.707079294	0.0246086813654755
Gm16485	6.715943018	0.0369892101984427
Lhfpl4	6.726929101	0.045184009404378
Plekhs1	6.745085791	0.0268106031769681
Ndst3	6.783797048	0.0242160992492355
Gm10800	6.788751614	0.0447993388804013
Ptprg	6.795848329	0.0201096854631296
Sertad4	6.807782389	0.0178881272239994
Atoh8	6.832736588	0.0164372054186172
Bco1	6.876775876	0.0236454757593498
Egflam	6.889461873	0.0371694831514884
Exoc3l2	6.889733811	0.0238502936450581
Ms4a1	6.911972052	0.0217168053116722
Meig1	6.913386111	0.00997760798105226
Megf10	6.938717544	0.0156756814994069
Eda	6.977987412	0.0218610797760581
Col28a1	6.997119504	0.0206528939913282
Mest	7.018451249	0.0112637085821245
Efemp1	7.029882683	0.0306575350701789
Ppp1r3c	7.048785807	0.0196633337996057
Piezo2	7.057570131	0.00947257118228412
Ccdc154	7.09280038	0.00820519277443103
Tcim	7.094381192	0.00635845386759588
Slc4a5	7.099296344	0.0104059600032008

Sult4a1	7.108529699	0.0110986883616966
Lurap1l	7.163783451	0.00936308021160274
Steap2	7.166410453	0.00885270364985505
Odf3l1	7.185840338	0.00992740838939354
Syt6	7.259196986	0.00859395257566139
Cd207	7.29930933	0.00394856976903052
Cthrc1	7.328605454	0.0065412540267065
Angpt4	7.381537662	0.00351010840463829
Ecscr	7.39437689	0.00573070403062073
Pcdhga6	7.496312169	0.00316953535359036
Pnpla3	7.503769255	0.00302203887627422
Serinc2	7.506160704	0.00522570703191609
Sema5a	7.512342774	0.00785879951325888
Nptx1	7.520638054	1.17721281265118e-38
Tead2	7.586360928	0.00558548623886272
Adamts12	7.638095402	0.00229048292261255
Ngf	7.646852464	0.00181062522457386
Ambp	7.65493183	0.00316953535359036
Ogn	7.664220843	0.00304582066561043
Pard3	7.720353446	0.00222534675992906
Evc2	7.812020565	0.00520290554664991
Ptprd	7.850156113	0.00334117198774621
Myh15	7.873790603	0.00180155326617801
Nyap2	7.978679865	0.00102009623413548
Cd209f	8.065247998	0.00102948419277953
Nox3	8.097351533	0.000702277265479045
Mapk12	8.108134563	0.00145577221257284
Spry4	8.137404189	0.000694467338799743
Rnf183	8.151763826	6.94352634704524e-07
Klf15	8.516538197	0.000251159795885856
Sorbs2	8.552644061	0.000303169825957642
Rab3b	8.594528338	0.000287234450170215
Cadps	8.852887647	8.21592394287636e-05
Prl2c2	8.985701005	8.43177030845696e-05

Enrichment FDR	Genes in list	Total genes	Functional Category	Genes
1.22E-09	105	2299	Immune system process	CSF1 H2-M2 CD274 PDCD1LG2 CCL6 CCL9 IRF4 IL23A CCR1 IL1B SRC PTX3 TNFSF8 CXCL3 CXCL1
4.14E-08	73	1439	Defense response	CCL6 CCL9 IL33 CCR1 PTX3 CXCL3 CXCL1 KLRK1 HP CCL22 CCL17 CD226 FPR1 LTB4R1 TLR11 EPX
1.29E-07	69	1367	Immune response	H2-M2 CD274 PDCD1LG2 CCL6 CCL9 IL23A CCR1 PTX3 CXCL3 CXCL1 KLRK1 CCL22 CCL17 CD226
1.79E-07	42	633	Regulation of cytokine production	IL1B KLRK1 CD226 CLEC9A CCR7 CLEC4N IL33 IL6 CD209D FFAR4 LRRC32 KLF4 CD274 PDCD1LG2
1.79E-07	29	328	Leukocyte migration	CCL6 CCL9 IL1B CXCL3 CXCL1 KLRK1 F7 CCL22 CCL17 CXCL2 TNFSF14 IL23A CCR1 PLCB1 CSF1 ED
1.92E-07	65	1281	Regulation of immune system process	CSF1 H2-M2 CD274 PDCD1LG2 IL23A KLRK1 F7 CD226 FPR1 TLR11 FPR2 CCR7 TNFSF14 PIM1 C3
5.66E-07	42	668	Inflammatory response	CCL6 CCL9 IL33 CCR1 CXCL3 CXCL1 HP CCL22 CCL17 FPR1 LTB4R1 TLR11 FPR2 CXCL2 IL1B FFAR4
5.66E-07	32	420	Positive regulation of cytokine production	IL1B KLRK1 CD226 CLEC9A CCR7 CLEC4N IL33 CD209D CD274 IRF4 RGCC CLU C3 CD6 IL23A PRG
7.21E-07	21	193	Regulation of cytokine secretion	CLEC9A CCR7 CLEC4N IL33 IL1B CD209D FFAR4 LRRC32 CD274 RGCC IL6 FN1 RASGRP1 IL1A SRC
1.28E-06	50	916	Response to cytokine	CCL6 CCL9 IL1B CXCL3 CXCL1 CCL22 CCL17 CXCL2 GM4951 F830016B08RIK CSF1 IL6 OCSTAMP (
1.28E-06	22	220	Cytokine secretion	CLEC9A CCR7 CLEC4N IL33 IL1B CD209D FFAR4 LRRC32 CD274 RGCC IL6 FN1 RASGRP1 IL1A SRC
1.61E-06	42	702	Cytokine production	IL1B KLRK1 CD226 CLEC9A CCR7 CLEC4N IL33 IL6 CD209D FFAR4 LRRC32 KLF4 CD274 PDCD1LG2
1.94E-06	95	2378	Response to external stimulus	CD274 PDCD1LG2 CCL6 CCL9 IL33 CCR1 EPHA4 IL1B CXCL3 CXCL1 KLRK1 F7 CCL22 CCL17 CCR7 S
1.94E-06	26	313	Regulation of ERK1 and ERK2 cascade	CCL6 CCL9 MT3 CCL22 CCL17 SPRY1 KLF4 ALOX15 IL6 FN1 RASGRP1 IL1B SRC GLIPR2 WNK2 SER
4.14E-06	48	901	Positive regulation of immune system process	CSF1 H2-M2 CD274 PDCD1LG2 IL23A KLRK1 F7 CD226 FPR1 TLR11 FPR2 CCR7 TNFSF14 C3 IL33
5.02E-06	26	330	ERK1 and ERK2 cascade	CCL6 CCL9 MT3 CCL22 CCL17 SPRY1 KLF4 ALOX15 IL6 FN1 RASGRP1 IL1B SRC GLIPR2 WNK2 SER
6.31E-06	44	802	Cellular response to cytokine stimulus	CCL6 CCL9 IL1B CXCL3 CXCL1 CCL22 CCL17 CXCL2 GM4951 F830016B08RIK CSF1 IL6 OCSTAMP (
6.44E-06	7	17	Negative regulation of interleukin-10 production	CD274 PDCD1LG2 IL23A MMP8 PRG2 TNFRSF9 EPX
1.55E-05	19	199	Myeloid leukocyte migration	CCL6 CCL9 IL1B CXCL3 CXCL1 CCL22 CCL17 CXCL2 IL23A PLCB1 CSF1 EDN1 CCR1 BST1 CCR7 ITGA
1.55E-05	16	142	Granulocyte migration	CCL6 CCL9 IL1B CXCL3 CXCL1 CCL22 CCL17 CXCL2 IL23A CSF1 EDN1 BST1 CCR7 ITGA1 EPX IL1A

Gene_Name	log2FoldChange	padj
Rnase2a	-6.300611676	0.00011
Mucl1	-4.62862348	0.004039
Ccl17	-4.455951051	9.23E-10
Fcrls	-3.87680687	1.94E-06
Ear2	-3.763389576	2.04E-07
Spink3	-3.597152946	0.02841
Ccl12	-3.385210571	0.000572
Muc5b	-3.316727765	0.025305
Gm6484	-3.251473666	0.000702
Car4	-3.132543003	0.000868
Ky	-3.117689166	0.012081
Pitx3	-3.085692653	0.017117
Ccl6	-2.820046885	1.96E-09
4933422H20Ri	-2.734520962	0.000191
AF529169	-2.726097204	0.001878
Clec4b1	-2.704340644	0.004687
Defb1	-2.681849277	0.000112
Slc22a26	-2.681273855	0.001671
Alb	-2.600133551	0.002349
Chi3l3	-2.599318137	0.002124
Gm11710	-2.589686375	6.68E-06
Acot3	-2.585002632	0.002907
Igfbp2	-2.560605634	0.002351
Mmp12	-2.519956972	7.58E-07
Dnaic1	-2.501747196	0.024593
Gm5483	-2.457090908	3.23E-05
Cib3	-2.456015582	0.003776
Mgl2	-2.446910901	0.000519
Cxcl13	-2.445450984	0.000132
Ccl22	-2.432881539	0.001063
G6pc2	-2.430408825	0.008835
Sult1a1	-2.364210867	0.000457
Bhmt	-2.334209965	0.008558
Gm11437	-2.300075248	0.004521
Pf4	-2.281903331	1.51E-09
Cyp4a14	-2.27182682	0.006177
Gbp1	-2.233784609	0.015662
Lyz1	-2.226246147	3.28E-07
Bcl2a1d	-2.189124131	0.001636
Cd207	-2.188310627	0.008376
Sectm1a	-2.168627984	6.43E-06
Ppp1r3c	-2.168464018	0.003582
Mir511	-2.163716018	0.008207
BC089597	-2.15657828	0.001866
Clec4n	-2.14506616	4.21E-06
Siglec1	-2.133426952	0.001171

Alox15	-2.118776379	3.00E-05
Slc22a27	-2.107773045	0.011833
Cd177	-2.063198072	1.01E-06
Hyal6	-2.062962781	0.007161
Lyz2	-2.061063664	6.38E-08
Ccl8	-2.05679965	0.044057
Adam33	-2.026658305	0.001505
Gm2061	-2.024592906	0.021159
B3gnt7	-1.972741613	1.46E-10
Chp2	-1.961442201	1.94E-05
Aox3	-1.958732509	0.032702
F13a1	-1.954352108	0.003574
Dcstamp	-1.944191933	0.00296
Tarm1	-1.923048625	5.89E-05
Mtnr1a	-1.921400686	0.001903
Bcl2a1b	-1.919322719	4.89E-05
Hsd17b6	-1.916694016	0.029427
Cyp2c38	-1.9153614	0.001637
Pira6	-1.904750217	0.030812
Bcl2a1a	-1.894362626	0.002593
Cyp2a22	-1.885664789	0.026853
Slco1a4	-1.870241779	0.027244
Enho	-1.864146662	0.016066
Ces1g	-1.852837708	0.000507
Rims3	-1.842078556	0.009575
Pglyrp2	-1.826891288	0.002593
Afm	-1.823952001	0.036911
Lilra5	-1.808936706	0.001288
Cldn1	-1.808224315	0.000772
Amdhd1	-1.804939146	0.042716
Mir122a	-1.802667012	0.024378
Bank1	-1.802013121	3.62E-06
Cyp7a1	-1.792620597	0.002624
Atp6v0d2	-1.787494556	7.96E-05
Irf4	-1.784366638	0.008084
Fgf21	-1.784314296	0.035721
Dlec1	-1.754796706	0.043237
C1qa	-1.749464631	8.47E-06
Dnahc5	-1.743735866	0.03835
Slc16a5	-1.728767658	0.020877
Apoa1	-1.728763676	0.01149
Trem2	-1.719931081	2.62E-08
Aldh1b1	-1.712306117	0.023025
Gm16291	-1.705953449	0.001001
Slc34a2	-1.703831449	0.004201
Esrrb	-1.694258734	0.021744
G0s2	-1.69344423	0.027244

Dsg1c	-1.691866425	0.001711
Gm4952	-1.691457664	0.008691
C1qc	-1.689161761	3.15E-05
Cyp2c44	-1.686460525	0.026853
Fabp7	-1.684543398	0.00296
Abca9	-1.681986885	1.51E-09
Klrb1b	-1.680826183	0.010614
Cyp4f14	-1.679104707	0.03776
Ano5	-1.67430578	0.015021
Col6a6	-1.668406475	0.026387
Fcgr3	-1.667095214	3.09E-06
Ces1b	-1.661987293	0.023476
Adck3	-1.654381885	0.033093
Bhmt2	-1.651133049	0.021122
Tnfrsf13b	-1.647848451	0.006465
Hsd17b13	-1.647377865	0.006332
Hyal5	-1.645299736	0.004235
Ccr5	-1.63754822	0.001211
Pld4	-1.636550742	2.79E-05
Fcgr1	-1.63474483	0.000186
Tlr8	-1.632009793	4.66E-06
Clec4a2	-1.629478078	0.000133
Cd79b	-1.628241534	0.00194
Fmo4	-1.625029184	0.010833
Prhoxnb	-1.624097429	0.047469
Clec12a	-1.619609212	3.55E-05
H2-DMa	-1.615044146	0.000119
Emr1	-1.61352428	1.67E-05
Asgr2	-1.612532568	0.010283
Acot4	-1.60597925	0.004491
Adgb	-1.605586724	6.68E-06
Slc6a13	-1.604105655	0.027318
C1qb	-1.603786097	1.03E-05
Abcb11	-1.59632778	0.042716
B3galt1	-1.595225457	0.025886
Cd19	-1.592543686	0.022154
Msr1	-1.591369467	3.74E-08
Cyp2c68	-1.591228552	0.032702
Abcg3	-1.589405044	1.39E-05
H2-M2	-1.588912483	0.009043
1700007F19Ri	-1.587510395	0.004103
F7	-1.581474737	0.004912
Aqp8	-1.576286526	0.014473
Elovl2	-1.572343983	0.040392
LOC10003894	-1.557727025	0.000187
Amy1	-1.556086029	0.019046
Ces1c	-1.554637166	0.033798

Rab36	-1.55423804	0.00127
Apom	-1.553983246	0.040996
Clec7a	-1.553642607	4.21E-06
1700040L02Ril	-1.553072462	0.013296
Zbtb16	-1.552602921	0.001075
Angptl3	-1.546951342	0.039261
Abca8a	-1.546575129	0.036411
Mag	-1.542830346	0.001991
Serpinc1	-1.541511255	0.028458
Cd180	-1.539195998	9.72E-08
Dmgdh	-1.53683572	0.04882
Ehhadh	-1.535597367	0.049416
Ahsg	-1.533508616	0.025162
Akr1d1	-1.531721115	0.024593
BC048546	-1.531227408	0.045327
Slc16a7	-1.528008788	0.000428
Clec4f	-1.527470438	0.02792
Cyp2c70	-1.526869396	0.048943
Tmem25	-1.526236878	0.004357
F630028O10Ri	-1.523913787	7.97E-08
H2-DMb1	-1.521020408	0.006123
Enpp2	-1.515459756	0.028543
Acot1	-1.514985283	0.008376
Cfp	-1.514663053	1.57E-06
Olfr111	-1.514248158	0.021515
Tymp	-1.505142248	0.023871
Agt	-1.503455069	0.036569
Spatc1l	-1.502666518	0.013513
Odf3b	-1.499923557	0.032324
Serpind1	-1.499895405	0.041064
Gamt	-1.498864793	0.018086
Akr1c20	-1.496435279	0.014237
Cd52	-1.491639861	0.00257
Serpinf2	-1.490871219	0.023698
Mmp8	-1.48751829	0.003574
Pzp	-1.479097415	0.048566
Slc30a10	-1.478532621	0.034749
Csf1r	-1.477422366	3.28E-07
Aif1	-1.477115367	5.52E-06
Irf5	-1.476147494	1.00E-06
Gckr	-1.472528462	0.020756
Cysltr1	-1.468446176	0.000231
H2-DMb2	-1.467523826	0.014237
Dpys	-1.467109002	0.037874
Nr1i3	-1.462233478	0.006432
Slc7a8	-1.460497219	4.35E-11
Tm6sf1	-1.457645308	3.28E-07

4930480G23Ri	-1.456995296	0.041992
Sirpb1a	-1.456372534	0.002592
Erbb4	-1.455952221	0.017273
Hfe2	-1.455004829	0.024504
Apoh	-1.453938115	0.038594
Cyp2d37-ps	-1.451228999	0.046726
Tyrobp	-1.448448972	5.29E-07
Fam198a	-1.44808019	0.002091
Ppp1r3b	-1.446513772	0.02039
Mreg	-1.446243674	0.034173
Sdr42e1	-1.444097039	0.029701
Gstm3	-1.44233363	0.027132
Itih1	-1.442308408	0.026333
Alox5ap	-1.441683868	1.75E-05
Vsig4	-1.441168135	0.023871
Ebi3	-1.438383046	0.003776
Adrb3	-1.434857394	0.041386
Cyp2c67	-1.434606917	0.045428
Slamf6	-1.431619322	0.005211
Nxpe5	-1.42403649	0.014237
Rab3il1	-1.419495665	4.10E-07
Gm4788	-1.417522104	0.042716
Lilrb4	-1.416993275	0.000182
Agtr1a	-1.416779623	0.01396
Dppa3	-1.414002654	0.01725
Slc17a1	-1.403473666	0.008376
Cds1	-1.402731376	7.25E-05
B930025P03Ri	-1.400924466	0.042658
Cyp4a32	-1.400208862	0.038634
Proz	-1.399350914	0.038093
Tbxas1	-1.398772512	4.23E-06
Btk	-1.395392971	3.15E-05
1300017J02Rik	-1.394058734	0.047777
Lcat	-1.393446127	0.048292
H2-Ab1	-1.393375502	0.001676
Hepacam2	-1.388533881	0.015185
Osgin1	-1.387058354	0.0118
Ctss	-1.387030731	8.88E-05
Vnn3	-1.386649026	0.013216
Qprt	-1.386621875	0.026853
Nlrp3	-1.38636663	2.83E-06
Tbx3	-1.384784802	0.024593
Agxt2	-1.376567798	0.01105
Cpn2	-1.37147906	0.040508
Cd74	-1.370555649	0.001878
H2-Aa	-1.368620957	0.003903
Cyp4a31	-1.367786127	0.013036

Gstm7	-1.367009263	0.029701
Abcc6	-1.363870927	0.043736
Spp2	-1.361658767	0.046731
Arl11	-1.360917293	0.000215
Vwce	-1.360424151	0.041992
Hrg	-1.358842775	0.042716
AI504432	-1.356327292	0.033093
F13b	-1.355931579	0.042716
Tlr7	-1.35580269	0.001428
Icos	-1.355428378	0.008313
Meiob	-1.351478348	0.042534
C8a	-1.351005229	0.044691
H2-Eb1	-1.350966524	0.003605
F2	-1.350080312	0.041386
Pon1	-1.348810717	0.047807
Itgb2	-1.34727411	4.21E-06
Cd79a	-1.343196681	0.028769
Tfec	-1.34254219	6.52E-06
Apoe	-1.3420317	0.033093
Vipr1	-1.339192114	0.01002
Masp2	-1.336227873	0.039387
Nckap1l	-1.332088313	6.99E-06
F10	-1.332072812	0.026718
Gm5150	-1.331304228	0.000245
Fmo5	-1.325808507	0.046917
2010003K11Ri	-1.32532162	0.031042
Cd163	-1.323295042	0.000299
Chrm3	-1.319438185	0.031004
Spata2l	-1.319036177	0.026853
Gm2a	-1.317964239	0.000763
Vtn	-1.317513964	0.046726
Phf11a	-1.316653526	0.018486
Fcer1g	-1.315107013	3.89E-05
Zfp750	-1.314593323	0.013489
Azgp1	-1.314316192	0.046258
Snurf	-1.314275217	0.01585
Cd36	-1.312467195	0.0001
Slc10a5	-1.310942494	0.033668
Pla2g12b	-1.308214147	0.033183
Nlrp6	-1.307382836	0.048244
P2ry13	-1.307141736	2.20E-08
Rnase6	-1.299371985	0.016755
Ccr1	-1.299122322	0.001025
Mug2	-1.298093069	0.02167
P2ry12	-1.297280217	8.38E-08
Myo1g	-1.296955233	0.003958
Mfsd7c	-1.294873621	1.95E-05

Fads6	-1.292623204	0.017379
Fgd2	-1.289629363	2.20E-08
Cd69	-1.285114617	0.042796
Laptm5	-1.284807162	1.99E-06
Rassf4	-1.284469493	6.52E-06
Tspan32	-1.283817156	0.028458
Prlr	-1.281378931	0.03792
Fcgr2b	-1.281094981	0.000139
Slc26a1	-1.277034032	0.037293
Itih2	-1.273091903	0.035924
Mst1	-1.272552471	0.029522
Kctd12	-1.268785807	2.37E-05
Spic	-1.265111392	0.001901
Foxa3	-1.264884296	0.025219
Sfpi1	-1.264650326	3.28E-07
Smlr1	-1.263453714	0.024747
Itgal	-1.263203594	6.05E-05
Abcd2	-1.260982612	0.002116
1810033B17Ri	-1.260131815	0.010293
Rgs18	-1.25918895	0.004417
Klra2	-1.25712237	1.57E-06
Rnf144b	-1.25553687	0.005969
Slfn1	-1.252172114	0.012081
Clec4a3	-1.251967602	0.002029
Dock2	-1.250440213	0.000282
Gdf10	-1.247797394	0.014473
Cideb	-1.246398578	0.032594
Tnxb	-1.245859822	0.037657
Tmem37	-1.245549889	0.019089
Acat3	-1.245542943	0.049018
Tmem30b	-1.241809607	0.026529
Crot	-1.241638835	0.027155
Slc17a4	-1.2412385	0.00559
Nr1i2	-1.239287647	0.036225
Hs3st3b1	-1.238688777	0.021668
Sepp1	-1.236629371	0.034761
C5ar1	-1.234925228	0.00013
Srrm4	-1.2344078	0.032185
Ccl24	-1.233975356	0.000235
Acox2	-1.233056977	0.035773
1300002K09Ri	-1.229483578	0.025713
Fcrla	-1.228990487	0.048244
Ccdc69	-1.22685329	0.024352
Lrmp	-1.226706964	0.000236
1810011H11Ri	-1.226461548	5.16E-06
Itga8	-1.223006733	0.00562
D630039A03Ri	-1.219790348	0.003397

Lair1	-1.219319886	8.64E-05
AF251705	-1.217649039	4.21E-06
Vmo1	-1.212864508	0.042826
Mfsd6l	-1.212484499	0.027369
Gpr65	-1.212257156	0.005426
Tppp	-1.212125179	0.015449
Med12l	-1.20654658	0.01149
Cd300ld	-1.202378108	3.75E-05
C4bp	-1.199729567	0.033019
Adamdec1	-1.199670501	8.02E-05
Gpld1	-1.197615516	0.031286
Amt	-1.197345431	0.028951
Atf5	-1.194868105	0.012397
Cyth4	-1.194741661	0.001115
Ugt1a6b	-1.194474218	0.03945
Itgax	-1.1929123	0.007621
Asb2	-1.191466293	0.009886
Cxcl12	-1.18574521	0.033185
Cd200r4	-1.179452702	0.002079
Tmie	-1.174112274	0.038079
Gdf2	-1.173770867	0.000202
Aldh1a7	-1.173761045	0.040392
P2ry14	-1.170766466	1.94E-06
Gm11837	-1.169432375	0.045305
Faah	-1.167271252	0.031399
5031425F14Ril	-1.166326672	0.005854
C3	-1.165511473	0.049416
Spata22	-1.162540143	0.025145
Sash3	-1.157211688	0.002612
Coro1a	-1.156382886	6.13E-05
Folr2	-1.156171257	0.038762
Mme	-1.154169099	0.01002
Syt1	-1.153098186	0.046726
Pctp	-1.151324432	0.023225
Fpgs	-1.150744651	0.02281
Slc9a9	-1.146955894	4.20E-06
Habp2	-1.146855563	0.035145
Olfm1	-1.145991861	0.040884
Abcb4	-1.145859678	0.042716
Oit3	-1.145541697	0.017362
Mrc1	-1.144360701	0.003776
Cd48	-1.138605446	0.00085
Epsti1	-1.137757361	0.000226
Fbln5	-1.137130929	0.003429
Pik3cg	-1.135623031	0.001647
Clec1b	-1.132430096	0.004491
C1ra	-1.126875825	0.049679

Rorc	-1.12602633	0.026217
Agmo	-1.121999748	0.04707
Tnfrsf25	-1.121050946	0.013296
Fam46c	-1.119529897	0.041602
Fermt3	-1.119332245	3.85E-07
Nfam1	-1.118554821	3.28E-07
Mtfp1	-1.115568001	0.049679
Lcp1	-1.115521812	0.000221
C3ar1	-1.115078402	0.001811
Chdh	-1.114478484	0.045959
AI662270	-1.113624247	0.00011
Bdh1	-1.113499829	0.048158
Arhgap9	-1.113425863	1.59E-05
F630111L10Ril	-1.111635853	2.41E-05
Fam78a	-1.109776212	0.000226
Mpeg1	-1.109490365	7.99E-08
Cfi	-1.108636099	0.040299
Cybb	-1.107086434	0.000132
Cd86	-1.105109524	0.003299
Clpx	-1.10479865	0.01002
Dock10	-1.100134595	0.00324
Wdfy4	-1.099717568	0.011402
Gpr171	-1.098259443	0.025381
Pik3r6	-1.095515381	0.002263
Ccl9	-1.094933906	3.28E-07
Plbd1	-1.093630778	0.00296
Cx3cr1	-1.092600861	4.88E-05
Sntb1	-1.09197764	0.049899
Plcb2	-1.090893412	6.68E-06
Trpv2	-1.089603245	0.000475
Masp1	-1.088182299	0.037618
Adap2	-1.086939703	0.003052
Tnfaip8l2	-1.086406472	4.20E-06
Tlr9	-1.085802093	0.01091
Steap3	-1.084715273	0.019159
Ptpro	-1.083416902	0.000592
Olfml1	-1.082386294	0.020797
Tlr12	-1.082238969	0.011488
Clec5a	-1.0811707	0.031004
Ikzf1	-1.078298695	0.001388
Scimp	-1.0781301	0.002224
Treml4	-1.077347784	0.016629
Amica1	-1.074439695	0.025362
Pbld1	-1.069572681	0.044778
Lst1	-1.067705486	0.029701
Gna15	-1.065806515	5.11E-05
Arhgap15	-1.064546672	0.004554

A230050P20Ri	-1.063823086	0.01847
Sla	-1.062830383	0.000421
Inca1	-1.062802222	0.033231
Hoga1	-1.060100329	0.042716
Rasal3	-1.059335686	0.006067
Emb	-1.058790622	0.005895
Immp2l	-1.058774555	0.009043
Abca8b	-1.055496728	0.037267
Clec4a1	-1.055423982	0.014099
Gpr17	-1.054727891	0.039261
Fam196b	-1.054608668	0.006183
Adam11	-1.050030056	0.027869
Arhgap4	-1.047051252	3.74E-08
Rilp	-1.045035976	0.046525
Gbgt1	-1.044979999	0.002155
Tcf21	-1.044523154	0.01002
Rab32	-1.043063737	0.000323
Psen2	-1.042559369	0.048244
Gulo	-1.04200616	0.038648
H2-Q1	-1.041751776	0.010283
Alad	-1.034179466	0.013655
Neb	-1.02984924	0.04495
Hcls1	-1.02864262	3.38E-05
1700012D14Ri	-1.026606563	0.003401
Faim3	-1.025045976	0.032647
Lpl	-1.024221931	0.000603
Inhbe	-1.023140887	0.022929
Ticam2	-1.019377267	0.000307
Clec10a	-1.018923104	0.031848
AU022793	-1.018904464	0.008167
Hk3	-1.016591949	0.004367
Clec2i	-1.016209252	0.019686
Gp49a	-1.015131809	0.01002
Arhgap30	-1.010555496	5.83E-05
Card9	-1.009852791	0.002149
Lrrc25	-1.007597846	0.002592
A530032D15Ri	-1.002052606	0.026415
Mfsd7a	-1.001874496	0.004967
Lrrc3	-1.001248355	0.042716
Map1b	1.002017493	0.049416
Slc16a3	1.004993121	0.022131
Dusp4	1.013095658	0.000502
Mpp2	1.014259537	0.020585
Dusp14	1.024507249	0.016263
Prss12	1.026832928	0.025408
1700125H03Ri	1.049448923	0.035186
Chst11	1.057622074	0.016845

Bfsp1	1.061499811	0.039775
Zfp365	1.06841489	0.002124
Cthrc1	1.07447159	0.021515
Jag1	1.074660022	0.042769
Cox4i2	1.07574114	0.006256
Csgalnact1	1.079760935	0.008741
Rgs4	1.096174694	0.033093
Tmem200a	1.105521561	0.043498
Tnfrsf22	1.109990091	0.000926
Gjb4	1.112612554	0.014647
Dnahc10	1.113483559	0.008751
Ano4	1.121375216	0.00194
Nt5e	1.126805614	0.004005
Cubn	1.130228603	0.040367
Fosl1	1.144478116	0.008376
Tnfaip6	1.155584823	0.033231
Adamts4	1.169591542	3.55E-05
Inhba	1.208117501	0.014237
Fam71f2	1.212658872	0.008754
Tnfrsf23	1.217490217	1.20E-05
Stc1	1.218295016	0.041386
Meox1	1.22617395	1.95E-05
Crlf1	1.234425044	0.043382
Gm12505	1.242061221	0.000686
Abcb1a	1.26173947	0.022955
Rab15	1.286280751	0.000443
Areg	1.295513028	0.003242
Ptprn	1.3162725	0.025704
Piezo2	1.318922561	0.023871
Mcpt1	1.323246307	0.029249
Psg22	1.343555947	0.044944
Apol8	1.347616129	0.042658
Nav3	1.355382932	0.045782
Foxc2	1.359034039	0.000592
7530420F21Ril	1.369809598	0.033231
Ptgs2	1.439398642	0.001799
Esm1	1.44224475	0.025408
Npr3	1.542496094	0.038762
Lrrc10b	1.616381191	0.009776
Sh3gl3	1.634393219	0.025145
Vgf	1.666178427	0.041992
Tktl1	1.679711699	0.007367
Nell2	1.696023875	0.021515
Clvs1	1.770366959	0.048505
Stmn4	1.776608881	0.000307
Anks1b	1.783108455	0.031165
9530059O14Ri	1.788725326	0.035773

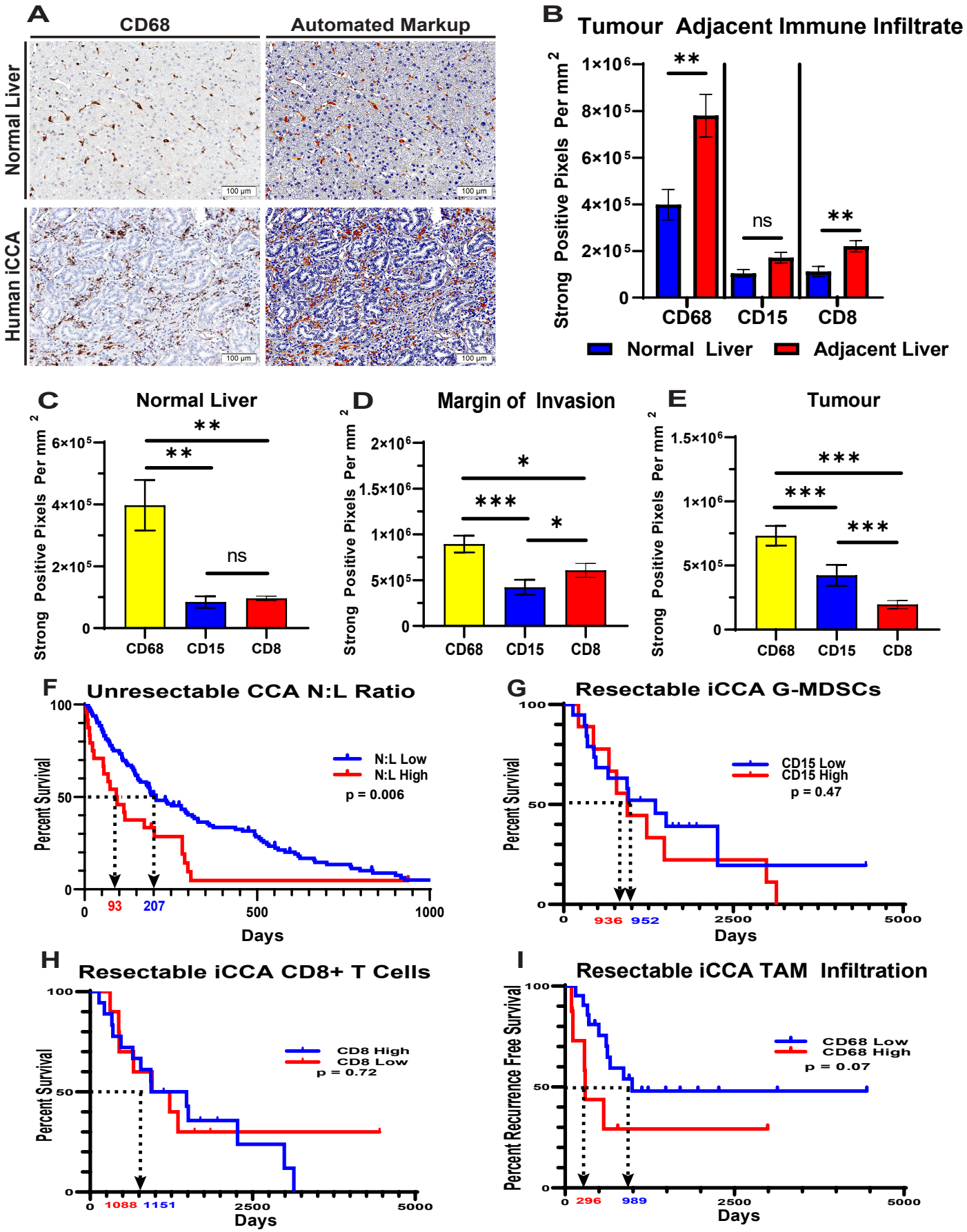
Tnni1	1.847844247	0.009578
Lrrc3b	1.879506359	0.021159
Lrrc7	1.918528371	0.042881
Fam19a1	2.013613918	0.020756
Ptpn5	2.193401922	0.002117
1700123L14Ril	2.244908836	0.01191
Kcnc2	2.358299551	0.024504
Hey1	2.430097521	0.013656
Stmn2	2.430225425	0.043736
Hist2h2aa2	2.46344576	2.76E-05
Aldh1a3	2.550888301	0.002626
Pthlh	2.694356144	0.007202
Gpr149	2.864417062	0.032319
Npy	2.870673498	0.005519
4930474M22R	2.886646966	0.034173
Slitrk6	3.545459842	0.002423
Crabp1	4.858974746	0.00527

Enrichment FDR	Genes in list	Total genes	Functional Category	Genes
4.25E-11	38	1367	Immune response	CCL8 H2-M2 CCL6 CD180 CXCL13 PF4 CD19 CCL22 CCL17 CCL12 TLR8 CD79B CCR5 PGL
7.97E-10	47	2299	Immune system process	CCL8 TNFRSF13B H2-M2 CCL6 IRF4 CD180 CXCL13 PF4 CD19 F7 CCL22 CCL17 CCL12 TLF
3.66E-08	34	1439	Defense response	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 TLR8 LYZ1 LYZ2 CCR5 PGLYRP2 TREM2 CLEC
1.12E-07	23	703	Innate immune response	CCL8 CCL6 CCL22 CCL17 CCL12 TLR8 TREM2 CLEC4N KLRB1B CFP FCGR1 CD180 CLDN1
2.04E-07	43	2378	Response to external stimulus	CCL8 CCL6 CD180 CXCL13 PF4 F7 CCL22 CCL17 CCL12 TLR8 LYZ1 LYZ2 CCR5 PGLYRP2 TF
1.30E-06	9	85	Chemokine-mediated signaling pathway	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 TREM2 CCR5
1.31E-06	29	1281	Regulation of immune system process	TNFRSF13B H2-M2 CD19 F7 TLR8 CD79B PGLYRP2 DCSTAMP TARM1 ZBTB16 KLRB1B B
2.18E-06	9	93	Long-chain fatty acid metabolic process	CYP2C38 CYP2C70 CYP2C68 CYP2A22 ALOX15 ACOT3 ACOT1 CYP4F14 ACOT4
2.31E-06	9	96	Response to chemokine	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 TREM2 CCR5
2.31E-06	9	96	Cellular response to chemokine	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 TREM2 CCR5
2.85E-06	20	668	Inflammatory response	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 CCR5 TARM1 CD180 SERPINC1 APOA1 TLR8
8.23E-06	27	1258	Lipid metabolic process	ACOT3 ELOVL2 ENPP2 EHHADH CYP7A1 APOA1 CYP2C38 AKR1D1 ACOT4 CES1G CES1C
1.65E-05	22	901	Positive regulation of immune system process	H2-M2 CD19 F7 TLR8 CD79B DCSTAMP BCL2A1D CFP TREM2 C1QA C1QC C1QB IGFBP2
1.66E-05	23	987	Response to external biotic stimulus	CD180 CXCL13 PF4 TLR8 LYZ1 LYZ2 PGLYRP2 TREM2 CLEC4N CLDN1 CD207 DEFB1 CCR5
1.66E-05	23	984	Response to other organism	CD180 CXCL13 PF4 TLR8 LYZ1 LYZ2 PGLYRP2 TREM2 CLEC4N CLDN1 CD207 DEFB1 CCR5
2.78E-05	23	1020	Response to biotic stimulus	CD180 CXCL13 PF4 TLR8 LYZ1 LYZ2 PGLYRP2 TREM2 CLEC4N CLDN1 CD207 DEFB1 CCR5
3.99E-05	35	2138	Positive regulation of response to stimulus	CCL8 G0S2 H2-M2 CCL6 CD180 CD19 F7 CCL22 CCL17 CCL12 TLR8 CD79B CLEC4N TARM
6.98E-05	18	693	Response to bacterium	CD180 CXCL13 PF4 LYZ1 LYZ2 PGLYRP2 TREM2 CLDN1 DEFB1 CCR5 BANK1 CD79B CES1
6.98E-05	12	301	Lipid catabolic process	ENPP2 EHHADH APOA1 CES1G CES1C CES1B CYP7A1 CYP4F14 ANGPTL3 FGF21 AKR1D1
8.63E-05	8	118	Neutrophil migration	CCL8 CCL6 CXCL13 PF4 CCL22 CCL17 CCL12 CD177

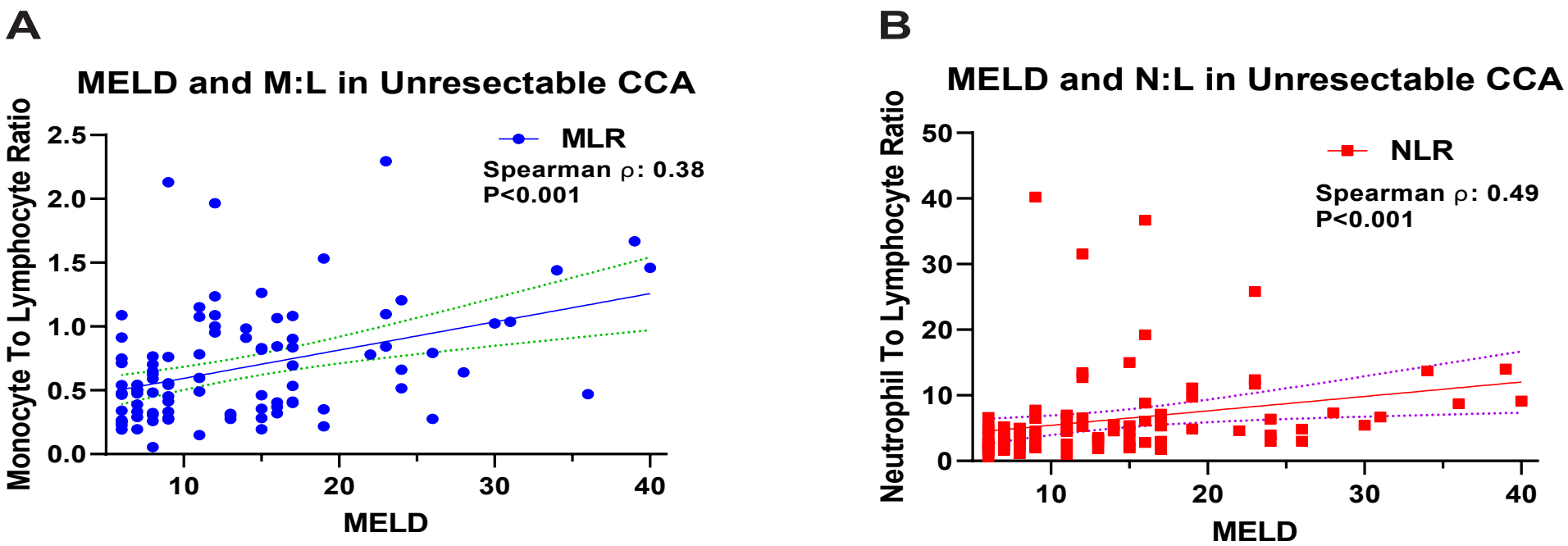
Enrichment FDR	Genes in list	Total genes	Functional Category	Genes
2.19E-14	46	941	blood vessel development	Prl2c2/Hes1/Adgrf5/Foxs1/Tead2/Sema5a/Ecscr/Angpt4/Ephb4/Adam12/Col18a1/Foxc1/I
1.15E-13	46	95	vasculature development	Prl2c2/Hes1/Adgrf5/Foxs1/Tead2/Sema5a/Ecscr/Angpt4/Ephb4/Adam12/Col18a1/Foxc1/I
1.48E-12	40	80	blood vessel morphogenesis	Prl2c2/Hes1/Adgrf5/Tead2/Sema5a/Ecscr/Angpt4/Ephb4/Adam12/Col18a1/Foxc1/Notch4
1.92E-12	48	89	tube morphogenesis	Prl2c2/Hes1/Adgrf5/Adamts12/Tead2/Sema5a/Ecscr/Angpt4/Cthrc1/Gata3/Ephb4/Adam1
1.27E-11	35	169	angiogenesis	Prl2c2/Sema5a/Ecscr/Angpt4/Ephb4/Adam12/Col18a1/Foxc1/Notch4/Hmga2/Amotl2/Plc
3.78E-10	25	100	regulation of angiogenesis	Prl2c2/Sema5a/Ecscr/Angpt4/Adam12/Foxc1/Notch4/Hmga2/Tgfb2/Fgf1/Rapgef3/Ccr3/E
4.99E-10	26	66	regulation of vasculature development	Prl2c2/Sema5a/Ecscr/Angpt4/Ephb4/Adam12/Foxc1/Notch4/Hmga2/Tgfb2/Fgf1/Rapgef3/
7.86E-09	21	168	extracellular matrix organization	Adamts12/Sema5a/Fbln1/Pxdn/Col18a1/Gpm6b/Foxc1/Loxl1/Tgfb2/Lamb1/Col5a1/Smpd
8.56E-09	21	105	extracellular structure organization	Adamts12/Sema5a/Fbln1/Pxdn/Col18a1/Gpm6b/Foxc1/Loxl1/Tgfb2/Lamb1/Col5a1/Smpd
3.00E-08	43	26	epithelium development	Klf15/Hes1/Pard3/Adamts12/Tead2/Clic5/Sema5a/Cthrc1/Gata3/Gas1/Slc4a5/Atoh8/Ret/
5.15E-08	35	727	cell morphogenesis involved in differentiat	Nptx1/Hes1/Ptprd/Pard3/Ngf/Clic5/Sema5a/Gata3/Ephb4/Gas1/Fbln1/Ret/Etv4/Col18a1/
6.36E-08	35	575	regulation of cell adhesion	Hes1/Sema5a/Gata3/Ephb4/Megf10/Fbln1/Ret/Zdhhc2/Gpm6b/Notch4/Camsap3/Tnc/Tg
9.07E-08	34	88	cell-cell adhesion	Hes1/Ptprd/Pard3/Gata3/Ephb4/Megf10/Ret/Zdhhc2/Igsf11/Notch4/Pcdh18/Camsap3/Nr
1.40E-07	15	17	Notch signaling pathway	Sorbs2/Hes1/Angpt4/Tcim/Enho/Foxc1/Notch4/Dner/Chac1/Tgfb2/Jag2/Epn2/Bcl6/Jag1/(
1.70E-07	39	217	cation transport	Rab3b/Hes1/Atp1b1/Ngf/Heph/Fcrl5/Tfr2/Syt6/Steap2/Piezo2/Steap4/Jph2/Kcnk12/Kcnh
1.97E-07	11	507	regulation of Notch signaling pathway	Hes1/Tcim/Enho/Notch4/Chac1/Tgfb2/Jag2/Epn2/Bcl6/Jag1/Gdpd5
2.24E-07	17	42	positive regulation of vasculature developr	Prl2c2/Sema5a/Angpt4/Ephb4/Adam12/Notch4/Hmga2/Fgf1/Rapgef3/Ccr3/Kdr/Serpine1/
2.79E-07	39	59	regulation of cell migration	Prl2c2/Sema5a/Angpt4/Gata3/Dpep1/Fbln1/Atoh8/Ret/Mgat3/Col18a1/Camsap3/Lgr6/Cc
3.09E-07	16	742	positive regulation of angiogenesis	Prl2c2/Sema5a/Angpt4/Adam12/Notch4/Hmga2/Fgf1/Rapgef3/Ccr3/Kdr/Serpine1/Itgb3/I
4.09E-07	37	341	animal organ morphogenesis	Hes1/Tead2/Clic5/Cthrc1/Gata3/Ephb4/Gas1/Ccdc154/Gdf11/Ankrd6/Fjx1/Cpe/Etv4/Grer

Enrichment FDR	Genes in list	Total genes	Functional Category	Genes
1.54E-05	2	1117	hyaluranon cable assembly	Bmp7/Has3
1.54E-05	2	809	regulation of hyaluranon cable assembly	Bmp7/Has3
1.54E-05	2	674	positive regulation of hyaluranon cable assembly	Bmp7/Has3
0.000279941	7	538	tissue morphogenesis	Irx2/Pthlh/Aldh1a3/Hey1/Bmp7/Tnni1/Stc1
0.000459346	2	68	morphogenesis of an epithelial bud	Pthlh/Bmp7
0.00045992	6	781	regulation of hormone levels	Crabp1/Aldh1a3/Vgf/Il11/Nell2/Gipr
0.000461433	3	363	nephron morphogenesis	Irx2/Hey1/Bmp7
0.000627044	4	187	osteoblast differentiation	Twist2/Pthlh/Hey1/Bmp7
0.000683528	2	963	osteoblast development	Pthlh/Hey1
0.000840295	3	699	kidney morphogenesis	Irx2/Hey1/Bmp7
0.000958094	5	118	ossification	Twist2/Pthlh/Hey1/Bmp7/Stc1
0.001049372	2	432	reflex	Slitrk6/Aldh1a3
0.001152645	2	336	endocardial cushion formation	Hey1/Bmp7
0.001152645	2	107	morphogenesis of an epithelial fold	Pthlh/Bmp7
0.00116311	4	50	skeletal system morphogenesis	Twist2/Pthlh/Bmp7/Stc1
0.001260601	2	58	retinoic acid metabolic process	Crabp1/Aldh1a3
0.001490478	2	684	startle response	Slitrk6/Grin2a
0.001490478	2	89	embryonic camera-type eye morphogenesis	Aldh1a3/Bmp7
0.001617147	4	172	regulation of synaptic plasticity	Cbln1/Vgf/Ptpn5/Grin2a
0.001738837	2	314	monovalent inorganic anion homeostasis	Pthlh/Stc1

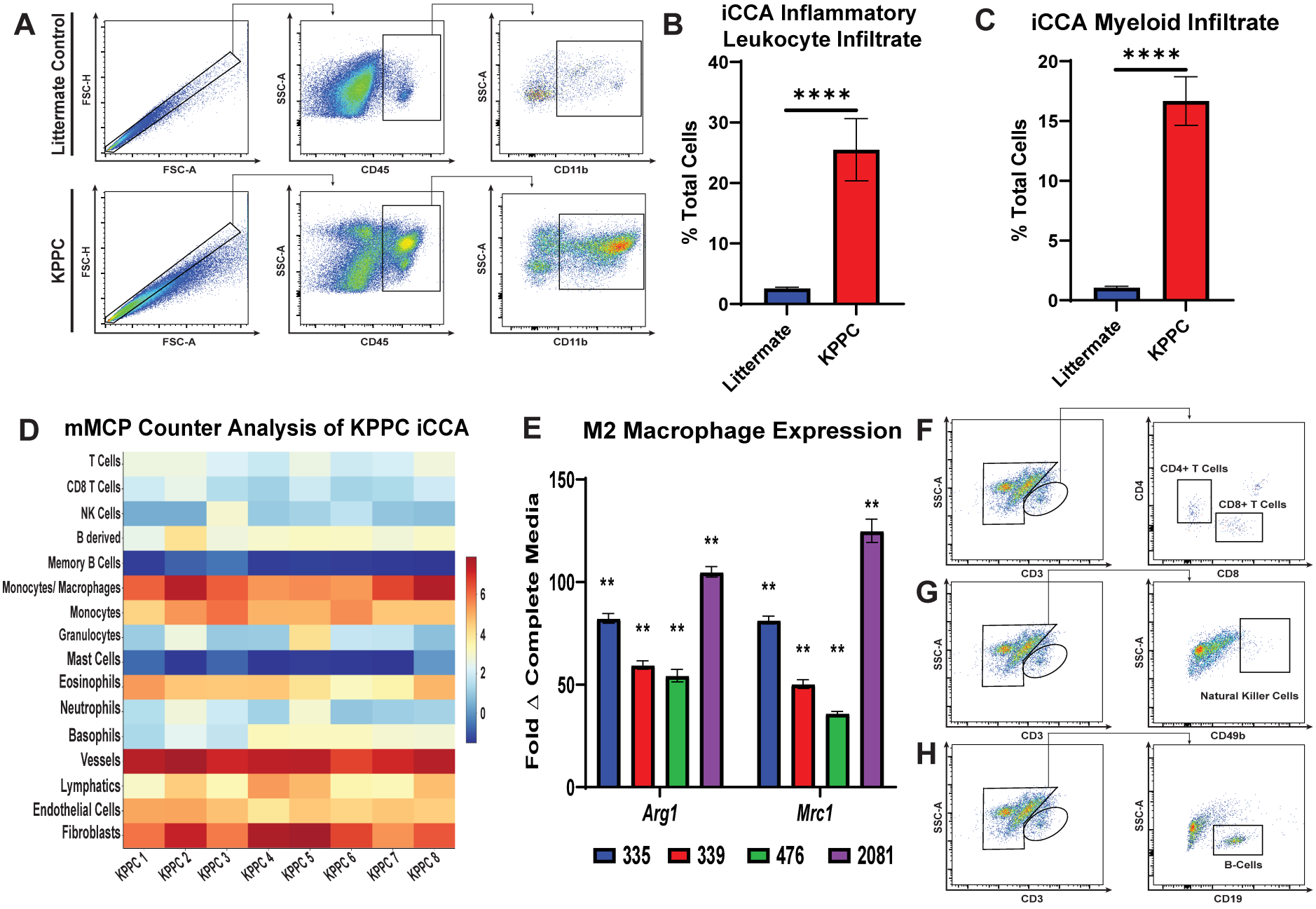
Supplemental Figure 1



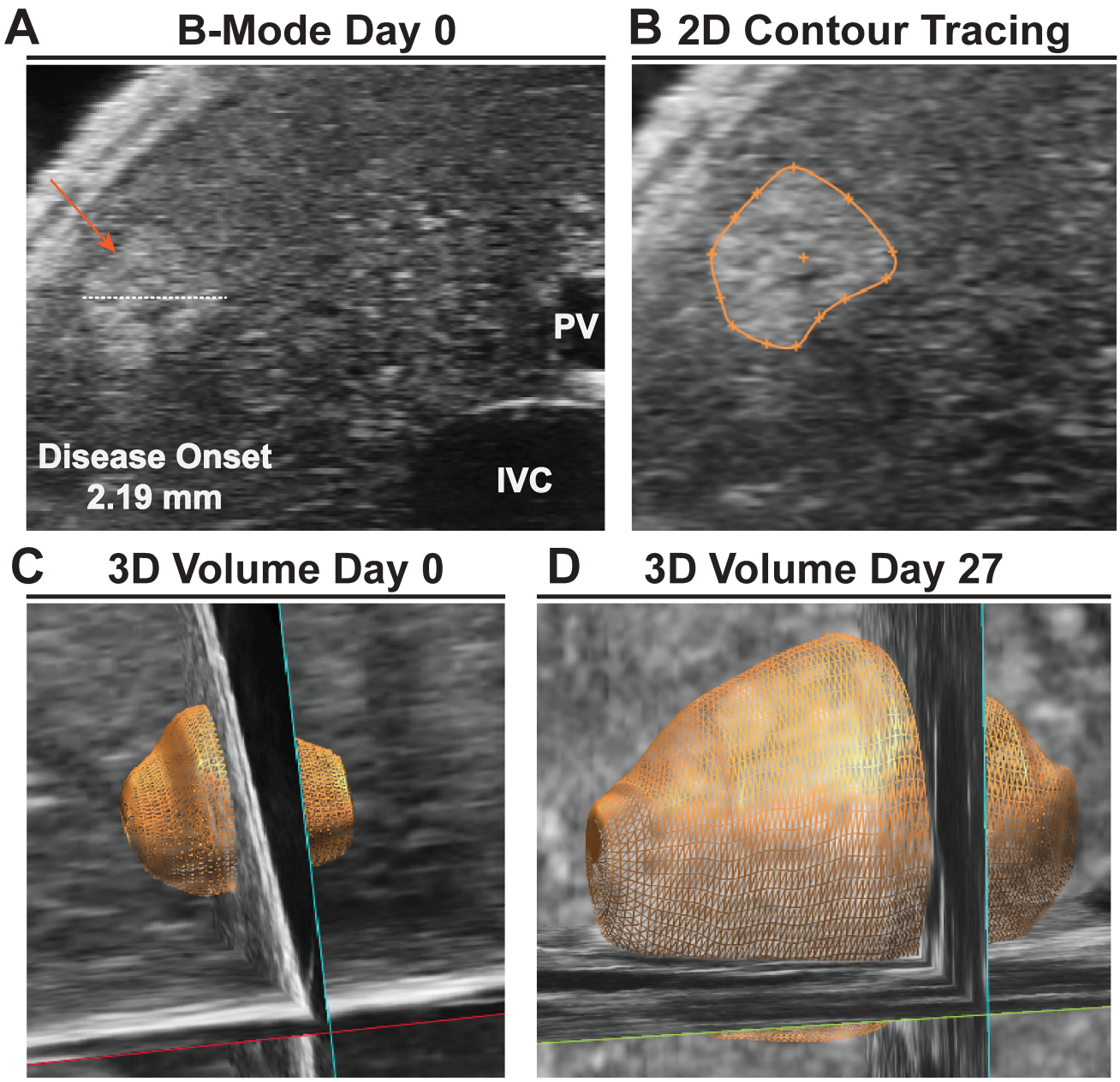
Supplemental Figure 2



Supplemental Figure 3

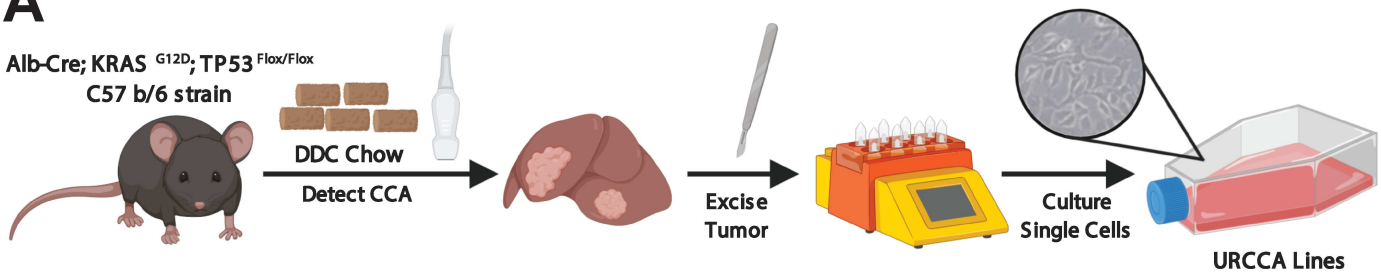


Supplemental Figure 4



Supplemental Figure 5

A

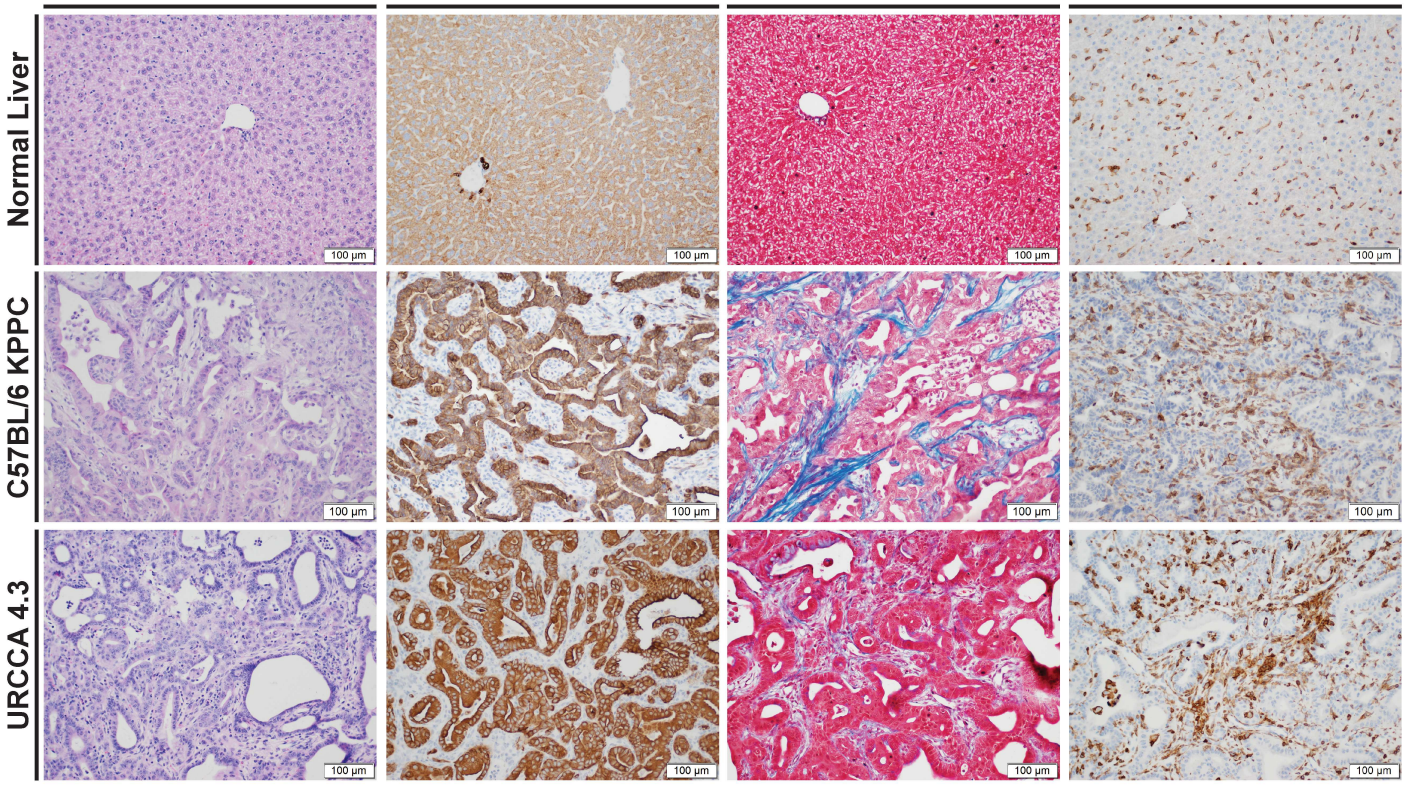


B

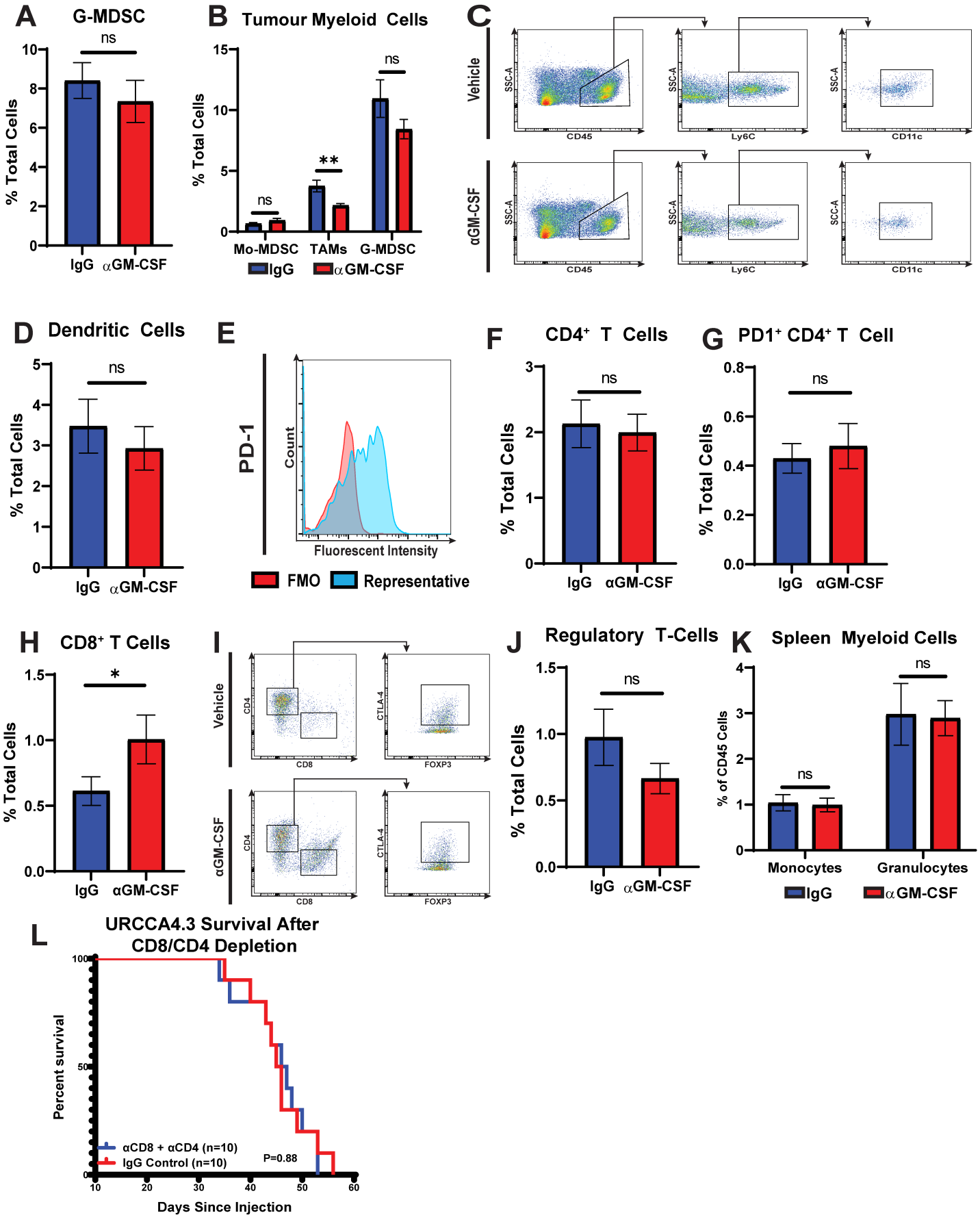
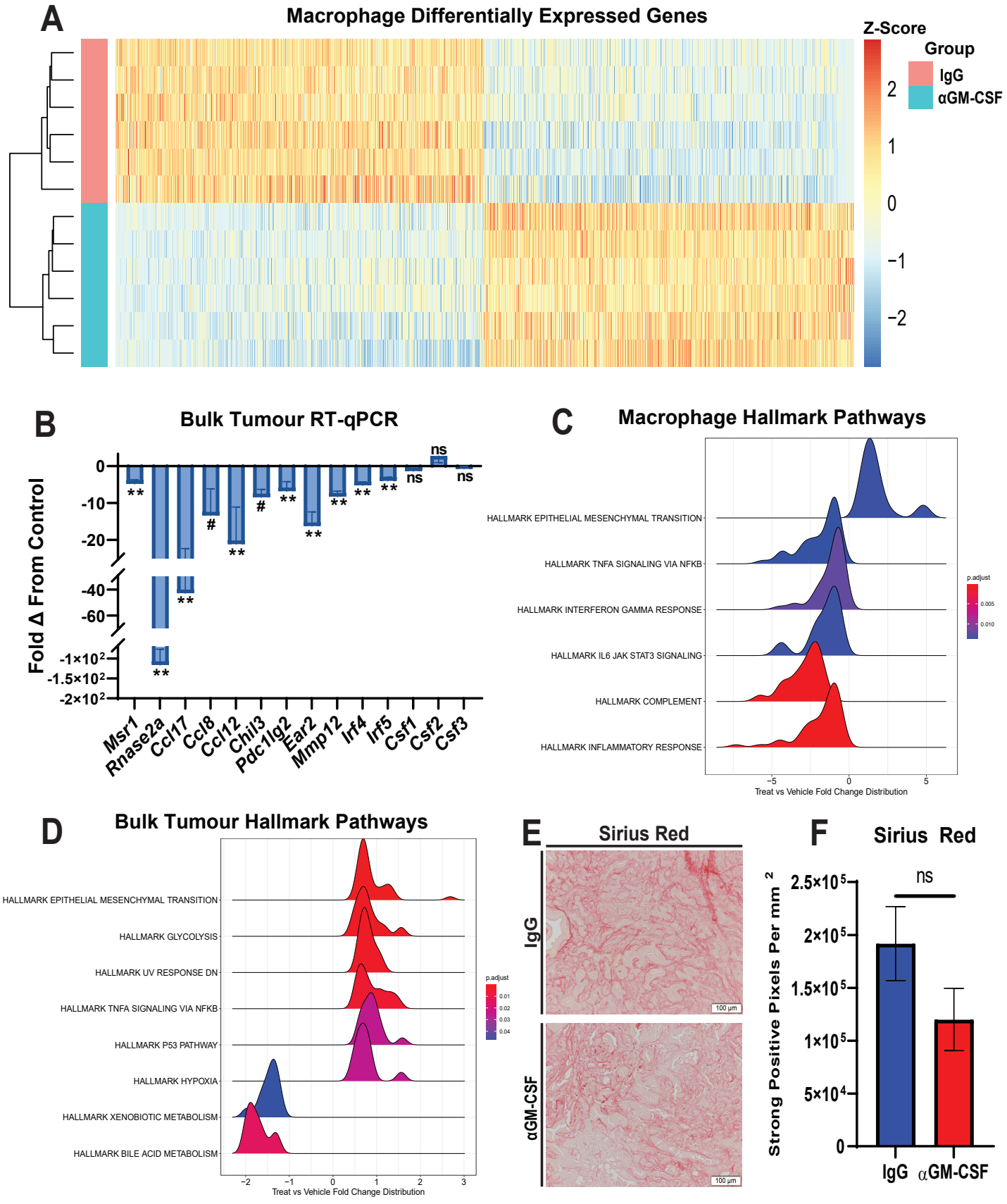
Concentration (pg/mL)
ND
<5
5-20
20-41
41-60
61-100
101-150
151-250
251-500

Cell Line	M-CSF	GM-CSF	G-CSF
URCCA 1.1	5-20	61-100	5-20
URCCA 2.1	ND	41-60	20-41
URCCA 2.2	ND	41-60	20-41
URCCA 2.3	<5	61-100	101-150
URCCA 2.6	ND	61-100	20-41
URCCA 3.1	5-20	101-150	20-41
URCCA 3.2	5-20	151-250	101-150
URCCA 3.3	5-20	151-250	41-60
URCCA 3.4	5-20	151-250	20-41
URCCA 3.5	5-20	41-60	5-20
URCCA 4.1	5-20	101-150	61-100
URCCA 4.2	5-20	101-150	61-100
URCCA 4.3	5-20	151-250	61-100
KP2	5-20	101-150	101-150
Media Only	ND	ND	ND

C



Supplemental Figure 6



Supplemental Figure 7