

Supplementary Table 1: Number and percentage of cells in different cellular clusters in diabetic and non-diabetic skin samples

Cell type	Total number of cells	diabetic	non-diabetic	diabetic %	non-diabetic %
Endo	7470	1736	5734	14.79	23.16
T cells	4827	1627	3200	13.87	12.93
Fibro A	4486	1610	2876	13.72	11.62
Fibro B	4002	1229	2773	10.47	11.20
SMC	3494	1236	2258	10.53	9.12
NK cells	3437	1208	2229	10.29	9.00
Kera A	3340	1197	2143	10.20	8.66
Myeloid	2625	1004	1621	8.56	6.55
Mast cells	1000	376	624	3.20	2.52
LEC	682	200	482	1.70	1.95
Kera B	663	237	426	2.02	1.72
Melanocytes	461	74	387	0.63	1.56

Supplementary Table 2

Supplementary Table 2: Downregulated genes in one (423) or more cluster (151) in diabetic skin

Genes downregulated in more than one cluster

Gene name	Endo	T cells	Fibro A	Fibro B	SMC	NK cells	Kera A	Myeloid	Mast cells	LEC	Kera B	Melanocytes
PLCG2	-0.51829	-1.61827	-0.89538	-0.85789	-0.55076	-1.51154	-0.84698	-0.67542	-1.222980388	-0.78138		-0.718233163
MT2A	-0.70444	-1.74069	-1.34467	-0.98279	-1.55382	-2.68495	-1.25257	-1.48945	-1.496837228			-1.017690984
MT1E	-0.51328	-1.65455	-1.20844	-1.08032	-1.50535	-2.65874	-1.16908	-0.84116				-1.22026088
RPS10	-0.61655	-0.71939	-0.65034	-0.64287	-0.75537	-0.7076	-0.64517	-0.71343		-0.84976		
TSC22D3	-0.42221	-0.69964	-1.07574	-0.62338		-0.65375	-0.56204	-0.76217	-0.826420517			
MT1X	-0.68748	-1.76328	-0.83974	-0.82603	-1.55297	-2.943	-0.74536	-1.29597				
XIST	-1.56524	-1.00625	-1.45624	-1.02171	-1.40814		-1.69664	-1.54221		-1.4604		
CFD		-0.37461	-0.4973	-0.6487	-0.29393	-0.30952	-0.76735				-1.587	
S100A10		-0.34742	-0.63087			-0.28596	-0.41222	-0.71745	-0.627556477	-0.89269		
RPS4X		-0.30438				-0.30731	-0.57456	-0.4485		-0.34288	-0.70079	
HNRNPH1	-0.2675	-0.32618	-0.56399	-0.31782	-0.27281			-0.28832				
RPL5		-0.30521				-0.33147		-0.26333		-0.35603	-0.29843	
MTRNR2L1			-1.06131	-1.15493	-0.86218			-1.02078				-1.93419504
SELENOW	-0.70607		-0.58334	-0.48046			-0.41271			-0.67499		
GLUL		-0.35277	-0.48511	-0.43019		-0.26844			-0.374979519			
EMP1	-0.63973		-0.2882					-0.5986		-0.95891		-0.687732748
MTRNR2L8		-1.36495	-0.93336	-0.88779		-1.1551		-0.96418				
PDK4	-0.9275		-0.58305	-0.52533	-1.03026		-0.29733					
MT-ND4			-0.34704	-0.42785					-0.369765169		-0.9111	-0.339265244
TXNIP	-0.37089	-1.15252				-0.64823	-0.57049	-0.33961				
CST3			-0.63124	-0.31239	-0.40714		-0.57815	-0.72345				
AMD1	-0.27481		-0.29165	-0.26657	-0.31356							
MT-ND4L			-0.46317	-0.47449					-0.295184574			-0.434036559
DCN		-0.26316	-0.25791					-0.28952			-0.63459	
HSPA8		-0.36996	-0.29255		-0.34533	-0.40919						
TPPP3			-0.96786	-0.6631			-0.80706			-0.61637		
KLF9	-0.29088				-0.39013		-0.32722	-0.4548				
TXN		-0.26626	-0.34345		-0.27977				-0.459182072			
HSPH1		-0.61201	-0.40378			-0.62171		-0.50868				
RPL36A		-0.27653			-0.27121	-0.30409		-0.33125				
PHLDA1	-0.32112	-0.29653	-0.29581		-0.42253							
LGALS1		-0.26655	-0.30962			-0.40176			-0.512993711			
PLAC9			-0.90262	-0.44301	-0.26511					-0.61077		
FKBP5	-0.29861	-0.47995			-0.57148	-0.62695						
CEBPD	-0.4186				-0.46858	-0.27758		-0.55057				
TMSB4X			-0.52524							-0.36397	-0.57502	
MINOS1			-0.41778	-0.41671			-0.27935					
ISG15	-0.74242		-0.31826		-0.67189							
FGL2			-0.67402	-0.62346				-0.69652				
KIAA0930			-0.53335	-0.27507								-0.575935045
CRIP2			-0.46312				-0.33277			-0.42426		
TAGLN2			-0.5027				-0.29156	-0.47576				
MT1A			-0.55071	-0.55483	-1.29893							
ZFAND5			-0.31068		-0.28277			-0.36477				
SAMHD1	-0.28829		-0.39587		-0.30211							
HMCN1			-0.40296	-0.3525						-0.40499		
FABP5	-0.53741				-0.28701						-1.31885	
NOVA1			-0.38276	-0.40582							-1.06777	
SRP14	-0.34471									-0.32999	-0.29037	
HSP90AA1		-0.49823			-0.44947			-0.54222				
DNAJB1	-0.36478				-0.72994			-0.54892				
AKAP13			-0.26622					-0.32863	-0.49084144			
GSTM3			-0.35572	-0.28747			-0.4804					
HES4			-0.38174		-0.5264				-0.64139209			
MTRNR2L12			-0.26393	-0.29888		-0.29433						
TSC22D1			-0.72355				-0.2619		-0.648557435			
MT-CO1			-0.3173	-0.2892							-0.6447	
CD55			-0.6514	-0.85935				-0.29887				
GSN	-0.3434		-0.48334				-0.32464					
MT1M			-1.29712	-1.21224	-1.57625							
HLA-DRB5	-0.41129					-0.40889		-0.91061				
DYNLL1		-0.29377	-0.34331				-0.44079					
NDUFA11			-0.29797	-0.2866			-0.25197					
PLIN2	-0.70495						-0.4021		-0.425369152			
DPYSL2			-0.41773						-0.517394542			-0.847981119
PABPC4		-0.28949						-0.31016	-0.427726324			

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RPL15				-0.32584	-0.26255	-0.27675	
BGN		-0.48384	-0.47471				
C1orf56				-0.27746	-0.34128		
ANXA4		-0.40243	-0.36096				
NTM			-0.26926			-0.787203283	
YBX3				-0.34187		-0.490025139	
HSPD1				-0.2994	-0.53737		
ODC1	-0.27292						-1.57202
GAS1		-0.46334	-0.37053				
STMN1		-0.27019					-1.79192
PLP2		-0.27099		-0.30701			
MAMDC2		-0.59234	-0.29675				
PI16		-0.9364	-0.86466				
HSP90AB1				-0.25169	-0.2944		
MAFB		-0.49643	-0.35195				
IFI6	-0.69019			-0.66825			
ABLIM1		-0.51869	-0.4601				
SPON2				-0.48921	-0.31641		
DKK2		-0.38534	-0.35941				
VEGFB		-0.30213	-0.37112				
IFNGR1					-0.39753	-0.469798175	
SPARC		-0.45873	-0.74692				
ESYT2		-0.31206				-0.427297891	
PRDM1		-0.36333		-0.3515			
PRELP		-0.32754					-0.514571263
CPQ		-0.46067	-0.49325				
DDX3X	-0.28456			-0.28196			
CLEC11A		-0.34123	-0.46276				
HLA-DQA2	-0.79236				-0.95838		
ANXA1					-0.40609		-0.537935229
LTBP4		-0.8311	-0.45264				
ACKR3		-0.50398	-0.42836				
GSTP1				-0.44941			-0.51106
CKB				-0.28237			-0.85408
TNXB		-0.88375	-0.37198				
COL5A1		-0.32296	-0.25878				
LPAR6		-0.4566		-0.462			
FBLN2		-0.45008	-0.35248				
CRABP2			-0.33398				-1.25347
SPARCL1	-0.40323	-1.08891					
AP1S2							-1.37364
TUBB2A		-0.30543					-0.585902618
MAML2		-0.29751				-0.403869121	-2.14209
TUBA1B		-0.30403					-0.75739
PCSK1N			-0.4453				-2.40024
KRT10			-0.26069	-0.82497			
ANGPTL1		-0.9719	-0.67573				
STC1	-0.80954						-0.8037
ABCC9		-0.34722	-0.30007				
PHF20				-0.32896		-0.376242178	
ANKRD28		-0.39239			-0.3962		
ADRB2	-0.36268			-0.38184			
IL6ST		-0.30985		-0.25819			
UBB		-0.30301		-0.2718			
HSPB1		-0.33181			-0.73136		
CLK1		-0.26105		-0.27463			
SOX4		-0.28575					-1.79864
DEFB1			-0.45588	-0.45578			
CES1		-0.32475	-0.4616				
FBLN1		-0.77964	-0.47717				
CCDC80		-0.90537	-0.67581				
DUSP1		-0.468			-0.35648		
CCPG1		-0.29446	-0.29595				
GOLIM4		-0.37095	-0.29703				
DDIT4		-0.29078		-0.3101			
CASC4		-0.28677	-0.28713				
OMD		-0.35084	-0.61405				
DNAJA1	-0.30245			-0.34791			
LEPR		-0.72288	-0.40868				

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TOB1		-0.60473					-0.45849						
MTUS1	-0.29074		-0.25491										
ANXA2			-0.42297					-0.28583					
HTRA3			-0.5678	-0.48117									
TMSB10										-0.26255	-0.58678		
HMGN3			-0.31272							-0.52351			
NBL1			-0.45649	-0.28066									
MAT2A	-0.26205					-0.2972							
CAPG								-0.27132		-0.383368287			
MYADM									-0.32708				
PTMS										-0.72164			
NPDC1	-0.26987		-0.35646							-0.29383	-0.6883		
GNG11	-0.38981		-0.28648										
PTMA								-0.27031		-0.32707			
SEMA3C			-0.28281										-0.573092443
MXRA5			-0.59055	-0.34091									
Genes upregulated in one cluster													
Gene name	Endo	T cells	Fibro A	Fibro B	SMC	NK cells	Kera A	Myeloid	Mast cells	LEC	Kera B	Melanocytes	
IFI44L	-0.77901												
ENPP2	-0.7775												
CLDN5	-0.66649												
CTSH	-0.64249												
IFIT1	-0.6255												
BST2	-0.60656												
LY6E	-0.57362												
CYTL1	-0.52489												
ADAMTS1	-0.52324												
MX1	-0.49528												
IFIT3	-0.48715												
MAP1LC3B	-0.47122												
XAF1	-0.44893												
SCARB1	-0.44225												
SERPING1	-0.41936												
TGFBR2	-0.39824												
APOLD1	-0.37109												
TFPI	-0.35666												
IFI44	-0.32804												
TMEM70	-0.32362												
EIF2AK2	-0.32352												
AKR1C3	-0.31791												
PIK3R3	-0.31631												
MGLL	-0.3076												
FAM13C	-0.30104												
LNX1	-0.28764												
NASP	-0.27542												
PECAM1	-0.27092												
ATP5MC3	-0.26828												
OSBPL1A	-0.26739												
MCF2L	-0.26571												
ELOVL7	-0.26543												
CPVL	-0.26289												
FILIP1	-0.26266												
CXorf36	-0.26117												
ZC3HAV1	-0.26074												
DUSP23	-0.25909												
DDX58	-0.25799												
THSD7A	-0.2508												
BATF		-0.43531											
CRYBG1		-0.35933											
JAML		-0.2812											
SEPT11		-0.27897											
RBMS1		-0.25724											
MFAP5			-0.79127										
DPT			-0.76368										
IGFBP7			-0.69017										
CFH			-0.61326										
IGFBP6			-0.54932										
PLXDC1			-0.54334										
APCDD1			-0.53306										

Supplementary Table 2

CLEC3B	-0.52001
SDC2	-0.5091
TRPS1	-0.48686
ZBTB20	-0.47576
SVIL	-0.4733
DPYSL3	-0.46593
ELN	-0.46114
ABI3BP	-0.4509
SPTBN1	-0.44321
TACC1	-0.42466
MXRA7	-0.41706
SH3BGRL3	-0.41605
ABCA8	-0.40272
FBN1	-0.40108
OLFML2B	-0.38761
PTN	-0.38567
SYNE1	-0.37273
CCDC186	-0.37008
PLEKHH2	-0.36765
CD34	-0.36723
TMOD3	-0.36315
ANTXR1	-0.36254
ARL6IP5	-0.36077
PSD3	-0.34215
AXL	-0.33391
GAS7	-0.33347
NFIA	-0.3334
TIMP3	-0.33318
IL16	-0.33286
LUM	-0.32643
LTBP3	-0.32597
EPB41L2	-0.31327
ANK2	-0.3125
BMP4	-0.31015
DYNC2LI1	-0.30811
DIO2	-0.30769
COLEC12	-0.30127
WEE1	-0.2971
GADD45G	-0.29478
CTNNB1	-0.2905
F2R	-0.28972
ID3	-0.28833
ZNF706	-0.28674
EMP3	-0.28652
PMEPA1	-0.28646
PER2	-0.28374
TUBB4B	-0.28366
COL5A2	-0.28327
HNRNPDL	-0.28303
NFIX	-0.28281
OSR1	-0.28029
BLOC1S1	-0.2798
TMEM43	-0.27755
EIF4A2	-0.27735
LIMCH1	-0.2766
PGRMC1	-0.27617
PREX2	-0.27514
PALLD	-0.27352
KLF4	-0.27307
MAN1A1	-0.27199
NORAD	-0.27099
CTSF	-0.27035
DNM1	-0.27031
SRSF2	-0.26797
RBM6	-0.26786
ARGLU1	-0.26706
PAM	-0.26644
WWTR1	-0.26595
MOB3B	-0.26591

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SEPT7	-0.26523	
CAMK1D	-0.26395	
RGS10	-0.26395	
ADAM33	-0.26251	
REEP5	-0.26204	
ECM1	-0.26172	
C9orf3	-0.26007	
SNHG7	-0.25969	
DDAH2	-0.25691	
GPSM2	-0.25567	
GLDN	-0.25464	
ADD3	-0.2524	
MEOX2	-0.25235	
IRS2	-0.25217	
SNRPN	-0.25144	
ID1	-0.25005	
SLPI	-1.54995	
C1QTNF3	-0.76975	
MATN4	-0.67267	
ITIH5	-0.61034	
LRRC15	-0.54122	
MFGE8	-0.49319	
CERCAM	-0.47858	
NUCB2	-0.46318	
FNDC1	-0.45069	
FAP	-0.44733	
SEMA3B	-0.44044	
ANGPTL5	-0.43049	
PPIC	-0.40564	
CYBRD1	-0.37934	
VKORC1	-0.37742	
P4HA2	-0.36184	
FAM180B	-0.3486	
PCOLCE2	-0.34208	
PCOLCE	-0.34179	
XG	-0.33538	
CITED2	-0.32734	
ADGRA2	-0.32559	
PRDX4	-0.30593	
HAS2	-0.30591	
FKBP7	-0.30113	
KDELRL3	-0.29378	
C1QTNF7	-0.28753	
PDGFRL	-0.28664	
SKAP2	-0.28316	
OGN	-0.28086	
C1QTNF4	-0.28043	
AIF1L	-0.27517	
CHPF	-0.27172	
OSR2	-0.26525	
GSTM5	-0.26352	
SERPINA5	-0.26222	
LRRC17	-0.26198	
MMP27	-0.26054	
RECK	-0.25322	
CCL8		-0.8383
CH25H		-0.60632
AVPR1A		-0.59526
RGS5		-0.53366
MYC		-0.49778
NCKAP5		-0.49622
ANGPT2		-0.48011
MTHFD2		-0.46523
C2orf40		-0.43381
CLMN		-0.40702
ZNF331		-0.3769
ANGPTL4		-0.33705
ADRA2A		-0.32314
SNHG15		-0.31405

Supplementary Table 2

COX4I2	-0.30969
ENPEP	-0.30347
GGCX	-0.28732
LBH	-0.28328
MEF2C	-0.28233
NUDT4	-0.28219
RRAD	-0.27053
MCL1	-0.26835
KLHL23	-0.2658
CYTH3	-0.25329
MT1F	-1.41651
AREG	-0.65314
SLC30A1	-0.48577
FGFBP2	-0.37768
CMC1	-0.32381
GNLY	-0.32011
ISG20	-0.28525
SKI	-0.28444
DEDD2	-0.28386
LINC01871	-0.28314
RPL27	-0.27703
ATP5IF1	-0.25786
ELL2	-0.25664
GLRX	-0.25527
LGALS7	-1.45927
KRT1	-0.92113
MT1G	-0.88288
KRTDAP	-0.86028
HOPX	-0.71286
DMKN	-0.70337
LY6D	-0.66791
CALML5	-0.64173
SYT8	-0.61808
MT4	-0.61555
CCL27	-0.58423
HBA2	-0.5643
DSG1	-0.55309
EPHB6	-0.55033
KCNK7	-0.54356
PHLDA2	-0.53725
LGALS7B	-0.53064
DSP	-0.52483
CSTA	-0.52185
SBSN	-0.49566
DSC1	-0.49261
S100A14	-0.49127
PYCARD	-0.49041
ALDH3A2	-0.48217
ALDH3A1	-0.4708
AHNAK2	-0.46498
IL18	-0.43455
CYB5A	-0.43232
CCND1	-0.42449
RNH1	-0.41843
S100A16	-0.41199
GLTP	-0.40769
PKP1	-0.39295
LAMTOR4	-0.37774
SDC1	-0.37387
EMP2	-0.37155
RAB25	-0.37154
CLTB	-0.36399
JUP	-0.35814
WNT4	-0.34775
CHP2	-0.34042
CASP14	-0.32774
EPPK1	-0.3274
CLDN1	-0.32406
LGALS1	-0.31102

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TRIM29	-0.29809	
ZBTB7B	-0.29716	
OGFRL1	-0.29375	
FGFBP1	-0.29348	
SULT2B1	-0.29249	
CEBPA	-0.29109	
IMPA2	-0.29104	
SYTL1	-0.28551	
DSC3	-0.28278	
PKP3	-0.28147	
EGR3	-0.28104	
PPP1R16A	-0.27649	
LYPD3	-0.27438	
ANO1	-0.2737	
CD109	-0.2728	
ITM2B	-0.27137	
EIF2S3	-0.26555	
DUSP2	-0.26479	
TKT	-0.26012	
KLK8	-0.2588	
CAMSAP3	-0.2583	
HBEGF	-0.25662	
KLF13	-0.25501	
MGST2	-0.25304	
CAPNS2	-0.25174	
CLCA4	-0.25033	
IL1R2		-0.97793
FCER1A		-0.90695
LGALS2		-0.71018
CD1C		-0.58457
S100A8		-0.49541
ARL4C		-0.45673
CD1E		-0.45583
PELI1		-0.45136
CD37		-0.41115
P2RY14		-0.39989
FCGR2B		-0.3858
S100A9		-0.3754
MIS18BP1		-0.32902
CDC42EP3		-0.30859
RARA		-0.29338
CFP		-0.2902
SMAP2		-0.27636
SGMS2		-0.26652
FAU		-0.2664
SYTL3		-0.699031703
HEY1		-0.690950857
ALOX5		-0.626058115
HIST1H4C		-0.614398217
IL18R1		-0.542413854
FDX1		-0.527721614
SLC26A2		-0.523033479
PIK3R1		-0.490920489
IKZF1		-0.48783925
CPEB4		-0.484688691
ABCA1		-0.468609522
ITK		-0.468166253
STK4		-0.463940491
AHNAK		-0.441616235
DUSP4		-0.436323587
IL1RL1		-0.420305371
VPS37B		-0.406363102
JARID2		-0.389781444
MAN2A1		-0.378559635
LRRFIP1		-0.352698882
MAPK1		-0.326285518
HERC1		-0.321932907
FYN		-0.317851929
FAM102B		-0.312575071

Supplementary Table 2

CAV1	-1.04784
ADAMTS6	-1.01894
NFATC2	-0.72301
TCTN3	-0.70816
SCN3A	-0.54455
CALM1	-0.54427
PLPP1	-0.5122
ARHGAP10	-0.51197
GUCY1A1	-0.49014
CELF2	-0.45569
GABARAPL2	-0.3666
HINT1	-0.35967
TUBA1A	-3.73683
TUBB2B	-3.25627
STMN2	-2.90726
RBP1	-2.64275
HOXB5	-2.60621
MLLT11	-2.24695
GAP43	-2.24496
DCX	-2.2171
MAP1B	-2.20634
RTN1	-2.128
BEX1	-2.07028
HOTAIRM1	-1.96144
JPT1	-1.94581
UCHL1	-1.88067
NREP	-1.79246
GNG3	-1.75608
NEFL	-1.75137
BEX2	-1.71223
BEX3	-1.67834
NSG1	-1.67748
LINC02381	-1.61979
TAGLN3	-1.58756
TCEAL7	-1.56335
LAMP5	-1.51583
NEFM	-1.49855
SCG5	-1.45784
KIF5C	-1.43897
C4orf48	-1.40574
ZFH3	-1.38517
SOX11	-1.38513
SNCG	-1.3714
HOXA5	-1.3391
STMN4	-1.32065
TMSB15A	-1.28789
MDK	-1.27723
CRMP1	-1.22141
SST	-1.21481
PAFAH1B3	-1.20885
FXVD6	-1.20113
VAMP2	-1.18005
HOXB8	-1.16459
INA	-1.16248
CCNI	-1.14434
ELAVL4	-1.13919
ATP6V0B	-1.1325
POU2F2	-1.12679
CRABP1	-1.11066
CENPV	-1.10941
NCAM1	-1.09197
HOXB2	-1.08041
YBX1	-1.04755
FEZ1	-1.03924
CNIH2	-1.03864
APLP1	-1.02574
ZNF428	-1.01801
OLFM1	-1.0138
MAP1LC3A	-0.98545

Supplementary Table 2

TTC3	-0.94984
HOXC4	-0.94588
PKIA	-0.93618
SVBP	-0.92974
UBE2E3	-0.92035
PFN2	-0.89671
RBFOX2	-0.879
NBDY	-0.87747
CXXC5	-0.82716
MYL6B	-0.82229
YWHAQ	-0.81009
PSMB5	-0.80279
RPAIN	-0.79811
PHPT1	-0.78173
MAGED1	-0.76154
YWHAB	-0.65876
GNAS	-0.60519
NDUFC2	-0.57445
PSMA7	-0.56248
H3F3A	-0.53049
SUMO2	-0.51854
CFL1	-0.41907
CD24	-0.38941
GPNMB	-0.684110075
SORBS2	-0.60254962
DCT	-0.530983028
ITGB1	-0.37777787

Supplementary Table 3: Upregulated genes in one (717) or more cluster (244) in diabetic skin

Genes upregulated in more than one cluster												
Gene name	Endo	T cells	Fibro A	Fibro B	SMC	NK cells	Kera A	Myeloid	Mast cells	LEC	Kera B	Melanocytes
NME2	0.547258	0.371458	0.340721	0.363589	0.418803	0.331886	0.450537	0.6064299	0.56595293	0.730945	1.094215	0.623357197
RPS17	0.3867	0.320892	1.101562	0.602754	0.334645	0.304564	0.509315	0.4708534	0.84376286		0.765059	0.556808172
RPS4Y1	0.703169	0.435065	1.174829	0.69737	0.585449		1.084121	0.5619834	0.41518773	0.396801	0.80169	
HLA-C	0.378065	0.498066		0.527427	0.448201			0.5733192	0.42208544	0.564683	0.97714	0.874216762
MIF		0.324424	0.42757	0.457057	0.437317	0.295345		0.5113932	0.40276355		1.623008	0.704981498
MT-ND3	0.37092	0.336789			0.546428	0.251835	0.374305	0.2582309	0.3412849	0.466307		
HLA-A		0.484634		0.384055		0.337589		0.5563169		0.478607	0.583014	0.595157841
DDX3Y		0.395287	0.271111	0.302641			0.934603	0.4582154		0.328329	0.368335	
RPL23	0.431415		0.86344	0.560244	0.320165		0.341373		0.36003773		0.301384	
RPS20	0.298897	0.310132	1.274441	0.716998		0.314092		0.2527761	0.56255778			
RBM3	0.299571		0.503899	0.390994	0.365508	0.250225	0.275376	0.283415				
RPS29	0.331461		0.746293	0.445427			0.476095		0.33143794		0.592135	
IRF1		0.336207	0.534242	0.527859		0.352049	0.422992				0.793662	
RPL37	0.323441		0.671545	0.443982			0.2677		0.34457422		0.625977	
RPL27A	0.43805		0.478707	0.350349			0.366489		0.27057321		0.541549	
RPL21	0.258341		0.579715	0.323685					0.49470926		0.345427	
RPL38			0.698942	0.420935			0.396723		0.30367766		0.419501	
TPT1	0.3115		0.587283	0.333613					0.37142071		0.433872	
RPL37A	0.262739		0.669676	0.381003			0.273572				0.495042	
CXCL2	0.679417		0.70651	0.957998				0.3073845		0.658737		
IER3	0.342594			0.980697	0.352337		0.275186				1.263731	
RPS11	0.39486		0.70314	0.482959			0.358009		0.3774103			
RPS27	0.251796		0.604392	0.397959					0.34503906		0.577146	
RPS6	0.316809		0.699359	0.452469					0.47683545		0.320883	
IFITM1		0.702658			0.288515	0.481955					0.753352	0.578707739
RPL13A	0.275171		1.033401	0.571162			0.319765		0.53549743			
SNHG8			0.337829	0.331813			0.350569		0.26660765		0.728808	
PTGS2	0.422843		0.254272					0.5086329	0.47199476			
NAMPT		0.348548	0.388493	0.27208							0.694073	
RPL23A			0.491178	0.272827					0.26729174		0.427923	
ATF3			0.363299	0.6115			0.531845				1.291956	
CXCL3	0.51931		0.62596	0.50244				0.331792				
NFKBIZ		0.364658	0.489932	0.5061							0.527129	
RPS25			0.531156	0.310336					0.30070986		0.399008	
BHLHE40		0.338586		0.272905			0.410202				0.766516	
EML4		0.305545				0.353217	0.282952				0.432537	
SLC2A3		0.558417		0.453869		0.303038		0.2962175				
RPS2	0.26518		0.857408	0.462609					0.26783415			
ETV6		0.317364						0.2585767		0.386445	0.592726	
SOD2			0.384681	0.507807				0.3138256			1.157378	
TAGLN	0.807621			0.740199	0.504397		0.340915					
RPS14	0.306783		0.538675	0.369955					0.3453059			
RPL34			0.389567	0.280926					0.25143096		0.267645	
RPLP2			0.734354	0.317802					0.34491503		0.375578	
HLA-E				0.424987			0.27148	0.2637002			0.586215	
IFI16			0.337891				0.263973		0.50000352		0.509849	
LDLR			0.437886	0.456628			0.324238					
RPL17			0.32456						0.465309		0.799049	
COL4A2			0.253665	0.530039	0.478362							
RPL7			0.791679	0.561236					0.31577267			
NAP1L1			0.252867	0.275305					0.42463917			
RPL10A			0.508807	0.351754					0.3538282			
CD44					0.269347		0.319974				0.78241	
ARL5B		0.336951					0.386872	0.3554569				
RPL35			0.517336	0.266194							0.363259	
RPSA			0.57613	0.28499					0.31555735			
RPL8			0.55653	0.292155								0.413216758
HSPB6			0.672439	0.312341	0.303763							
RPL19			0.409251	0.250473							0.296089	
CREM		0.447252						0.3770373	0.45069937			
NOP53			0.431115	0.275035							0.383433	
RPL31			0.747204	0.383637					0.37556957			
RHOH		0.337693				0.276707					0.386867	
RPS18			0.56113	0.290567							0.396979	
SERPINB1						0.332377		0.4010856	0.33426384			
ITGA4		0.504479				0.251078					0.292008	
NABP1			0.722073	0.455759			0.328694					

Supplementary Table 3

GZMA	0.897744			0.535586			1.005085
PLAU		0.394493	0.65853	0.313711			
UBA52		0.472994	0.276849				0.410045
PTPN22	0.27491			0.336918			0.278387
MT-ATP6	0.275827			0.411076	0.361411		
EIF1AY					0.288129	0.289001	0.28376
RPL39		0.616353	0.345179				0.446785
MYL9	0.329095		0.262138	0.329908			
REL	0.436042			0.36065	0.572132		
PTX3		1.651101	1.499872			0.919685	
LDHA					0.364783	0.2641583	1.537097
VMP1	0.342952				0.3119368	0.256952	
CHCHD10		0.293929			0.272511		0.982745
RPL13		0.541552	0.287425			0.28618076	
RNASEK						0.42043937	0.350011
NNMT		0.507078	0.412303				0.377083
NFKBIA			0.38601		0.641001		0.905982
ACTN1	0.367638			0.409057	0.363334		
RPS12		0.376859	0.27668				0.297525
RPL3	0.318354	0.272569					0.273176
JUND				0.257835	0.547616		0.467872
PNRC1		0.280984	0.408034				0.692512
NR4A2	0.461788			0.30024			0.5413
PSME1	0.291917					0.32598938	0.372933
RPLP1		0.448969	0.334658				0.384178
POSTN	0.40625			1.438816	0.802632		
SAMSN1	0.465959			0.293526			0.507746
IGFBP4		0.485642	0.313848			0.497847	
CTSL		0.544402	0.360061			0.3782209	
RPL14		0.456347	0.276712				0.303823
SPOCK1		0.276063	0.495204				
NDUFA13						0.31425909	0.573849
VGLL3			0.481054	0.423996			
A2M				0.256286		0.4303081	
AC013394.1					0.255506		0.490509
ADAMTS4		0.390886			0.293001		
RPS3A		0.368547	0.264685				
JUN					0.330505		0.41144
AEBP1				0.302246		0.340027	
RPS8		0.540369	0.333604				
PPP1R15A			0.348592		0.316006		
VCL	0.253096			0.351652			
CCNL1					0.262115		0.423104
CLEC2B	0.495874						0.614586
PRDX1						0.3296437	0.330863
CYTOR		0.393616	0.540826				
SLMAP				0.348139	0.277009		
IGF1		0.630271	0.61299				
GBP5	0.364517				0.336078		
PDCD4					0.267624		0.885823
RPL24		0.361126	0.260698				
STK17A	0.271381						0.400868
GPR183	0.320569				0.396337		
JUNB			0.325956				0.726252
RPL18		0.499374	0.27386				
TRAF1	0.309719				0.31794		
KLF2	0.334431			0.2857			
WISP2		0.324839		0.495733			
GZMK	0.939808				0.739561		
TM4SF1				0.411118			0.665745
THBS1	0.275996		0.288923				
NPC2		0.305122			0.4620318		
FOS			0.345056				0.702445
RPL18A		0.500667	0.268323				
MYCBP2		0.296078		0.258893			
PDIA3					0.401891	0.30815955	
RPL36		0.546304					0.359688
LAP3					0.4306416		0.380079
CYBA					0.3556592		0.469762734
PSMB9				0.307234			0.361761

Supplementary Table 3

PFN1	0.272738			0.345763			
EHF				0.474491			0.518376
HLA-DPA1				0.328866			0.410757
COL4A1		0.279346	0.455606				
RPLP0		0.683061	0.464984				
RPS15		0.263445					0.33028
CCL5	0.561283						0.621615
C11orf96	0.277611		0.706518				
TC2N	0.319878						0.419653
CTSC			0.279138		0.5484772		
EIF3E		0.374512	0.26759				
TNFAIP2		0.851235	0.718327				
GMFG							0.324652
IFNG	0.839134			0.289834			0.837565566
GBP1			0.300263		0.4085794		
ACTA2			0.300453	0.532373			
CSRP1				0.548255			0.798639
RPL32		0.415709	0.295845				
ARID5B			0.27048		0.333978		
CNN2		0.275073	0.279846				
ADM		0.406561	0.644805				
STAT3	0.259635						0.416988
ROMO1					0.33996868		0.660254
HLA-DPB1				0.318478			0.287081
MYLK		0.250545		0.374301			
RPS28		0.360071					0.520279
CD59					0.3292268		0.522039
SAT1					0.2628		0.777452
CHD2	0.274143				0.368611		
TMEM176B					0.3413587	0.55228924	
TGFBR3							0.401072
INSIG1		0.41338	0.396899				0.324872
RPL9		0.467529				0.27614554	
LTB	0.756876			0.425952			
HEBP2		0.279315					0.417105
PSME2				0.291203	0.3263267		
BICDL1	0.422531			0.334875			
RPS16		0.683385	0.452265				
GADD45B				0.532568			1.366078
TNFAIP8					0.3365882		0.59883
BCL2A1	0.308391				0.4275594		
CAV2	0.274651			0.296048			
SRPX		0.408348	0.269481				
SFRP1			0.557206				1.226404
RNF213	0.337043			0.263026			
SVEP1		0.916465	0.86663				
WSB1					0.363833		0.415543
CD3D	0.299257			0.390531			
GPRIN3	0.310183			0.289713			
SERPINE1	0.371671		0.492716				
ACTN4	0.29228						0.366836
KRT14	0.268832			0.502033			
CALD1	0.562582				0.254955		
HIF1A			0.375585				0.631932
RPL12		0.526198	0.30719				
COX7B						0.27791528	0.722407
PARP14				0.316424			0.359175
BTF3		0.262837	0.256902				
GADD45A			0.409258		0.48649		
CST7	0.519616					0.30082726	
NFKB1	0.26643						0.409123
RPL35A		0.33898	0.254596				
ACKR4		0.257395	0.484332				
ICAM1		0.336523				0.3166565	
CA2					0.485681		0.601311
DHRS3		0.309625	0.460217				
RASGRP1	0.388064			0.335621			
LINC00861	0.526087			0.290645			
IER2				0.407373			0.584492
CCL14	0.425375					0.823013	

Supplementary Table 3

ADH1B		0.406369	0.278142										
NKTR						0.260651				0.368015			
TNC			0.898797	0.500155									
PPIF								0.3367992				0.372163	
MYDGF								0.291494	0.33996122				
CXCL12	0.462423		0.260863										
TIMP1	0.269986										0.913106		
GPX3			0.790299	0.262428									
CD36			0.654819					0.374781					
IL32		0.442842				0.322425							
C6orf48			0.309802	0.308411									
NFE2L2		0.409511										0.443756	
ID4				0.526073								0.813289	
DDX21		0.465893				0.370762							
CLSTN2			0.29142		0.306228								
LYST						0.360405				0.351299			
BIRC3						0.294856						0.718774	
GZMM		0.392151										0.349853	
RPS9			0.272342									0.288411	
EIF4A3				0.258956			0.274192						
SELENOP								0.5706181				0.422864	
PCAT19	0.361504									0.366629			
NINJ1								0.3606283				0.606782	
TAPBP		0.284843										0.345004	
EEF1A1			0.300873	0.365649									
CLEC2D		0.321342				0.371981							
RPL29			0.528192	0.330467									
BRD2							0.367719					0.439061	
GPC3			0.471761	1.012248									
KRT15							0.567353					0.84945	
PTPRC		0.291106				0.252117							
GAPDH					0.318953							0.813968	
CD48									0.31442918			0.323214	
LIMD2		0.325097				0.309887							
RPS13			0.376202	0.253051									
SFN					0.275099							0.802554	
RPS5			0.541218	0.343905									
Genes upregulated in one cluster													
Gene name	Endo	T cells	Fibro A	Fibro B	SMC	NK cells	Kera A	Myeloid	Mast cells	LEC	Kera B	Melanocytes	
TCIM	0.465767												
CPE	0.436767												
CX3CL1	0.393712												
MMRN1	0.385103												
CTNNAL1	0.328307												
HSPG2	0.315073												
NUAK1	0.313232												
PLS3	0.310562												
STK38L	0.28956												
CXCL8	0.288281												
RAI14	0.288279												
SLCO2A1	0.286451												
SAMD4A	0.268979												
YWHAH	0.264533												
SMDT1	0.264185												
RGPD2		0.510405											
ICOS		0.385625											
CTLA4		0.383268											
JAK3		0.365574											
GIMAP7		0.360547											
SATB1		0.341232											
AP3M2		0.336155											
CD2		0.296482											
ANKRD12		0.289405											
USP36		0.289386											
AC004687.1		0.288034											
IL2RB		0.281947											
P2RY8		0.27314											
CHD1		0.272356											
CD7		0.27213											
ZC3H12D		0.27161											

Supplementary Table 3

UTY	0.269459
SPOCK2	0.262779
TAGAP	0.262534
GPR65	0.258413
RIPOR2	0.256638
PDE4D	0.256082
PDE3B	0.255277
HNRNPA3	0.25395
KDM6B	0.25197
TNFAIP6	0.877525
C7	0.791587
CPXM1	0.712987
MGST1	0.514455
LPL	0.501426
APOC1	0.482055
DEPP1	0.454422
RPL11	0.424697
VCAM1	0.418938
MTURN	0.394376
RPL7A	0.380168
AGTR1	0.37598
RPL6	0.374854
SMOC1	0.371412
RPS3	0.355467
IMPDH2	0.351149
RPL4	0.349913
EPB41L4A-AS1	0.348938
EEF1B2	0.345334
SNHG19	0.343044
PLXNA4	0.34185
RARRES2	0.329936
RPL22	0.323292
ALKAL2	0.321779
PQLC2L	0.319932
RPS24	0.318466
APOL6	0.316065
MAP7D3	0.314175
RPS7	0.303037
RBPMS	0.302562
NACA	0.300366
RPS15A	0.298825
GOS2	0.288391
EEF2	0.285902
CPB1	0.283511
ZFHx4	0.27295
RPS27A	0.263828
RPS23	0.263653
PTGDS	0.257411
FBL	0.255708
TLN1	0.254251
CDKN1C	0.251287
COMP	1.447902
LTBP2	0.655553
GEM	0.543237
SERPINE2	0.532598
CDH11	0.522386
COL12A1	0.514896
EFEMP1	0.512167
PLA2G2A	0.495771
SMOC2	0.477769
WTAP	0.476296
PDLIM2	0.433081
F3	0.421106
LAMC1	0.406313
COL8A1	0.399905
TNNT3	0.39606
MYOC	0.394293
ABL2	0.384691
GGT5	0.379511
NFIB	0.379319

Supplementary Table 3

C3	0.354788
CYGB	0.354622
RARRES1	0.34104
AMOTL2	0.339903
ATP2B1	0.339349
PDGFD	0.338747
LRRC32	0.335232
TMEM119	0.322778
UGCG	0.318439
ZFAS1	0.314725
RGS16	0.314031
SCARA3	0.313795
MYL12A	0.310499
NAV1	0.301395
TNFRSF12A	0.29945
ZYX	0.296976
COL18A1	0.294335
PTGES	0.291212
NTRK2	0.288353
GPRC5B	0.284707
MAFF	0.283525
ATP5MC2	0.27328
WNT11	0.27197
TSHZ2	0.266991
CRLF1	0.265112
PRRX1	0.264371
CMTM3	0.262849
PPL	0.260844
LSP1	0.2561
GLIS3	0.255112
RFLNB	0.252095
PXDC1	0.251499
ACTG2	0.632645
COL6A1	0.625939
PDLIM5	0.49334
FGF7	0.490262
SYNPO2	0.486753
CNN1	0.448996
FHL5	0.434962
PRUNE2	0.425823
SGIP1	0.423203
MYH11	0.413502
TPM2	0.35496
LTBP1	0.341307
CARMN	0.324451
MACF1	0.322664
PDLIM7	0.318012
C12orf75	0.311507
FLNA	0.311237
IGFBP2	0.30698
MBNL1-AS1	0.305196
MYH9	0.298964
MRVI1	0.285004
TGFB111	0.284948
CYFIP2	0.283232
RTN4	0.283077
SELENOM	0.282691
KANK2	0.279914
PELI2	0.275164
CAVIN3	0.273091
MT-ND5	0.271591
EDIL3	0.27158
ITGA1	0.268201
LPP	0.264585
BAG2	0.259004
CAVIN1	0.258587
CCDC3	0.258497
SORBS1	0.258155
FNBP1	0.256671
YAP1	0.251955

Supplementary Table 3

CRTAM	0.834386
XCL1	0.571033
COTL1	0.459571
KLRG1	0.447474
TIGIT	0.425214
GZMH	0.400324
HLA-DQB1	0.384285
HLA-DQA1	0.364956
CD8A	0.360668
CORO1A	0.342673
RNF19A	0.338507
SH2D1A	0.325815
APBB1IP	0.318829
AC093010.2	0.31716
PYHIN1	0.311271
EVI2A	0.304879
IKZF3	0.298219
FYB1	0.294577
NR4A3	0.292708
LEPROTL1	0.281207
TNFSF9	0.273999
CD28	0.270644
GPR174	0.269773
ENC1	0.268165
RBM25	0.265457
CD3G	0.265418
PNN	0.255125
DTHD1	0.254007
SLAMF7	0.250412
FABP7	1.123206
EGOT	0.727649
PMAIP1	0.689865
NSUN6	0.657849
INTS6	0.639419
CACNB4	0.638455
SMG1	0.581258
KRT6A	0.580473
ARL4A	0.538373
ZNF217	0.531921
NEDD4L	0.517672
LINC00842	0.491947
GSDMC	0.465095
AL355075.4	0.44885
GABPB1-AS1	0.448614
MALAT1	0.439545
IRF6	0.439053
EZH2	0.436119
TSC22D2	0.416517
TIAM1	0.405989
SDCCAG8	0.397749
AHCYL1	0.391278
SEMA4A	0.385975
SLC5A3	0.38486
ARIH1	0.382903
HNRNPU	0.381054
FBXW7	0.379896
ITGA2	0.379652
DSC2	0.377179
IDI1	0.376592
CENPL	0.375005
AC007952.4	0.371697
IFRD1	0.369869
TXNRD1	0.361263
CXADR	0.36007
MUCL1	0.358907
SERPINB7	0.357405
EIF4A1	0.354774
EPHA2	0.351158
ABI1	0.344765
TRIM69	0.343214

Supplementary Table 3

DENND2C	0.34164
PCF11	0.339796
RND3	0.339632
ERF	0.334248
GOLGA4	0.331544
MSN	0.330485
MFHAS1	0.323394
FAT1	0.321481
ASXL1	0.320056
SPPL3	0.319911
GOLGA8A	0.319306
TRA2B	0.319204
NFAT5	0.317398
PPP1R10	0.317366
TRA2A	0.312161
KDSR	0.311642
SQSTM1	0.306498
YME1L1	0.300408
C3orf52	0.297495
MRPS6	0.290138
RB1CC1	0.2867
TEAD1	0.282553
POLR2A	0.282428
MAP7D1	0.282098
MED13L	0.281615
SERTAD2	0.280575
AC103591.3	0.279301
TNFRSF19	0.279198
ETFDH	0.278992
IVNS1ABP	0.278546
HCAR3	0.275554
SMURF2	0.274444
LUC7L3	0.274165
GCH1	0.271938
FUS	0.267854
RRAGC	0.267809
DENND4A	0.267687
MORC3	0.266964
PDK1	0.264906
BAZ1A	0.261646
TRAK1	0.25872
SRSF3	0.258401
WAC	0.258287
NPIP5	0.257915
RNF152	0.257876
GOLGB1	0.25689
ASH1L	0.255744
PDGFC	0.253286
SERBP1	0.251402
CCL13	1.0271155
FCGR3A	0.9967379
C1QB	0.981146
PLTP	0.9652652
FCGBP	0.923438
RNASE1	0.8606108
F13A1	0.8142813
IL1RN	0.7918724
CCL3	0.7208858
CD14	0.7110873
CTSB	0.6923458
CCL4	0.6630761
CCL3L1	0.6542435
CD209	0.5853251
C1QA	0.5794059
C1QC	0.5777074
IL1B	0.5582776
LYVE1	0.5385784
CYBB	0.4997182
MS4A4A	0.4843311
ADAP2	0.4533922

Supplementary Table 3

PLAUR	0.4519404
SELENOK	0.4448018
CR1	0.4434102
MARCO	0.4412016
DAB2	0.4394293
LGMN	0.4298652
PDIA6	0.4215649
IL4I1	0.4197466
SLCO2B1	0.4117672
CD163	0.4047885
FCGR1A	0.3971001
HSPA5	0.3967829
HSP90B1	0.3958397
FOLR2	0.3871713
TTYH3	0.3869459
PLEK	0.3785977
CTS2	0.3676822
SDF2L1	0.3672273
FCN1	0.358587
DRAM1	0.3564796
CALR	0.3562618
CD93	0.3562585
LAIR1	0.3544952
GK	0.3509853
MAF	0.3488928
CALM3	0.3471533
C2	0.3391132
CD63	0.3322926
CREG1	0.3294829
CLTC	0.3285133
ITGB2	0.328256
MANF	0.3264678
PDIA4	0.3262193
MSR1	0.3261597
ARPC1B	0.3213751
ADAM9	0.3210766
PSAP	0.3201935
AP1B1	0.3151074
CYFIP1	0.3148346
TMED9	0.3103978
LAMP1	0.3094366
BLVRB	0.3080406
SNX6	0.307102
PPIB	0.3069588
MIR155HG	0.3060885
SLC15A3	0.3059907
LILRB1	0.3052387
ATF5	0.3023948
MLEC	0.2990738
FAM198B	0.2979074
EGR2	0.2976487
P4HB	0.2951027
DSE	0.2945372
GPR34	0.2904393
CLTA	0.2890086
IGSF6	0.2882757
NAIP	0.2868225
SPINT2	0.2864095
CANX	0.2821009
CD4	0.2818309
KCTD12	0.2712132
CCR1	0.2699262
RPN2	0.2647181
STAT1	0.2644078
POMP	0.2634186
SDC3	0.2601362
FUCA1	0.2578886
LRP1	0.2550853
ITSN1	0.2550319
LIPA	0.2548345

Supplementary Table 3

ARPC4	0.2547623	
VAMP5	0.2536169	
GYPC	0.2531276	
SEC61G	0.2508338	
TIMP2	0.2503409	
ARPC2	0.2500729	
DHRS9		1.2391495
ADCYAP1		0.96017336
C5AR1		0.60105778
PNPLA8		0.47046228
SSR4		0.43223369
SPATA13		0.39015575
DDX18		0.37504674
DUSP14		0.37182721
TANK		0.36408041
MS4A2		0.35875205
HPGD		0.35799647
IFITM2		0.35577776
TMEM258		0.33058046
SEC62		0.32655798
SEC11C		0.32481094
FKBP2		0.31681076
NDUFA4		0.31548227
SEC61B		0.31031637
CTSG		0.29619282
CD302		0.29340357
PRR34-AS1		0.2586828
TOP1		0.25809312
FCER1G		0.25028101
VWF		0.683534
SEMA3A		0.66695
RAPGEF5		0.656928
DNASE1L3		0.630965
KDR		0.575307
STAB2		0.504015
ENG		0.499729
LYN		0.498182
GJA1		0.474038
MRC1		0.472698
SRGAP3		0.461689
NRP2		0.44626
PLA2R1		0.441185
C1R		0.420565
TANC1		0.415232
SLC27A3		0.412955
WFS1		0.405794
RNMT		0.393494
HHEX		0.391266
SELENON		0.389117
MMP2		0.387063
UNC5B		0.380685
F8		0.376503
SEMA6A		0.37641
STAB1		0.376156
OSBPL10		0.375962
LAMB1		0.371436
FLRT2		0.366284
GATA2		0.357295
SCN9A		0.353557
TSPAN5		0.342621
THBD		0.340269
ROBO4		0.339534
PIEZO2		0.339511
SLC26A4		0.339393
HRCT1		0.334577
AC020916.1		0.332481
FAM43A		0.328378
PLSCR1		0.327718
C17orf67		0.327078
AHCTF1		0.326402

Supplementary Table 3

TMEM255B	0.322463
ANKRD29	0.320182
SHC1	0.319984
PRR5L	0.318192
KLHL3	0.311179
GPR146	0.308527
NPR1	0.303095
RHOA	0.299152
PLIN5	0.297235
MFAP2	0.292658
QSOX1	0.292233
MCFD2	0.29115
TXNL4B	0.289699
IL7	0.285137
SPTLC2	0.284392
RALGAPA2	0.283335
PDE7B	0.281847
ETS2	0.278823
RARRES3	0.278242
CASP4	0.275003
YTHDC2	0.273383
CFI	0.273318
TNRC6B	0.272653
BCAT1	0.269073
MMP14	0.267636
CARD16	0.265131
DDR2	0.26161
TSPAN11	0.254784
AQP5	1.697469
AKR1C2	1.638407
TPD52L1	1.181765
PPP1R1B	1.161149
FXYD3	1.160622
S100A1	1.120962
TESC	1.077989
CA6	1.072322
KRT19	1.045407
SPTSSB	1.005262
VAMP8	0.972985
NDUFB1	0.964817
ZG16B	0.939881
S100A11	0.91309
KRT18	0.900977
SNORC	0.900841
PDLIM4	0.900314
KRT7	0.887937
POLR2L	0.880846
CLDN10	0.873833
NDRG2	0.868332
CEBPB	0.865683
SLC12A2	0.862772
RHOV	0.85969
NDUFA1	0.781371
ANAPC16	0.774329
ALDH9A1	0.772797
TMEM123	0.768317
KRT8	0.758676
STAC2	0.755513
COX7A1	0.754076
ELF3	0.751995
SLC25A5	0.710218
REXO2	0.702138
COX5B	0.694464
TSTD1	0.682516
ADI1	0.678753
TOMM7	0.667447
NDUFC1	0.626678
ENO1	0.624397
CRACR2B	0.623329
GCHFR	0.620646

Supplementary Table 3

ROPN1B	0.61634
ACTR3B	0.604301
PALMD	0.599997
CAST	0.598908
FAM162A	0.592113
SDCBP	0.590408
PDE4B	0.572509
UQCR11	0.562418
SDHD	0.557871
MTIF3	0.55695
NDUFB4	0.550423
ETHE1	0.550296
NIPSNAP2	0.548197
H2AFJ	0.540965
ANKRD37	0.540241
PPA1	0.538863
GSTK1	0.533828
CHPT1	0.522906
UQCRQ	0.513964
UGP2	0.508121
ECHDC2	0.505171
CMPK1	0.504991
ARHGDIB	0.503094
AES	0.501275
GNG5	0.499631
COX14	0.496154
COX17	0.494857
SMIM22	0.48548
PIM3	0.485165
OSTF1	0.482391
BTG2	0.48111
ATP5F1B	0.480267
EEF1D	0.472095
COX7C	0.469291
CYSTM1	0.468357
SH3YL1	0.46767
ABHD5	0.465675
GLS	0.464564
WDR45B	0.464528
ALDOA	0.460889
TPD52	0.458181
WASF2	0.458164
CDC42SE2	0.455533
PGK1	0.455175
NDUFA3	0.454988
COX6B1	0.453129
DNAJC1	0.45205
SPTSSA	0.45068
DECR1	0.450119
ARFGAP3	0.444157
MKNK2	0.443384
ETF1	0.441294
NDUFB2	0.441199
LMO4	0.440659
TOMM20	0.440313
ATP5MG	0.440205
TMEM141	0.439445
CEMIP2	0.43941
PHB	0.438831
HADHB	0.436345
CNN3	0.435105
CD46	0.432156
UQCRB	0.429588
SRRM1	0.425347
PSMB8	0.42526
TPI1	0.422865
SSFA2	0.422631
SYPL1	0.422098
RORA	0.421573
EZR	0.420509

Supplementary Table 3

MBD2	0.419389
VDAC1	0.419042
IQGAP2	0.419033
CIB1	0.416005
CLIC1	0.415643
ANP32B	0.414728
RHOC	0.409709
LITAF	0.409355
NANS	0.409262
ESRRA	0.409005
SGK1	0.408992
UBL5	0.408239
ARHGAP18	0.407033
SUCLA2	0.402934
NUDT8	0.402921
ANXA11	0.402378
ATP5ME	0.400316
HADHA	0.400026
ANXA5	0.398151
SMIM4	0.394784
ISCU	0.392663
PKM	0.388094
COX8A	0.388078
SYF2	0.387324
UBALD2	0.386048
WIPF1	0.385897
GRPEL1	0.38589
CD164	0.383805
UBE2V1	0.383498
ATP5MD	0.382701
CFLAR	0.381894
MAP2K3	0.381763
SERP1	0.380266
EIF3K	0.379847
SRSF5	0.379297
TMEM159	0.375304
ATP5MF	0.374509
STK39	0.368824
SLC9A3R1	0.368065
ZFP36L1	0.36505
APOBEC3G	0.361623
CDC37	0.359247
ID2	0.357712
MAP3K8	0.357429
PNP	0.356378
ARID5A	0.35381
CHMP4B	0.351181
HLA-F	0.350443
ANP32E	0.350346
TUBA4A	0.347847
PPP2R5A	0.345525
NENF	0.345171
RAB5A	0.343766
NR3C1	0.33937
TOMM5	0.337905
STK17B	0.337529
PPCS	0.337107
HIPK1	0.335792
RAP1A	0.335699
COQ10B	0.334904
UBE2B	0.330062
COPS9	0.327904
MCRIP2	0.32762
UTRN	0.327469
TMEM134	0.327162
PRPSAP1	0.325956
RPL36AL	0.323148
DDT	0.322227
NAA50	0.321778
ZC3H12A	0.321262

Supplementary Table 3

PSMD9	0.321004	
IDH2	0.320882	
SLC39A8	0.318387	
PTPN7	0.317125	
PRPF4B	0.316998	
TMEM256	0.316744	
FGFR10P2	0.314529	
CYLD	0.310099	
RILPL2	0.308712	
RAB11FIP1	0.30852	
SP100	0.308195	
EIF2A	0.307811	
DBNL	0.304842	
ELF1	0.302678	
ARPC5L	0.301554	
MBP	0.301238	
IDH3B	0.30042	
JAK1	0.298506	
MTCH1	0.298415	
CSRNP1	0.298211	
SNX1	0.297778	
NARS	0.297377	
RPL30	0.29459	
STXBP3	0.293635	
RPA3	0.293081	
PPTC7	0.292554	
ICAM3	0.292407	
ARF6	0.291666	
PCNP	0.278957	
CYTH1	0.277775	
TMF1	0.277592	
SDHB	0.275804	
GLUD1	0.274941	
RICTOR	0.272747	
TGIF1	0.272536	
KRTCAP2	0.272294	
SUN2	0.271449	
HBP1	0.271284	
FBXW2	0.270081	
TMEM243	0.270012	
FOXP1	0.265435	
STAG2	0.264711	
SEPT1	0.264119	
GGCT	0.263442	
USP16	0.262964	
PRR13	0.259105	
DENR	0.258776	
YES1	0.258458	
TM9SF3	0.257826	
TOB2	0.254391	
CD2AP	0.25416	
ALOX5AP	0.25245	
CRYM		0.716624909
FRZB		0.687743945
MIA		0.615971774
GNAL		0.508115225

Supplementary Table 4: Cluster specific bidirectional genes in diabetic skin

Gene name	downregulated											
	upregulated											
Gene name	Endo	T cells	Fibro A	Fibro B	SMC	NK cells	Kera A	Myeloid	Mast cells	LEC	Kera B	Melanocytes
HBB		-1.28494	-1.39067	-0.2907		-0.61282	-0.56192	-0.83243	-0.63723	0.747558	1.168621	
CRIP1			-0.54996		0.420117	0.277647	-0.46562		-0.69306	-1.42702	0.667339	
HSPA1A		-0.87964	-0.49674	-0.41027	-0.63141	-1.04821		-0.87863			0.295021	
RPS26	-0.386175133	-0.53152	0.257108			-0.64288	-0.64307	-0.54053		-0.50426		
RHOB	0.355652103		-0.56797	-0.65146	-0.32004		-0.25513	-0.60074				
SLC38A2			-0.52039	-0.38702	-0.33484		0.260405	-0.26639			0.383131	
HSPA1B		-0.51482		-0.33587	-0.47612	-0.61661		-0.56837			0.373669	
ZFP36L2		-0.29358	-0.69967			-0.25094			-0.431	-0.9819	0.414117	
CD9			-0.82389				-0.29616	-0.26421		-0.42745	0.792262	
CCL2			1.17144	1.7037	-0.56007		1.094228	0.444704				
COL1A1			-0.54629	-0.88504	0.365683		-0.75185					-0.986448202
COL1A2			-0.47728	-0.73993	0.435566		-0.57827					-0.958361919
CDKN1A			0.281559	0.308844	-0.38326				-0.31856		0.439477	
LGALS3		-0.27377					-0.36308	-0.25732	-0.43604		1.022059	
MGP	0.948557549		-1.08372	-0.52398			-0.4477			-1.85774		
IFI27	-0.680145371		-0.66355	-0.33996	-1.0081							0.997085485
CD74		0.303526	-0.34686			0.468262				0.336557	0.531791	
S100A4			-0.42485		0.277805		-0.30746				0.551791	-0.984496335
SERF2			-0.34481	-0.41265			-0.26999			-0.3019	0.593808	
UBC			-0.25354	-0.27135				-0.33506	-0.43605		0.641359	
VIM		-0.5036		0.259662		-0.42242			-0.73836	-0.39564		
MT-ND1	0.380233022				0.524949		0.43646	0.282616			-0.3993	
S100A6			-0.39955			-0.29038	-0.55178	-0.48704			1.230911	
EGR1			0.410435	0.439865			-0.25813		0.338671			
RACK1			0.421725	0.322382			-0.3689				-0.3089	
ATP1A1			-0.45563	-0.30995			0.331089				0.635282	
TGFBI			0.280441	0.487724	0.75534		-0.36505					
ACTB					0.425156	0.387227		0.410863			-0.68268	
NEAT1	0.30616317				0.301384		0.428777		-0.35999			
FOSB				0.470535	-0.38863				0.286919		0.523372	
B2M			-0.27126					0.26802	0.42801		0.818047	
CYR61	0.416500745		0.283486	0.458588	-0.34255							
FN1	0.880840823		-0.67044	-0.34619	0.652952							
IGFBP5			-0.48423	-0.49594	0.433817					1.174626		
TPM4		0.260728	-0.28955		0.370445			0.315241				
CD81				-0.31602		0.279959	-0.36293	0.351604				
RPS21		-0.25047				-0.32775				-0.29861	0.270481	
RPL41						-0.30112		-0.29991		-0.27026	0.416271	
TNFSF10		0.275424	-0.26384						0.407534		0.401981	
MT-ATP8			-0.49943	-0.5045			0.347836					-0.618700628
HLA-B			-0.40424					0.285737		0.379249	0.615374	
DSTN			-0.28878			-0.48812				-0.53746	0.486409	
RGCC		0.254525	-0.54059	-0.4552							0.639381	
FCGRT	-0.3661142		0.274649					0.431419				
HLA-DRB1	-0.268887258		-0.39421			0.564876			0.28862			
RPL10			0.450716				-0.2637					
TSPO				-0.30842			-0.49793				0.883512	
RGS1		0.253246				0.307516		-0.29023				
ACTG1				0.328335			-0.5561				-1.01838	
CXCL14			0.475226	0.309929			-0.29988					
LMNA								-0.36642	-0.56452		0.343693	
ZFP36					-0.25495		0.350695				1.015175	
IER5							0.280215	-0.38407			0.53026	
SOC3			0.26774	0.432238	-0.29295							
AL078639.1				-0.49302			0.301421					-0.700200821
ADIRF			-0.55759							-0.43361	1.240828	
APOE				0.921339	-0.69079		-0.26013					
FABP4	-0.899479007		0.553558		-0.54803							
DST			-0.48966	-0.2586	0.251433							
PPDPF		-0.25631						-0.28281			0.497682	
SLC25A6			0.554672	0.298902			-0.31888					
FHL1			-0.43854	0.284095	0.270989							
ACADVL			-0.2887	-0.27407							0.452645	
COL3A1			-0.62791	-0.77684	0.436466							
FOSL2		0.358867			-0.25722						0.420112	
FTH1			0.263102						-0.3799		-0.77644	

Supplementary Table 4

FTL		0.406693			-0.57751				-0.86574
PMP22		-0.31513				0.35715			-0.542383089
MFAP4		-0.67506	-0.74644	0.28525					
MT-CYB			-0.29975	0.319147				-0.92989	
HES1				-0.45288	0.567566	-0.49025			
PPP1CB		-0.26981		-0.29323				0.536775	
DBI					-0.61843	-0.30682		1.125978	
STEAP4		0.377859	0.35973	-0.54633					
MARCKS			0.401793					-1.86256	
ATP1B3	0.3500497					-0.9812			
COL6A2		-0.36407		0.417905					
MT-ND2				0.267375				-0.71679	
EDNRB				-0.42195			0.471843		
COL14A1		-0.49385		0.326446					
MT-CO2				0.293414				-0.95864	
NRP1	-0.272038011					0.433561			
SH3BGR1		-0.2596						0.273215	
PRSS23		-0.25613					0.437413		
APOD	-0.440984293		0.378555						
HTRA1		-0.38476					0.404273		
ADGRF5	-0.296157677						0.522846		
IL1R1			0.309067			-0.40439			
ITPR2					-0.40976			0.440327	
ASPN		-0.7738	0.272673						
FILIP1L				0.407718		-0.79692			
PLPP3		0.341722		-0.50252					
CLU		-0.42419	0.370083						
RAMP1				-0.30855					0.636094669
PEG10		0.277338						-1.04844	
AKR1C1							-0.94769	1.414518	
NR4A1		-0.37198						0.37388	
ATP5F1E							-0.3499	0.429289	
ENAH		-0.3535		0.358347					
TNFRSF9					0.335052		-0.81356		
IRF2BP2	0.279172	-0.32025							
APRT					-0.27022			0.319141	
RNF144B					0.286666	-0.3963			
SERPINH1			-0.41476				0.269585		
IFITM3				-0.32038			0.57183		
QPCT			-0.29052						0.444015154
MT-CO3				0.291011				-0.63744	
TLE4		-0.37247			0.351287				
CYTIP						-0.2703		0.513388	
HP1BP3		-0.33942						0.337175	
IL6			0.747003	-0.28899					
RPL28		0.421199			-0.26077				
TIPARP				-0.36403				0.503945	
LMCD1	-0.282175374		0.651942						
EIF1B					0.31709			-0.9885	
CYP1B1		-0.34327	0.311284						
COMT					-0.28591			0.745562	
UCP2						0.256495	-0.33832		
PERP					-0.36608			0.707944	
MEIS2							0.265914	-1.18068	
APP							0.364111		-0.780847213
PLD3						0.381662		-0.85703	
RPL26						-0.27884		0.381305	
MARCKSL1		0.278618						-2.20196	
HLA-DRA		-0.36384			0.332237				
EGFL7	-0.322879751					0.2618			
NUPR1		0.282768			-0.32391				
TUBB			0.311879					-1.85037	
AQP1		-0.52523		0.464365					
PPIA							-0.30108	0.646813	
PROCR			-0.33729				0.542605		
RCAN1			0.296847				-0.74458		
TMEM238					-0.28643			0.257238	
USP53		-0.26676					0.261701		
NFIL3		0.302378			-0.26669				
MBNL1		-0.32889						0.496255	

Supplementary Table 4

SDC4					-0.46125		0.663007
JMJD1C		-0.32787			0.396796		
LDHB						0.330715	-1.04008
GPBP1					0.288949	-0.26322	
CTSD					-0.33666	0.260363	
CIRBP		0.258312					-0.56413
C1orf21						-0.44271	0.392182
BTG1				-0.31579	0.438116		
LIFR	-0.290134604					0.418976	
FAM129A		-0.3215	0.257248				
PDLIM3		-0.28122	0.328647				
TCF4		-0.37059			0.323596		
BASP1			0.568993				-2.82542
SPRY1			-0.41292			0.415793	
CTGF	0.273627518	-0.73301					
NCOA7					-0.35777		0.609019

Supplementary Table 5: GSEA analysis showing upregulated and downregulated pathways using KEGG database in diabetic skin endothelial cells based on normalized enrichment score (NES)

Name	Size	Enrichment score	Normalized enrichment score	NOM p-val	FDR q-val	FWER p-val	RANK AT MAX	LEADING EDGE
upregulated pathways								
KEGG_RIBOSOME	70	0.5963758	1.9677137	0	0.00084848	0.001	416	tags=71%, list=23%, signal=89%
KEGG_FOCAL_ADHESION	50	0.55508953	1.7097642	0.00392157	0.03769462	0.073	274	tags=42%, list=15%, signal=48%
KEGG_P53_SIGNALING_PATHWAY	16	0.7140249	1.6508062	0.00340716	0.05656531	0.155	376	tags=69%, list=21%, signal=86%
KEGG_CHEMOKINE_SIGNALING_PATHWAY	31	0.5313045	1.471174	0.04844961	0.28148794	0.698	307	tags=39%, list=17%, signal=46%
KEGG_REGULATION_OF_ACTIN_CYTOSKELETON	50	0.45575425	1.3873509	0.04448743	0.43211228	0.894	151	tags=24%, list=8%, signal=25%
KEGG_CELL_CYCLE	18	0.5599457	1.3585066	0.09689214	0.43231717	0.936	421	tags=56%, list=23%, signal=72%
KEGG_ECM_RECEPTOR_INTERACTION	16	0.5756831	1.3516417	0.09756097	0.38852018	0.943	123	tags=38%, list=7%, signal=40%
KEGG_SMALL_CELL_LUNG_CANCER	27	0.501508	1.3447993	0.0967118	0.35399508	0.946	168	tags=26%, list=9%, signal=28%
KEGG_CYTOKINE_CYTOKINE_RECEPTOR_INTERACTION	25	0.5075006	1.3247643	0.12222222	0.35443795	0.963	46	tags=24%, list=3%, signal=24%
KEGG_PARKINSONS_DISEASE	33	0.46370274	1.2875072	0.11568628	0.38972437	0.98	360	tags=42%, list=20%, signal=52%
KEGG_OXIDATIVE_PHOSPHORYLATION	34	0.44854143	1.2582797	0.1271028	0.41741276	0.993	360	tags=41%, list=20%, signal=51%
KEGG_ADHERENS_JUNCTION	16	0.5058813	1.1815656	0.23498233	0.55490685	0.998	177	tags=38%, list=10%, signal=41%
KEGG_VASCULAR_SMOOTH_MUSCLE_CONTRACTION	23	0.45507702	1.1469922	0.27322406	0.5957508	0.998	803	tags=70%, list=45%, signal=124%
KEGG_PATHWAYS_IN_CANCER	62	0.33706322	1.0708612	0.3222004	0.7352836	1	177	tags=19%, list=10%, signal=21%
KEGG_NOD_LIKE_RECEPTOR_SIGNALING_PATHWAY	15	0.45801345	1.061434	0.39784947	0.7113767	1	168	tags=20%, list=9%, signal=22%
KEGG_GAP_JUNCTION	16	0.41684487	0.9917708	0.4877193	0.8355502	1	803	tags=75%, list=45%, signal=134%
KEGG_UBIQUITIN_MEDIATED_PROTEOLYSIS	19	0.3728257	0.9110284	0.5963964	0.9903539	1	1089	tags=79%, list=61%, signal=198%
KEGG_ALZHEIMERS_DISEASE	36	0.31610516	0.8996192	0.62030077	0.96248126	1	694	tags=58%, list=39%, signal=93%
KEGG_TIGHT_JUNCTION	23	0.33862814	0.8609135	0.6666667	1	1	151	tags=22%, list=8%, signal=23%
KEGG_OOCYTE_MEIOSIS	18	0.34411	0.8483709	0.6841155	0.9790818	1	745	tags=50%, list=41%, signal=85%
KEGG_GNRH_SIGNALING_PATHWAY	20	0.33358154	0.83266747	0.71031743	0.96224546	1	803	tags=60%, list=45%, signal=107%
KEGG_HUNTINGTONS_DISEASE	36	0.273052	0.7812062	0.8270677	1	1	316	tags=25%, list=18%, signal=30%
KEGG_PROSTATE_CANCER	26	0.2696637	0.71748567	0.90676415	1	1	180	tags=19%, list=10%, signal=21%
KEGG_MELANOGENESIS	15	0.3066583	0.7097814	0.8651079	1	1	803	tags=67%, list=45%, signal=120%
KEGG_WNT_SIGNALING_PATHWAY	21	0.28018788	0.7051038	0.88014984	0.9924696	1	694	tags=43%, list=39%, signal=69%
KEGG_ENDOCYTOSIS	24	0.25587577	0.6754832	0.9158317	0.98398334	1	173	tags=8%, list=10%, signal=9%
KEGG_AXON_GUIDANCE	23	0.24902989	0.64084864	0.93142855	0.9754338	1	697	tags=52%, list=39%, signal=84%
KEGG_MAPK_SIGNALING_PATHWAY	48	0.1813503	0.5468199	0.99389005	0.98354477	1	890	tags=63%, list=50%, signal=121%
downregulated pathways								
KEGG_CELL_ADHESION_MOLECULES_CAMS	21	-0.7015002	-1.770437	0.00425532	0.10417096	0.095	186	tags=52%, list=10%, signal=58%
KEGG_ERBB_SIGNALING_PATHWAY	19	-0.53866065	-1.3444902	0.10961969	1	0.959	113	tags=16%, list=6%, signal=17%
KEGG_PHOSPHATIDYLINOSITOL_SIGNALING_SYSTEM	16	-0.5603572	-1.2864069	0.17351598	1	0.98	159	tags=19%, list=9%, signal=20%
KEGG_FC_GAMMA_R_MEDIATED_PHAGOCYTOSIS	20	-0.517017	-1.2772685	0.15384616	1	0.986	56	tags=15%, list=3%, signal=15%
KEGG_PROGESTERONE_MEDIATED_OOCYTE_MATURATION	15	-0.51773995	-1.2240347	0.21412803	1	0.997	172	tags=20%, list=10%, signal=22%
KEGG_GLORECTAL_CANCER	16	-0.5164038	-1.2201313	0.21786493	0.8893797	0.998	113	tags=19%, list=6%, signal=20%
KEGG_GLIOMA	17	-0.50699	-1.2012521	0.2516129	0.82415724	0.998	159	tags=18%, list=9%, signal=19%
KEGG_LEISHMANIA_INFECTION	17	-0.5070932	-1.1863818	0.2553648	0.7653934	0.999	101	tags=24%, list=6%, signal=25%
KEGG_RIG_I_LIKE_RECEPTOR_SIGNALING_PATHWAY	15	-0.4998152	-1.1541837	0.29777777	0.7748306	1	165	tags=33%, list=9%, signal=36%
KEGG_B_CELL_RECEPTOR_SIGNALING_PATHWAY	19	-0.4672158	-1.1305264	0.27959183	0.7630178	1	56	tags=11%, list=3%, signal=11%
KEGG_VEGF_SIGNALING_PATHWAY	17	-0.43429628	-1.0375208	0.4245283	0.94654775	1	56	tags=12%, list=3%, signal=12%
KEGG_JAK_STAT_SIGNALING_PATHWAY	18	-0.4210481	-1.0289407	0.41111112	0.8919844	1	113	tags=17%, list=6%, signal=18%
KEGG_NATURAL_KILLER_CELL_MEDIATED_CYTOTOXICITY	18	-0.4146357	-1.0049093	0.43949044	0.8877711	1	56	tags=11%, list=3%, signal=11%
KEGG_PANCREATIC_CANCER	18	-0.39622676	-0.98968846	0.45073375	0.8653373	1	56	tags=11%, list=3%, signal=11%

Supplementary Table 5

KEGG_CALCIIUM_SIGNALING_PATHWAY	23	-0.37924415	-0.9752521	0.4896694	0.8431899	1	159 tags=13%, list=9%, signal=14%
KEGG_LEUKOCYTE_TRANSENDOTHELIAL_MIGRATION	34	-0.32698435	-0.92310655	0.56646216	0.92095846	1	185 tags=24%, list=10%, signal=26%
KEGG_EPITHELIAL_CELL_SIGNALING_IN_HELICOBACTER_PYLORI_INFECTION	18	-0.38236952	-0.90741366	0.58099353	0.90281904	1	188 tags=22%, list=10%, signal=25%
KEGG_APOPTOSIS	17	-0.36829674	-0.88370854	0.6441441	0.90603715	1	179 tags=18%, list=10%, signal=19%
KEGG_CHRONIC_MYELOID_LEUKEMIA	24	-0.34108493	-0.8645039	0.64551425	0.9025642	1	113 tags=13%, list=6%, signal=13%
KEGG_NEUROTROPHIN_SIGNALING_PATHWAY	32	-0.3156462	-0.84622246	0.7070707	0.89410394	1	179 tags=13%, list=10%, signal=14%
KEGG_SPLICEOSOME	22	-0.31649184	-0.79836035	0.73473686	0.9409653	1	155 tags=9%, list=9%, signal=10%
KEGG_ACUTE_MYELOID_LEUKEMIA	19	-0.29380262	-0.716207	0.85350317	1	1	113 tags=11%, list=6%, signal=11%
KEGG_INSULIN_SIGNALING_PATHWAY	21	-0.2697769	-0.6754293	0.89439654	1	1	159 tags=10%, list=9%, signal=10%
KEGG_T_CELL_RECEPTOR_SIGNALING_PATHWAY	22	-0.23402295	-0.6017927	0.9519651	1	1	56 tags=5%, list=3%, signal=5%
KEGG_LONG_TERM_POTENTIATION	18	-0.24559428	-0.5908802	0.9483146	1	1	159 tags=11%, list=9%, signal=12%
KEGG_TOLL_LIKE_RECEPTOR_SIGNALING_PATHWAY	16	-0.24460518	-0.5750698	0.93736017	0.96953934	1	165 tags=13%, list=9%, signal=14%

Significant upregulated KEGG pathways (nomalized p value < 0.05)

Significant downregulated KEGG pathways (nomalized p value < 0.05)

Supplementary Table 6: VEGF signaling interaction analysis between different cell types in diabetic and non-diabetic skin cells using cell chat

non-diabetic	VEGF.outdeg	VEGF.indeg	VEGF.hub	VEGF.authority	VEGF.eigen	VEGF.page_rank	VEGF.betweenness	VEGF.flowbet
Endothelial cells	0	0.168234915	0	1	1	0.389354847	0	0
Fibroblasts A	0.058494301	0	1	0	0.618232261	0.081632653	0	0
Fibroblasts B	0.044476288	0	0.804189412	0	0.504121336	0.081632653	0	0
Keratinocytes A	0.016411162	0	0.278044774	0	0.201841137	0.081632653	0	0
Keratinocytes B	0	0	0	0	0.586620251	0.081632653	0	0
LEC	0	0.021077115	0	0.122565594	0.213568922	0.120849235	0	0
Myeloid cells	0.047925077	0	0.774837597	0	0.489520454	0.081632653	0	0
SMC	0.022005203	0	0.369439027	0	0.254672336	0.081632653	0	0

diabetic	VEGF.outdeg	VEGF.indeg	VEGF.hub	VEGF.authority	VEGF.eigen	VEGF.page_rank	VEGF.betweenness	VEGF.flowbet
Endothelial cells	0	0.127065539	1.7019E-16	1	1	0.401768413	0	0
Fibroblasts A	0.054565294	0	0.814778594	1.3267E-16	0.61862797	0.068741699	0	0
Fibroblasts B	0.066294762	0	1	1.3267E-16	0.755801186	0.068741699	0	0
Keratinocytes A	0.012709093	0	0.186711702	1.3267E-16	0.151718845	0.068741699	0	0
Keratinocytes B	0	0	2.12737E-17	6.63348E-17	0.417648981	0.068741699	0	0
LEC	0.002388086	0.081867488	0.041573062	0.654201709	0.685090652	0.185781391	0	0.011940429
Myeloid cells	0.046579599	0	0.697251144	1.3267E-16	0.53112778	0.068741699	0	0
SMC	0.026396193	0	0.404073179	1.3267E-16	0.312628291	0.068741699	0	0

Interaction probabilities; Rows are senders and columns are receivers

Non-diabetic	Endothelial.cells.VEGF	Fibroblasts.A.VEGF	Fibroblasts.B.VEGF	Keratinocytes.A.VEGF	Keratinocytes.B.VEGF	LEC.VEGF	Myeloid.cells.VEGF	SMC.VEGF
Endothelial cells	0	0	0	0	0	0	0	0
Fibroblasts A	0.052166528	0	0	0	0	0.006327773	0	0
Fibroblasts B	0.042309955	0	0	0	0	0.002166333	0	0
Keratinocytes A	0.014484079	0	0	0	0	0.001927083	0	0
Keratinocytes B	0	0	0	0	0	0	0	0
LEC	0	0	0	0	0	0	0	0
Myeloid cells	0.040057195	0	0	0	0	0.007867882	0	0
SMC	0.019217158	0	0	0	0	0.002788045	0	0

Interaction probabilities; Rows are senders and columns are receivers

Diabetic	Endothelial.cells.VEGF	Fibroblasts.A.VEGF	Fibroblasts.B.VEGF	Keratinocytes.A.VEGF	Keratinocytes.B.VEGF	LEC.VEGF	Myeloid.cells.VEGF	SMC.VEGF
Endothelial cells	0	0	0	0	0	0	0	0
Fibroblasts A	0.032119022	0	0	0	0	0.022446272	0	0
Fibroblasts B	0.040697014	0	0	0	0	0.025597747	0	0
Keratinocytes A	0.006972243	0	0	0	0	0.00573685	0	0
Keratinocytes B	0	0	0	0	0	0	0	0
LEC	0.002388086	0	0	0	0	0	0	0
Myeloid cells	0.027703482	0	0	0	0	0.018876118	0	0
SMC	0.017185693	0	0	0	0	0.009210501	0	0

Difference in probabilities (diabetic – non-diabetic)

	Endothelial.cells.VEGF	Fibroblasts.A.VEGF	Fibroblasts.B.VEGF	Keratinocytes.A.VEGF	Keratinocytes.B.VEGF	LEC.VEGF	Myeloid.cells.VEGF	SMC.VEGF
Endothelial cells	0	0	0	0	0	0	0	0
Fibroblasts A	-0.020047506	0	0	0	0	0.016118499	0	0
Fibroblasts B	-0.001612941	0	0	0	0	0.023431415	0	0
Keratinocytes A	-0.007511836	0	0	0	0	0.003809766	0	0
Keratinocytes B	0	0	0	0	0	0	0	0
LEC	0.002388086	0	0	0	0	0	0	0
Myeloid cells	-0.012353713	0	0	0	0	0.011008236	0	0
SMC	-0.002031465	0	0	0	0	0.006422456	0	0

Supplementary Table 7: Demographics of subjects included in this study
Samples used for scRNA seq study

Sample ID	Diabetes status	Diabetes	Gender	Age	Tissue location	BMI (kg/m²)	HbA1C (%)	Oral	Insulin	Race
		type						medication		
SC_NS-1	non-diabetic	N/A	F	37	Breast	48.5	N/A	N/A	N/A	Caucasian
SC_NS-2	non-diabetic	N/A	M	69	Lower limb	34.2	N/A	N/A	N/A	African American
SC_NS-3	diabetic	T2DM	M	70	Lower limb	26.4	13	Metformin	Yes	Caucasian
SC_NS-4	diabetic	T2DM	M	54	Lower limb	27.3	7.3	Metformin	Yes	Caucasian
SC_NS-5	diabetic	T2DM	M	65	Lower limb	31.9	10.3	Metformin	Yes	Caucasian
SC_NS-6	non-diabetic	N/A	M	46	Pannus	27.2	N/A	N/A	N/A	Caucasian
Sc_Skin3	non-diabetic	N/A	F	23	Breast	42.2	N/A	N/A	N/A	African American
Sc_Skin4	non-diabetic	N/A	F	28	Breast	26.9	N/A	N/A	N/A	Caucasian

Additional samples used for validation study

Sample ID	Diabetes status	Diabetes	Gender	age	Tissue location	BMI (kg/m²)	HbA1C (%)	Oral	Insulin	Race
		type						medication		
NS11	diabetic	T2DM	M	79	Lower limb	20.7	6.8	No	Yes	Caucasian
NS12	diabetic	T2DM	M	54	Lower limb	28.4	5.2	Yes	No	African American
NS13	diabetic	T2DM	M	55	Pannus	95.3	7.9	N/A	N/A	Caucasian
NS10	non-diabetic	N/A	F	53	Lower limb	35.2	N/A	N/A	N/A	African American
NS7	non-diabetic	N/A	M	56	Pannus	28.2	N/A	N/A	N/A	Caucasian
NS14	non-diabetic	N/A	F	52	Breast	29.5	N/A	N/A	N/A	Caucasian
NS30	non-diabetic	N/A	F	55	Breast	32.6	N/A	N/A	N/A	African American
NS17	diabetic	T2DM	M	70	Lower limb	37.1	11.9	N/A	Yes	Caucasian
NS32	diabetic	T2DM	F	54	Pannus	55.5	5.4	N/A	N/A	Caucasian